The Metropolitan Water District of Southern California

Agenda

The mission of the Metropolitan Water District of Southern California is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

Board of Directors - Final - Revised 2

January 9, 2024

1:00 PM

Tuesday, January 9, 2024 Meeting Schedule
08:30 a.m. FAIRP 10:30 a.m. EOP 12:30 p.m. Break 01:00 p.m. BOD

Agendas, live streaming, meeting schedules, and other board materials are available here: https://mwdh2o.legistar.com/Calendar.aspx. If you have technical difficulties with the live streaming page, a listen-only phone line is available at 1-877-853-5257; enter meeting ID: 891 1613 4145. Members of the public may present their comments to the Board on matters within their jurisdiction as listed on the agenda via in-person or teleconference. To participate via teleconference 1-833-548-0276 and enter meeting ID: 815 2066 4276 or click https://us06web.zoom.us/j/81520664276pwd=a1RTQWh6V3h3ckFhNmdsUWpKR1c2Zz09

MWD Headquarters Building • 700 N. Alameda Street • Los Angeles, CA 90012
Teleconference Locations:
525 Via La Selva • Redondo Beach, CA 90277
City Hall • 303 W. Commonwealth • Fullerton, CA 92832
3008 W. 82nd Place • Inglewood, CA 90305
1545 Victory Blvd., 2nd floor • Glendale, CA 91201

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1. Call to Order

a. Invocation: Vice Chair of the Board S. Gail Goldberg, San Diego County Water Authority

b. Pledge of Allegiance: Director Tana McCoy, City of Compton

2. Roll Call

3. Determination of a Quorum

4. COMMUNITY REFLECTIONS: [CANCELLED 12/29/23]

5. Opportunity for members of the public to address the Board on matters within the Board's jurisdiction. (As required by Gov. Code §54954.3(a))

6. OTHER MATTERS AND REPORTS

Boardroom

A. Report on Directors' Events Attended at Metropolitan's Expense **21-2869**

Attachments: 01092024 BOD 6A Report - REVISED

B. Chair's Monthly Activity Report **21-2870**

Attachments: 01092024 BOD 6B Report

C. General Manager's summary of activities **21-2871**

Attachments: 01092024 BOD 6C Report

D. General Counsel's summary of activities **21-2872**

Attachments: 01092024 BOD 6D Report

E. General Auditor's summary of activities **21-2873**

Attachments: 01092024 BOD 6E Report

F. Ethics Officer's summary of activities **21-2874**

Attachments: 01092024 BOD 6F Report

G. Updated report on the list of certified assessed valuations for the fiscal year 2023/24 and tabulation of assessed valuations, percentage participation, and vote entitlement of member agencies as of January 9, 2024. [ADDED SUBJECT 1/4/24] (FAIRP) **21-2936**

Attachments: 01092024 FAIRP 6G B-L

**** CONSENT CALENDAR ITEMS -- ACTION ****

7. CONSENT CALENDAR OTHER ITEMS - ACTION

A. Approval of the Minutes of the Board of Directors Meeting for November 14, 2023 and Special Board of Directors Meeting for December 5, 2023 (Copies have been submitted to each Director, any additions, corrections, or omissions) **21-2875**

Attachments: 01092024 BOD 7A1 (11142023) Minutes
01092024 BOD 7A2 (12052023) Minutes

B. Approve Committee Assignments

8. CONSENT CALENDAR ITEMS - ACTION

7-1 Authorize an agreement with the Center for Smart Infrastructure in an amount not to exceed $2 million to fund the organization's startup costs and focused water innovation research; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (EOT) **21-2898**

Attachments: 01092024 EOT 7-1 B-L
01092024 EOT 7-1 Presentation

7-2 Authorize an increase of $4,800,000 in change order authority for the contract to upgrade the domestic water treatment systems at the five Colorado River Aqueduct pumping plants; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (EOT) **21-2899**

Attachments: 01092024 EOT 7-2 B-L
01092024 EOT 7-2 Presentation

7-3 Authorize agreements with (1) Jacobs Engineering Group Inc. in an amount not to exceed $3.425 million; and(2) Brown and Caldwell in an amount not to exceed $2.26 million for design of security system improvements at several facilities throughout Metropolitan's Distribution System; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA. [Consultation with Metropolitan Team Manager, Engineering Services, Sandip Budhia, or designated agents on threats to public services or facilities; may be heard in closed session pursuant to Gov. Code Section 54957(a)] (EOT) **21-2900**

Attachments: 01092024 EOT 7-3 B-L
01092024 EOT 7-3 Presentation

7-4 Award a $549,592.04 contract to Caasi Flow Control for procurement of plug valves to be installed on the Foothill Feeder and Rialto Pipeline; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (EOT) **21-2901**

Attachments: 01092024 EOT 7-4 B-L
01092024 EOT 7-4 Presentation

7-5 Authorize an agreement with Application Software Technology LLC in an amount not to exceed $800,000 for the Oracle E-Business Suite Procurement Services Module Implementation; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (EOT) **21-2903**

Attachments: 01092024 EOT 7-5 B-L
01092024 EOT 7-5 Presentation

7-6 Authorize agreements with: (1) Alvarez, LLC in an amount not to exceed $1,923,940 to provide professional services and technical support; and (2) Cloudhouse Technologies Limited in an amount not to exceed $801,900 for licenses for up to a period of three years, to migrate legacy applications to supported Windows servers for the Application Server Upgrade project; the General Manager has determined the proposed actions are exempt or otherwise not subject to CEQA. [REVISED SUBJECT 1/3/24] (EOT) **21-2904**

Attachments: 01092024 EOT 7-6 B-L REVISED
01092024 EOT 7-6 Presentation

7-7 Authorize an increase in contract authority for Skilled Trade Supplemental Labor Contract in the amount of $6 million for a total not-to-exceed amount of $8 million; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (EOP) **21-2919**

Attachments: 01092024 EOP 7-7 B-L
01092024 EOP 7-7 Presentation

7-8 Approve amendments to the Metropolitan Water District Administrative Code Division VI, Chapters 2 and 5 to conform personnel regulations and the salary schedule for unrepresented employees to current law, practices, and regulations; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA. [DEFERRED 1/3/24] (LC) **21-2920**

7-9 Authorize the General Manager to execute 47 license agreements to update the conditions and extend the term of existing secondary use agreements comprising Metropolitan fee-owned parcels in Los Angeles, Orange, Riverside and San Bernardino counties;the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA (Assessor Parcel Nos. 0201-821-49; 0239-182-46; 0262-051-21; 0262-071-40; 0264-011-31; 0266-041-59; 0643-221-06; 0643-221-06; 0643-221-07; 0646-081-07; 0649-031-06; 189-200-007; 2526-024-270; 291-480-008; 303-090-036; 390-151-19; 430-210-014; 430-190-028; 4493-014-906; 452-052-03; 516-030-013; 516-100-006; 5260-013-910; 6204-012-901; 6204-033-901; 6204-028-901; 6680-200-02; 6680-500-16; 811-100-007; 8666-059-904; 8381-006-906; 8381-006-909; 8381-019-900; 8381-020-902; 8381-020-903; 8381-023-901; 8381-030-902; 8381-030-903; 8381-036-906; 8381-036-905; 8669-013-901; 8684-008-270; 921-700-013; 922-110-022; Parcel on Fargo Canyon Road, Riverside) (FAIRP) **21-2925**

Attachments: 01092024 FAIRP 7-9 B-L
01092024 FAIRP 7-9 Presentation

7-10 Review and consider the City of Rancho Cucamonga certified Final Environmental Impact Report and take related CEQA actions, and authorize the General Manager to grant a permanent easement to the City of Rancho Cucamonga for public road and trail purposes on Metropolitan fee-owned property in the City of Rancho Cucamonga and identified Assessor Parcel Numbers 022-512-301; 022-512-302; 022-512-303; 022-512-304 (FAIRP) **21-2926**

Attachments: 01092024 FAIRP 7-10 B-L
01092024 FAIRP 7-10 Presentation

7-11 Adopt Legislative Priorities and Principles for 2024; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (LRAC) **21-2928**

Attachments: 01092024 LRAC 7-11 B-L
01092024 LRAC 7-11 Presentation

**** END OF CONSENT CALENDAR ITEMS ****

9. OTHER BOARD ITEMS - ACTION

NONE

10. BOARD INFORMATION ITEMS

9-1 Conservation Board Report **21-2876**

Attachments: 01092024 BOD 9-1 Report

11. OTHER MATTERS

NONE

12. FOLLOW-UP ITEMS

NONE

13. FUTURE AGENDA ITEMS

14. ADJOURNMENT

NOTE: Each agenda item with a committee designation will be considered and a recommendation may be made by one or more committees prior to consideration and final action by the full Board of Directors. The committee designation appears in parenthesis at the end of the description of the agenda item, e.g. (EOT). Board agendas may be obtained on Metropolitan's Web site https://mwdh2o.legistar.com/Calendar.aspx

Writings relating to open session agenda items distributed to Directors less than 72 hours prior to a regular meeting are available for public inspection at Metropolitan's Headquarters Building and on Metropolitan's Web site https://mwdh2o.legistar.com/Calendar.aspx.

Requests for a disability-related modification or accommodation, including auxiliary aids or services, in order to attend or participate in a meeting should be made to the Board Executive Secretary in advance of the meeting to ensure availability of the requested service or accommodation.

REVISED Item 6A

Metropolitan Water District of Southern California
Summary of Events
Attended by Directors at Metropolitan's Expense in December 2023

Date(s)	Location	Meeting Hosted by:	Participating Director(s)
Dec. 12-15	Las Vegas, NV	Colorado River Water Users Association (CRWUA) 2023 Annual Conference	Garry Bryant Michael Camacho Arturo Chacon Gloria Cordero David DeJesus Brenda Dennstedt Juan Garza Cynthia Kurtz* Tana McCoy Jacque McMillan John Morris Adán Ortega Glen Peterson Karl Seckel Tim Smith

*Revised by adding Director Cynthia Kurtz

• Chair of the Board Adán Ortega Jr.'s Monthly Activity Report – December 2023

Summary

This report highlights my activities as Chair of the Board during the month of December 2023 on matters relating to The Metropolitan Water District of Southern California's business.

Monthly Activities

Key Activities

- For the first time since the surveying and constructing the Colorado River Aqueduct in almost 100 years, Metropolitan's Board of Directors convened a special board meeting at Metropolitan's Gene Camp field headquarters at the start of the Colorado River near Parker Dam. A quorum of the Board convened at our downtown Los Angeles headquarters in compliance with state laws. Amelia Flores, Chairwoman of the Colorado River Indian Tribes, gave the invocation at the board meeting. "We're now at a point where people, tribal nations need to be involved as we go forward planning out the river and having solutions to keep this river flowing," she said. "We have a lot of work to do together." The Board also received an update on housing developments at Metropolitan's desert facilities and toured the housing at Gene Camp.

- Attended the Celebration of 100 SAFER Consolidations, marking the successful completion of over 100 water system consolidations initiated by the State Water Resources Control Board's Safe and Affordable Drinking Water for Equity and Resilience (SAFER) program. The event at West Side Elementary School in Thermal highlighted the program's achievements since its inception in 2019. The school, connected to the water district in 2021, stands as one of the completed consolidations. In attendance were Vice President of Coachella Valley Water District Cástulo Estrada, State Water Resources Control Board President E. Joaquin Esquivel, and US Environmental Protection Agency (EPA) Region 9 Administrator Martha Guzman Aceves.

Speaking Engagements/Events

- As the City of San Fernando's Representative on the Board of the Metropolitan Water District of Southern California, I was invited to make brief remarks at San Fernando's Holiday Tree Lighting Event. I weaved in the topic of water for the holiday season in English and Spanish by expressing gratitude for the abundant water supply that nourishes our trees delivered through rivers and aqueducts. I encouraged a collective appreciation for this essential resource, emphasizing the importance of water for sustaining life, nurturing gardens, and supporting the natural environment in which the trees thrive. I gave a special thanks to San Fernando Mayor Celeste Rodriguez and City Manager Nick Kimball.

Other Activities

- Participated in the 2023 Colorado River Water Users Association (CRWUA) Annual Conference in conjunction with Metropolitan Board Directors and Staff. Engaged in substantive meetings and fostered connections with esteemed professionals within the water industry, thereby cultivating and fortifying collaborative relationships.

- Metropolitan and the Quechan Tribe extended through 2026 their partnership to conserve water. Through the agreement, Metropolitan pays interested farmers not to grow crops in the hot summer months, and the conserved water is made available for urban needs and to boost water levels in Lake Mead. General Manager Adel Hagekhalil and Quechan Indian Tribe President Jordan Joaquin signed the agreement.

- Witnessed the California Conservation Agreements Signing Ceremony, where we joined forces with California water agencies and the Bureau of Reclamation in our shared commitment to conserve 1.6 million acre-feet of Colorado River water by 2026. Our combined endeavors are significantly contributing to conservation initiatives in the Lower Basin.

- I joined General Manager Adel Hagekhalil in welcoming over 300 guests to the first Metropolitan co-hosted reception with the Central Arizona Project (CAP). CAP Board President Terry Goddard and I also welcomed United States Bureau of Reclamation (USBR) Commissioner Camille Touton and were joined by CAP General Manager Brenda Burman as well.

- On our last night at CRWUA, Directors Tana McCoy, John Morris, and Board Vice Chair Michael Camacho joined me at a dinner with the leadership of the Palo Verde Irrigation District.

- During CRWUA, I also had the opportunity to meet individually with Imperial Irrigation District President Alex Cardenas, Coachella Valley Water District President John Powell Jr., and Palo Verde Irrigation District President Bart Fisher. As a group, we also met with the leadership of the Pechanga Tribe.

- Needless to report in detail given numerous news articles, our General Manager Adel Hagekhalil made a great impression at CRWUA with his appeal for creativity and innovation to break the mentality of conflict that comes with a single focus on scarcity. I would also like to acknowledge the wonderful work of Metropolitan's staff, including Dee Zinke and Sue Sims, in preparing for the meetings we held at CRWUA. It also seemed that at every panel discussion and meeting, our counterparts from other California and Colorado River Basin organizations went out of their way to praise our Colorado River experts, Bill Hasencamp and Meena Westford, and their colleagues. As I observed the room, I saw our General Manager and colleagues from the Board present at CRWUA beam with pride at such references, which speaks for itself. Thank you, Adel and Staff!

- About a dozen Metropolitan Directors attended CRWUA. I would like to particularly acknowledge Directors Gloria Cordero, who represents Metropolitan on the Colorado River Board, and Marty Miller, who chairs the Ad Hoc Committee on the Colorado River. It was evident from my interactions and observations that Director Cordero has done a great job at forging contacts and friendships with many people throughout the Colorado River watershed, which is key to the final outcome in the post-2026 negotiations. Ad Hoc Committee Chair Miller attended sessions with tribal leaders and participated in the signing ceremonies, interacting with many leaders from throughout the Basin States. Thank you, Directors Cordero and Miller, for being able, personable, and strategically representing Southern California's interests on the Colorado River.

Internal Activities

- I joined General Manager Adel Hagekhalil to witness the signing of the Memorandum Of Understanding (MOU) extension with American Federation of State, County and Municipal Employees (AFSME) Local 1902 President Alan Shanahan, which was overwhelmingly ratified by its members.

- Staff has been informing me of the work of artist Eloy Torres, who is painting the portrait of Former Board Chair Phillip J. Pace for an upcoming dedication event marking the official naming of the board room at Metropolitan in his honor. We are estimating that the portrait and signage will be ready for unveiling in April 2024.

Regularly Scheduled/Ongoing Meetings

I continue to meet regularly to review the Board's organizational issues and coordinate activities with the Board Vice Chairs and Department Heads.

General Manager's Monthly Report

Activities for the Month of December 2023

Table of Contents

Message from the General Manager

As we ring in the new year, I am profoundly grateful for our collective efforts and proud of the numerous achievements we accomplished together in 2023. The partnership among Metropolitan's dedicated workforce, the Board of Directors, and the leadership and staff of our member agencies directly impacts the lives of 19 million Southern California residents who rely on us.

Looking ahead, I am excited about the possibilities that 2024 holds.

We will make additional, critical decisions about the future of the Colorado River, building off of last month's series of agreements to save 1.6-million-acre feet in Lake Mead.

We ended the year with a record amount of water in storage, and water began to flow into the High Desert Water Bank after years of planning and preparation. In 2024, we will create more ways to store water during times of abundance through programs that support our in-basin aquifers.

We will adopt a biennial budget that grapples with the challenges imposed by the severity of the last drought, knowing that the investments in our people and our pipes pay regional dividends in all kinds of weather. And we will explore options for increased fiscal sustainability as part of our integrated climate and resource planning in the Climate Adaptation Master Plan for Water process that has made such tremendous headway in 2023.

These are just a few of the opportunities that the New Year presents us, to support Metropolitan's transformation and accelerate our readiness for the next century. It will be demanding, of course, but I am confident that through continued collaboration there are no limits to what we can achieve together.

Please enjoy this brief slide show that highlights just a few of our many accomplishments in 2023.

We are one

Adel

"We make a living by what we get, but we make a life by what we give."

- Winston Churchill, Two-time Prime Minister of the United Kingdom

Strategic Priorities Update

The General Manager's Strategic Priorities guide actions in key areas of focus, investment, and transformation for Metropolitan.

Empower the workforce and promote diversity, equity, and inclusion

Build a safe, inclusive, and accountable workplace where all employees feel valued, respected, and able to meaningfully contribute to decisions about their work to fulfill Metropolitan's Mission.

The EEO Office reported an average case closure rate of 89 business days for the fourth quarter (October–December 2023), again meeting its closure rate target. The EEO Office will continue to prioritize its commitment to conducting prompt, thorough, and fair investigations.

At the special board meeting at Gene Pumping Plant, staff presented the status of desert housing improvements and community planning for future employee housing. Board members also had the opportunity to tour the facility and see some improvements firsthand.

Prepare and support the workforce by expanding training and skill development and updating strategies to recruit and retain diverse talent at a time when Metropolitan's needs are evolving and employee expectations about the workplace are changing.

The Organizational Development & Training Unit graduated 20 newly promoted managers in December with a session that included Influential Leadership & Persuasive Communication and a presentation from Chief Diversity, Equity and Inclusion (DE&I) Officer, Liji Thomas, on DE&I's Mission & Values. These sessions prepare our new managers to excel in their new role by equipping them with soft and hard skills that may not have been required in their previous role. Additionally, the cohort structure aims to create a close-knit supportive network of peers who can support one another during operational challenges.

DE&I is reaching out to local colleges such as University of La Verne and San Bernardino Community College to explore partnerships around water operator certificate programs, to provide greater outreach for the Apprenticeship Program through pre-apprenticeship workshops, and to cast a wider net for applicants by expanding locations for testing.

Sustain Metropolitan's mission with a strengthened business model

Develop revenue and business model options that support the needs of the member agencies as well as Metropolitan's financial sustainability and climate adaptation needs.

Board action at the November FAIRP committee concurred with the assumptions in the LRFP-NA for planning purposes. Staff will bring the item back for questions at the January FAIRP. Staff continues to integrate financial work into the CAMP4W process. Staff presented the Pure Water Southern California cost recovery alternatives at the October FAIRP Committee meeting. The item was continued to a future FAIRP committee for further board deliberation and analysis.

Manage rate pressure on member agencies through attention to programmatic costs, organizational efficiencies, and efforts to secure external funding for projects with broad and multi-purpose benefits.

To help control costs in response to revenue shortfalls, Metropolitan identified 2.5 percent in budget reductions for the second half of the year, at the direction of the GM. The Chief of Staff worked with group managers across the agency to find achievable one-time savings, as we continue to identify savings opportunities while ensuring reliable operations.

Adapt to changing climate and water resources

Provide each member agency access to an equivalent level of water supply reliability through the development of a Climate Adaptation Master Plan for Water (CAMP4W) that integrates water resource, financial and climate adaptation planning.

The CAMP4W Planning Team presented a refined set of six evaluative criteria to the inaugural meeting of the Task Force, reaching preliminary consensus on the criteria categories. Details of the criteria will be included in WM #5 in January, and the team continues to develop a project list for evaluation. The Jan. 18 Task Force meeting will also include a draft set of Time-Bound Targets to spur discussion, and a two-day training workshop is being planned. A "save the date" has been sent for Feb. 5–6.

Staff conducted Workshop #11 regarding the supply concerns of State Water Project-Dependent Areas. This workshop included all member agencies to discuss the proposed drought mitigation actions portfolio and implementation plans. Staff will take the feedback and make refinements to prepare for board actions scheduled in the first quarter of 2024.

Advance the long-term reliability and resilience of the region's water sources through a One Water approach that recognizes the interconnected nature of imported and local supplies, meets both community and ecosystem needs and adapts to a changing climate.

The California Department of Water Resources (DWR) released the Delta Conveyance Project's Final Environmental Impact Report (EIR) on December 8, 2023. Metropolitan submitted a comment letter, focused on the long-term performance of the project. The Final EIR was certified on December 21, and DWR approved the proposed project, choosing the "Bethany Reservoir Alignment" for further engineering, design and permitting. DWR will next begin to pursue numerous state and federal permits. The Delta Construction Authority will provide a new cost estimate and a benefit-cost analysis in mid-2024.

On December 13, as part of the Colorado River Water Users Association's annual conference, the Commissioner of the Bureau of Reclamation Camille Touton signed several water conservation agreements with California water agencies and the Fort Yuma Quechan Indian Tribe (Quechan Tribe) to help meet the state's commitment to conserve 1.6 million acre-feet of water for Lake Mead's benefit through 2026, the equivalent of about 25 feet of elevation at Lake Mead. Metropolitan also signed conservation agreements with Imperial Irrigation District, Palo Verde Irrigation District (PVID), the Quechan Tribe, Coachella Valley Water District, and San Diego County Water Authority. These agreements will collectively leave about 250,000 acre-feet of water in Lake Mead this year. The agreements with PVID and the Quechan Tribe will leave additional water in Lake Mead through 2026, and additional agreements with Imperial Irrigation District are being pursued for conservation programs running through 2026.

Staff presented to the Member Agency Managers the updated cost estimates for Pure Water Southern California (PWSC), following the same presentation to the Board's PWSC Subcommittee. The costs included the present-worth construction costs, escalated costs, changes to the Program since 2018, potential external funding contributions, O&M costs, and calculated unit costs for various assumptions. The PWSC team joined with LACSD to brief various NGOs and support environmental leaders' review of the progress of the PWSC and LA City's Operation NEXT/Hyperion 2035.

The Division of Drinking Water (DDW) of the State Water Resources Control Board published another draft of the Direct Potable Reuse (DPR) regulations, and Metropolitan submitted comments. A board presentation was deferred to the January 2024 subcommittee meeting, after the expected finalization of the regulations.

Staff executed three consultant agreements for design, environmental planning, and public outreach for the proposed rice and wetlands projects on Webb Tract that are to be funded by a Delta Conservancy grant. The final consultant agreement for scientific studies is expected early January 2024. The Webb Tract New Project Authorization package was approved by Engineering, and a new CIP project number was issued.

Dr. Shawn Acuña presented at the North American Society of Environmental Toxicology and Chemistry Annual Meeting. The presentation, based on work around Delta smelt, outlined how including contaminant performance metrics lead to changes in management decisions.

As part of the Pacific Flyway Shorebird Survey, staff coordinated with USFWS staff to conduct the annual shorebird count on Bouldin Island. The PFSS is a long-term monitoring program led by Point Blue Conservation Science, designed to guide the management and conservation of wintering shorebirds.

Staff expects to roll out to Member Agencies in January 2024 the retailer-level information of our regional turf landscape survey and dashboard.

Strategic Priorities Update (continued)

Protect public health, the regional economy and Metropolitan's assets

Proactively identify, assess and reduce potential vulnerabilities to Metropolitan's system, operations and infrastructure.

The assessment and prioritization of Metropolitan's Capital Investment Plan based on risk and value is complete, and the proposed 2-year and 10-year CIP spending plans have been prepared for inclusion in the budget documents under development.

Metropolitan hosted a workshop for seismic resilience with LADWP, DWR, Cal WARN and CUEA. Two additional dam Emergency Action Plans were approved by Cal OES; 10 out of the 13 required EAPs have been completed.

Three Bay Delta levee improvement projects wrapped up work for the 2023 season. These projects occurred on Bouldin and Bacon Islands. Approximately 8.5 miles of levee were improved.

The Cyber Security Operations Center completed 195 cyberthreat investigations last month and tracked over 500 new events in a recent seven-day period. The annual Cybersecurity Awareness Training Campaign is underway, and as of Dec. 18, 62 percent of staff have completed the annual training.

Apply innovation, technology, and sustainable practices across project lifecycles (design, construction, operations, maintenance, and replacement).

For procurement policies, the Contracting Services Unit and Sustainability, Resilience & Innovation held a kick-off meeting with a newly hired consultant to review tasks and milestones for revising drafts for updated Operating Policies and sustainable procurement requirements.

Staff is working to incorporate Envision into the progressive-design-build procurement documents for the Lake Mathews Headworks Facility upgrades.

The first board update on the ZEV transition will be at the January EOT meeting. A detailed replacement schedule is underway, and the team has already accumulated ZEV credits under the State Program for the purchase of eight ZEVs. The State regulatory program takes effect January 1.

Partner with interested parties and the communities we serve

Grow and deepen collaboration and relationships among member agencies, interested parties and leaders on the issues most important to them and toward mutual and/or regional benefits.

The GM held another listening session with environmental leaders, focused on the Climate Adaptation Master Plan for Water. Approximately 40 stakeholders participated, providing perspectives and input on the evaluative criteria that will be part of the Climate Decision-Making Framework. The feedback was considered in the proposed criteria that were presented to the Task Force on December 19.

Reach disadvantaged communities and non-traditional interested parties to better understand their needs and ensure their inclusion in decision making.

Metropolitan leadership hosted Colorado River Indian Tribes (CRIT) leaders for dinner and board meeting at Gene Camp where Madam Chair Flores provided opening remarks. Separately, we collaborated with CRIT to hold a pre-apprenticeship workshop on CRIT reservation for high school seniors and adults to learn more about Metropolitan's apprenticeship program, resume writing, interviewing, and navigating the Metropolitan career site.

During CRWUA, Metropolitan hosted a signing ceremony with Quechan tribal leaders for new Colorado River conservation agreement, and we hosted Pechanga tribal leaders for a discussion on water supply issues and opportunities for ongoing collaboration.

Executive Summary

This executive summary is added to this report to provide a high-level snapshot of a key accomplishment from each area of the organization. Detailed information is reported in the pages following this summary.

Administrative Services

The Records Management & Imaging Services Team recently published three video tutorials on the newly launched Library and Archives Services SharePoint site. The tutorials, which run between 10 and 12 minutes each, provide employees with an overview of Metropolitan's archival program. Topics covered include Understanding Archival Records, an Introduction to the Metropolitan Archives, and Using the Metropolitan Archives Portal. Transcripts for each tutorial are also included on the site.

Bay-Delta Initiatives

The California Department of Water Resources (DWR) released the Final Delta Conveyance Project Environmental Impact Report (EIR) to the public, in accordance with the California Environmental Quality Act on December 8, 2023. The Final EIR was certified on December 21, 2023, and DWR approved the proposed project. Responses to comments, the Final EIR, and accompanying informational resources, can be accessed at www.deltaconveyanceproject.com.

Chief Financial Officer

In November, informational reports were provided to the Finance, Audit, Insurance, and Real Property Committee on Member Agency Purchase Order commitments covering January 1, 2015, through December 31, 2024, and Pure Water Southern California Cost Recovery Alternatives.

Colorado River

On December 13, the Bureau of Reclamation's Commissioner executed several system conservation agreements with California water agencies with funds provided by the Inflation Reduction Act. These agreements are part of California's commitment to conserve an additional 1.6 million acre-feet of water for the benefit of Lake Mead through 2026.

Diversity, Equity & Inclusion

Metropolitan staff attended the U.S. Green Building Council—Los Angeles (USGBC-LA) Green Gala and Sustainable Innovation Awards in Los Angeles, CA. The USGBC-LA GALA Awards is a celebration of outstanding leaders' contributions to sustainability, innovation, and community impact.

Engineering Services

The 25-mile-long Allen McColloch Pipeline (AMP) comprises approximately nine miles of prestressed concrete cylinder pipe (PCCP) and delivers water from the Diemer plant to the El Toro Reservoir. An electromagnetic inspection of the PCCP portion of the AMP was conducted in November. A draft report, which was issued in December, identified 81 pipe sections that are showing new or increased levels of distress. To mitigate the risk of a pipeline failure, Engineering staff worked with Operations and member agency staff to reduce the operating pressure in the pipe. Additional modifications to further reduce the pressure in the pipeline, such as an orifice plate and bypass control valve, will be installed during a planned Diemer plant shutdown in January. Staff is expediting rehabilitation of the AMP using either carbon fiber reinforced polymer (CFRP) lining or structural steel internal lining to replace the compromised PCCP pipe sections. Shutdown(s) in early 2024 will be coordinated with member agencies and local cities/jurisdictions. Board actions are anticipated to procure material and authorize construction.

External Affairs

Public and media interest in Metropolitan's leadership to address Colorado River issues remained high and was highlighted with several milestone events at the annual Colorado River Water Users Association conference. Chair Ortega, Vice Chair Camacho, Directors Bryant, Chacon, Cordero, DeJesus, Dennstedt, Garza, Kurtz, McCoy, Miller, Morris, G. Peterson, Seckel, and Smith, GM Hagekhalil, GC Scully, AGMs Upadhyay and Zinke, Colorado River Resources Manager Hasencamp, and staff attended. (December 12–15)

Human Resources

The Organizational Development & Training Unit (OD&T) concluded the 13th cohort of Metropolitan's Management University, graduating 18 new managers. OD&T also facilitated a team building exercise for the Warehouse Team at Weymouth focusing on interpersonal communication and team collaboration.

Information Technology

Information Technology, Engineering Services and Water Systems Operation staff continue to work closely together on the Supervisory Control and Data Acquisition (SCADA) system upgrades. In recent months, staff has completed installation of equipment for the pilot project at the Mills Treatment Plant. The pilot project is approximately 80 percent complete and scheduled to be complete in March 2024.

Safety, Security and Protection

Metropolitan Security staff partnered with Department of Homeland Security (DHS) Cybersecurity and Infrastructure Security Agency (CISA) protective security agents to assess potential security vulnerabilities and mitigation measures of Diamond Valley Reservoir. Safety, Regulatory, and Training (SRT) collaborated with Metropolitan's legal department to ensure that all regulatory requirements were met for the removal of the underground storage tank from the former Sunset Garage facility and to negotiate a significantly reduced penalty for alleged violations related to asbestos management for Weymouth basin rehabilitation efforts.

Sustainability, Resiliency and Innovation

SRI's recent core activities showcase a commitment to environmental leadership and innovation. Key highlights include active participation in the Climate Adaptation Master Plan for Water (CAMP4W) sessions, collaboration with member agencies on climate decision-making frameworks, and the Chief SRI Officer's engagement at the 2023 Colorado River Water Users Association (CRUWA) Conference. Efforts also extend to executive retreats focusing on adaptive management, the transition to zero-emission vehicles, and the initiation of a sustainable procurement policy. SRI's commitment to sustainability is underscored by the draft of a new operating policy (D-03) emphasizing sustainability and resilience. Notably, the office's involvement in community-centric events like LARTA's ECO '23 and the WaterStart Channels for Innovation Summit reflects a dedication to grassroots innovation and impactful solutions. Environmental planning, regulatory compliance support, and land management initiatives further demonstrate SRI's multifaceted approach to driving positive change in the water management landscape.

Water Resource Management

Staff wrapped up the calendar year culminating with the signing of historic water conservation agreements with partner states and agencies on the Colorado River and collaboration with the Department of Water Resources and the State Water Contractors in preparing for next year and beyond. Staff continued efforts in the research, development, and production of recycled water and desalination technologies as well as furthering efforts in outdoor conservation and landscape transformation.

Water System Operations

This month, a lengthy shutdown of a segment of the Second Lower Feeder began for installing steel liners, ensuring the integrity of the aging prestressed concrete cylinder pipe. Extending through April, this prolonged shutdown requires agencies to rely on the Palos Verdes Feeder for water supply. To serve agencies south of the out-of-service Palos Verdes Reservoir, a temporary reservoir bypass had been constructed. Leading up to the shutdown, several additional challenges had to be overcome including repairing a leak at the reservoir bypass and extensive testing of the new bypass by Metropolitan and member agency operators. The start of this shutdown marks the successful culmination of years of collaboration, coordination, and problem-solving among operators, engineers, member agencies, and contractors for planning this complex shutdown.

"Our recent successful field inspection trip is a testament to the outstanding collaboration of over 50 colleagues at various levels, whose dedicated efforts and collective expertise ensured its success. Their commitment to excellence and teamwork exemplify the strength of our organization."

Sylvia Lanza, Sr. Resource Specialist

PROGRAM DESCRIPTION

The Engineering Operations and Technology (EO&T) Committee organizes an annual inspection trip that provides a first-hand look at Metropolitan's facilities and serves as a crucial element in the committee's decision-making process. Even amid the pandemic, virtual inspection trips were conducted. The most recent trip was in November 2023.

IMPORTANCE TO METROPOLITAN

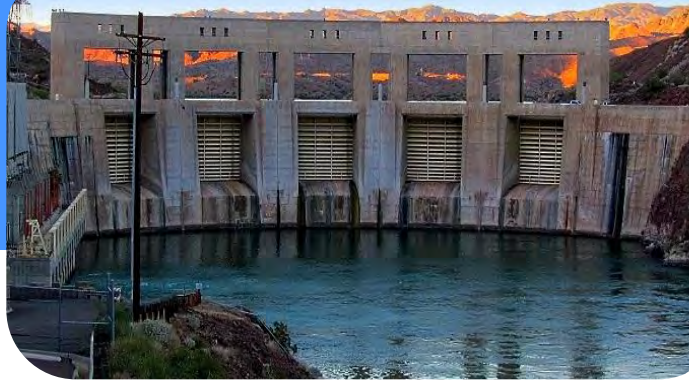
The EO&T Trip plays a vital role in showcasing recently completed projects at various Metropolitan facilities, allowing board members to confirm the effective use of capital funds in enhancing system operations and reliability. Additionally, it offers insights into facilities that are slated for rehabilitation, upgrades, and addressing challenges like climate change, aging infrastructure and drought conditions.

The meticulous planning of the EO&T Trip involves months of collaboration across the organization and includes tasks such as identifying facilities for the tour, route planning, creating informational materials and videos, and on-site presentations. The success of these trips directly results from the dedication of the staff working on this project. The 2023 EO&T Trip on November 16 featured critical stops at the La Verne Water Quality Laboratory, Cybersecurity Operations Center, F. E. Weymouth Water Treatment Plant Basins 5 through 8, and various Lake Mathews facilities. The tour covered Lake Mathews Reservoir's history, Metropolitan's drone program, the 3D printing program, the construction of the Perris Valley Pipeline, and an overview of hydroelectric power plants. The inspection trip concluded with examinations of the newlyconstructed storage building at Lake Mathews and insights into the zero-emission vehicle program.

MEMORABLE MOMENT

Attendees were captivated by the historical account of Lake Mathews and its pivotal role in supplying water to Southern California. In recent years, the lake has helped mitigate the impact of the drought on Southern California. Additionally, directors were deeply moved by the memorials dedicated to former Directors Lois B. Krieger and Donald Galleano.

Water Resources and Engineering



Water Resource Management

Ensure Access to Sufficient Water Supplies to Operate a Full Colorado River Aqueduct in Times of Drought

Staff attended the annual Colorado River Water Users Association (CRWUA) conference in Las Vegas. At the conference, California water users, including Metropolitan, Imperial Irrigation District (IID), San Diego County Water Authority (SDCWA), Fort Yuma Quechan Indian Tribe, Palo Verde Irrigation District (PVID), and Coachella Valley Water District (CVWD) signed historic conservation agreements with the U.S. Bureau of Reclamation (USBR) to protect the Colorado River. This series of system conservation implementation agreements will help California conserve up to 1.6 million acre-feet of water to help support the Colorado River system.

Manage Existing and Develop New Regional Water Management Programs to Maintain Water Supply Reliability in the Face of Increasing Water Supply Volatility.

Staff initiated site inspections for On-Site Retrofit Program projects that were completed during FY22–23. In late November and early December, staff visited a total of ten sites. Four sites were in the Inland Empire Utilities Agency's service area (City of Fontana), two sites were in Eastern Municipal Water District's service area (Hemet and Menifee), three sites were in Western Municipal Water District's service area (two in Temecula and one in Corona), and one site was in Central Basin Municipal Water District's service area (Santa Fe Springs). These inspections are required annually as an audit requirement of the Program.

Implement Regional Conservation Program

Staff held two Water Efficient Landscaper Dual Certification Classes with the California Landscape Contractors Association: One in Irvine with Irvine Ranch Water District for 50 landscape professionals, and one in Oceanside with the San Diego County Water Authority, City of Oceanside for 45 landscape professionals.

Staff represented Metropolitan on a panel discussing climate-ready landscapes at the California Water Efficiency Partnership Winter Plenary in San Francisco.

Staff also represented Metrpolitan on a panel discussing Strategies for Water Efficient Landscaping during an Alliance for Water Efficiency roundtable.

Collaborate with Member Agencies, Water Agencies and Associations, and Provide Leadership for Policy Development, Advocacy, Outreach and Education

Staff collaborated in organizing the annual workshop of the State Water Contractors Water Operations Committee. Over 100 attendees from the California Department of Water Resources and State Water Project contractors participated in person and online, and over 50 attendees joined a field trip to SWP facilities, including San Luis Reservoir. The workshop provided an improved understanding of the water operations planning processes undertaken by DWR, as well as the water management challenges faced by SWP contractors.

Photo below: SWP contractor and DWR staff visit San Luis Reservoir 12/5/2023

Staff presented a water supply update to the Riverside County Water Task Force on December 15, 2023. The update included a summary of Water Year 2022–2023, water supply and drought management actions in Calendar Year 2023, and planning considerations for Calendar Year 2024. The Riverside County Water Task Force is a collaboration between Eastern Municipal Water District, Western Municipal Water District, and the Western Riverside Council of Governments.

Implement Future Supply Actions Funding Program

On December 1st, staff released a Request for Proposals (RFP) for the Future Supply Actions Funding Program (FSA Program). Staff also hosted an informational webinar for member agencies and other interested stakeholders on December 13. The webinar provided a background on the program and guidance on the application process. Over 30 stakeholders participated in the webinar with 16 member agencies represented. FSA Program study proposals are due Monday, February 5 at 2:00. Additional information on the FSA Program including the webinar recording is available on Metropolitan's website: https://www.mwdh2o.com/funding-opportunities#future-supply

Promote Metropolitan's Technical Capabilities and Innovation Efforts To Advance The Understanding Of Water Resources Management.

Staff participated in two meetings on offshore seawater desalination in December. Las Virgenes MWD hosted the first meeting. The meeting included a discussion of a potential offshore desalination demonstration project serving Las Virgenes' service area and providing emergency supplies to Malibu and the Pacific Palisades within LADWP's service area. The second meeting was hosted by MWDOC and included discussions of siting offshore desalination along the Orange and San Diego County coastlines. Staff provided updates on the FSA Program and Metropolitan's recently approved desalination siting studies. Metropolitan's desalination studies are anticipated to be launched in January and will include assessments of different types of offshore desalination technologies.

Water Resources and Engineering

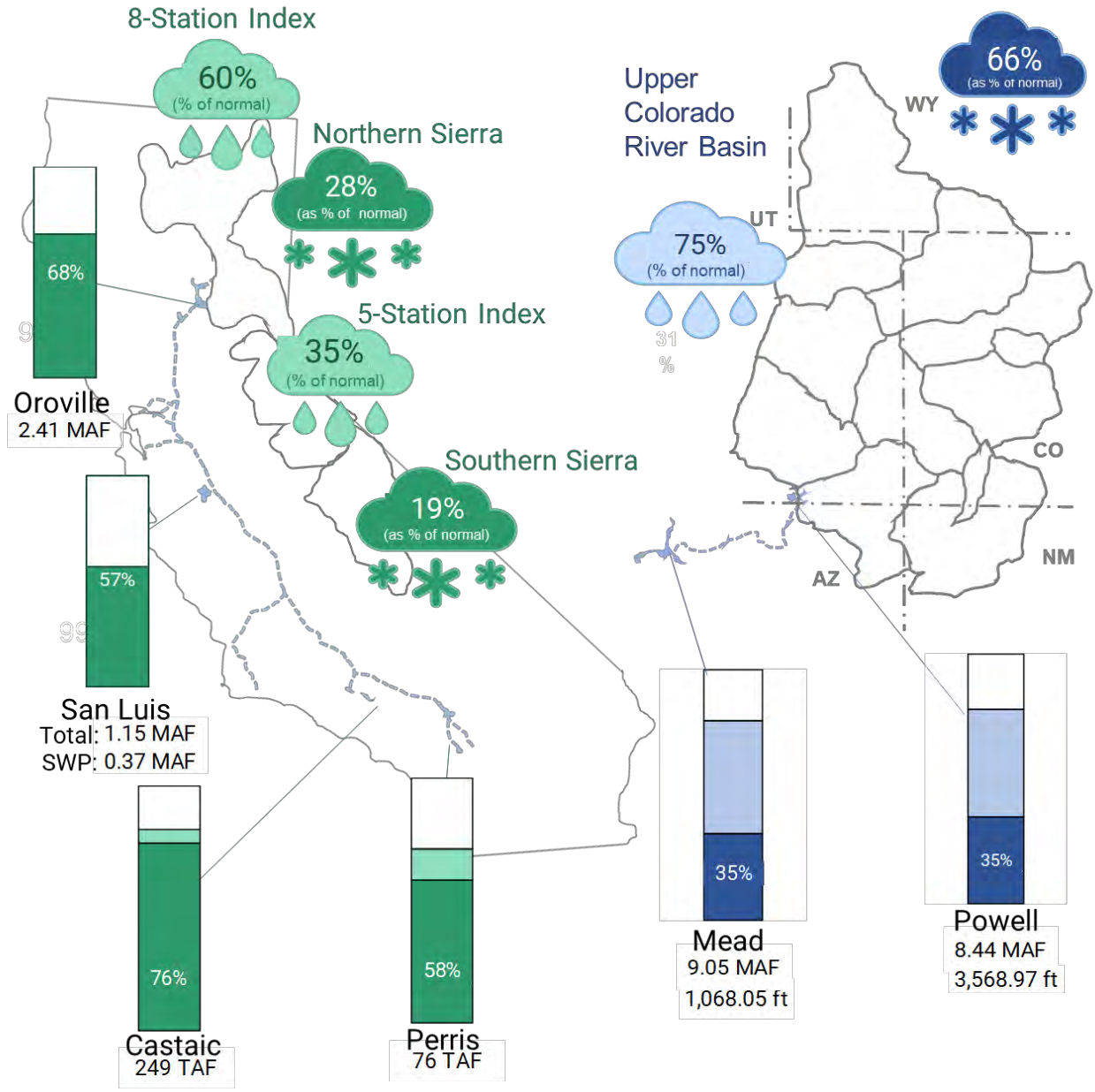
(continued)

State Water Project Resources

SWP Table A - 100% - 1,911,500 acre-feet

Colorado River Resources

Projected CRA Diversions - 662,000 acre-feet



Water Year 2023-2024
As of: 12/31/2023

Extended Report:
https://www.mwdh2o.com/WSCR

Bay-Delta Initiatives

Core Functions

Delta Conveyance

The California Department of Water Resources (DWR) released the Final Environmental Impact Report (EIR) to the public, including public agencies that commented on the Draft EIR, in accordance with the California Environmental Quality Act (CEQA) on December 8, 2023. The Final EIR was certified on December 21, 2023, and DWR approved the proposed project. Responses to comments, as well as the Final EIR and accompanying informational resources, can be accessed at www.deltaconveyanceproject.com.

The U.S. Army Corps of Engineers (USACE), as part of its permitting review under the Clean Water Act and Rivers and Harbors Act, released a draft Environmental Impact Statement (EIS) to comply with the National Environmental Policy Act for a public review that ended on March 16, 2023. USACE is developing responses to the comments received.

Sites Reservoir

At the December 15 Joint Reservoir Committee and Sites Authority Board meeting, the Reservoir Committee and the Authority Board approved a contract with an outside consultant to provide wheeling rate development services. Delivering the benefits of the Sites Reservoir Project requires the shared use of the existing Glenn-Colusa Irrigation District Canal, Tehama-Colusa Canal, and the Lower Colusa Basin Drain System. Facility partner fish screens, pump stations, canals, regulating reservoirs, etc. will be needed to convey Sites water into and out of the Sites Reservoir as well as to divert from and release back into the Sacramento River. This use of these existing facilities owned by others requires Facilities Use Agreement(s), and the Sites Storage Partners will need to pay their share of cost for this service. The owners of these existing facilities would receive benefits from shared use as well under the assumption that Sites water flowing through their facilities allows fixed O&M and capital improvement costs to be spread over a larger rate base, thereby reducing the unit cost to the existing ratepayers.

Science Activities

Science staff completed its review of the Bay-Delta Water Quality Control Plan Draft Staff Report and Substitute Environmental Document released by the California State Water Resources Control Board on September 28, 2023. Metropolitan will submit written comments to the State Water Board on the Draft Staff Report and Substitute Environmental Document before the January 19, 2024, deadline.

Dr. Shawn Acuña presented on contaminant performance metrics at the North American Society of Environmental Toxicology and Chemistry Annual Meeting and Fall 2023 Zoology Colloquium. The presentation, *Management for a Listed Species Using Contaminant Performance Metrics,* summarized the use of contaminant performance metrics within a structured decision-making framework in the context of water projects and Delta smelt. Results from the work found that including contaminant performance metrics lead to changes in management decisions.

Delta Island Activities

Staff executed three consultant agreements for design, environmental planning, and public outreach for the proposed rice and wetlands projects on Webb Tract that, if approved, will be funded by a Delta Conservancy grant. The final consultant agreement for scientific studies is expected in early January 2024. The Webb Tract New Project Authorization package was approved by Engineering, and a new CIP project number was issued.

As part of the Pacific Flyway Shorebird Survey (PFSS), staff coordinated with USFWS staff to conduct the annual shorebird count on Bouldin Island. The PFSS is a long-term monitoring program led by Point Blue Conservation Science, designed to guide the management and conservation of wintering shorebirds.

Three levee improvement projects wrapped up work for the 2023 season. These projects occurred on Bouldin and Bacon Islands. Approximately 8.5 miles of levee were improved. DWR provided funding for this project through the Delta Levees Special Flood Control Projects program. Additional work will be completed in 2024.

Staff presented on the Levee Monitoring Pilot Study on Bouldin Island at the WaterStart Channels for Innovation Summit 2023. This pilot study is using innovative new technology to determine real-time changes in levee conditions.

Colorado River Resources

Reclamation Executes California IRA System Conservation Agreements in Las Vegas

Following Metropolitan's November 14 and December 5 board approval of various agreements with its partners in California, on December 13, as part of the Colorado River Water Users Association's annual conference, the Commissioner of the Bureau of Reclamation Camille Touton signed several water conservation agreements with California water agencies and the Fort Yuma Quechan Indian Tribe (Quechan Tribe) to help meet the state's commitment to conserve 1.6 million acre-feet of water for Lake Mead's benefit through 2026. Metropolitan's General Manager and General Counsel signed conservation agreements with Imperial Irrigation District, Palo Verde Irrigation District (PVID), the Quechan Tribe, Coachella Valley Water District, and San Diego County Water Authority. These agreements will collectively leave about 250,000 acre-feet of water in Lake Mead this year. The agreements with PVID and the Quechan Tribe will leave additional water in Lake Mead through 2026. These agreements, along with Metropolitan's projected record amount of storing a projected 450,000 acre-feet of water in Lake Mead in 2023, have resulted in California's water use being at its lowest level since 1949. It is anticipated that additional agreements will be signed with Imperial Irrigation District in 2024 for conservation programs running through 2026. California's plan to conserve 1.6 million acre-feet of water is the equivalent of about 25 feet of elevation in Lake Mead.

Engineering

Core Business Function – Execute Capital Investment Plan Projects

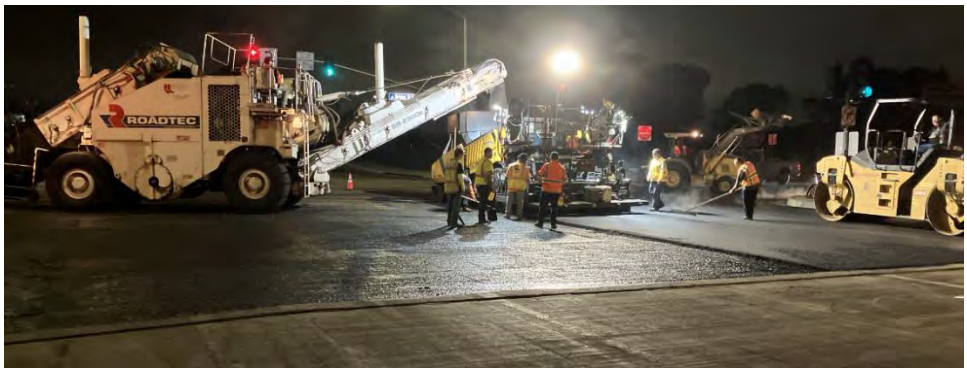
Engineering Services manages and executes projects within the Capital Investment Plan (CIP) to maintain infrastructure resiliency, ensure regulatory compliance, enhance sustainability, and provide flexibility in system operations to address uncertain water supply conditions.

Distribution System Reliability Program

This program maintains reliable water deliveries through specific rehabilitation and upgrade projects on Metropolitan's pipelines, reservoirs, and control structures. Recent activities include the following:

- **Lake Mathews Wastewater Replacement**—This project consists of replacing the existing septic tank system with a wastewater collection system at Lake Mathews. The new wastewater system connects to a nearby off-site Western Municipal Water District main wastewater line. The contractor is continuing to coat the accessway, inspect the sewer line, and restore the surface asphalt. Construction is approximately 97 percent complete and is scheduled to be complete in February 2024.
- **La Verne Shops Building Completion—Stage 4**—This project will complete the La Verne Shops building improvements and install Metropolitan-furnished shop equipment. The contractor continued installing electrical conduits for branch circuits, excavating for the new electrical duct bank, and began placing concrete for the equipment pads. Construction is approximately 77 percent complete and is scheduled to be complete in August 2024.
- **Orange County Feeder Lining Repairs**—This project replaces the deteriorated internal lining along an 11-mile portion of the Orange County Feeder within the cities of Santa Ana, Costa Mesa, and Newport Beach. Rehabilitation of the third and final stage of the project is currently underway. The pipeline relining has been completed and the pipeline was returned to service in July 2023. The contractor is currently demobilizing from the contractor's yard and performing site restoration in the city of Newport Beach. Construction of Stage 3 is approximately 95 percent complete and is scheduled to be complete by January 2024.
- **Garvey Reservoir Rehabilitation**—This project will replace the aging reservoir floating cover and liner, structurally strengthen the inlet/outlet tower, upgrade the on-site water quality laboratory building, rehabilitate the junction structure, and replace the existing standby generator and a portion of the security perimeter fence. Final design is approximately 10 percent complete and is scheduled to be complete in early January 2025.

Lake Mathews Wastewater Replacement—Testing manhole coating



Orange County Feeder Lining Rehabilitation—Surface restoration

Prestressed Concrete Cylinder Pipe (PCCP) Reliability Program

This program was established to enhance the reliability of Metropolitan's water distribution system and to reduce the risk of costly emergency repairs of PCCP. The priority pipelines included in the program are the Second Lower Feeder, Sepulveda Feeder, Calabasas Feeder, Rialto Pipeline, and the Allen-McColloch Pipeline. A total of 100 miles of PCCP pipelines will be refurbished under this 20-year program. Recent activities include the following:

- **Second Lower Feeder Valves**—This procurement contract provides 13 conical plug valves for the Second Lower Feeder PCCP rehabilitation. Metropolitan's Board awarded a procurement contract for the valves in December 2018. Seven valves have been delivered as of March 2023. The eighth and ninth valves shipped from Yokohama, Japan, in November 2023, and arrived in the Port of Long Beach on December 4, 2023. The tenth valve is scheduled to be shipped in January 2024. The eleventh and twelfth valves are scheduled to be

shipped by October 2024. Fabrication of the final valve will be completed in late 2024 and delivery is projected for early-2025.

- **Second Lower Feeder PCCP Rehabilitation Reach 3B**—This project installs steel lining and three conical plug valves (described above) along a 3.7-mile-long portion of the Second Lower Feeder that traverses the cities of Lomita, Los Angeles, and Torrance. Testing of the temporary bypass line at the Palos Verdes Reservoir was completed, and the bypass line has been placed into service. Dewatering of the Second Lower Feeder was completed, and the pipeline turned over to the contractor for installation of the steel lining. Construction is 36 percent complete and is scheduled to be completed in September 2025.
- **Sepulveda Feeder Reach 2**—This project installs steel lining along 3.9 miles through several cities including the cities of Torrance and Los Angeles. Final design is approximately 95 percent complete and is scheduled to be complete by January 2024.
- **PCCP Valve Warehouse**—This project constructs an 18,160 square-feet pre-engineered metal building on a reinforced concrete slab at Lake Mathews for valve and equipment storage related to the PCCP relining program. The contractor has completed the assembly of the building structure, the water line tie-in for the building, and installation of the fire water pipe and building sprinkler system. Construction is 95 percent complete and is scheduled to be complete by February 2024.
- **Electromagnetic Inspection**—Regular inspections of the PCCP feeders are a critical step in evaluating the condition of each pipeline and assist staff in prioritizing the relining work on each feeder. This project conducts the fifth cycle of electromagnetic and visual inspections of Metropolitan's approximate 146.4 miles of PCCP pipelines. Portions of the Sepulveda Feeder and Yorba Linda Feeder totaling 18 miles were inspected during the 2022/2023 shutdown season. Approximately 8.7 miles of the Allen-McColloch Pipeline (AMP) were inspected in November 2023. Based on the results of the inspection, Metropolitan is prioritizing rehabilitation of the Allen-McColloch Pipeline during the current and next shutdown seasons. Inspections of the West Valley Feeder No. 2 and Calabasas Feeder are scheduled for January 2024.

Colorado River Aqueduct (CRA) Reliability Program

This program maintains the reliability of Metropolitan's CRA conveyance system. Recent activities include the following:

- **Flow Level Monitoring Stations**—This project will install 12 flow monitoring stations at remote locations along the Colorado River Aqueduct. The contractor has mobilized to the site. Construction is 5 percent complete and is scheduled to be complete July 2024.
- **Cabazon Radial Gate Replacement**—This project will replace an inline and waste way radial gate at the facility as well as install security, electrical, and safety upgrades. Final design is 40 percent complete and is scheduled to be complete in July 2024.
- **Overhead Cranes Replacement**—This project consists of replacing the overhead bridge cranes and retrofitting the support structures within the pump bays located at all five of Metropolitan's Colorado River Aqueduct pumping plants. The contractor has completed the installation of the new cranes at the Gene, Iron Mountain, and Eagle Mountain pumping plants. Testing and commissioning of the new overhead crane at Eagle Mountain Pumping Plant is complete and assembly of the crane is underway at Intake Pumping Plant. Construction is 65 percent complete and is scheduled to be complete in June 2024.
- **CRA Storage Buildings**—This project furnishes and installs storage buildings at Hinds, Eagle Mountain, and Iron Mountain and constructs associated site improvements. The construction contract was awarded at the July 2023 board meeting. The contractor is in the process of issuing submittals on the project for Metropolitan's review. Construction is anticipated to be completed in January 2026.

- **Eagle Mountain Utilities**—This project will replace the existing potable, non-potable, and sewer lines at the Eagle Mountain Pump Plant housing village. Final design is 40 percent complete and is schedule to be complete in April 2024.

CRA Overhead Cranes Replacement—Eagle Pumping Plant Crane Load Test

System Flexibility/Supply Reliability

Projects under this program will enhance the flexibility and/or increase the capacity of Metropolitan's water supply and delivery infrastructure to meet current and projected service demands. Projects under this program address climate change affecting water supply, regional drought, and alternative water sources for areas dependent on State Project water**.**

- **Wadsworth Pumping Plant Bypass**—In conjunction with three other projects, this project enhances water supply reliability in the Rialto Pipeline service area by enabling water to be pumped from the Wadsworth Pumping Plant forebay to Rialto Pipeline by way of the Inland Feeder. This project installs a bypass pipeline and an isolation valve to interconnect the Wadsworth Pumping Plant with the Eastside Pipeline. Construction of the valve structure and relocation of utilities in area is underway. Construction is approximately 20 percent complete and is scheduled to be complete in August 2024.
- **Sepulveda Feeder Pumping Stations**—This project installs new pump stations at the existing Venice and Sepulveda Canyon pressure control facilities, providing the ability to reverse flow in the Sepulveda Feeder and deliver water from the Central Pool to portions of the Jensen plant exclusive area. This project uses a progressive design-build (PDB) project delivery method. Engineering and Operations staff are reviewing initial submittals and collaborating through a series of design workshops, planned through the end of the year, to support upcoming design work. The contractor and Metropolitan are coordinating with both Southern California Edison and Los Angeles Department of Water and Power on upgrades to the incoming power

service at both locations. Phase 1, which includes site investigation, design to the 70 percent level, environmental planning, and preparation of long-lead-item procurement documents, is scheduled to be complete in September 2024. Work progress is on track to complete the first major milestone, delivery of the 30 percent design package and the Basis of Design Report (BODR) in April 2024.

Treatment Plant Reliability Program

This program was initiated to maintain reliability and improve the operating efficiency of Metropolitan's water treatment plants through specific improvement projects. Recent activities include the following:

- **Weymouth Basins 5–8 and Filter Building No. 2 Rehabilitation**—This project rehabilitates major mechanical and structural components of Basins 5–8 and Filter Building No. 2 at the Weymouth plant, including the flocculation/sedimentation equipment, sludge pumps, baffle boards and walls, launders, inlet gates, and outlet drop gates. Rehabilitation work also includes seismic upgrades of basin walls and inlet channel, hazardous material abatement, and replacement of filter valves and actuators in Filter Building No. 2. The contractor continued planned work under the first quarter-plant outage, including installation of clarifier and flocculator equipment, and new mechanical piping and electrical conduits in Basins 7 and 8. The contractor completed construction of new concrete walls and stainless-steel catwalks in Basins 7 and 8 and installation of filter valves, piping, and electrical components in Filter Building No. 2. Construction is 55 percent complete and is scheduled to be complete in June 2025.
- **Mills Electrical Upgrades**—This project upgrades the electrical system with dual-power feeds to key process equipment to comply with current codes and industry practice, improve plant reliability, and enhance worker safety. Stage 1 construction is complete, and a construction contract for Stage 2 improvements was awarded in November 2021. Stage 2 improvements will add a second incoming 12 kV service from Riverside Public Utilities, reconfigure the existing 4160-volt switchgear, and replace the standby generator switchgear and the emergency generator programmable logic controller. The contractor continued installation of the roofing and HVAC systems and began installation of the electrical conduits inside the ORP Switchgear Building. A permanent easement for installation of a second incoming 12 kilovolt (kV) electrical service to the Mills plant has been signed and recorded by Metropolitan and the Riverside Public Utilities. Construction is approximately 45 percent complete and is scheduled to be complete in August 2025.
- **Jensen Ozone PSUs Replacement**—This project rehabilitates the ozone generation system at the Jensen plant by replacing four existing ozone power supply units (PSUs) and four sets of generator dielectrics. The project also makes required modifications to the associated electrical, control, and cooling water systems. Metropolitan's Board awarded a construction contract in June 2022. All PSUs and dielectrics have been manufactured and delivered. Installation of two PSUs is complete and dielectrics for two ozone generators have been replaced. The contractor continued installing the cooling water system pipe and preparing for start-up testing of the newly installed PSUs. Construction is 75 percent complete and is scheduled to be complete in April 2024.

Weymouth Basins 5–8 and Filter Building No. 2 Rehabilitation—Launder and weir installation

Weymouth Basins 5–8 and Filter Building No. 2 Rehabilitation—Basin 7 Weir plate installation

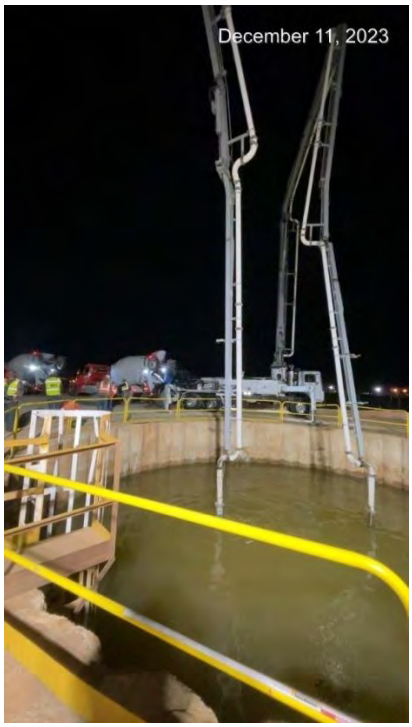
System Reliability Program

The System Reliability Program consists of projects to improve or modify facilities located throughout Metropolitan's service area to use new processes and/or technologies and improve facility safety and overall reliability. Recent activities include the following:

- **Headquarters Physical Security Upgrades**—This project implements comprehensive security upgrades for the Metropolitan Headquarters Building. These upgrades are consistent with federally recommended best practices for government buildings. This work has been prioritized and staged to minimize rework and impacts on day-to-day operations within the building. Stage 1 work is complete and provides enhanced security related to perimeter windows and doors. Stage 2 work is complete and provides security system upgrades inside the building with a focus on the main entry rotunda area, boardroom, executive dining lounge, and security control room. Stage 3 improvements will provide security system upgrades around the perimeter of the building. Metropolitan's Board awarded the third and final contract in December 2022. The contractor completed the mock-up fence panel and gate for the ornamental fence within the courtyard and continued the bollard installation. Construction is 55 percent complete and is scheduled to be complete in May 2024.
- **Headquarters Building Fire Alarm and Smoke Control System Upgrades**—This project upgrades the Metropolitan Headquarters Building fire life safety systems, which includes replacement of the fire detection and alarm system and HVAC system improvements for smoke control. The fire alarm and smoke control systems in Metropolitan's Headquarters Building provide detection, notification, and control of building functions so that occupants and visitors can safely exit in the event of a fire. The contractor continued final testing and sign-off of the fire alarm and smoke control systems by the LAFD and Los Angeles Department of Building and Safety. Construction is 75 percent complete and is scheduled to be complete in February 2024.
- **Headquarters Building Fire Sprinkler Level P1 Replacement**—This project replaces a portion of the existing building's parking garage level P1 fire sprinkler system's piping to ensure that the 25-year-old system provides reliable fire/life safety protection for all building occupants and facility. The work is divided into nine phases to minimize related impacts to building operations. The contractor has completed installation of fire sprinkler piping and supports for seven of the nine phases and begun installation of a two-inch copper line along the western perimeter of Level P1. Construction is 75 percent complete and is scheduled to be complete in January 2024.
- **SCADA System Upgrades**—This project will upgrade Metropolitan's entire control system in incremental stages, spanning the Colorado River Aqueduct, the five water treatment plants, and the conveyance and distribution system. The first stage of this project replaces the control system at the Mills plant, starting with a pilot effort on one of the plant's remote terminal units to demonstrate the proposed technology and the consultant's approach for the plant and the overall project. The consultant has installed the pilot equipment, and is now performing equipment verification, and developing control narratives and a training plan. The pilot phase is approximately 80 percent complete and is scheduled to be complete in March 2024. The system upgrades at the Mills plant are scheduled to be complete in October 2026.
- **Foothill Hydroelectric Plant and Control Building Seismic Upgrade**—This project strengthens the Foothill Hydroelectric Plant and Control Building to withstand a significant earthquake, by removing and replacing the roofing system; adding encasements to enlarge and strengthen concrete columns; and reinforcing shallow foundations. The contractor continued performing abatement activities on the building's roof, demolition of existing exhaust fans, and installation of structural steel roof plates. Construction is approximately 25 percent complete and is scheduled to be complete in December 2024.
- **Perris Valley Pipeline**—This project will complete construction of the Perris Valley Pipeline and provide service connections to Eastern and Western Municipal Water Districts. This project installs 3,000 linear feet

of tunnel which crosses the Interstate 215 freeway. Metropolitan's Board awarded a construction contract in January 2023. Construction is underway at three of four shafts and has nearly completed construction of the main drive shaft. A tunnel boring machine "naming" event, which will signify the commencement of tunneling work, is scheduled for late January 2024. Overall construction is 30 percent complete and is scheduled to be complete in early 2025.

Foothill Hydroelectric Power Plant—Installation of Seismic Reinforcing



Perris Valley Pipeline—Underwater Concrete Placement of the Shaft No. 3 Bottom Plug

Perris Valley Pipeline—Drilling secant piles for Shaft No. 3

Value Engineering Program

Gene Wash Dam Discharge Valve Test—Risk Assessment Workshop

- In December, Engineering Services completed a Risk Assessment workshop to review and improve the plan to test the new 42-inch diameter fixed cone valve at the base of the Gene Wash dam. This valve was recently installed through a capital improvement project which also completed other refurbishment work in the area. The new valve replaced the original discharge valve installed during construction of the dam in 1937. The original equipment performed well for many decades and provided a means for Metropolitan to dewater Gene Wash in the event of an emergency condition. Although never called upon to perform in an actual emergency, the original valve was tested and maintained by WSO staff and remained ready for use at all times.
- The risk assessment workshop focused on reviewing the test plan and identifying clear and objective criteria, as well as key risks which could occur during testing. For each risk, the workshop team developed and recommended a set of pre-test mitigations and contingency plans. The team included Metropolitan staff from Engineering, WSO, and Environmental Planning and was supplemented by consultant subject matter experts with decades of experience in gate and valve design for dam outlet works and underwater construction experience.
- The workshop recommendations will improve the test plan in several critical areas including personnel safety, and in the mitigation and response measures necessary to ensure continued safe operation of these facilities.

Pure Water Southern California

The Pure Water Southern California (PWSC) Program is a large-regional recycled water project that will provide a new local source of safe and reliable drinking water for Southern California. The PWSC currently is working in three areas: demonstration testing, environmental planning, and design. The PWSC will produce 150 mgd of purified water from the Advanced Water Purification Facility (AWPF) in Carson California to be used for indirect potable reuse (IPR) and direct potable reuse (DPR) with the first deliveries by 2030 and completion by 2035.

- **Demonstration Testing**: Demonstration testing began in 2019 with N-only tertiary membrane bioreactor (tMBR) testing completed in 2021, secondary MBR testing completed in 2023, and a summary report is being prepared. Maintenance and modifications for nitrification tMBR optimization testing are completed and testing is scheduled to begin in early 2024. Test plans are being prepared to guide the future testing. The name of the demonstration plant was changed in November 2023 to the Grace F. Napolitano Pure Water Southern California Innovation Center to reflect the respresntative's support for the water reuse.
- **Environmental Planning**: The Environmental Planning Phase began in 2020 with the goal of preparing an Environmental Impact Report (EIR) for approval in 2025. The draft EIR is currently scheduled for publication in early-2025, with board certification of the document in the third quarter of 2025. Staff continues to finalize the project description, perform additional technical studies, incorporate changes to the program due to inclusion of the LADWP Operation NEXT pipe upsizing, and develop text for the draft EIR.
- **Program Management:** PWSC program management efforts lead the planning for the Program, including project controls, scheduling, risk management and other plans and studies.
    - A PWSC cost estimate update was presented to the PWSC/Regional Conveyance Subcommittee in November 2023. The presentation provided a review of the 2018 costs, highlights of program changes, updated capital and O&M costs, potential partner carried costs/contributions, and a projected unit cost. The Phase 1 cost (2023 dollars) is approximately $6.39 billion.
    - A Construction Sequencing memorandum has been prepared to identify the milestones and construction contracts needed to meet the projected completion of the AWPF, the backbone pipeline, and full delivery for IPR in 2032.
    - A Large-Scale Water Recycling grant application requesting $125 million was submitted to the US Bureau of Reclamation (USBR) on November 20, 2023. Successful applicants will be notified in early 2024. To receive funding, an approved USBR Feasibility Study is required. Work on this study is

approximately 67 percent complete and is progressing on schedule for a January 19, 2024, submittal. A 3:1 agency match of the grant funds is required.

- **Advanced Purification Facility:** The AWPF will purify wastewater from LACSD's A.K Warren facility (formerly the JWPCP) using processes that include membrane bioreactors, reverse osmosis, and UV Oxidation.
    - The AWPF team is evaluating the use of Progressive Design Build to design and construct the treatment plant facilities and published an "Announcement Of Upcoming Request For Qualifications For Progressive Design-Build Of The Pure Water Southern California Advanced Water Purification Facility."
    - A proposed Request for Qualifications from qualified Design Build Entities (DBE's) is scheduled for March 2023 with authorization of a DBE planned for late 2024.
- **Direct Potable Reuse (DPR):** The California Division of Drinking Water (DDW) is scheduled to publish final DPR regulations in December 2023. Metropolitan and LACSD submitted a combined letter to DDW on November 23, 2023, with comments on the "Alternatives" Section, standardized online monitoring, scientific advisory panel for emerging concerns, governance, and monitoring/reporting provisions.
- **Conveyance Pipeline System:** The program's backbone conveyance system consists of over 40 miles of pipeline and pump stations. Metropolitan's Board authorized consulting agreements for preliminary design in March 2023.
    - **Reach 1**—This reach is approximately six miles long and runs through the city of Carson. Current work includes utility potholing and geotechnical work. Preliminary design is 25 percent complete and is scheduled to be complete by mid-2024.
    - **Reach 2**—This reach is approximately 8 miles long and runs through the cities of Long Beach and Lakewood. Current work includes ground penetrating radar and obtaining permits for geotechnical work, which is expected to start early next year. Preliminary design is seven percent complete and is scheduled to be complete by late-2024.

Protecting the Public and Metropolitan's Assets

Engineering Services continued to develop state-mandated Emergency Action Plans (EAPs) for Metropolitan's state-regulated dams to help ensure long-term public safety. In December, the EAPs for Garvey Reservoir and Palos Verdes Reservoir were submitted to the Cal OES and are currently under review. The EAPs for Live Oak Reservoir and the Weymouth Finished Water Reservoir are substantially complete and will be submitted for review by the Cal OES in January 2024. To date, eight of Metropolitan's 13 state required EAPs have been fully approved by Cal OES.

Safety, Security and Protection

Project Highlights

Security and Emergency Management

Security and Emergency Response

Metropolitan Security staff partnered with Department of Homeland Security (DHS) Cybersecurity and Infrastructure Security Agency (CISA) protective security agents to assess the Diamond Valley Reservoir's potential security vulnerabilities and mitigation measures.

As part of their two-day courtesy visit, DHS CISA coordinated closely with Metropolitan security specialists to complete their Infrastructure Visualization Platform (IVP) data collection and presentation medium. IVP panoramic images increase security readiness by providing map overlays, viewpoints, and diagrams to assist first responders during an emergency. The IVP team also collects data on obstructions and restrictions that could affect the approach of emergency response vehicles and equipment to the site in the event of a natural hazard or malevolent act.

Like Google Earth Street view, it allows security specialists to:

- Document critical facility approach and exit routes
- Evaluate security lighting
- Catalogue physical security features of main facility entrances
- Appraise protective measures to secure dams, critical nodes, and other key reservoir structures

The combination of immersive high-resolution camera and video imagery, geospatial information, and hypermedia data of critical facilities greatly enhances critical infrastructure security planning, protection, and response efforts.

DHS CISA Protective Security Agents conduct courtesy DVL security assessment

In the realm of security operations, where accurate and timely information is paramount, the power of intelligence is recognized. The quest for real-time actionable intelligence has driven Metropolitan security staff to engage with federal and local agencies, urging them to incorporate us into their "need-to-know" protocols. The aim is to maintain a preventative and proactive approach, ensuring that security stays ahead of potential issues rather than merely reacting to them.

As of December 2023, a senior intelligence officer with the Department of Homeland Security (DHS) has been presenting Metropolitan with a threat brief tailored specifically for the water industry. This proactive measure, occurring periodically in response to evolving threats, equips Metropolitan with valuable insights into emerging concerns.

From November 6 through 9, Metropolitan staff attended the International Association of Emergency Managers Annual Conference held in Long Beach, California. The focus of this year's conference was diversity, equity, and inclusion in emergency management and included speakers from the Federal Emergency Management Agency, the National Weather Service, and California State University. The overall theme of unity and collaboration was evident throughout the educational event, which provided numerous networking opportunities. In addition, the latest in emergency response and management technology was on display.

Staff attended the International Association of Emergency Managers Annual Conference

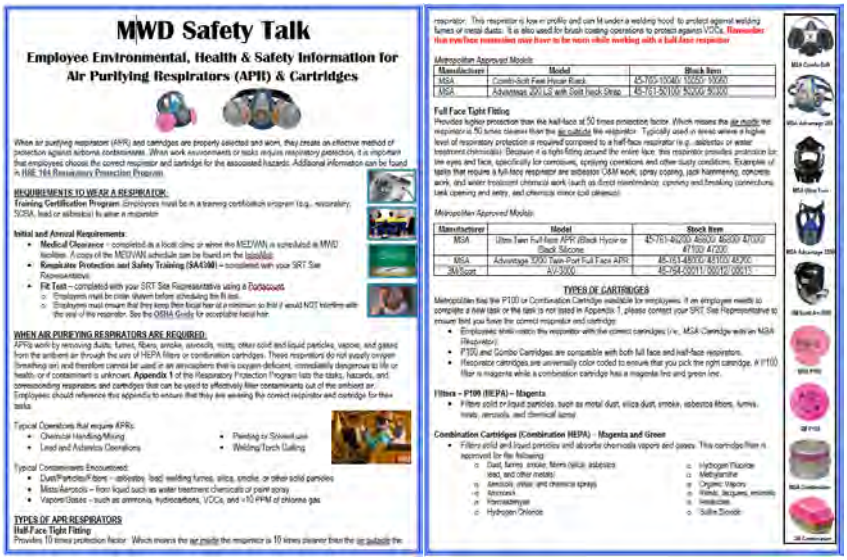
During November and December, Metropolitan's emergency responders received training ranging from working in Metropolitan's Emergency Operations Center (EOC) and Incident Command Posts (ICPs) to preparing for dam emergencies. Emergency Management staff also participated in Cal OES training so that they could teach these courses to other Metropolitan staff in the future.

On November 30, Metropolitan staff participated in a workshop to finalize a joint emergency response plan that would be used following a catastrophic earthquake in the Southern California region. This type of pre-planning is vital to recover from any catastrophic event. The workshop featured presentations from the California Water/Wastewater Response Agency Response Network (Cal WARN) and the California Utilities Emergency Association (CUEA). Other attendees included staff from the Department of Water Resources, the Los Angeles Department of Water and Power, and members from the Seismic Resilient Water Task Force.

Safety, Regulatory and Training

SRT Health & Safety Programs

SRT posted a new MWD Safety Talk to the Intramet. The safety talk on Air Purifying Respirators communicates the requirements of medical clearance, training, and fit testing before employees can use a respirator as personal protection equipment. The safety talk also identifies the approved respirator models and filter cartridges available through Metropolitan warehouses. Safety talks provide concise information about a Metropolitan program or topic that can be printed and shared readily to any applicable audience.



MWD Safety Talk on Respirators

SRT Environmental Programs

SRT worked closely with Legal and Real Property to ensure proper removal of the Underground Storage Tank (UST) at Metropolitan's former Sunset Garage facility. As a condition of the sale, Metropolitan reviews all UST removal and abatement work conducted by the new owner and approves associated costs. On December 5, staff observed the UST removal by the buyer's consultant and contractor and observed soil samples collected for analysis. A Los Angeles City Fire Department inspector was also present to provide regulatory oversight. The open excavation is to be filled with slurry pending the soil sample test results.

Underground Storage Tank Removal

SRT coordinated with Diemer and Weymouth Treatment Plant staff to prepare for and clean out sodium hypochlorite and sulfuric acid tanks to prepare them for inspection by Metropolitan's corrosion engineering team. SRT's hazardous waste vendor collected and disposed of approximately 400 gallons of hypochlorite and 900 gallons of rinse water from the Diemer facility, and approximately 230 gallons of sulfuric acid, 150 pounds of sludge, and 275 gallons of rinse water from the Weymouth facility.

Before and After - Weymouth Sulfuric Acid Tank Cleanout

SRT staff met with South Coast Air Quality Management District's (SCAQMD) legal department to discuss the alleged violations related to asbestos management for the Weymouth Basin 5–8 Rehabilitation Project. After discussing the appropriate responsible parties for each citation and providing information on Metropolitan's mitigation efforts, such as steps taken to prevent future violations and training courses attended, the penalty amount was reduced from $9,699 to $1,020. Staff is working with Legal and Engineering to sign the agreement form and pay the penalty.

SRT Apprenticeship

The SRT Apprenticeship Programs prepare apprentices to become qualified mechanics and electricians responsible for maintaining Metropolitan's water treatment and distribution systems. The Class of 2026 has recently completed their second academic period, where apprentices were introduced to the basic concepts of electrical theory and the fundamentals of electricity. The apprentices were also taught how to use multimeters for troubleshooting and reference guidelines for electrical safety in the workplace provided by the National Electrical Code (NEC) and the National Fire Protection Association (NFPA). The apprentices also learned schematics and print reading, which are essential skills for electricians to perform work in the field.

Apprentices studying electrical currents and Ohm's Law

SRT Safety and Technical Training

In the preceding month, the SRT Safety and Technical Training Team delivered a total of 28 safety and environmental classes to an audience of 203 students, addressing 13 crucial topics.

SRT Training and Site Support staff collaborated with the Construction Services Unit to organize a two-day confined space rescue course. This specialized training covered the equipment, techniques, and procedures essential for performing rescue operations in confined spaces and/or other restricted-access environments. The instructional approach encompassed a thorough classroom session, complemented by hands-on practical applications. Participants actively engaged with the equipment and learned techniques integral to the successful rescue of personnel. This strategic combination of theoretical knowledge and practical skill helps ensure staff are well-informed and proficient in real-world rescue scenarios.

SRT Site Support staff demonstrating use of tripod rescue equipment

Water System Operations

Core Business Objectives

Provide Reliable Water Deliveries

Metropolitan member agency water deliveries were 110,100 acre-feet (AF) for December with an average of 3,550 AF per day, which was about 50 AF per day higher than in November. In addition, Metropolitan delivered 14,500 AF to Cyclic and Conjunctive Use Programs. Treated water deliveries were 10,800 AF lower than November for a total of 50,100 AF, or 46 percent of total deliveries for the month. The Colorado River Aqueduct (CRA) pumped a total of 54,000 AF in December. Metropolitan maintained a four-pump flow along the CRA for most of the month. State Water Project (SWP) imports averaged 3,400 AF per day, totaling about 106,900 AF for the month. The target SWP blend was around 80 percent for the Weymouth Plant, 35 percent for the Diemer Plant, and 60 percent for the Skinner Plant.

Staff completed repairing the Whitewater protection structure along the CRA. During Tropical Storm Hilary, material was deposited upstream of the protection structure, reducing the flow capacity. Staff used this material to reinforce and raise the protective berms that channel the river flow towards the concrete reinforcement.

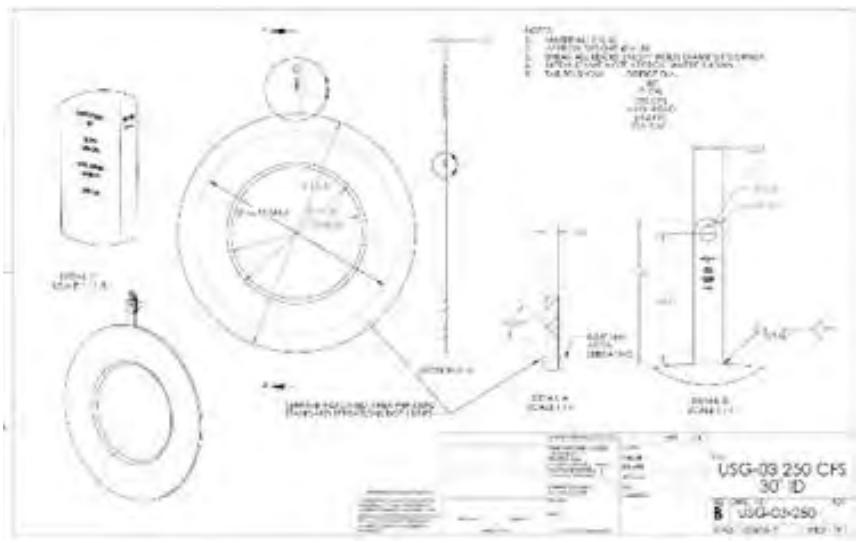
Equipment pushing material along the CRA (left) and reinforcing protective berms (right)

The La Verne Shops received an urgent request to fabricate components required to repair a leak on the Palos Verdes Feeder. Availability of the Palos Verdes Feeder is needed for a several-month-long shutdown of the Second Lower Feeder that began on December 15. Operations and Engineering staff coordinated through the Veteran's Day weekend to fabricate an end ring, steel band, and butt strap, delivering the necessary fittings in time to support completing the repair work for the Second Lower Feeder shutdown




Fitting components for the repair of the Palos Verdes Feeder in various stages of fabrication

The La Verne Shops fabricated a new orifice plate for the Upper San Gabriel Valley Municipal Water District. An existing orifice plate designed for 250 cfs and installed at service connection USG-03 was identified as flowing nearly 300 cfs, exceeding the percolation rates of the Los Angeles County Department of Public Works' spreading grounds and necessitating the fabrication of the new plate to operate at the desired flow rate more accurately.



Engineering drawing (left) and completed orifice plate (right) for service connection USG-03

Staff placed a temporary bypass for the Palos Verdes Feeder into service at the Palos Verdes Reservoir. The bypass consists of two 28-inch lines that will provide uninterrupted water supply to service connections LA-21 and WB-32, while the Second Lower Feeder (SLF) is out of service for the relining of 3.5 miles of prestressed concrete cylinder pipe (PCCP) from the Sepulveda Feeder interconnection in the City of Torrance to Oak Street Pressure Control Structure (PCS) in Rolling Hills. The SLF relining began December 15 and is expected to be completed by the end of April 2024.

Temporary bypass for the Palos Verdes Feeder at Palos Verdes Reservoir

Staff shut down a portion of the Santa Monica Feeder from December 15 to 17 to replace a venturi-type flow meter at service connection SMN-01, which is located at the terminus of the Santa Monica Feeder in West Los Angeles. During a recent inspection, staff discovered the meter was leaking because of corrosion. Staff expedited certification of a replacement venturi meter by a Utah lab, and the La Verne Shops fabricated pipe spools required for installation by Metropolitan forces. This multi-discipline effort completed over a short period will provide operational reliability for the City of Santa Monica for many years.

Close-up of the venturi meter leaking because of corrosion at the Santa Monica Feeder

Newly installed venturi flow meter at service connection off the Santa Monica Feeder

Manage Water Reserves

The 100 percent State Water Project (SWP) allocation, when combined with Colorado River supplies, provides the region with surplus water supplies. Water continues to be managed according to Water Surplus and Drought Management (WSDM) principles and operational objectives with an emphasis to position SWP supplies to meet future demands in the SWP-dependent area. Metropolitan continues deliveries to Desert Water Agency and Coachella Valley Water District. With the higher SWP Allocation and low regional demands, Metropolitan is working to maximize its use of Table A supplies this year. Staff is working with member agencies to manage supplies through the Cyclic and Cyclic Cost Offset Program. On December 1, the Department of Water Resources issued an initial 10 percent SWP Allocation. Metropolitan will shift operations in early January 2024 to preserve SWP supplies and use more Colorado River supplies in case the low SWP allocation continues through 2024.

Support the Pure Water Southern California Program

During December, staff restarted the demonstration plant at the Napolitano Innovation Center after a four-week shutdown to repair and upgrade the facility for the next phase of tertiary membrane bioreactor (MBR) testing in a nitrifying-denitrifying mode of operation with external carbon addition. After successful mechanical, electrical, instrumentation, and SCADA improvements throughout the facility, the MBR was reseeded with sludge from Irvine Ranch Water District's Michelson Water Recycling Plant and began operations with successful nitrification within a few hours of startup. Through the rest of December, staff stabilized the bioreactor and started the remaining advanced water treatment processes in anticipation of testing resuming in January.

Staff connect a new nitrate probe to assess denitrification in the anoxic tank at the demonstration plant

New foam skimming equipment is installed in the aerobic tank at the demonstration plant

Staff collects water samples to assess bioreactor microbial concentrations at the demonstration plant

Staff fits PVC piping for new chemical feed lines at the demonstration plant

Manage Power Resources and Energy Use in a Sustainable Manner

Energy markets in December 2023 remained stable. Natural gas prices in December were generally in the seasonally normal $4–7 per Metric Million British Thermal Unit (MMBtu) range, with electricity prices in the California Independent System Operator (CAISO) market following suit, averaging in the $40–60 per megawatt-hours (MWh) range.

CRA pumping remained relatively low in December, generally at the four-pump level, driven by high SWP supplies, reduced demand, and nearly full storage levels at Lake Mathews, helping to keep CRA pumping costs trending below budget. CRA pumping costs for December were about $6 million. The CRA energy cost budget for fiscal year 2023/24 is $82.6 million; the current cost forecast for the 2023/24 fiscal year is significantly lower at $49 million, because of reduced pumping and lower forward cost curves. Monthly costs are forecast to increase after the scheduled CRA shutdown in March as the aqueduct returns to a higher scheduled flow and energy prices increase in anticipation of summer.

Daily generation output from Metropolitan's small hydroelectric plants (HEPs) averaged around 23 MW during the month of December, for a total energy output of about 17,000 MWh. Metropolitan's solar facilities totaling 5.4 megawatts of capacity generated approximately 1,000 MWh in December 2023.

Ensure Water Quality Compliance, Worker Safety, and Environmental Protection

Metropolitan complied with all water quality regulations and primary drinking water standards during November 2023.

Staff began installation of a 3-inch natural gas line at the Weymouth Plant. The existing steel gas line leaked in multiple locations and is beyond its useful life span. The new gas line will provide reliable natural gas service to several buildings at the facility. The new gas service will include additional valves for isolation and an extra tee for the future gas upgrade project.

Staff potholing existing utilities (left) and excavating gas line lateral (right)

A broken sewer line was discovered at the Diemer plant. Staff responded quickly by isolating the discharges back into the broken sewer line. Staff completed repairs within a week and promptly returned the sewer line to service.

Damaged sewer line at Diemer plant

Repaired sewer line at Diemer plant

Staff performed high-voltage switching to isolate the electrical transformer and circuit breakers that supply the Lake Skinner Outlet Tower and valves for five-year maintenance and testing. This process requires specific steps that must be executed and followed precisely as written to create an electrically safe condition for staff working on electrical equipment. During this time, Metropolitan's switching instructor also evaluated a staff member to be certified as a high-voltage switcher.

Staff performing high-voltage switching to safely isolate electrical equipment for maintenance

Optimize Maintenance

The CRA pumps are one of the many components crucial to moving water through the desert. During normal operations, these pumps are regularly exposed to the natural sand and silt found in Colorado River water. Thus, they require periodic disassembly, cleaning, repair, and repacking of pump bowl seals to operate at maximum efficiency.

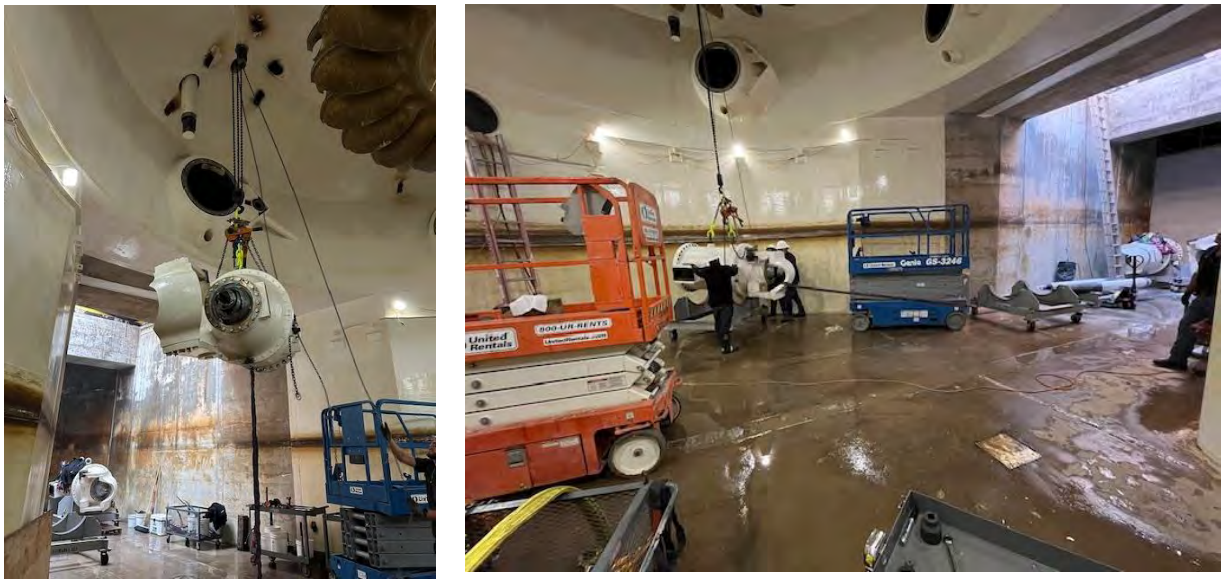
Staff cleaning and replacing pump bowl packing at Eagle Mountain pumping plant

Main pump impeller cleaning and repair at Eagle Mountain pumping plant

Metropolitan operates about 63 miles of open-lined canals. Ensuring that access roads and slopes along the canal are properly maintained facilitates efficient maintenance and inspections of the Colorado River Aqueduct. Staff grades roads and slopes as needed throughout the year to maintain access to this critical system.

Staff maintaining roads and slopes along the CRA

To restore power generation at the nine mega-watt Sepulveda HEP, staff are performing the first major refurbishment and reconditioning of the hydraulic turbine since it was commissioned over 40 years ago. This month, staff removed the five needle valves that control the water flow in the turbine as the valves reached the end of their service life and became inoperable. Refurbishing the valve to a like-new condition restores reliable operation and extends the asset's life.



Staff lowering a four-ton needle valve (left) and resting on a cart for transport (right)

Staff removed one of six sleeve valves from the Inland Feeder pressure control structure, PC-1. During recent maintenance activities, staff found that the valve showed signs of significant wear that could make it inoperable. Using prior experience rebuilding similar valves at Wadsworth Pump Plant, staff promptly disassembled and refurbished the PC-1 valve.

Staff preparing to remove sleeve valve for refurbishment at PC-1

Staff removing six sleeve valves for refurbishment at PC-1

Staff replaced an Uninterruptible Power Supply (UPS) used in the ozone system at the Diemer plant because the equipment had reached the end of its service life. The function of a UPS is to provide power to critical equipment during a power outage.

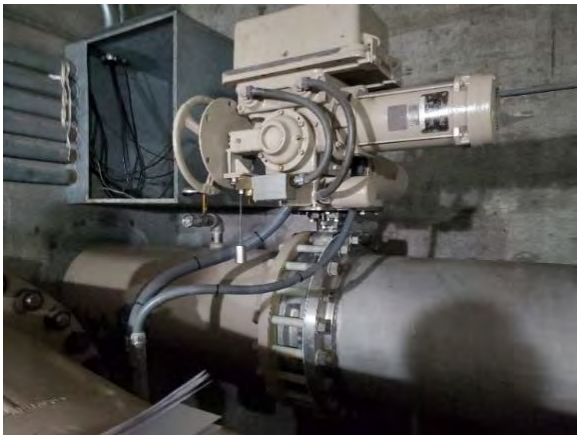
Staff preparing to replace a UPS at the Diemer plant

Optimize Water Treatment and Distribution

In August, staff hosted a Partnership for Safe Water meeting and plant tour with operations staff from the City of Long Beach. The group took the time to discuss treatment plant optimization and operational strategies being used by both agencies to ensure reliable treatment plant operations to provide the highest quality water. The group also discussed operator certification requirements and strategies that could be used to aid staff in acquiring increased levels of certification.

Partnership for Safe Water meeting and plant tour at the Jensen plant

Staff completed pre-shutdown work at the Jensen Water Treatment Plant to prepare for the replacement of a surface wash valve. This work is required to address an actuator anomaly. Pre-shutdown work included installing temporary support and scaffolding, cutting welded support, and installing anchoring to limit the shutdown duration and optimize plant production



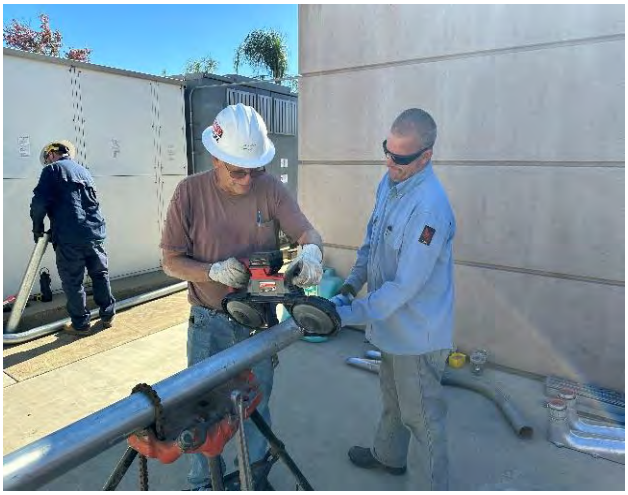
Supports to be cut (left), and valve and actuator to be replaced (right)

In December, the SWP target blend entering the Weymouth and Diemer plants were at 80 and 35 percent, respectively. Diemer plant blend was lowered to about 10 percent late in the month to manage trihalomethanes. The SWP target entering Lake Skinner was approximately 60 percent in December, and the SWP blend leaving the lake was 50 to 60 percent. Flow-weighted running annual averages for total dissolved solids from November 2022 through October 2023 for Metropolitan's treatment plants capable of receiving a blend of supplies from the SWP and the Colorado River Aqueduct were 417, 453, and 504 milligrams per liter (mg/L) for the Weymouth, Diemer, and

Skinner plants, respectively. The long-running nitrification in the distribution system concluded in early December, with nitrite concentrations below action levels in most samples and all flushing operations discontinued.

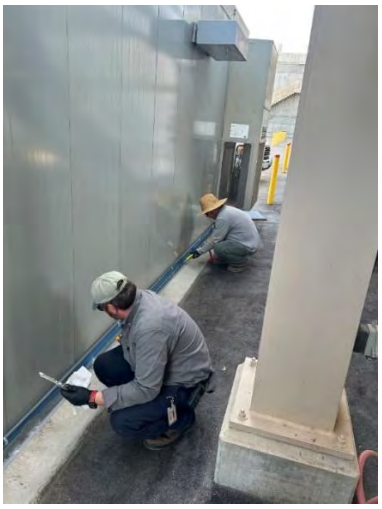
Improve Emergency Preparedness and Response

Staff began the construction of a backup power supply at the Water Quality Laboratory in La Verne. The connection of two substations allows each to be fed separately to the other in the event of a service failure.



Staff threading electrical conduit (left) and cutting and preparing conduit for installation (right) at the Water Quality Laboratory

Staff improved waterproofing on several electrical buildings throughout the Skinner plant following the storms over the past year which caused water intrusion into motor control centers feeding vital electrical equipment. The plant experienced several short-duration high-intensity rainfall events that exposed vulnerable places of entry for moisture, many of which are being addressed by caulking, installing lids and gutters, or saw-cutting concrete pads to divert water away from buildings.



Staff waterproofing electrical motor control center building at the Skinner plant

Actively Engage in Capital Project Planning and Execution

Work continued on a preliminary design for the Water Quality seismic retrofit and building improvement project. Staff met with project consultants and designers throughout December to discuss specific bench and equipment space requirements, supplies storage, office capacity, and functional needs for each area of the building.

Prepare for Future Legislation and Regulation

On November 27, EPA released its second version of draft guidance on how to apply the "functional equivalency" test found in the Supreme Court's County of Maui v. Hawaii Wildlife Fund decision. Under the Maui decision, the Supreme Court set forth seven factors to help determine whether a NPDES permit is required when a point source pollutant discharged to groundwater has the same "functional equivalency" as a direct discharge to a navigable water. As with the previous version of the guidance, staff will provide comments supporting the functional equivalency tests as spelled out by the Supreme Court. Metropolitan submitted comments to EPA on the draft guidance on December 21.

On December 5, DDW released new Annual Reporting Requirements for Metropolitan's drinking water systems titled the "Clearinghouse Annual Inventory Report (CAIR)" for public comment. The new Order replaces both section 6 of the Electronic Annual Report (eAR) and the Drought and Conservation Reporting Order. Metropolitan submitted comments to the State Water Resources Control Board asking to remove Metropolitan's small water systems along the Colorado River Aqueduct from the drought reporting elements of the Order. The Order is set to go into effect on January 1, 2024.

On December 6, EPA published its proposed Lead and Copper Rule Improvements Rule. The proposed rule focuses on identifying and replacing lead service lines—including full lead-line replacement; lowering the lead action level from 0.015 to 0.010 milligrams per liter (mg/L); and improving public education and outreach materials to include renters and individuals with limited English proficiency. Staff is reviewing the proposal and may engage by the February 5, 2024 comment deadline.

Staff provided testimony strongly supporting the proposed resolution to adopt direct potable reuse (DPR) regulations during the December 19 meeting of the State Water Resources Control Board. Metropolitan's comments recognized the State Board for its significant milestone achieved to advance potable reuse development in the state through the new regulations. This comprehensive regulation is a result of several years of research and extensive stakeholder input, including from Metropolitan and will help provide a basis for Metropolitan's treatment approach for the Pure Water Southern California program. The State Board adopted the DPR regulations which now triggers review through the state's Office of Administrative Law. The DPR regulations are anticipated to be formally published in the California Code of Regulations in coming months.

Advance Education and Outreach Initiatives

Staff who received Advanced Water Treatment Operator Certification (AWTO) were invited to be recognized at the Pure Water Southern California and Regional Conveyance Subcommittee meeting at Union Station Headquarters. Metropolitan was recognized by the California-Nevada American Water Works Association and California Water Environment Association for its leadership in the development of the AWTO Certification program.

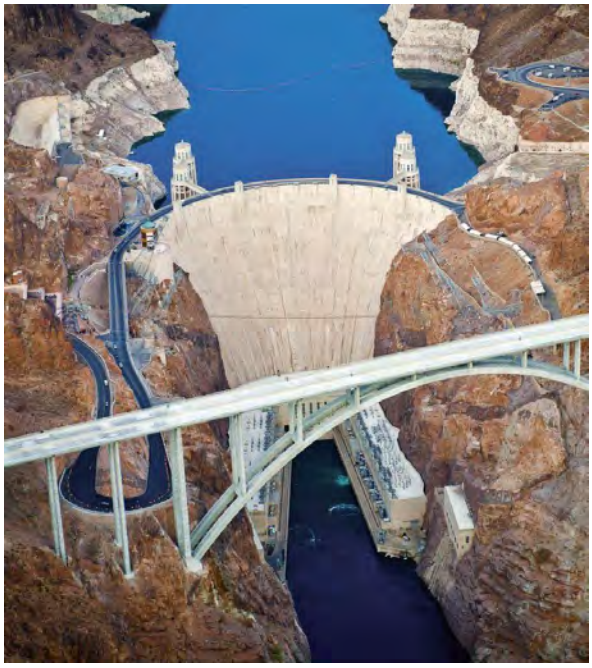
Staff recognized for receiving AWTO certification at Metropolitan's board room

Metropolitan leadership and industry organization representatives recognizing Metropolitan's certified AWTOs

Operations (continued)

Monthly Update as of: 12/31/2023

Reservoir	Current Storage	Percent of Capacity
Colorado River Basin		
Lake Powell	8,441,000	35%
Lake Mead	9,059,000	35%
DWR		
Lake Oroville	2,406,619	68%
Shasta Lake	3,112,660	68%
San Luis Total	1,147,347	57%
San Luis CDWR	368,649	35%
Castaic Lake	248,522	77%
Silverwood Lake	72,897	97%
Lake Perris	76,370	58%
MWD		
DVL	753,442	93%
Lake Mathews	168,302	92%
Lake Skinner	39,068	89%



Hoover Dam

Information Technology

Project Highlights

Special Board Meeting – Live Stream from Gene Camp

The seamless collaboration between the Telecom and iHub teams played a pivotal role in executing the Special Board Meeting at Gene Camp on December 5, 2023. Both teams brought their unique expertise to the table, resulting in a well-coordinated effort. This success stands as a testament to the outstanding teamwork and collaboration exhibited by all parties involved, which fostered a positive spirit of cooperation conducive to overcoming challenges and achieving common goals.

Several dry runs were conducted between the Information Technology staff located at Gene Camp and the iHub Team at Headquarters which demonstrated testing excellence and exhibited setup and breakdown efficiency. The decision to use Starlink as a backup WiFi source proved strategic, ensuring uninterrupted connectivity and mitigating potential issues.

Desert Fiber Project

The Information Technology Group continues to analyze fiber network connectivity at our desert sites. Expertise from various business units has been instrumental in participating in the preliminary work. A feasibility study was recently completed indicating the best route to install fiber cabling, moving the project into Phase II.

The prework activities involve soil investigation, tower mapping, and LiDAR survey studies. In early December, soil analysis of 30+ test pits was conducted. The findings will analyze geotechnical soil stability and determine whether an alternative fiber route will need to be considered. The soil investigation report is expected to be available by the spring of 2024. The LiDAR Survey is planned for March of 2024 to determine whether the 230KV towers may be needed to support our fiber infrastructure over rocky mountain peaks. Phase II is tentatively scheduled to be completed in Q2-2024.

Operations (continued)

Photos: Soil testing performed at various desert sites

Finance and Administration

Finance

Maintain Strong Financial Position

Provide timely and discerning financial analyses, planning, and management to ensure that forecasted revenues are sufficient to meet planned expenses and provide a prudent level of reserves consistent with board policy.

In November, informational reports were provided to the Finance, Audit, Insurance, and Real Property Committee on Member Agency Purchase Order commitments covering January 1, 2015, through December 31, 2024, and Pure Water Southern California Cost Recovery Alternatives.

Manage risk to protect Metropolitan's assets against exposure to loss.

The Risk Management Unit completed 31 incident reports communicating instances of Metropolitan property damage, liability, workplace injuries, regulatory visits, and spills.

Risk Management completed 45 risk assessments on contracts, including professional service agreements, construction contracts, entry permits, special events, and film permits.

Business Continuity

Facilitate district-wide planning and training to prepare employees and managers to effectively carry out critical roles and recover mission essential functions thus ensuring continuity of operations and resiliency in the event of a disaster.

Manage the Business Continuity Management Program in accordance with Operating Policy A-06.

- Continued working with the district on Business Continuity Plan updates and approvals.
- In conjunction with the core planning team, continued working on the district-wide Local Hazard Mitigation Plan.
- Collaborated with Human Resources to add a text/SMS device type to the MyHR system that would in turn sync to MetAlert for emergency communications.
- Worked with the Fusion business continuity software vendor and Cybersecurity to deploy Single Sign On (SSO) in accordance with vendor requirements.

Financial Management

Manage Metropolitan's finances in an ethical and transparent manner and provide consistent, clear, and timely financial reporting. Update Metropolitan's capital financing plans and work with rating agencies and investors to communicate Metropolitan's financial needs, strategies, and capabilities, thus ensuring that Metropolitan has cost effective access to capital markets and the ability to finance ongoing future needs. In addition, actively manage Metropolitan's short-term investment portfolio to meet ongoing liquidity needs and changing economic environments.

Record and report the financial activities of Metropolitan in a timely, accurate, and transparent manner to the Board, executive management, member agencies, and the financial community.

- Water Transactions for November 2023 (for water delivered in September 2023) totaled 108.8 thousand acre-feet (TAF), which was 33.5 TAF lower than the budget of 142.3 TAF and translates to $105.5 million in receipts, which was $37.0 million lower than budget of $142.5 million.

- Year-to-date water transactions through November 2023 (for water delivered in May 2023 through September 2023) were 520.5 TAF, which was 178.7 TAF lower than the budget of 699.2 TAF. Year-to-date water receipts through November 2023 were $528.2 million, which was $187.9 million lower than the budget of $716.1 million.
- In November 2023, Accounts Payable processed approximately 4,000 vendor invoices for payment.

Update capital financing plans and work with rating agencies and investors to communicate financial needs and capabilities, ensure cost-effective access to capital markets, and maintain long-term bond ratings of AA or better.

In November 2023, Metropolitan received 21 responses for a Request for Qualifications for Underwriting Services. From the responses, a team of investment banking firms will be selected in January 2024 to manage and underwrite several bond issues that will be issued in 2024.

Also, in November 2023, the 2023 Long-Range Finance Plan Needs Assessment report was presented to Metropolitan's Board. The Board agreed to concur with the report for planning purposes, and for the report to be reviewed by the Board, again, in January 2024.

Prudently manage the investment of Metropolitan's funds in accordance with policy guidelines and liquidity considerations.

As of November 30, 2023, Metropolitan's investment portfolio balance was $1.0 billion; the total November earnings were $3.4 million, and the effective rate of return was 4.18 percent.

Treasury staff managed daily cash flow to cover Metropolitan's operational expenditures and invested excess funds.

In November 2023, Metropolitan's portfolio manager executed seven trades. Treasury staff completed the following transactions:

- 25 Dreyfus Cash Management Fund transactions
- 18 CAMP Investment Pool transactions
- $3.3 million in Metropolitan's bond and SWAP payments
- 1,058 disbursements by check, 20 by Automated Clearing House (ACH), and 121 by wire transfer
- 58 receipts by check, 32 by ACH, and 52 by incoming wires and bank transfers
- Stopped five unauthorized ACH disbursements

In addition, Treasury staff processed eight professional services invoice payment requests totaling approximately $200,000. The Treasury staff also processed for DCA 13 checks and 14 wires totaling approximately $3.2 million.

Furthermore, 8,342 P-One Card transactions, totaling $1.2 million, recorded in the November bank statement were monitored by the P-One Card Administrator. The program received an annual rebate of $207,600.

Administrative Services

Accomplishments

RMIS Introduces Tutorial Videos for Metropolitan Archives

The Records Management & Imaging Services Team recently published three video tutorials on the newly launched Library and Archives Services SharePoint site. The tutorials, which run between 10 and 12 minutes each, provide employees with an overview of Metropolitan's archival program. Topics covered include Understanding Archival Records, an Introduction to the Metropolitan Archives, and Using the Metropolitan Archives Portal. Transcripts for each tutorial are also included on the site.

Professional Services Contracting Team Update

During December, the Professional Services Contracting Team (PSCT) completed the following solicitations in support of Metropolitan's initiatives:

Request for Proposal (RFP) No. 1348—Data Management and Data Analytics Consulting & Implementation Services. This solicitation acquired data management and data analytics consulting and implementation services to unlock new efficiencies in systems and processes by developing new data marts, enterprise data warehouse and analytics, and re-designing existing data marts in the form of use cases.

Request for Qualifications (RFQ) No. 1356 On-Call and Project-Specific Architectural Consulting Services. This solicitation pre-qualified multiple architectural consulting firms to provide on-call and project-specific architectural design, building engineering, office and laboratory space planning, kitchen facility planning, interior design, and landscape design services as outlined in the two technical categories: category 1—Industrial and Commercial Building Design and Planning, and category 2—Interior Design and Space Planning.

Human Resources

HR Priorities

Partner with Metropolitan leadership to support learning, development, and adaptive workforce planning initiatives.

In December, 459 Metropolitan employees attended virtually facilitated classes, including Presentation Skills, Resume Writing, Customer Service Excellence, Cybersecurity Awareness, Business Writing, and EEO Investigations 101. Thirty employees attended in-person trainings on Communication Skills and Stress Management.

LinkedIn Learning, Metropolitan's online e-learning content platform, was accessed for such topics as Interviewing Tips, Critical Thinking, Learning to be Promotable, and Practicing Fairness as a Manager.

The Organizational Development & Training Unit (OD&T) concluded the 13th cohort of Metropolitan's Management University, graduating 18 new managers. OD&T also facilitated a team-building exercise for the Warehouse Team at Weymouth, focusing on interpersonal communication and team collaboration.

Seek diverse, high-quality talent, and establish partnerships to discover additional outreach opportunities that aid in staffing positions.

The Recruitment team successfully filled 22 positions during the month of December and has 38 recruitments in final stages. Recruitment received new staffing requisitions for 19 positions, resulting in 207 positions currently in recruitment.

HR Core Business: Provide Excellent Human Resources Services

Objective #1: Administer all HR services with efficiency and a focus on customer service excellence, consistency, and flexibility.

The Business Support Team planned, organized, and coordinated a "Ready, Set, Goal" wellness webinar. The live webcast, held on December 13, 2023, was hosted by Kaiser Permanente. The webinar invited employees to choose a behavior they want to target, explore ways to strengthen motivation to create habits that stick and learn key strategies that lead to health improvement. Employees were also invited to create a realistic action plan by using their personal strengths to improve their overall well-being.

HR Core Business: Comply with Employment Laws and Regulations

Effectively administer all Human Resources policies, programs, and practices in compliance with applicable federal and state laws and Metropolitan's Administrative Code, Operating Policies, and Memorandum of Understanding.

In December, two new workers' compensation claims were received. Two employees are currently off work because of an industrial injury or illness. This reflects Metropolitan's effort to accommodate injured workers while enabling them to be productive and on the job. Staff continues to address accommodations, coordinate treatment, and work closely with our Workers' Compensation Third-Party Administrator, Tristar Risk Management.

HR Metrics	June 2023	December 2023	Prior Month November 2023
Headcount			
Regular Employees	1,779	1,803	1,798
Temporary Employees	25	46	43
Interns	0	1	1
Recurrents	18	18	18
Annuitants	24	24	23

	December 2023	November 2023
Number of Recruitments in Progress (Includes Temps and Intern positions)	207	210
Number of New Staffing Requisitions	19	18
	December 2023	**November 2023**
Number of Job Audit Requests in Progress	16	17
Number of Completed/Closed Job Audits	1	1
Number of New Job Audit Requests	0	4

Transactions Current Month and Fiscal YTD (includes current month)			
External Hires	FY 22/23 Totals	December 2023	FISCAL YTD
Regular Employees	116	7	57
Temporary Employees	36	6	35
Interns	0	0	1
Internal Promotions	72	9	40
Management Requested Promotions	149	4	69
Retirements/Separations (regular employees)	98	2	31
Employee-Requested Transfers	19	0	9

Departures

Last	First Name	Classification	Eff Date	Reason	Group
Snider	Marc	Landscape Maintenance Tech II	10/24/2023	Retirement - Service	CONVEYANCE & DISTRIBUTION GROUP
Releford	Christopher	Pump Plant Maint Operator I	10/26/2023	Resignation	CONVEYANCE & DISTRIBUTION GROUP

Diversity, Equity and Inclusion

Tribal Outreach & Engagement

DEI Staff together with SRI staff facilitated a meeting between the Chemehuevi Nation Environmental Management (CEM) and the Navajo Nation Power Utility (NPU). The purpose of the meeting was to learn insights from the NPU regarding a Design, Build, Operate and Maintain (DBOM) solar projects. The Chemehuevi has been in discussion with MWD staff regarding a proposed Chemehuevi Solar farm, which will be built on tribal land and which will connect to MWD's transmission line in the desert. The discussion focused on tribal nation's sovereign rights and how it may impact tribes if all equity of a DBOM project is handed to a non tribal nation entity. The CEM staff will share the information with its tribal council for further engagement with MWD.

CRIT Workshop

DEI Staff collaborated with CRIT to hold a resume writing, interviewing, and job seekers' workshop on CRIT reservation that attracted over 20 interested high school seniors and adult. We gave a description of the apprenticeship program and answered many questions, as well as guiding the participants with tips for resume writing, successful interviewing, and navigating the Metropolitan career site to learn about available jobs and career opportunities. The workshop was interactive with a lot of participation and engagement. The post-workshop survey revealed an average score of 5 (the highest score) regarding the usefulness of the workshop, and all participants indicated that they would return for a similar workshop or for a workshop to enhance their math and English skills in preparation of apprenticeship application/testing.

Business Outreach & Community Engagement

On December 7, 2023, Metropolitan staff attended the U.S. Green Building Council—Los Angeles (USGBC-LA) Green Gala and Sustainable Innovation Awards in Los Angeles, CA. The USGBC-LA GALA Awards is a celebration of outstanding leaders' contributions to sustainability, innovation, and community impact.

On December 8, 2023, Metropolitan staff attended the Latin Business Association—47th Annual Sol Business Awards in Rosemead, CA. The Sol Business Awards recognize and honor outstanding achievements in the business community. From innovative startups to established industry leaders, these awards celebrate those who have demonstrated exceptional dedication, creativity, and success.

On December 16, 2023, Metropolitan staff attended the Regional Hispanic Institute Mujeres De Año Gratitude reception in Long Beach, CA. To honor leaders who come from a variety of professional fields and disciplines and recognize them for their impact, influence, and inspiration continuously displayed in our community and to honor the outstanding demonstration of character, commitment, civic leadership, and citizenship or extraordinary individuals in our communities.

Finance and Administration (continued)

External Affairs

Highlights

Public and media interest in Metropolitan's leadership to address Colorado River issues remained high and was highlighted with several milestone events at the annual Colorado River Water Users Association conference. Chair Ortega, Vice Chair Camacho, Directors Bryant, Chacon, Cordero, DeJesus, Dennstedt, Garza, Kurtz, McCoy, Miller, Morris, G. Peterson, Seckel, and Smith, GM Hagekhalil, GC Scully, AGMs Upadhyay and Zinke, Colorado River Resources Manager Hasencamp and staff attended. (December 12-15)

- Signed partnership agreement with the Quechan Tribe to extend water conservation efforts
- Participated in media event with the US Bureau of Reclamation and California agencies marking multiple agreements on Colorado River conservation programs to save 1.6 million acre-feet in Lake Mead by 2026
- GM Hagekhalil joined panelists for a discussion of current and potential strategies to help stabilize the Colorado River policies and shape future river guidelines
- Co-hosted reception with Central Arizona Project
- Conducted interviews with KUNC's Alex Hager, Politico California reporter Camille Von Kaenel, KPCC/LAist reporter Emily Guerin, and LA Times reporter Ian James
- Hosted information tables on Pure Water and Colorado River programs at exhibit hall

Top Left: GM Hagekhalil, Chair Ortega and Director Cordero with California water agencies and the Bureau of Reclamation Commissioner Touton. Top Right: CAP Board President Goddard, Bureau of Reclamation Commissioner Touton, CAP GM Burman, and GM Hagekhalil. Bottom Left: GM Hagekhalil with fellow panelists Vice Chair Lorelei Cloud of the Southern Ute Indian Tribe and Governor Stephen Roe Lewis of the Gila River Indian Tribe. Bottom Right: Metropolitan GM Hagekhalil and Quechan Tribal President Jordan Joaquin signing agreement to extend their partnership to conserve water through 2026.

GM Hagekhalil was the featured speaker on "Challenges for Energy & Natural Resources in California" at the Institute for Corporate Counsel and USC Gould School of Law. (December 6)

GM Hagekhalil spoke on a panel, "From Boom to Bust" with DWR Director Nemeth at the California Foundation on the Economy and Environment (CFEE) water conference. AGM Zinke also attended. (December 7)

GM Hagekhalil testified at the State Water Resources Control Board public hearing on the Bay-Delta Water Quality Control Plan update in support of the Agreements to Support Healthy Rivers and Landscapes. (December 11)

Legislative Services

Federal

Metropolitan staff participated in stakeholder meetings with staff from the House Transportation and Infrastructure Committee to discuss priorities for the next Water Resources and Development Act bill authorizing Army Corps of Engineers projects and programs.

The FY24 National Defense Authorization Act includes $5 million to continue a Center for Disease Control and Prevention Study on the health impacts of per- and polyfluoroalkyl substances (PFAS) in drinking water and $1 million in incentives for the development of technology for thermal destruction of PFAS.

State

Metropolitan staff presented amendments to the sponsors of SB 366 (Caballero, D-Merced) which would make updates to the California Water Plan.

Following projections by the Legislative Analyst's Office that California will face a $68 billion deficit, the Department of Finance announced an expenditure freeze for all agencies and departments.

DWR released its final EIR for the Delta Conveyance Project.

Local

Provided a tour of the Grace F. Napolitano Pure Water Southern California Innovation Center with Assemblymember Fong (D-Alhambra) and his district office staff. (December 18)

Metropolitan staff presented, monitored and/or participated in 40 webinars, virtual meetings, and events with community organizations, trade associations and local officials on water-specific topics.

Media and Communications

- Facilitated interviews for LA Times reporter Ian James, KPCC/LAist reporter Jacob Margolis, The Hill reporter Sharon Udasin, and EO/AGM Upadhyay on the State Water Resources Control Board's adoption of Direct Potable Reuse regulations.
- Arranged interview between WRM Resource Specialist Guerrero and Robert Starr of the Water Zone podcast regarding water supply conditions and the continued need for conservation.

- Scheduled interview between EO/AGM Upadhyay, Sr. Deputy General Counsel Teraoka and Politico reporter Ry Rivard about the 3M and Dupont PFAS settlements.
- Set up interview with Colorado River Resources Manager Hasencamp and Desert Sun reporter Janet Wilson on Metropolitan's exchange agreements with Coachella Valley Water District.
- Coordinated interview for GM Hagekhalil and Politico California's Camille von Kaenel regarding the Delta Conveyance Project EIR and the nexus between the Colorado River and the State Water Project.
- Arranged interview with GM Hagekhalil, Bay Delta Initiatives Manager Hawk, and LA Times reporter Ian James on the Delta Conveyance Project.
- Set up interview between GM Hagekhalil and Water Education Foundation's Nick Cahill about Pure Water Southern California and the role the project will play to solve challenges on the Colorado River.
- Issued statements on DWR's initial State Water Project allocation, the Delta Conveyance Project Final EIR, the State Water Board's adoption of direct potable reuse regulations and provided quotes for SWRCB and Water Reuse Association news releases.
- Animated the district's holiday card for various uses.

Metropolitan's 2023 Holiday Card

Social Media and Website

- Produced and posted four social media influencer video vignettes for Instagram posts with home and fashion stylist Katie Zamprioli (145,000 followers) and actor Kyle MacLachlan (516,000 followers), closing out the year of the district's social media influencer campaigns that reached audiences new to Metropolitan across a range of interests in the arts, music, style, fashion and lifestyle communities.

- Received more than 70,000 combined impressions from repurposed Black Friday and Cyber Monday conservation assets from years past.
- Posted photos leading up to and after the Board of Directors historic meeting at Gene Camp.
- Registered 47,000 visits to mwdh2o.com with careers, job postings, and press release pages the most popular; received more than 22,000 views on bewaterwise.com site.

- Added new stories to mwdh2o.com on drought-relief rebates, the Project Labor Agreement annual report; update on Climate Adaptation Master Plan for Water; completion of the first phase of the High Desert Water Bank Program; and redesigned and updated the website's Delta Conveyance webpage.

Pure Water Southern California

- Community Relations Team Manager Soni chaired an Independent Scientific Advisory Panel to discuss Boise's recycled water program. (December 5-6)
- Briefed environmental leaders on program status and discussed related research. (December 1)
- Met with Council for Watershed Health on recycled water communications. (December 4)
- Met with staff from the city of Bellflower (December 6), Union Pacific (December 7), and the city of Lakewood (December 15) to discuss conveyance system alignment. Provided tours for MWD101 Employee participants (December 11) and city of Torrance Water Commission (December 18) and attended Strength-Based Community Change event. (December 15)

Community Partnering and Sponsorship Program

Metropolitan provided sponsorships to support the following events and programs this month:

- Los Angeles Alliance for a New Economy 2023 City of Justice Awards, US Green Building Council Los Angeles Chapter Green Gala Event and Women in Water Diplomacy Network North America and Colorado River Basin.

Other Outreach Activities

- Notified residents and businesses of Santa Monica Feeder shutdown, Second Lower Feeder shutdown, and Sepulveda Feeder Urgent Repair; Continued to resolve community concerns related to Second Lower Feeder Reach 3B; Hosted an information table at Harbor City community event on Second Lower Feeder.
- Conducted Environmental Listening Session on CAMP4W evaluative criteria. (December 11)
- Conducted eight focus groups on public attitudes on water issues, water quality, and public trust. Results will be presented to the Legislation, Regulatory Affairs, and Communications committee in early 2024.
- Provided tour of Weymouth for Joint Utility Vendor Audit Consortium (December 14) and tour of Diamond Valley Lake for the Riverside County Water Taskforce. (December 15)

Education and Community Relations

Metropolitan staff interacted with 245 teachers, students, and adults through in-person and online meetings and events.

- Water Engineering 4 Good teams participated in an online demonstration of Onshape, a CAD program they will use to create a drawing of their water conservation project.
- Metropolitan recognized the 37 student artists featured in the 2024 Water is Life calendar. Chair Ortega and Director Dennstedt participated in the virtual ceremony.

Sustainability, Resilience, Innovation, Environmental Planning, and Land Management

SRI Core Activities

General Manager Environmental Listening Session—Climate Adaptation Master Plan for Water (CAMP4W)

SRI and Metropolitan staff were actively involved in hosting and participating in the General Manager Environmental Listening Session on CAMP4W, which took place on December 11, 2023. During the session, participants discussed the draft evaluative criteria of CAMP4W and shared insights through small group discussions, reflecting on key points within the criteria.

Member Agency CAMP4W Workshop

SRI office, Metropolitan staff, and member agencies collaborated on December 12, 2023, to contribute to the development of a climate decision-making framework. They also conducted a thorough review of the draft project-level evaluative criteria during this engagement.

2023 Colorado River Water Users Association (CRUWA) Conference

The Chief SRI Officer actively engaged in a panel discussion at CRUWA Conference in Las Vegas, focusing on the evaluation of urban best practices in Science and Innovation within the Municipal and Industrial (M&I) sector. Panelists explored innovative technological solutions for enhancing water efficiency, data analysis, and decision-making processes. CRUWA serves as a platform for the exchange of ideas and perspectives on Colorado River use and management, fostering the development of shared solutions.

The Chief SRI Officer presented at the 2023 CRUWA Conference in Las Vegas

CAMP4W Executive Retreat

The Chief SRI Officer and staff participated in a full-day executive management retreat. During the retreat, demo and discussion of the framework/evaluation criteria dashboard and the 2024 timeline/process for decision-making and

brainstorming, the next steps for the business model were presented to streamline the decision-making process, particularly in the context of adaptive management.

Climate Adaptation Master Plan for Water Joint Task Force (CAMP4W)

Chief SRI Officer, Metropolitan Water District staff, directors, and member agencies all joined to review the proposed evaluative criteria and decision-making framework. The CAMP4W Task Force focused on the development and use of the evaluative criteria and provided an overview of how they integrate into the CAMP4W process.

Zero Emission Vehicle Transition

SRI staff continued to lead cross-organizational efforts for the transition of Metropolitan's fleet to zero-emission vehicles. The current focus is finalizing its vehicle replacement strategy to meet new regulations. The final replacement strategy will determine total vehicle costs and provide the information needed for ESGs to design and build the supporting charging infrastructure. An informational board letter on the project's next steps will be presented to the EO&T Committee in January.

Sustainable Procurement

SRI staff began initiating the development a sustainable procurement policy working with the Responsible Purchasing Network (RPN), a consultant who specializes in this field. The RPN will also assist with the revision of the existing procurement manual and procedures and, on completion, will train staff on best sustainable procurement practices.

Sustainability and Resilience Operating Policy

SRI staff completed a draft of a new operating policy, D-03, Sustainability and Resilience, which provides policy for Metropolitan to operate sustainably while increasing resiliency and reliability of water supplies. The policy delegates authority to the Chief Sustainability, Resilience, and Innovation Officer to ensure that Metropolitan's sustainability and resilience efforts align with the goals of the Climate Action Plan and the General Manager's related strategic priorities.

Equity, Inclusion and Affordability Committee Panel on Affordability

The SRI office coordinated with groups across the district to organize a series of *Panels on Affordability* for the Board Equity, Inclusion and Affordability Committee. This last in a series of four panels was in response to the Board's request for affordability discussions to inform the CAMP4W and are designed inform policy recommendations and evaluative criteria that will guide a CAMP4W decision making framework. This month's panel included representatives from the San Francisco Public Utilities Commission and University California Los Angeles' Human Right to Water Lab &Water Resources Group with a focus on cost containment strategies and water affordability.

Innovation

Innovation, Pilots, and Emerging Technologies Updates

SRI Innovation Team Participates in LARTA's three-day ECO '23. ECO '23 in Los Angeles brought together local community leaders, grassroots innovators, academia, government, industry, foundations, and investors. SRI's Innovation Team has partnered with LARTA for over 10 years, including a Metropolitan Agriculture Conference with LARTA at UC Riverside. Metropolitan's SRI Innovation team was also invited by LARTA and Braid Theory to be a

partner in a NOAA Grant in 2023. ECO '23 explored intricate systems of food, energy, healthcare, oceans, and education, showcasing both the challenges and innovative solutions within each sector, through the activation of six threads of programming: communities & people, interactive discussion, policy & adoption, innovation showcases, connections & introductions, and funding. Over 300 invited attendees participated in ECO '23.

Metropolitan Agriculture Conference with LARTA at UC Riverside

WaterStart Channels for Innovation Summit and Celebration of WaterStart's 10th Anniversary

Celebrating Ten Years of Innovation and Impact—Las Vegas Valley Water District and Southern Nevada Water Authority Deputy General Manager of Operations and board member Dave Johnson gave a special presentation to celebrate the 10th anniversary of WaterStart.

Programming - CFI Summit 2023 - On December 12, Metropolitan's SRI Innovation, Engineering, and Bay Delta teams participated with WaterStart Innovation Members from around the globe at the CFI Summit. The day started with a panel discussion on "RACING INTO INNOVATION—Partnering with Utilities to Achieve CSR Goals" featuring deep discussions on timely and intricate water management topics with experts. The panel was followed by Technology Priority Pitches—Specific technology priorities that have been challenging in sourcing a solution presented by WaterStart members. Each pitch described the background of the need, the challenges faced in finding a solution, and the performance indicators critical to defining success.

Pitch 1—Healthy Soils on Metropolitan Lands, presented by David Bradshaw, Agricultural Liaison, Metropolitan Water District of Southern California

Pitch 2—Enabling Whole Life Carbon in Design, presented by Shaunna Berendsen, Chief Innovation Officer, Anglian Water Services

Pitch 3—An Update on the Center for Smart Infrastructure and Specific Dam Safety Research Concepts, presented by Elizabeth Bialek, Manager of Engineering Services, East Bay Municipal Utility District

Pitch 4—Collaborating to Protect Drinking Water Supplies from Wildfire Impacts in the Truckee River Watershed, presented by Kara Steeland, Sr. Hydrologist and Watershed Coordinator, Truckee Meadows Water Authority.

Priority Pilot Pitches were moderated by Michael Thomas, WaterStart Board Member and Metropolitan Champion of Innovation. Michael Thomas was the winner of the 2022 Pilot Priority Pitch Competition. The 2023 Pitch Competition included a Priority Pitch on Earthen Levee Monitoring by Metropolitan's Russ Ryan with Rezatec's Camilla Brathwaite from England. The unique technologies implemented in the Bay Delta and piloted with co-funding from WaterStart will be a game changer for all groups in the Bay Delta. Russ Ryan is submitting a paper on the new technologies piloted to the State Water Project Partners and believes that they will be implemented by all partners in the Delta.

Environmental Planning Section

Core Business: Environmental Planning and Regulatory Compliance Support

Bay Delta Initiatives

Delta Conveyance Project

- Continued coordination with the California Department of Water Resources for ongoing permitting effort on behalf of Public Water Agencies.

Webb Tract Multi-Benefit Mosaic Landscape Project

- Completed preparation of special status plant technical reports.
- Participated in biweekly meetings with Bay Delta Initiatives staff and key working group consultants.

Engineering Services Group

Etiwanda Pipeline Relining Project

- Completed Mitigation Monitoring and Reporting Program (MMRP) documentation in support of project closeout.

Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program

- Continued construction monitoring and mitigation compliance for PCCP Second Lower Feeder Reach 3B.
- Continued construction monitoring for Lake Mathews Valve Storage Building project.
- Participated in strategy meeting in support of the urgent relining of the Allen McColloch Pipeline.
- Provided support for the preliminary design report for the PCCP Calabasas Feeder, Rialto Feeder Reach 1, and Sepulveda Feeder North Reach.

Perris Valley Pipeline

- Conducted ongoing mitigation monitoring of construction activities.

Mitigation monitoring for Perris Valley Pipeline construction near Interstate-215

Sustainability, Resilience and Innovation (continued)

Pure Water Southern California

- Continued preparation of technical studies in support of draft environmental impact report (EIR).
- Reviewed revised data and project modifications, including upsized pipeline, for incorporation into technical studies and draft EIR.
- Continued tribal cultural resource consultation.
- Provided input on Large-Scale Water Recycling Project grant application.

Weymouth Water Treatment Plant and La Verne Site Improvements Program EIR

- Continued preparation of the final EIR, including responses to comments on the draft EIR.

Design Review

- Completed environmental analysis and CEQA determination for the Weymouth Hazardous Waste Storage Facility and Weymouth Asphalt Rehabilitation projects.

Construction Monitoring

- Continued construction monitoring for Orange County Feeder Relining Reach 3 and Weymouth Basins 5–8 Rehabilitation.

Sustainability, Resiliency, and Innovation Office

Climate Action Plan (CAP) Monitoring and Reporting

- Continued monitoring for Battery Energy Storage System project operation, in compliance with the CAP Program EIR MMRP.
- Continued to assist in Scope 3 emissions data collection in support of the CAP implementation, including developing an electronic system to capture contractor's construction emissions and a data management system to capture utilities data (waste, wastewater, and water use).
- Provided analysis review for Natural Gas Inventory Equipment report.

Real Property Support

- Provided environmental analysis and CEQA determinations in support of three real property agreements.

Water System Operations Group

- Prepared and submitted regulatory permit notifications for the Foothill Feeder Station 592+80 emergency repair.
- Provided environmental analysis and clearance for the Diemer Plant and Upper Feeder shutdowns and Rialto Feeder vegetation removal activities
- Obtained emergency authorization under Regional General Permit 63 from U.S. Army Corps of Engineers and provided construction monitoring for repairs conducted at the CRA Whitewater Siphon Protection Structure.

Reserve Management

Lake Mathews Multiple Species Reserve

- Seeded approximately 14 acres of prescribed burn areas with native grassland species.
- Installed security fencing along Harley John Road.
- Removed invasive tumbleweed and invasive tamarisk trees within sensitive areas.

- Conducted comprehensive security patrols throughout the Reserve to prevent trespassing, vandalism, poaching, and theft and to ensure the protection of the Reserve's natural and cultural resources, facilities, and equipment.

Southwestern Riverside County Multi-Species Reserve

- Conducted vegetation management around artificial burrows to attract burrowing owls.
- Coordinated efforts for and hosted the annual Christmas bird count event on December 19, 2023.
- Removed non-native plants along the roads for fire and habitat management.
- Continued seed collection and propagation of native plants for future restoration projects.
- The Alamos Schoolhouse interpretive center was open on Saturdays, and the Reserve Interpreter hosted birding events each Saturday.
- Conducted comprehensive security patrols throughout the Reserve to prevent trespassing, vandalism, poaching, and theft and to ensure the protection of the Reserve's natural and cultural resources, facilities, and equipment.

External Document Reviews

- Reviewed 15 CEQA notices for external projects and prepared comment letters for those that may affect Metropolitan facilities and/or operations.

Water Resources Management Support

- Provided environmental analysis and CEQA determination in support of the Perris North Basin Groundwater Contamination Prevention and Remediation local resources program.

Land Management

Granted an entry permit to Verizon Wireless for one year to conduct a feasibility study for a wireless telecommunication tower on Metropolitan property just west of Lake Mathews. Metropolitan received a fee of $2,500 for the entry permit.

Granted an entry permit to Corona Fire Department for a duration of 5 years to conduct annual swift water rescue training over a couple of days at the Lake Mathews inlet channel. This was mutual benefits transaction.

Extended an entry permit to San Jacinto Master Developer, LLC (Shea Properties) by one year to conduct biological studies for adjacent proposed development in Lakeview area of Riverside County. Metropolitan received a fee of $1,000 for the extension of the entry permit.

Granted an easement to Riverside Public Utilities for electrical equipment proposed as part of Metropolitan's Mill's Plant Electrical Upgrade project. There was no charge for the easement because it was required as part of the upgrade project.

Granted an Easement to the County of Riverside Flood Control and Water Conservation District for a storm drain inlet structure within Metropolitan's property on the west side of Lake Mathews as part of an adjacent development. Metropolitan received a fee of $8,000 for the easement.

Metropolitan's Mission is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

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Metropolitan Cases

Harold Jones v. Metropolitan, et al.
(Los Angeles County Superior Court)

On November 16, 2023, employee Harold Jones filed an employment lawsuit against Metropolitan in Los Angeles County Superior Court. The complaint was served on Metropolitan on November 29. The complaint alleges seven causes of action. Five causes of action are under the California Fair Employment and Housing Act (FEHA) alleging: discrimination based on race, color and/or national origin, discrimination based on age, retaliation, failure to prevent discrimination, and failure to promote. In addition, there are causes of action alleging the failure to permit inspection of personnel records and unfair business practices. Plaintiff alleges he was discriminated against based on his race/color/national origin/age because Metropolitan denied him promotions even though he was and remains well-qualified; and he alleges Metropolitan retaliated against him after he complained of discriminatory conduct in September of 2021. The Legal Department is representing Metropolitan and is meeting and conferring with opposing counsel to address legal deficiencies in the complaint. Metropolitan anticipates responding to the complaint in January 2024.

CDWR Environmental Impact Cases
(Sacramento County Superior Court)

On December 26, 2023, the trial court entered an order denying motions for attorney's fees filed by eight groups of plaintiffs seeking a total of approximately $13 million in fees stemming from the California WaterFix coordinated cases. The motions were filed after the first order denying fees issued in early 2020 was reversed on appeal in 2022. The judge denied the fee motions because the plaintiffs failed to show that their litigation over the WaterFix Environmental Impact Report (EIR) and their answers in the WaterFix bond validation case were a substantial factor in Governor Newsom's decision not to support WaterFix and the Department of Water Resources' subsequent decision to rescind the project approval and bond resolutions and decertify the EIR. Plaintiffs have until February 26, 2024 to file appeals.

Matters Impacting Metropolitan

EPA Proposes Lead and Copper Rule Revision

On November 30, 2023, the U.S. Environmental Protection Agency (EPA) announced the proposed Lead and Copper Rule Improvements (LCRI) to reduce lead in drinking water and to simplify the rule relative to the 2021 Lead and Copper Rule Revisions (LCRR). Key provisions in the proposal include: (1) requiring water systems to replace lead service lines within 10 years; (2) removing the lead trigger level; (3) improving tap sampling procedures; (4) lowering the lead action level from 15 micrograms per liter (µg/L) to 10 µg/L; and (5) requiring new service line inventory procedures. The proposed rule also provides improvements in the following areas: corrosion control treatment, public education and consumer awareness, requirements for small systems, and sampling in schools and child-care facilities.

The proposed LCRI is intended to strengthen EPA's existing Lead and Copper Rule, which was first promulgated in 1991, and most recently revised in January 2021, when EPA issued its LCRR. While EPA's previous efforts to reduce lead in drinking water prioritized corrosion control to reduce lead levels at the tap, the LCRI focuses on mandatory lead service line replacement. Specifically, the proposed LCRI would require water systems to inventory, formulate a replacement plan for, and replace all lead service lines under the control of the water system within 10 years, regardless of lead level. EPA has found that when lead service lines are present, they represent the greatest source of lead exposure in drinking water.

The proposed LCRI would also make key changes to the protocol that water systems must use for tap sampling informed by best practices already being deployed at the local and state level, like in

Michigan. Water systems would be required to collect first liter and fifth liter samples at sites with lead service lines and use the higher of the two values when determining compliance with the rule.

In addition, EPA is proposing to lower the lead action level from 15 µg/L to 10 µg/L. When a water system's lead sampling exceeds the action level, the system would be required to inform the public and take action to reduce lead exposure while concurrently working to replace all lead pipes. For example, the system would install or adjust corrosion control treatment to reduce lead that leaches into drinking water.

Under the proposed LCRI, water systems would also be required to regularly update their inventories, create a publicly available service line replacement plan, and identify the materials of all service lines of unknown material. According to EPA, knowing where lead pipes are is critical to replacing them efficiently and equitably. Water systems are currently required under the LCRR to provide an initial inventory of their lead service lines by October 16, 2024.

To support eliminating lead service lines, the Infrastructure and Investment and Jobs Act (Pub. L. 117-58), also referred to as the Bipartisan Infrastructure Law (signed into law Nov. 15, 2021), included $15 billion specifically appropriated for lead service line replacement projects and associated activities directly connected to the identification and planning for the replacement of lead service lines. Additionally, $11.7 billion of general Drinking Water State Revolving Funds can be used for lead service line replacement.

EPA held a public informational webinar about the proposed LCRI on December 6, 2023. To help inform its decision making regarding these potential revisions, EPA is also hosting a virtual public hearing on January 16, 2024, to receive public comment and present the proposed requirements of the LCRI. Furthermore, EPA published the LCRI in the Federal Register on December 6, 2023, which started a 60-day public comment period. Public comments are due by February 5, 2024. EPA intends to finalize the LCRI before the LCRR compliance date of October 16, 2024. Metropolitan staff will continue to monitor EPA's proposed LCRI.

Other Matters

Miscellaneous

On December 18, 2023, Metropolitan issued $120,000,000 of Tax-Exempt Flexible Rate Revolving Note, Series 2023 A-4 (the Notes). The Notes were issued to fund Board-approved debt-financed projects. Legal Department staff attorneys worked with and assisted outside bond counsel with the drafting and negotiation of several contracts and closing certificates.

Legal Department staff worked with Finance staff to prepare and post Metropolitan's annual financial information filings for fiscal year ended June 30, 2023, pursuant to continuing disclosure requirements for all of Metropolitan's outstanding revenue and general obligation bonds. The annual filings include certain financial and operational disclosures and the Annual Comprehensive Financial Report for Fiscal Years Ended June 30, 2023 and 2022. The annual filings are available at http://emma.msrb.org (the Electronic Municipal Market Access system) maintained by the Municipal Securities Rulemaking Board.

Matters Concluded and/or Terminated

AFSCME Local 1902 v. Metropolitan (MOU Hearing Officer Appeal)

On April 30, 2019, AFSCME Local 1902 filed a grievance on behalf of three Equipment Operators who alleged the denial of meal period pay in violation of the AFSCME MOU. Metropolitan denied the grievance and AFSCME appealed the denial to a hearing officer. The parties agreed to hold the matter in abeyance pending new MOU negotiations in 2023. After completion of negotiations, on December 20, 2023, the parties resolved the grievance. EEO issues were not implicated, the agreement has no confidentiality provisions, the Operators are still employed by Metropolitan, and the Operators received $500 each to resolve their meal period pay claims. The grievance has been withdrawn pursuant to a written settlement agreement.

Date of Report: January 3, 2024

Matters Received

Category	Received	Description
Action in which MWD is a party	1	Complaint for Damages: (1) Discrimination on the Bases of Race, Color, and/or National Origin; (2) Discrimination on the Basis of Age; (3) Retaliation; (4) Failure to Prevent Discrimination; (5) Failure to Promote; (6) Failure to Permit Inspection of Personnel Records; (7) Unfair Business Practice, filed in Los Angeles County Superior Court, in the case *Harold Jones v. MWD*, Case No. 23STCV28217
Government Code Claims	2	Claims relating to: (1) conditions at a District provided employee residence; and (2) accident involving an MWD vehicle

Category	Received	Description
Subpoenas	2	(1) Deposition Subpoenas for Production of Business Records for employment, payroll, and claims records and (2) records relating to any asbestos-containing products served on two different matters unrelated to Metropolitan

Requests Pursuant to the Public Records Act	16	Requestor	Documents Requested
		Andersen Integrate Services (2 requests)	(1) Proposals, company scores, and evaluation worksheets for On-Call General Industrial Hygiene and Safety Services; and (2) Proposals, company scores, and total dollar spent under each contract for On-Call Industrial Hygiene Services
		Blair, Church & Flynn Consulting Engineers	Records of any existing MWD facilities near project in Irvine
		Brown and Caldwell	Request for Qualifications for PDB Services for Sepulveda Feeder Pump Stations
		CCS Global Tech	Score sheet, winning proposals, number of task orders, and awarded contracts for Request for Qualifications for On-Call Information Technology Services
		County of San Diego, Department of Public Works, Land Development Division	EGIA contract for SoCalWaterSmart Program
		DRMcNatty & Associates	Accepted proposal for Data Management and Data Analytics Consulting and Implementation Services
		Los Angeles Times	Data on water transfers within Kings County to MWD during the period 2018-2023

Date of Report: January 3, 2024

Requestor	Documents Requested
Orange County Water District	General Mineral and Physical Analysis of MWD's Water Supplies for the period July 2022 through June 2023
Private Citizens (3 requests)	Proposals and/or Statements of Qualifications and sign-in sheets for pre-proposal meetings or site visits for the (1) Request for Qualifications for As Needed Engineering Design Services for pipelines, potable and recycled water storage and conveyance facilities and sewage lift stations; and (2) Request for Qualifications for Engineering Services for Water Treatment Facilities, Conveyance, Storage & Distribution Faculties, and Large Rotating Equipment; and (3) List of firms that submitted proposals, list of firms who were prequalified, prequalified firms' proposals, and evaluation tabulation for Request for Qualifications for On-Call General Industrial Hygiene Services
Rist Associates (2 requests)	Proposals and/or Statements of Qualifications and sign-in sheets for pre-proposal meetings or site visits for the (1) Request for Proposal for Desalination Research; and (2) Request for Qualifications for On-Call Engineering Services
Sensis	Winning Proposal and scoring sheets for Request for Proposal for Multi-Media Placement Consulting Services for Water Awareness & Outreach Campaign
SteepSteel	Copies of all active leases/licenses for cell towers, rooftop antennas, or other wireless installations on property owned or managed by MWD, along with 24 months of associated payment histories

PLEASE NOTE

- ADDITIONS ONLY IN THE FOLLOWING TWO TABLES WILL BE SHOWN IN RED.
- ANY CHANGE TO THE *OUTSIDE COUNSEL AGREEMENTS* TABLE WILL BE SHOWN IN REDLINE FORM (I.E., ADDITIONS, REVISIONS, DELETIONS).

Date of Report: January 3, 2024

Bay-Delta and SWP Litigation

Consolidated DCP Revenue Bond Validation Action and CEQA Case

Sierra Club, et al. v. California Department of Water Resources (CEQA, designated as lead case)

DWR v. All Persons Interested (Validation)

Sacramento County Superior Ct.
(Judge Kenneth C. Mennemeier)

- **Validation Action**
  - Metropolitan, Mojave Water Agency, Coachella Valley Water District, and Santa Clarita Valley Water Agency have filed answers in support
  - Kern County Water Agency, Tulare Lake Basin Water Storage District, Oak Flat Water District, County of Kings, Kern Member Units & Dudley Ridge Water District, and City of Yuba City filed answers in opposition
  - North Coast Rivers Alliance et al., Howard Jarvis Taxpayers Association, Sierra Club et al., County of Sacramento & Sacramento County Water Agency, CWIN et al., Clarksburg Fire Protection District, Delta Legacy Communities, Inc, and South Delta Water Agency & Central Delta Water Agency have filed answers in opposition
  - Case ordered consolidated with the DCP Revenue Bond CEQA Case for pre-trial and trial purposes and assigned to Judge Earl for all purposes
  - DWR's motions for summary judgment re CEQA affirmative defenses granted; cross-motions by opponents denied
  - Dec. 9, 2022 DWR's motion for summary adjudication of Delta Reform Act and public trust doctrine affirmative defenses granted; NCRA's motion for summary judgment re same denied
- Trial on the merits held May 15-18, 2023
  - Supplemental briefing ordered on three issues with final brief due June 30, 2023
  - Tentative Decision/Proposed Statement of Decision against validity issued Aug. 25
  - DWR's objections filed September 18, 2023
  - Opponents responses to objections filed September 28, 2023
  - Court extended the deadline to issue a judgment to January 22, 2024~~December 18, 2023~~
- **CEQA Case**
  - Sierra Club, Center for Biological Diversity, Planning and Conservation League, Restore the Delta, and Friends of Stone Lakes National Wildlife Refuge filed a

	standalone CEQA lawsuit challenging DWR's adoption of the bond resolutions • Alleges DWR violated CEQA by adopting bond resolutions before certifying a Final EIR for the Delta Conveyance Project • Cases ordered consolidated for all purposes • DWR's motion for summary judgment granted; Sierra Club's motion denied • Tentative Decision/Proposed Statement of Decision rejecting CEQA challenge issued Aug. 25, 2023 • DWR's objections filed September 18, 2023 • Opponents responses to objections filed September 28, 2023 • Court extended the deadline to issue a judgment to January 22, 2024~~December 18, 2023~~
Subject	**Status**
SWP-CVP 2019 BiOp Cases *Pacific Coast Fed'n of Fishermen's Ass'ns, et al. v. Raimondo, et al.* (*PCFFA*) *Calif. Natural Resources Agency, et al. v. Raimondo, et al.* (*CNRA*) Federal District Court, Eastern Dist. of California, Fresno Division (Judge Thurston)	• SWC intervened in both *PCFFA and CNRA* cases • Federal defendants reinitiated consultation on Oct 1, 2021 • ~~February 24, 2023 court approved the 2023 Interim Operations Plan proposed by federal defendants and state plaintiffs, denied all alternative proposed operations and extended the stay until December 31, 2023~~ • Nov. 16, 2023 ~~deadline for~~ parties ~~to~~ filed a joint status report • Federal defendants and state plaintiffs seek another 1-year stay and proposed a 2024 Interim Operations Plan (IOP); PCFFA seeks to extend the 2023 IOP until the court rules on the 2024 IOP • Briefing on stay extension and 2024 IOP concludes March 6, 2024 • Dec. 29, 2023 order extended the stay and 2023 IOP until March 2024 or new order, whichever is earlier
CESA Incidental Take Permit Cases **Coordinated Case Name *CDWR Water Operations Cases*, JCCP 5117 (Coordination Trial Judge Gevercer)**	• All 8 cases ordered coordinated in Sacramento County Superior Court • Stay on discovery issued until coordination trial judge orders otherwise • All four Fresno cases transferred to Sacramento to be heard with the four other coordinated cases

Metropolitan & Mojave Water Agency v. Calif. Dept. of Fish & Wildlife, et al. (CESA/CEQA/Breach of Contract) *State Water Contractors & Kern County Water Agency v. Calif. Dept. of Fish & Wildlife, et al*. (CESA/CEQA) *Tehama-Colusa Canal Auth., et al. v. Calif. Dept. of Water Resources* (CEQA) *San Bernardino Valley Municipal Water Dist. v. Calif. Dept. of Water Resources, et al.* (CEQA/CESA/ Breach of Contract/Takings) *Sierra Club, et al. v. Calif. Dept. of Water Resources* (CEQA/Delta Reform Act/Public Trust) *North Coast Rivers Alliance, et al. v. Calif. Dept. of Water Resources* (CEQA/Delta Reform Act/Public Trust) *Central Delta Water Agency, et. al. v. Calif. Dept. of Water Resources* (CEQA/Delta Reform Act/Public Trust/ Delta Protection Acts/Area of Origin) *San Francisco Baykeeper, et al. v. Calif. Dept. of Water Resources, et al*. (CEQA/CESA)	• Certified administrative records lodged March 4, 2022 • State Water Contractors et al. granted leave to intervene in Sierra Club, North Coast Rivers Alliance, Central Delta Water Agency, and San Francisco Baykeeper cases by stipulation • SWC, et al. granted leave to intervene as respondents in *Tehama-Colusa Canal Auth., et al. v. Calif. Dept. of Water Resources* CEQA case • SWC's renewed motion to augment the administrative records granted in part; a court-appointed referee will review withheld records to determine if the deliberative process privilege applies • Sept. 8, 2023 hearing on DWR's and CDFW's motion to modify the referral to exclude certain withheld records • CDFW's motion denied, DWR's motion subject to the Court's in camera review of records proposed for exclusion • Referee's recommendation is to grant in part, deny in part SWC parties' motion to augment the administrative records • Oct. 13, 2023 objections or responses to Referee's recommendation due • Oct. 27, 2023 court's ruling granting in part, and denying in part, the SWC parties' motion to augment DWR's and CDFW's administrative records became final • Parties are conferring on a merits briefing schedule

CDWR Environmental Impact Cases **Sacramento Superior Ct. Case No. JCCP 4942, 3d DCA Case No. C091771** **(20 Coordinated Cases)** Validation Action *DWR v. All Persons Interested* CEQA 17 cases CESA/Incidental Take Permit 2 cases (Judge Arguelles)	• Cases dismissed after DWR rescinded project approval, bond resolutions, decertified the EIR, and CDFW rescinded the CESA incidental take permit • January 10, 2020 – Nine motions for attorneys' fees and costs denied in their entirety • Parties have appealed attorneys' fees and costs rulings • May 11, 2022, court of appeal reversed the trial court's denial of attorney fees and costs in an unpublished opinion • Opinion ordered published • Coordinated cases remitted to trial court for re-hearing of fee motions consistent with the court of appeal's opinion • Sept.15, 2023 re-hearing on fee motions • Dec. 26, 2023 order denying fee motions • Jan. 11, 2024 deadline to file motion for reconsideration • Feb. 26, 2024 deadline to file notice of appeal
COA Addendum/ **No-Harm Agreement** *North Coast Rivers Alliance v. DWR* Sacramento County Superior Ct. (Judge Rockwell)	• Plaintiffs allege violations of CEQA, Delta Reform Act & public trust doctrine • USBR Statement of Non-Waiver of Sovereign Immunity filed September 2019 • Westlands Water District and North Delta Water Agency granted leave to intervene • Metropolitan & SWC monitoring • Deadline to prepare administrative record last extended to Nov. 18, 2022

SWP Contract Extension Validation Action Court of Appeal for the Third App. Dist. Case No. C096316 *DWR v. All Persons Interested in the Matter, etc.*	• DWR seeks a judgment that the Contract Extension amendments to the State Water Contracts are lawful • Metropolitan and 7 other SWCs filed answers in support of validity to become parties • Jan. 5-7, 2022 Hearing on the merits held with CEQA cases, below • Final statement of decision in DWR's favor filed March 9, 2022 • Final judgment entered and served • C-WIN et al., County of San Joaquin et al. and North Coast Rivers Alliance et al. filed notices of appeal • Validation and CEQA cases consolidated on appeal • Briefing completed May 30, 2023 • Oral argument held ~~recalendared for~~ November 15, 2023~~; 30 minutes per side~~
SWP Contract Extension CEQA Cases Court of Appeal for the Third App. Dist. Case Nos. C096384 & C096304 *North Coast Rivers Alliance, et al. v. DWR* *Planning & Conservation League, et al. v. DWR*	• Petitions for writ of mandate alleging CEQA and Delta Reform Act violations filed on January 8 & 10, 2019 • Deemed related to DWR's Contract Extension Validation Action and assigned to Judge Culhane • Administrative Record completed • DWR filed its answers on September 28, 2020 • Metropolitan, Kern County Water Agency and Coachella Valley Water District have intervened and filed answers in the two CEQA cases • Final statement of decision in DWR's favor denying the writs of mandate filed March 9, 2022 • Final judgments entered and served • North Coast Rivers Alliance et al. and PCL et al. filed notices of appeal • Appeals consolidated with the validation action above

Delta Conveyance Project Soil Exploration Cases *Central Delta Water Agency, et al. v. DWR* Sacramento County Superior Ct. (Judge Chang) *Central Delta Water Agency, et al. v. DWR (II)*, Sacramento County Super. Ct. (Judge Acquisto)	• Original case filed August 10, 2020; new case challenging the second addendum to the CEQA document filed Aug. 1, 2022 • Plaintiffs Central Delta Water Agency, South Delta Water Agency and Local Agencies of the North Delta • One cause of action alleging that DWR's adoption of an Initial Study/Mitigated Negative Declaration (IS/MND) for soil explorations needed for the Delta Conveyance Project violates CEQA • March 24, 2021 Second Amended Petition filed to add allegation that DWR's addendum re changes in locations and depths of certain borings violates CEQA • DWR's petition to add the 2020 CEQA case to the *Department of Water Resources Cases*, JCCP 4594, San Joaquin County Superior Court denied • Hearing on the merits held Oct.13, 2022 • Dec. 2, 2022 ruling on the merits granting the petition with respect to two mitigation measures and denying on all other grounds • Dec. 23, 2022 court order directing DWR to address the two mitigation measures within 60 days while declining to order DWR to vacate the IS/MND • March 27, 2023 court entered judgment and issued a writ after ordering and considering supplemental briefing • May 5, 2023 court granted DWR's motion to discharge the writ and dismiss the case • May 18, 2023 Notice of Appeal filed • Hearing on motion for attorneys' fees continued to February 29, 2024
Water Management Tools Contract Amendment *California Water Impact Network et al. v. DWR* Sacramento County Superior Ct. (Judge Aquisto) *North Coast Rivers Alliance, et al. v. DWR* Sacramento County Super. Ct. (Judge Aquisto)	• Filed September 28, 2020 • CWIN and Aqualliance allege one cause of action for violation of CEQA • NCRA et al. allege four causes of action for violations of CEQA, the Delta Reform Act, Public Trust Doctrine and seeking declaratory relief • SWC motion to intervene in both cases granted • Dec. 20, 2022 DWR filed notice of certification of the administrative record and filed answers in both cases

San Diego County Water Authority v. Metropolitan, et al.		
Cases	**Date**	**Status**
2014, 2016	Aug. 28, 2020	SDCWA served first amended (2014) and second amended (2016) petitions/complaints.
	Sept. 28	Metropolitan filed demurrers and motions to strike portions of the amended petitions/complaints.
	Sept. 28-29	Member agencies City of Torrance, Eastern Municipal Water District, Foothill Municipal Water District, Las Virgenes Municipal Water District, Three Valleys Municipal Water District, Municipal Water District of Orange County, West Basin Municipal Water District, and Western Municipal Water District filed joinders to the demurrers and motions to strike.
	Feb. 16, 2021	Court issued order denying Metropolitan's demurrers and motions to strike, allowing SDCWA to retain contested allegations in amended petitions/complaints.
	March 22	Metropolitan filed answers to the amended petitions/complaints and cross-complaints against SDCWA for declaratory relief and reformation, in the 2014, 2016 cases.
	March 22-23	Member agencies City of Torrance, Eastern Municipal Water District, Foothill Municipal Water District, Las Virgenes Municipal Water District, Three Valleys Municipal Water District, Municipal Water District of Orange County, West Basin Municipal Water District, and Western Municipal Water District filed answers to the amended petitions/complaints in the 2014, 2016 cases.
	April 23	SDCWA filed answers to Metropolitan's cross-complaints.
	Sept. 30	Based on the Court of Appeal's Sept. 21 opinion (described above), and the Board's Sept. 28 authorization, Metropolitan paid $35,871,153.70 to SDCWA for 2015-2017 Water Stewardship Rate charges under the Exchange Agreement and statutory interest.
2017	July 23, 2020	Dismissal without prejudice entered.
2018	July 28, 2020	Parties filed a stipulation and application to designate the case complex and related to the 2010-2017 cases, and to assign the case to Judge Massullo's court.
	Nov. 13	Court ordered case complex and assigned to Judge Massullo's court.
	April 21, 2021	SDCWA filed second amended petition/complaint.
	May 25	Metropolitan filed motion to strike portions of the second amended petition/complaint.

Cases	Date	Status
2018 (cont.)	May 25-26	Member agencies City of Torrance, Eastern Municipal Water District, Foothill Municipal Water District, Las Virgenes Municipal Water District, Three Valleys Municipal Water District, Municipal Water District of Orange County, West Basin Municipal Water District, and Western Municipal Water District filed joinders to the motion to strike.
	July 19	Court issued order denying Metropolitan's motion to strike portions of the second amended petition/complaint.
	July 29	Metropolitan filed answer to the second amended petition/complaint and cross-complaint against SDCWA for declaratory relief and reformation.
	July 29	Member agencies City of Torrance, Eastern Municipal Water District, Foothill Municipal Water District, Las Virgenes Municipal Water District, Three Valleys Municipal Water District, Municipal Water District of Orange County, West Basin Municipal Water District, and Western Municipal Water District filed answers to the second amended petition/complaint.
	Aug. 31	SDCWA filed answer to Metropolitan's cross-complaint.
	April 11, 2022	Court entered order of voluntary dismissal of parties' WaterFix claims and cross-claims.
2014, 2016, 2018	June 11, 2021	Deposition of non-party witness.
	Aug. 25	Hearing on Metropolitan's motion for further protective order regarding deposition of non-party witness.
	Aug. 25	Court issued order consolidating the 2014, 2016, and 2018 cases for all purposes, including trial.
	Aug. 30	Court issued order granting Metropolitan's motion for a further protective order regarding deposition of non-party witness.
	Aug. 31	SDCWA filed consolidated answer to Metropolitan's cross-complaints in the 2014, 2016, and 2018 cases.
	Oct. 27	Parties submitted to the court a joint stipulation and proposed order staying discovery through Dec. 8 and resetting pre-trial deadlines.
	Oct. 29	Court issued order staying discovery through Dec. 8 and resetting pre-trial deadlines, while the parties discuss the prospect of settling some or all remaining claims and crossclaims.
	Jan. 12, 2022	Case Management Conference. Court ordered a 35-day case stay to allow the parties to focus on settlement negotiations, with weekly written check-ins with the court; and directed the parties to meet and confer regarding discovery and deadlines.

Cases	Date	Status
2014, 2016, 2018 (cont.)	Feb. 22	Court issued order resetting pre-trial deadlines as proposed by the parties.
	Feb. 22	Metropolitan and SDCWA each filed motions for summary adjudication.
	April 13	Hearing on Metropolitan's and SDCWA's motions for summary adjudication.
	April 18	Parties filed supplemental briefs regarding their respective motions for summary adjudication, as directed by the court.
	April 18	Court issued order resetting pre-trial deadlines as proposed by the parties.
	April 29	Parties filed pre-trial briefs.
	April 29	Metropolitan filed motions in limine.
	May 4	Court issued order granting Metropolitan's motion for summary adjudication on cross-claim for declaratory relief that the conveyance facility owner, Metropolitan, determines fair compensation, including any offsetting benefits; and denying its motion on certain other cross-claims and an affirmative defense.
	May 11	Court issued order granting SDCWA's motion for summary adjudication on cross-claim for declaratory relief in the 2018 case regarding lawfulness of the Water Stewardship Rate's inclusion in the wheeling rate and transportation rates in 2019-2020; certain cross-claims and affirmative defenses on the ground that Metropolitan has a duty to charge no more than fair compensation, which includes reasonable credit for any offsetting benefits, with the court also stating that whether that duty arose and whether Metropolitan breached that duty are issues to be resolved at trial; affirmative defenses that SDCWA's claims are untimely and SDCWA has not satisfied claims presentation requirements; affirmative defense in the 2018 case that SDCWA has not satisfied contract dispute resolution requirements; claim, cross-claims, and affirmative defenses regarding applicability of Proposition 26, finding that Proposition 26 applies to Metropolitan's rates and charges, with the court also stating that whether Metropolitan violated Proposition 26 is a separate issue; and cross-claims and affirmative defenses regarding applicability of Government Code section 54999.7, finding that section 54999.7 applies to Metropolitan's rates. Court denied SDCWA's motion on certain other cross-claims and affirmative defenses.
	May 13	Pre-trial conference; court denied Metropolitan's motions in limine.
	May 16	Court issued order setting post-trial brief deadline and closing arguments.
	May 16-27	Trial occurred but did not conclude.

Cases	Date	Status
2014, 2016, 2018 (cont.)	May 23, June 21	SDCWA filed motions in limine.
	May 26, June 24	Court denied SDCWA's motions in limine.
	June 3, June 24, July 1	Trial continued, concluding on July 1.
	June 24	SDCWA filed motion for partial judgment.
	July 15	Metropolitan filed opposition to motion for partial judgment.
	Aug. 19	Post-trial briefs filed.
	Sept. 14	Court issued order granting in part and denying in part SDCWA's motion for partial judgment (granting motion as to Metropolitan's dispute resolution, waiver, and consent defenses; denying motion as to Metropolitan's reformation cross-claims and mistake of fact and law defenses; and deferring ruling on Metropolitan's cost causation cross-claim).
	Sept. 21	Metropolitan filed response to order granting in part and denying in part SDCWA's motion for partial judgment (requesting deletion of Background section portion relying on pleading allegations).
	Sept. 22	SDCWA filed objection to Metropolitan's response to order granting in part and denying in part SDCWA's motion for partial judgment.
	Sept. 27	Post-trial closing arguments.
	Oct. 20	Court issued order that it will rule on SDCWA's motion for partial judgment as to Metropolitan's cost causation cross-claim simultaneously with the trial statement of decision.
	Dec. 16	The parties' filed proposed trial statements of decision.
	Dec. 21	SDCWA filed the parties' stipulation and proposed order for judgment on Water Stewardship Rate claims for 2015-2020.
	Dec. 27	Court entered order for judgment on Water Stewardship Rate claims for 2015-2020 as proposed by the parties.
	March 14, 2023	Court issued tentative statement of decision (tentatively ruling in Metropolitan's favor on all claims litigated at trial, except for those ruled to be moot based on the rulings in Metropolitan's favor)
	March 14	Court issued amended order granting in part and denying in part SDCWA's motion for partial judgment (ruling that Metropolitan's claims for declaratory relief regarding cost causation are not subject to court review).

	March 29	SDCWA filed objections to tentative statement of decision
	April 3	Metropolitan filed response to amended order granting in part and denying in part SDCWA's motion for partial judgment (requesting deletion of Background section portion relying on pleading allegations).
	April 25	Court issued statement of decision (ruling in Metropolitan's favor on all claims litigated at trial, except for those ruled to be moot based on the rulings in Metropolitan's favor)
All Cases	April 15, 2021	Case Management Conference on 2010-2018 cases. Court set trial in 2014, 2016, and 2018 cases on May 16-27, 2022.
	April 27	SDCWA served notice of deposition of non-party witness.
	May 13-14	Metropolitan filed motions to quash and for protective order regarding deposition of non-party witness.
	June 4	Ruling on motions to quash and for protective order.

Outside Counsel Agreements				
Firm Name	**Matter Name**	**Agreement No.**	**Effective Date**	**Contract Maximum**
Albright, Yee & Schmit, APC	Employment Matter	211923	05/23	$60,000
Andrade Gonzalez LLP	MWD v. DWR, CDFW and CDNR Incidental Take Permit (ITP) CESA/CEQA/Contract Litigation	185894	07/20	$250,000
Aleshire & Wynder	Oil, Mineral and Gas Leasing	174613	08/18	$50,000
Atkinson Andelson Loya Ruud & Romo	Employee Relations	59302	04/04	$1,277,187
	Delta Conveyance Project Bond Validation-CEQA Litigation	185899	09/21	$250,000
	MWD Drone and Airspace Issues	193452	08/20	$50,000
	AFSCME Local 1902 in Grievance No. 1906G020 (CSU Meal Period)	201883	07/12/21	$30,000
	AFSCME Local 1902 v. MWD, PERB Case No. LA-CE-1438-M	201889	09/15/21	$20,000
	MWD MOU Negotiations**	201893	10/05/21	$100,000
Best, Best & Krieger	Bay-Delta Conservation Plan/Delta Conveyance Project (with SWCs)	170697	08/17	$500,000
	Environmental Compliance Issues	185888	05/20	$100,000
	Grant Compliance Issues	211921	05/23	$75,000
	Pure Water Southern California	207966	11/22	$100,000
Blooston, Mordkofsky, Dickens, Duffy & Prendergast, LLP	FCC and Communications Matters	110227	11/10	$100,000
Buchalter, a Professional Corp.	Union Pacific Industry Track Agreement	193464	12/07/20	$50,000

Firm Name	Matter Name	Agreement No.	Effective Date	Contract Maximum
Burke, Williams & Sorensen, LLP	Real Property – General	180192	01/19	$100,000
	Labor and Employment Matters	180207	04/19	$75,000
	General Real Estate Matters	180209	08/19	$200,000
	Rancho Cucamonga Condemnation Actions (Grade Separation Project)	207970	05/22	$100,000
Law Office of Alexis S.M. Chiu*	Bond Counsel	200468	07/21	N/A
Cislo & Thomas LLP	Intellectual Property	170703	08/17	$100,000
Curls Bartling P.C.*	Bond Counsel	200470	07/21	N/A
Duane Morris LLP	SWRCB Curtailment Process	138005	09/14	$615,422
Duncan, Weinberg, Genzer & Pembroke	Power Issues	6255	09/95	$3,175,000
Ellison, Schneider, Harris & Donlan	Colorado River Issues	69374	09/05	$175,000
	Issues re SWRCB	84457	06/07	$200,000
Erin Joyce Law, PC	Employment Matter	216039	11/23	$100,000
Greines, Martin, Stein & Richland LLP	SDCWA v. MWD	207958	10/22	$100,000
	Colorado River Matters	207965	11/22	$100,000
Haden Law Office	Real Property Matters re Agricultural Land	180194	01/19	$50,000
Hanna, Brophy, MacLean, McAleer & Jensen, LLP	Workers' Compensation	211926	06/23	$100,000
Hanson Bridgett LLP	SDCWA v. MWD	124103	03/12	$1,100,000

Firm Name	Matter Name	Agreement No.	Effective Date	Contract Maximum
	Finance Advice	158024	12/16	$100,000
	Deferred Compensation/HR	170706	10/17	$500,000
	Tax Issues	180200	04/19	$50,000
	Alternative Project Delivery (ADP)	207961	10/22	$250,000
	Ad Valorem Property Taxes	216042	11/23	$100,000
Hausman & Sosa, LLP	MOU Hearing Officer Appeal	201892	09/21	$95,000
	MOU Hearing Officer Appeal	207949	07/22	$25,000
Hawkins Delafield & Wood LLP*	Bond Counsel	193469	07/21	N/A
Hemming Morse, LLP	Baker Electric v. MWD	211933	08/23	$100,000
Horvitz & Levy	SDCWA v. MWD	124100	02/12	$1,250,000
	General Appellate Advice	146616	12/15	$200,000 ~~$100,000~~
	Colorado River	203464	04/22	$100,000
Innovative Legal Services, P.C.	Employment Matter	211915	01/19/23	$100,000
Internet Law Center	Cybersecurity and Privacy Advice and Representation	200478	04/13/21	$100,000
	Systems Integrated, LLC v. MWD	201875	05/17/21	$100,000
Amira Jackmon, Attorney at Law*	Bond Counsel	200464	07/21	N/A
Jackson Lewis P.C.	Employment: Department of Labor Office of Contract Compliance	137992	02/14	$45,000
Jones Hall, A Professional Law Corp*	Bond Counsel	200465	07/21	N/A
Kronenberger Rosenfeld, LLP	Systems Integrated, LLC v. MWD	211920	04/23	$250,000
Kutak Rock LLP	Delta Islands Land Management	207959	10/22	$10,000

Firm Name	Matter Name	Agreement No.	Effective Date	Contract Maximum
Liebert Cassidy Whitmore	Labor and Employment	158032	02/17	$229,724
	FLSA Audit	180199	02/19	$50,000
Manatt, Phelps & Phillips	SDCWA v. MWD rate litigation	146627	06/16	$4,400,000
	Raftelis-Subcontractor of Manatt, Agr. #146627: Per 5/2/22 Engagement Letter between Manatt and Raftelis, MWD paid Raftelis Financial Consultants, Inc.	Invoice No. 23949		$56,376.64 for expert services & reimbursable expenses in *SDCWA v. MWD*
Marten Law LLP	PFAS Multi-District Litigation	216034	09/23	$400,000 ~~$100,000~~
Martenson, Hasbrouck & Simon LLP	Employment Matter	211932	08/23	$50,000
Meyers Nave Riback Silver & Wilson	Pure Water Southern California	207967	11/22	$100,000
	PFAS Compliance Issues	207968	11/14/22	$100,000
Miller Barondess, LLP	SDCWA v. MWD	138006	12/14	$600,000
Morgan, Lewis & Bockius	SDCWA v. MWD	110226	07/10	$8,750,000
	Project Labor Agreements	200476	04/21	$100,000
Musick, Peeler & Garrett LLP	Colorado River Aqueduct Electric Cables Repair/Contractor Claims	193461	11/20	$2,500,000
	Arvin-Edison v. Dow Chemical	203452	01/22	$100,000
	Semitropic TCP Litigation	207954	09/22	$75,000
Nixon Peabody LLP*	Bond Counsel [re-opened]	193473	07/21	$100,000
	Special Finance Project	207960	10/22	$50,000
Norton Rose Fulbright US LLP*	Bond Counsel	200466	07/21	N/A

Firm Name	Matter Name	Agreement No.	Effective Date	Contract Maximum
Olson Remcho LLP	Government Law	131968	07/14	$400,000
	Executive Committee/Ad Hoc Committees Advice	207947	08/22	$60,000
	Public Records Act	207950	08/22	$45,000
	Advice/Assistance re Proposition 26/Election Issues	211922	05/23	$100,000
Pearlman, Brown & Wax, L.L.P.	Workers' Compensation	216037	10/23	$100,000
Rains Lucia Stern St. Phalle & Silver, PC	Employment Matter	211919	4/23	$60,000
Renne Public Law Group, LLP	ACE v. MWD (PERB Case No. LA-CE-1574-M)	203466	05/22	$100,000
	ACE v. MWD (PERB Case No. LA-CE-1611-M)	207962	10/22	$50,000
Ryan & Associates	Leasing Issues	43714	06/01	$200,000
	Oswalt v. MWD	211925	05/23	$100,000
Seyfarth Shaw LLP	Claim (Contract #201897)	201897	11/04/21	$350,000
	Claim (Contract #203436)	203436	11/15/21	$350,000
	Claim (Contract #203454)	203454	01/22	$210,000
	Reese v. MWD	207952	11/22	$750,000
	General Labor/Employment Advice	211917	3/23	$100,000
	Civil Rights Department Complaint	211931	07/23	$100,000
	Crawford v. MWD	216035	09/23	$100,000
Sheppard Mullin Richter & Hampton	Rivers v. MWD	207946	07/22	$250,000
	Lorentzen v. MWD	216036	09/23	$100,000
Stradling Yocca Carlson & Rauth*	Bond Counsel	200471	07/21	N/A
Theodora Oringher PC	Construction Contracts - General Conditions Update	185896	07/20	$100,000

Date of Report: January 3, 2024

Firm Name	Matter Name	Agreement No.	Effective Date	Contract Maximum
Thompson Coburn LLP	NERC Energy Reliability Standards	193451	08/20	$300,000
Van Ness Feldman, LLP	General Litigation	170704	07/18	$50,000
	Colorado River MSHCP	180191	01/19	$50,000
	Bay-Delta and State Water Project Environmental Compliance	193457	10/15/20	$50,000
	Colorado River Issues	211924	05/23	$100,000

*Expenditures paid by Bond Proceeds/Finance
**Expenditures paid by another group

Board of Directors

- **General Auditor's Report for December 2023**

Summary

This report highlights significant activities of the Office of the General Auditor for the month ended December 31, 2023.

Audit & Advisory Services

- Thirteen projects are in reporting, including one audit awaiting management response
- Eight projects are in progress, including four audits and four advisories
- Four projects are in planning, including three audits and one advisory

Work priority is being given to carry-forward audits.

No final reports were issued during this period.

Six follow-up audit forms have been submitted to management and are pending completion; one follow-up form has been received from management with follow-up audit work pending.

Other General Auditor Activities

1. **Senior Audit Manager Recruitment**
   Collaboration with Human Resources to fill this position is in progress.

2. **External Quality Assessment**
   The assessment has been completed and we submitted responses to the report's recommendations. A final report will be presented to the Subcommittee on Audits in January 2024.

3. **Colorado River Water Users Association Agreed Upon Procedures**
   We completed an agreed-upon procedures engagement for the period April 1, 2022 through March 31, 2023. A memo reporting the results of the procedures was issued to the CRWUA Assistant Secretary-Treasurer on December 12, 2023.

Date of Report: December 31, 2023

Ethics Office Monthly Report

DECEMBER 2023

EDUCATION

Annual COGEL Conference - The Council on Governmental Ethics Laws is the prominent organization for governmental ethics professionals. Assistant Ethics Officer Peter Von Haam and Program Manager Dannelle-Mimi Phan attended the 2023 annual conference.

Staff also presented an Ethics Office overview for Metropolitan new hires.

COMPLIANCE

Assisted employees with their Annual, Assuming Office, and Leaving Office Form 700 filings. Assistance included filing for multiple positions, troubleshooting the electronic filing system, and notifications of deadlines.

Monitored the status of past due Assuming Office and Leaving Office Form 700 filings. Sent notices to nine current employees and three former employees; obtained compliance from five current employees and one former employee.

ADVICE

Addressed 14 advice matters related to the following: conflicts of interest, financial disclosure, gifts, and other ethics-related topics.

INVESTIGATIONS

Received nine complaints involving the following allegations:

- Discrimination based on gender by a Metropolitan official
- An employee attempted to obtain special treatment from a manager
- Two instances of sexual harassment by a Metropolitan official
- Metropolitan officials violated the Brown Act
- Discrimination and sexual harassment by a Metropolitan official
- A manager misused their authority to benefit a job candidate
- A manager misused their authority to benefit a relative
- An employee misused their position for personal gain

Four matters were referred to the EEO Office.

ETHICS OFFICER FINDINGS

The Ethics Officer determined that two Metropolitan managers improperly disclosed confidential information. The findings were forwarded to Human Resources and management for consideration of any appropriate action. The Ethics Officer also determined that one Metropolitan manager did not improperly disclose confidential information.

ADVICE AND INVESTIGATIVE DATA

Advice Matters	14
Compliance Assistance	43
Complaints Received	9
Investigations Opened	3
Pending Investigations	12

- **Board of Directors**
  Finance, Audit, Insurance, and Real Property Committee

1/9/2024 Board Meeting

6G

Subject

Updated report on the list of certified assessed valuations for the fiscal year 2023/24 and tabulation of assessed valuations, percentage participation, and vote entitlement of member agencies as of January 9, 2024

Executive Summary

On December 28, 2023, San Diego Local Agency Formation Commission (SDLAFCO) finalized the reorganization of Fallbrook Public Utilities District (Fallbrook), consisting of the detachment of Fallbrook from San Diego County Water Authority (SDCWA) to Eastern Municipal Water District (Eastern.) As a result, the reorganization is effective at Metropolitan for all district purposes, including the assessed valuation of each impacted member agency for purposes of member agency participation, voting, and director entitlement. Fallbrook's service area totals $5.01 billion in net assessed valuation, which minimally impacts SDCWA's and Eastern's assessed valuation percentage, but does not impact any director entitlement.

This letter provides an updated report on certified assessed valuations as a result of the Fallbrook reorganization.

Fiscal Impact

None

Applicable Policy

Metropolitan Water District Act Section 52: Additional Directors

Metropolitan Water District Act Section 55: Voting by Board

Metropolitan Water District Act Section 305: Certification of Assessed Valuations; Segregation of Valuations

Related Board Action(s)/Future Action(s)

Not applicable

Details and Background

Background

Member agency participation, vote, and director entitlement are determined at Metropolitan based on certified assessed valuations for each member agency's service area. (MWD Act, §§ 52, 55, 305.) The certified assessed valuations are reported to the Board each August after receipt of the certified information from each county assessor. On August 8, 2023, staff reported the assessed valuation to the Board for fiscal year (FY) 2023/24. However, on December 28, 2023, SDLAFCO finalized the deannexation of Fallbrook from SDCWA and annexation to Eastern's service area. The next day, SDLAFCO also filed the Certificate of Completion with the Secretary of the Metropolitan Board of Directors. As a result of the reorganization, the assessed valuation of Fallbrook's service area is now part of Eastern's service area and must be attributed to Eastern's certified assessed valuation for Metropolitan purposes, including participation, vote, and director entitlement. (MWD Act, § 455.)

Fallbrook's total net assessed valuation is $5.01 billion, which is a small percentage of Metropolitan's total valuation (net of homeowners exemptions) of $3.86 trillion for FY 2023/24 throughout its six-county service area. The transfer results in a 0.13 percent addition to Eastern's assessed valuation and an equivalent reduction from SDCWA's assessed valuation, as shown in **Table 1.** The percentage does not change for any other member agency. The updated percentage participation and vote entitlement by member agencies, provided in **Attachment 1,** is effective as of January 9, 2024, and the net change from FY 2022/23 to the current FY 2023/24 has also been updated, as reflected in **Attachment 2**.

Assessed valuation is also used to determine the number of representatives an agency has on the Metropolitan Board. Based on the percentage of assessed valuation being transferred to Eastern, the number of representatives for each agency remains the same and is also reported in **Attachment 3**.

The updated percentage participation and vote entitlement for the two impacted member agencies are as follows:

Table 1

The Metropolitan Water District of Southern California
Comparison of Vote Entitlement Percentage for Fiscal Years 2023/24 After The Fallbrook PUD Transfer

	As of 8/15/2023 FY 2023/24		As of 1/9/2024 FY 2023/24		Change	
Member Agency	**Vote Entitlement**	**Vote Entitlement Percentage**	**Vote Entitlement**	**Vote Entitlement Percentage**	**Vote Entitlement**	**Vote Entitlement Percentage**
Eastern MWD	11,559	2.99%	12,060	3.12%	501	0.13%
San Diego County Water Authority	67,702	17.53%	67,201	17.40%	(501)	-0.13%

Katano Kasaine 1/5/2024
Katano Kasaine *Date*
Assistant General Manager/
Chief Financial Officer

1/5/2024
Adel Hagekhalil *Date*
General Manager

Attachment 1 – Assessed Valuations, Percentage Participation, and Vote and Director Entitlement of Member Public Agencies as of January 9, 2024

Attachment 2 – Updated Comparison of Net Assessed Valuations for Fiscal Years 2022/23 and 2023/24

Attachment 3 – Updated Comparison of Vote Entitlement Percentage for Fiscal Years 2022/23 and 2023/24

Ref# cfo12698624

The Metropolitan Water District of Southern California
Assessed Valuations, Percentage Participation, and
Vote and Director Entitlement of Member Public Agencies
As of January 9, 2024

Member Agency	*Assessed Valuation Amount Certified	Percent of Total	** Vote Entitlement	*** Director Entitlement
Anaheim	$ 60,384,239,089	1.56%	6,038	1
Beverly Hills	44,925,471,380	1.16%	4,493	1
Burbank	31,747,985,559	0.82%	3,175	1
Calleguas MWD	130,730,622,244	3.39%	13,073	1
Central Basin MWD	193,242,928,112	5.00%	19,324	2
Compton	6,413,398,218	0.17%	641	1
Eastern MWD	120,598,728,795	3.12%	12,060	1
Foothill MWD	24,094,186,106	0.62%	2,409	1
Fullerton	25,613,995,600	0.66%	2,561	1
Glendale	39,846,531,370	1.03%	3,985	1
Inland Empire Utilities Agency	160,301,386,680	4.15%	16,030	1
Las Virgenes MWD	30,903,464,678	0.80%	3,090	1
Long Beach	65,577,549,323	1.70%	6,558	1
Los Angeles	801,720,255,259	20.76%	80,172	5
MWD of Orange County	646,336,513,093	16.74%	64,634	4
Pasadena	38,640,474,384	1.00%	3,864	1
San Diego County Water Authority	672,010,650,192	17.40%	67,201	4
San Fernando	2,596,234,164	0.07%	260	1
San Marino	8,004,717,057	0.21%	800	1
Santa Ana	34,312,996,241	0.89%	3,431	1
Santa Monica	48,607,667,263	1.26%	4,861	1
Three Valleys MWD	86,341,467,819	2.24%	8,634	1
Torrance	35,904,604,824	0.93%	3,590	1
Upper San Gabriel Valley MWD	134,179,397,217	3.47%	13,418	1
West Basin MWD	270,636,770,769	7.01%	27,064	2
Western MWD	147,747,843,154	3.83%	14,775	1
TOTAL ASSESSED VALUATIONS WITHIN METROPOLITAN	$ 3,861,420,078,590	100%	386,141	38

Percentage may not foot due to rounding.

The Metropolitan Water District of Southern California
Comparison of Assessed Valuations Net of HOE for Fiscal Years 2022/23 and 2023/24

Member Agency	FY 2022/23 Net Assessed Valuation	FY 2023/24 Net Assessed Valuation	Percentage Change
Los Angeles County:			
Beverly Hills	$ 42,674,597,044	$ 44,925,471,380	5.3%
Burbank	28,930,674,618	31,747,985,559	9.7%
Glendale	38,135,312,336	39,846,531,370	4.5%
Los Angeles	756,988,951,892	801,720,255,259	5.9%
Pasadena	37,161,819,093	38,640,474,384	4.0%
San Marino	7,698,613,665	8,004,717,057	4.0%
Santa Monica	46,186,316,289	48,607,667,263	5.2%
Long Beach	61,510,103,081	65,577,549,323	6.6%
Torrance	34,159,203,429	35,904,604,824	5.1%
Compton	5,986,309,227	6,413,398,218	7.1%
West Basin MWD	254,528,802,947	270,636,770,769	6.3%
Three Valleys MWD	82,538,322,114	86,341,467,819	4.6%
Foothill MWD	22,900,325,902	24,094,186,106	5.2%
Central Basin MWD	182,159,170,598	193,242,928,112	6.1%
Las Virgenes MWD	29,271,920,993	30,903,464,678	5.6%
Upper San Gabriel Valley MWD	126,877,023,875	134,179,397,217	5.8%
San Fernando	2,381,877,804	2,596,234,164	9.0%
Total Los Angeles County	**1,760,089,344,907**	**1,863,383,103,502**	**5.9%**
Orange County:			
Anaheim	56,269,073,437	60,384,239,089	7.3%
Santa Ana	32,281,865,954	34,312,996,241	6.3%
Fullerton	23,900,520,075	25,613,995,600	7.2%
MWD of Orange County	609,134,298,271	646,336,513,093	6.1%
Total Orange County	**721,585,757,737**	**766,647,744,023**	**6.2%**
Riverside County:			
Eastern MWD	105,024,028,930	120,598,728,795	14.8%
Western MWD	135,413,345,350	147,747,843,154	9.1%
Total Riverside County	**240,437,374,280**	**268,346,571,949**	**11.6%**
San Bernardino County:			
Inland Empire Utilities Agency	**146,634,414,955**	**160,301,386,680**	**9.3%**
San Diego County:			
San Diego County Water Authority	**632,321,979,224**	**672,010,650,192**	**6.3%**
Ventura County:			
Calleguas MWD	**123,683,835,701**	**130,730,622,244**	**5.7%**
Total Within Metropolitan	**3,624,752,706,804**	**3,861,420,078,590**	**6.5%**
Excluded Areas	**82,867,799**	**87,104,636**	**5.1%**
***Total Taxable by Metropolitan**	**$ 3,624,835,574,603**	**$ 3,861,507,183,226**	**6.5%**

The Metropolitan Water District of Southern California
Comparison of Vote Entitlement Percentage for Fiscal Years 2022/23 and 2023/24

	FY 2022/23		FY 2023/24		Change	
Member Agency	**Vote Entitlement**	**Vote Entitlement Percentage**	**Vote Entitlement**	**Vote Entitlement Percentage**	**Vote Entitlement**	**Vote Entitlement Percentage**
Anaheim	5,627	1.55%	6,038	1.56%	411	0.01%
Beverly Hills	4,267	1.18%	4,493	1.16%	226	-0.01%
Burbank	2,893	0.80%	3,175	0.82%	282	0.02%
Calleguas MWD	12,368	3.41%	13,073	3.39%	705	-0.03%
Central Basin MWD	18,216	5.03%	19,324	5.00%	1,108	-0.02%
Compton	599	0.17%	641	0.17%	42	0.00%
Eastern MWD	10,502	2.90%	12,060	3.12%	1,558	0.23%
Foothill MWD	2,290	0.63%	2,409	0.62%	119	-0.01%
Fullerton	2,390	0.66%	2,561	0.66%	171	0.00%
Glendale	3,814	1.05%	3,985	1.03%	171	-0.02%
Inland Empire Utilities Agency	14,663	4.05%	16,030	4.15%	1,367	0.11%
Las Virgenes MWD	2,927	0.81%	3,090	0.80%	163	-0.01%
Long Beach	6,151	1.70%	6,558	1.70%	407	0.00%
Los Angeles	75,699	20.88%	80,172	20.76%	4,473	-0.12%
MWD of Orange County	60,913	16.80%	64,634	16.74%	3,721	-0.07%
Pasadena	3,716	1.03%	3,864	1.00%	148	-0.02%
San Diego County Water Authority	63,232	17.44%	67,201	17.40%	3,969	-0.04%
San Fernando	238	0.07%	260	0.07%	22	0.00%
San Marino	770	0.21%	800	0.21%	30	-0.01%
Santa Ana	3,228	0.89%	3,431	0.89%	203	0.00%
Santa Monica	4,619	1.27%	4,861	1.26%	242	-0.02%
Three Valleys MWD	8,254	2.28%	8,634	2.24%	380	-0.04%
Torrance	3,416	0.94%	3,590	0.93%	174	-0.01%
Upper San Gabriel Valley MWD	12,688	3.50%	13,418	3.47%	730	-0.03%
West Basin MWD	25,453	7.02%	27,064	7.01%	1,611	-0.01%
Western MWD	13,541	3.74%	14,775	3.83%	1,234	0.09%
Total	**362,474**	**100%**	**386,141**	**100%**	**23,667**	**0.00%**

Percentages may not foot due to rounding.

MINUTES

REGULAR MEETING OF THE

BOARD OF DIRECTORS

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

November 14, 2023

53419 The Board of Directors of The Metropolitan Water District of Southern California met in a regular session on Tuesday, November 14, 2023.

Chair Ortega called the meeting to order at 3:05 p.m.

Director Peterson is using AB 2449 emergency circumstances due to a physical emergency that prevents him from attending in person. Director Peterson appeared by audio and video.

Director Seckel moved, seconded by Director McCoy, to approve the usage of AB 2449 emergency circumstances request by Director Peterson passed by a vote of 373,028 ayes; 0 noes; 0 abstain; 3,090 not voting; and 10,023 absent.

Due to the circumstances, the Board will not have an invocation.

53420 The Pledge of Allegiance was given by Director Cynthia Kurtz, City of Pasadena.

Chair Ortega called on Director De Jesus to introduce the guest Member Agency Manager Matt Litchfield, General Manager of Three Valleys Municipal Water District. Director De Jesus and Mr. Litchfield made remarks.

Chair Ortega thanked Mr. Litchfield for returning to join the board to comment on matters important to the Three Valleys Municipal Water District. Chair Ortega acknowledged former Metropolitan Board Member Vasquez-Wilson and Ron Wilson in the audience, Veterans Day, and Thanksgiving holiday. Metropolitan External Affairs social media group will make tributes highlighting Veterans working at Metropolitan and their families. In addition, the month of November is Native American Heritage Month, and the Native American/Alaskan Native Employee Association has organized activities to share their cultures and traditions with colleagues.

53421 Board Secretary Fong-Sakai administered the roll call. Those responding present were: Directors Abdo, Ackerman, Alvarez, Armstrong, Bryant, Camacho, Cordero, De Jesus, Dennstedt, Dick, Erdman, Fellow, Fong-Sakai, Garza, Goldberg, Gray (teleconference posted location), Jung (teleconference posted location), Kurtz, Lefevre (teleconference posted location), Luna, McCoy, McMillan, Miller, Morris, Ortega, Peterson (AB 2449), Phan (teleconference posted location), Pressman (present and teleconference posted location available for the public), Ramos, Seckel, Smith, and Sutley.

Director Peterson announced during the roll that no one was in the room with them 18 years of age or older.

Those not responding were: Directors Chacon, Douglas, Faessel, Kassakhian, Petersen, and Quinn.

Board Secretary Fong-Sakai declared a quorum present.

53422 Chair Ortega welcomed Karla Nemeth, California Department of Water Resources Director to discuss California Department of Water Resources and Governor Newsom Administration priorities for water policy and program initiatives. Ms. Nemeth made remarks regarding the program.

The following Director(s) asked questions or made comments:

Director(s)

1. Sutley
2. Peterson
3. Seckel

Ms. Nemeth responded to the Directors' comments or questions. Chair Ortega and General Manager Hagekhalil thanked Ms. Nemeth for attending the board meeting.

Director Gray left the meeting.

53423 Chair Ortega invited members of the public to address the Board on matters within the Board's jurisdiction (in-person and via teleconference).

	Name	Affiliation	Item
1.	Paul Schoenberger	Mesa Water District	7-1
2.	Darcy Burke	Elsinore Valley Municipal Valley Water District	7-1
3.	Leticia Vasquez Wilson	Resident Central Basin Municipal Water District	Central Basin Municipal Water District Concerns
4..	Ronald Wilson	Resident and Attorney	Central Basin Municipal Water District Concerns
5.	Alan Shanahan	AFSCME Local 1902	Item 8-6
6.	Caty Wagner	Sierra Club California	Central Basin Municipal Water District Concerns and Item 7-1
7.	John Vrsalovich	MAPA	Item 8-6
8.	No name provided	Resident Southern California	Item 7-1
9.	Greg Thomas	Elsinore Valley Municipal Water District	Item 7-1
10.	Rick Shintaku	General Manager South Coast Water District	Item 7-1
11.	Maura Monagan	LA Waterkeeper	Item 7-1
12.	Wesley Chong	LA Resident	Item 7-1
13.	Brett Barbe	Yorba Linder Water District	Heli-Hydrants and Deimer Plant
14.	Harvey Ryan	Elsinore Valley Municipal Water District	Item 7-1
15	Andy Moris	Riverside Resident	Item 7-1

Chair Ortega addressed the following: Other Matters and Reports.

53424 Chair Ortega asked if there were any corrections to the report of events attended by Directors at Metropolitan's expense during the month of October, as previously posted and distributed to the Board. No corrections were made.

53425 Chair Ortega referred to the Chair's monthly report, which was previously posted and distributed to the Board. Chair Ortega asked if there were any questions regarding the report.

The following Director(s) asked questions or made comments:

Director(s)

1. Peterson

Chair Ortega responded to the Director's comments.

53426 General Manager Hagekhalil referred to the General Manager's monthly report, which was previously posted and distributed to the Board. In addition, General Manager Hagekhalil reported an update on the General Manager's Business Plan and referred to a video of the Antelope Valley-East Kern Water Agency celebration.

53427 General Counsel Scully stated she had nothing to add to the written report.

53428 General Auditor Suzuki stated he had nothing to add to the written report.

53429 Ethics Officer Salinas stated he had nothing to add to the written report.

53430 Chair Ortega asked the Directors if there were any comments or discussions on the Approval of the Minutes of the Board of Directors Meeting for October 10, 2023. (Copies have been submitted to each Director any additions, corrections, or omissions) (Agenda Item 7A). No amendments were made.

Chair Ortega announced he sent the Board a memo regarding the Long-Term Planning Task Force membership and their role in the joint task force. No committee assignments for approval.

Chair Ortega called on Directors who are requesting an item be pulled from the Consent Calendar Action Items.

Director Fong-Sakai recused herself from Item 7-1, which involves AECOM Technical Services Inc., a company in which he currently owns stock.

The following Director(s) asked questions or made comments:

Director(s)

1. Alvarez

Chair Ortega called for a vote to approve Consent Calendar Items 7A, 7-1 through 7-13, and 7-15 (**M.I. No. 53430 through 53444**). (Items 7-1 through 7-13, and 7-15 as discussed at Committee as shown below).

53431 Authorize professional services agreements with: (1) AECOM Technical Services Inc. in an amount not to exceed $660,000; and (2) CDM Smith Inc. in an amount not to

exceed $475,000 to perform water desalination studies in Metropolitan's service area, as set forth in Agenda Item 7-1 board letter.

53432 Authorize an agreement with General Networks Corporation in an amount not to exceed $6,609,900 for the implementation of a cloud-based Enterprise Content Management System, as set forth in Agenda Item 7-2 board letter.

53433 Authorize an increase of $3,100,000 in change order authority for the contract to replace the overhead bridge cranes at the five Colorado River Aqueduct pumping plants, as set forth in Agenda Item 7-3 board letter.

53434 a. Award a $1,244,935 contract to HP Communications Inc. to construct a new fiber optic cable line from Parker Dam to the Gene Pumping Plant and b. Authorize an increase of $176,000 to an existing agreement with HDR Engineering Inc. for a new not-to-exceed amount of $451,000 for technical support during construction, as set forth in Agenda Item 7-4 board letter.

53435 Authorize the General Manager to extend the Metropolitan/Quechan Tribe Seasonal Fallowing Pilot Program with the Quechan Tribe of the Fort Yuma Indian Reservation and farmers within Quechan tribal land, to provide incentives for land fallowing for up to $864,000 in 2024 and escalated annually through 2026, as set forth in Agenda Item 7-5 board letter.

53436 Express support for the 2023 California Resilience Challenge and approve a financial sponsorship of $50,000 to continue as a Resilience Leader, as set forth in Agenda Item 7-6 board letter.

53437 Authorize an increase of $200,000/year to a new amount not to exceed $400,000/year for an existing agreement with WaterWise Consulting Inc. for the Large Landscape and Residential Survey Program, as set forth in Agenda Item 7-7 board letter.

53438 Authorize an increase of $350,000/year, to a new amount not to exceed $850,000/year, for an existing agreement with WaterWise Consulting, Inc. to provide inspection services for turf removal, regional device rebates, and water savings incentive program projects for Metropolitan's conservation rebate programs, as set forth in Agenda Item 7-8 board letter.

53439 Authorize the General Manager to authorize an extension of the 13 contracts to June 30, 2024. Authorize the General Manager to increase the contract amounts to $449,000 for contracts 184359-04, 184454-02, 184470-04, and 184751-04, as set forth in Agenda Item 7-9 board letter.

53440 Authorize the attached salary schedules, as set forth in Agenda Item 7-10 board letter.

53441 Approve amendments to the Metropolitan Water District Administrative Code to conform to current law, practices, and regulations, as set forth in Agenda Item 7-11 board letter.

53442 Approve amendments to Metropolitan Water District Administrative Code sections 6431 and 6453 to increase the authority of the General Counsel to obtain legal and related services to an amount not to exceed $250,000 and the General Auditor to obtain professional services to an amount not to exceed $100,000, as set forth in Agenda Item 7-12 board letter.

53443 a. Adopt a resolution providing financial assurance for the Colorado River Aqueduct Master Reclamation Plan and establish the Metropolitan Reclamation Plan Trust Fund; and b. Amend Sections 5200 and 5201 of the Metropolitan Water District Administrative Code to establish the Metropolitan Reclamation Plan Trust Fund, as set forth in Agenda Item 7-13 board letter.

53444 Authorize the General Manager to sponsor legislation to amend the Surface Mining and Reclamation Act to eliminate the sunset date to allow Metropolitan to continue operating under its existing master reclamation plan, as set forth in Agenda Item 7-15 board letter.

Director Pressman moved, seconded by Director Luna that the Board approve the Consent Calendar Items 7A, 7-1 through 7-13, and 7-15 as follows:

The following is a record of the vote:

Record of Vote on Consent Item(s):	7A and 7-1 through 7-13, & 7-15								
Member Agency	Total Votes	Director	Present	Yes	Yes Vote	No	No Vote	Abstain	Abstain Vote
Anaheim	6038	Faessel							
Beverly Hills	4493	Pressman	x	x	4493				
Burbank	3175	Ramos	x	x	3175				
Calleguas Municipal Water District	13073	McMillan	x	x	13073				
Central Basin Municipal Water District	19324	Garza	x	x	19324				
		Chacon							
			Subtotal:		19324				
Compton	641	McCoy	x	x	641				
Eastern Municipal Water District	11559	Armstrong	x	x	11559				
Foothill Municipal Water District	2409	Bryant	x	x	2409				
Fullerton	2561	Jung	x	x	2561				
Glendale	3985	Kassakhian							
Inland Empire Utilities Agency	16030	Camacho	x	x	16030				
Las Virgenes	3090	Peterson	x	x	3090				
Long Beach	6558	Cordero	x	x	6558				
Los Angeles	80172	Sutley	x	x	40086				
		Petersen							
		Quinn							
		Luna	x	x	40086				
		Douglas							
			Subtotal:		80172				
Municipal Water Dist. of Orange County	64634	Ackerman	x	x	16159				
		Seckel	x	x	16159				
		Dick	x	x	16159				
		Erdman	x	x	16159				
			Subtotal:		64634				
Pasadena	3864	Kurtz	x	x	3864				
San Diego County Water Authority	67702	Fong-Sakai	x	x	16926				
		Goldberg	x	x	16926				
		Miller	x	x	16926				
		Smith	x	x	16926				
			Subtotal:		67702				
San Fernando	260	Ortega	x	x	260				
San Marino	800	Morris	x	x	800				
Santa Ana	3431	Phan	x	x	3431				
Santa Monica	4861	Abdo	x	x	4861				
Three Valleys Municipal Water District	8634	De Jesus	x	x	8634				
Torrance	3590	Lefevre	x	x	3590				
Upper San Gabriel Valley Mun. Wat. Dist	13418	Fellow	x	x	13418				
West Basin Municipal Water District	27064	Alvarez	x	x	27064				
		Gray							
			Subtotal:		27064				
Western Municipal Water District	14775	Dennstedt	x	x	14775				
Total	**386141**				**376118**				
Present and not voting									
Absent	**10023**								

The motion to approve the Consent Calendar Items 7A, 7-1 through 7-13, and 7-15 (**M.I. No. 53430 through 53444**)***** passed by a vote of 376,118 ayes; 0 noes; 0 abstain; 0 not voting; and 10,023 absent.

Director Peterson, using AB 2449 emergency circumstances, appeared on video and did not have anyone over the age of 18 present during the vote.

***Note: Individual vote tally for Item 7-1**

Director Fong-Sakai recused herself from Item 7-1, which involves AECOM Technical Services Inc., a company in which he currently owns stock. Director Alverez stated for the record he is voting no. The motion to approve the Consent Calendar Item 7-1 passed by a vote of 349,054 ayes, 27,064 noes, 0 abstain, 0 not voting, and 10,023 absent.

***Note: Individual vote tally for Item 7-3**

Director Phan recused herself on Item 7-3, involves J.F. Shea Construction, Inc. is an entity to Shea Homes, a company which is a client of her employer Rutan & Tucker, LLP. The motion to approve the Consent Calendar Item 7-3 passed by a vote of 372,687 ayes; 0 noes; 0 abstain; 3,431 not voting; and 10,023 absent.

Directors Miller and Smith left the meeting.

Chair Ortega called on the Committee Chairs to give a report on Board Items for action and to hear recusals, abstentions, and disclosures before any discussion on the items.

53445 Award an $18,840,000 contract to Steve P. Rados Inc. to construct a surge protection facility on the Inland Feeder near the Badlands Tunnel. This project is part of water supply reliability improvements in the Rialto Pipeline service area, as set forth in Agenda Item 8-1 board letter.

Chair Ortega called for a vote to approve Board Item 8-1 (**M.I. No. 53445)**

Director Erdman moved, seconded by Director Camacho that the Board approve Board Item 8-1 as follows:

Director Fong-Sakai recused herself from Item 8-1, which involves AECOM Technical Services Inc., a company in which he currently owns stock.

The following is a record of the vote:

Record of Vote on Item:	**8-1**								
Member Agency	**Total Votes**	**Director**	**Present**	**Yes**	**Yes Vote**	**No**	**No Vote**	**Abstain**	**Abstain Vote**
Anaheim	6038	Faessel							
Beverly Hills	4493	Pressman	x	x	4493				
Burbank	3175	Ramos	x	x	3175				
Calleguas Municipal Water District	13073	McMillan	x	x	13073				
Central Basin Municipal Water District	19324	Garza	x	x	19324				
		Chacon							
			Subtotal:		19324				
Compton	641	McCoy	x	x	641				
Eastern Municipal Water District	11559	Armstrong	x	x	11559				
Foothill Municipal Water District	2409	Bryant	x	x	2409				
Fullerton	2561	Jung	x	x	2561				
Glendale	3985	Kassakhian							
Inland Empire Utilities Agency	16030	Camacho	x	x	16030				
Las Virgenes	3090	Peterson	x	x	3090				
Long Beach	6558	Cordero	x	x	6558				
Los Angeles	80172	Sutley	x	x	40086				
		Petersen							
		Quinn							
		Luna	x	x	40086				
		Douglas							
			Subtotal:		80172				
Municipal Water Dist. of Orange County	64634	Ackerman	x	x	16159				
		Seckel	x	x	16159				
		Dick	x	x	16159				
		Erdman	x	x	16159				
			Subtotal:		64634				
Pasadena	3864	Kurtz	x	x	3864				
San Diego County Water Authority	67702	Fong-Sakai	x						
		Goldberg	x	x	67702				
		Miller							
		Smith							
			Subtotal:		67702				
San Fernando	260	Ortega	x	x	260				
San Marino	800	Morris	x	x	800				
Santa Ana	3431	Phan	x	x	3431				
Santa Monica	4861	Abdo	x	x	4861				
Three Valleys Municipal Water District	8634	De Jesus	x	x	8634				
Torrance	3590	Lefevre	x	x	3590				
Upper San Gabriel Valley Mun. Wat. Dis	13418	Fellow	x	x	13418				
West Basin Municipal Water District	27064	Alvarez	x	x	27064				
		Gray							
			Subtotal:		27064				
Western Municipal Water District	14775	Dennstedt	x	x	14775				
Total	**386141**				**376118**				
Present and not voting									
Absent	**10023**								

The motion to approve the Board Item 8-1 (**M.I. No. 53445**) passed by a vote of 376,118 ayes; 0 noes; 0 abstain; 0 not voting; and 10,023 absent.

Director Peterson, using AB 2449 emergency circumstances, appeared on video and did not have anyone over the age of 18 present during the vote.

Director Fong-Sakai left the meeting.

53446 Adopt CEQA determination that the proposed action was previously addressed in the adopted 2003 Mitigated Negative Declaration and award a $16,055,500 contract to Northwest Pipe Company to furnish 12,500 feet of welded steel pipe to rehabilitate a portion of the Lakeview Pipeline, as set forth in Agenda Item 8-2 board letter.

Chair Ortega called for a vote to approve Board Item 8-2 (**M.I. No. 53446)**

Director Erdman moved, seconded by Director Camacho that the Board approve the Board Item 8-2 as follows:

The following is a record of the vote:

Record of Vote on Item:	8-2								
Member Agency	Total Votes	Director	Present	Yes	Yes Vote	No	No Vote	Abstain	Abstain Vote
Anaheim	6038	Faessel							
Beverly Hills	4493	Pressman	x	x	4493				
Burbank	3175	Ramos	x	x	3175				
Calleguas Municipal Water District	13073	McMillan	x	x	13073				
Central Basin Municipal Water District	19324	Garza	x	x	19324				
		Chacon							
			Subtotal:		19324				
Compton	641	McCoy	x	x	641				
Eastern Municipal Water District	11559	Armstrong	x	x	11559				
Foothill Municipal Water District	2409	Bryant	x	x	2409				
Fullerton	2561	Jung	x	x	2561				
Glendale	3985	Kassakhian							
Inland Empire Utilities Agency	16030	Camacho	x	x	16030				
Las Virgenes	3090	Peterson	x	x	3090				
Long Beach	6558	Cordero	x	x	6558				
Los Angeles	80172	Sutley	x	x	40086				
		Petersen							
		Quinn							
		Luna	x	x	40086				
		Douglas							
			Subtotal:		80172				
Municipal Water Dist. of Orange County	64634	Ackerman	x	x	16159				
		Seckel	x	x	16159				
		Dick	x	x	16159				
		Erdman	x	x	16159				
			Subtotal:		64634				
Pasadena	3864	Kurtz	x	x	3864				
San Diego County Water Authority	67702	Fong-Sakai							
		Goldberg	x	x	67702				
		Miller							
		Smith							
			Subtotal:		67702				
San Fernando	260	Ortega	x	x	260				
San Marino	800	Morris	x	x	800				
Santa Ana	3431	Phan	x	x	3431				
Santa Monica	4861	Abdo	x	x	4861				
Three Valleys Municipal Water District	8634	De Jesus	x	x	8634				
Torrance	3590	Lefevre	x	x	3590				
Upper San Gabriel Valley Mun. Wat. Dis	13418	Fellow	x	x	13418				
West Basin Municipal Water District	27064	Alvarez	x	x	27064				
		Gray							
			Subtotal:		27064				
Western Municipal Water District	14775	Dennstedt	x	x	14775				
Total	**386141**				**376118**				
Present and not voting									
Absent	**10023**								

The motion to approve the Board Item 8-2 (**M.I. No. 53446**) passed by a vote of 376,118 ayes; 0 noes; 0 abstain; 0 not voting; and 10,023 absent.

Director Peterson, using AB 2449 emergency circumstances, appeared on video and did not have anyone over the age of 18 present during the vote.

Director Garza left the meeting.

53447 Authorize the General Manager to enter into agreements with Coachella Valley Water District, Imperial Irrigation District, and San Diego County Water Authority to allow water to be added to Lake Mead under Reclamation's LC Conservation Program in 2023, as set forth in Agenda Item 8-3 board letter.

Chair Ortega called for a vote to approve Board Item 8-3 (**M.I. No. 53447)**

Director Sutley moved, seconded by Director Morris that the Board approve the Board Item 8-3 as follows:

Director Goldberg disclosed for the record that she receives per diem and reimbursements from the San Diego County Water Authority.

San Diego Directors Smith, Fong-Sakai, and Miller left the meeting prior to Item 8-3.

The following is a record of the vote:

Record of Vote on Item:	8-3								
Member Agency	Total Votes	Director	Present	Yes	Yes Vote	No	No Vote	Abstain	Abstain Vote
Anaheim	6038	Faessel							
Beverly Hills	4493	Pressman	x	x	4493				
Burbank	3175	Ramos	x	x	3175				
Calleguas Municipal Water District	13073	McMillan	x	x	13073				
Central Basin Municipal Water District	19324	Garza							
		Chacon							
			Subtotal:						
Compton	641	McCoy	x	x	641				
Eastern Municipal Water District	11559	Armstrong	x	x	11559				
Foothill Municipal Water District	2409	Bryant	x	x	2409				
Fullerton	2561	Jung	x	x	2561				
Glendale	3985	Kassakhian							
Inland Empire Utilities Agency	16030	Camacho	x	x	16030				
Las Virgenes	3090	Peterson	x	x	3090				
Long Beach	6558	Cordero	x	x	6558				
Los Angeles	80172	Sutley	x	x	40086				
		Petersen							
		Quinn							
		Luna	x	x	40086				
		Douglas							
			Subtotal:		80172				
Municipal Water Dist. of Orange County	64634	Ackerman	x	x	16159				
		Seckel	x	x	16159				
		Dick	x	x	16159				
		Erdman	x	x	16159				
			Subtotal:		64634				
Pasadena	3864	Kurtz	x	x	3864				
San Diego County Water Authority	67702	Fong-Sakai							
		Goldberg	x	x	67702				
		Miller							
		Smith							
			Subtotal:		67702				
San Fernando	260	Ortega	x	x	260				
San Marino	800	Morris	x	x	800				
Santa Ana	3431	Phan	x	x	3431				
Santa Monica	4861	Abdo	x	x	4861				
Three Valleys Municipal Water District	8634	De Jesus	x	x	8634				
Torrance	3590	Lefevre	x	x	3590				
Upper San Gabriel Valley Mun. Wat. Dist	13418	Fellow	x	x	13418				
West Basin Municipal Water District	27064	Alvarez	x	x	27064				
		Gray							
			Subtotal:		27064				
Western Municipal Water District	14775	Dennstedt	x	x	14775				
Total	**386141**				**356794**				
Present and not voting									
Absent	**29347**								

The motion to approve the Board Item 8-3 (**M.I. No. 53447**) passed by a vote of 356,794 ayes; 0 noes; 0 abstain; 0 not voting; and 29,347 absent.

Director Peterson, using AB2 449 emergency circumstances, appeared on video and did not have anyone over the age of 18 present during the vote.

53448 Substitute Motion to concurwith the 2023 Long-Range Finance Plan Needs Assessment for planning purposes and to bring it back to Board in January (2024) (Agenda Item 8-7).

The following Director(s) asked questions or made comments:

Director(s)

1. Camacho
2. Dick
3. Ackerman
4. De Jesus
5. Bryant
6. Kurtz

Staff responded to the Directors' comments or questions.

Chair Ortega called for a vote to approve Board Item 8-7 (**M.I. No. 53448)**

Director Camacho moved, seconded by Director Luna that the Board approve the Board Item 8-7 as follows:

The following is a record of the vote:

Record of Vote on Item:	8-7								
Member Agency	Total Votes	Director	Present	Yes	Yes Vote	No	No Vote	Abstain	Abstain Vote
Anaheim	6038	Faessel							
Beverly Hills	4493	Pressman	x	x	4493				
Burbank	3175	Ramos	x	x	3175				
Calleguas Municipal Water District	13073	McMillan	x	x	13073				
Central Basin Municipal Water District	19324	Garza							
		Chacon							
			Subtotal:						
Compton	641	McCoy	x	x	641				
Eastern Municipal Water District	11559	Armstrong	x	x	11559				
Foothill Municipal Water District	2409	Bryant	x	x	2409				
Fullerton	2561	Jung							
Glendale	3985	Kassakhian							
Inland Empire Utilities Agency	16030	Camacho	x	x	16030				
Las Virgenes	3090	Peterson	x	x	3090				
Long Beach	6558	Cordero	x	x	6558				
Los Angeles	80172	Sutley	x	x	40086				
		Petersen							
		Quinn							
		Luna	x	x	40086				
		Douglas							
			Subtotal:		80172				
Municipal Water Dist. of Orange County	64634	Ackerman	x	x	16159				
		Seckel	x	x	16159				
		Dick	x	x	16159				
		Erdman	x	x	16159				
			Subtotal:		64634				
Pasadena	3864	Kurtz	x			x	3864		
San Diego County Water Authority	67702	Fong-Sakai							
		Goldberg	x	x	67702				
		Miller							
		Smith							
			Subtotal:		67702				
San Fernando	260	Ortega	x	x	260				
San Marino	800	Morris	x			x	800		
Santa Ana	3431	Phan	x	x	3431				
Santa Monica	4861	Abdo	x	x	4861				
Three Valleys Municipal Water District	8634	De Jesus	x			x	8634		
Torrance	3590	Lefevre	x	x	3590				
Upper San Gabriel Valley Mun. Wat. Dist.	13418	Fellow	x	x	13418				
West Basin Municipal Water District	27064	Alvarez	x	x	27064				
		Gray							
			Subtotal:		27064				
Western Municipal Water District	14775	Dennstedt	x	x	14775				
Total	**386141**				**340935**		**13298**		
Present and not voting									
Absent	**31908**								

The substitute motion to approve the Board Item 8-7 (**M.I. No. 53448**) passed by a vote of 340,935 ayes; 13,298 noes; 0 abstain; 0 not voting; and 31,908 absent.

Director Peterson, using AB 2449 emergency circumstances, appeared on video and did not have anyone over the age of 18 present during the vote.

Director De Jesus left the meeting.

53449 Authorize an increase in maximum amount payable under contract for legal services with Internet Law Center, Ltd. in the amount of $150,000 for a total amount not to exceed $250,000; and authorize an increase in maximum amount payable under contract for legal services with Kronenberger Rosenfeld, LLP in the amount of $100,000 for a total amount not to exceed $250,000, as set forth in Agenda Item 8-5 board letter.

Chair Ortega called for a vote to approve Board Item 8-5 (**M.I. No. 53449)**

Director Luna moved, seconded by Director Morris that the Board approve the Board Item 8-5 as follows:

The following is a record of the vote:

Record of Vote on Item:	8-5								
Member Agency	Total Votes	Director	Present	Yes	Yes Vote	No	No Vote	Abstain	Abstain Vote
Anaheim	6038	Faessel							
Beverly Hills	4493	Pressman	x	x	4493				
Burbank	3175	Ramos	x	x	3175				
Calleguas Municipal Water District	13073	McMillan	x	x	13073				
Central Basin Municipal Water District	19324	Garza							
		Chacon							
			Subtotal:						
Compton	641	McCoy	x	x	641				
Eastern Municipal Water District	11559	Armstrong	x	x	11559				
Foothill Municipal Water District	2409	Bryant	x	x	2409				
Fullerton	2561	Jung							
Glendale	3985	Kassakhian							
Inland Empire Utilities Agency	16030	Camacho	x	x	16030				
Las Virgenes	3090	Peterson	x	x	3090				
Long Beach	6558	Cordero	x	x	6558				
Los Angeles	80172	Sutley	x	x	40086				
		Petersen							
		Quinn							
		Luna	x	x	40086				
		Douglas							
			Subtotal:		80172				
Municipal Water Dist. of Orange County	64634	Ackerman	x	x	16159				
		Seckel	x	x	16159				
		Dick	x	x	16159				
		Erdman	x	x	16159				
			Subtotal:		64634				
Pasadena	3864	Kurtz	x	x	3864				
San Diego County Water Authority	67702	Fong-Sakai							
		Goldberg	x	x	67702				
		Miller							
		Smith							
			Subtotal:		67702				
San Fernando	260	Ortega	x	x	260				
San Marino	800	Morris	x	x	800				
Santa Ana	3431	Phan	x	x	3431				
Santa Monica	4861	Abdo	x	x	4861				
Three Valleys Municipal Water District	8634	De Jesus							
Torrance	3590	Lefevre	x	x	3590				
Upper San Gabriel Valley Mun. Wat. Dis	13418	Fellow	x	x	13418				
West Basin Municipal Water District	27064	Alvarez	x	x	27064				
		Gray							
			Subtotal:		27064				
Western Municipal Water District	14775	Dennstedt	x	x	14775				
Total	**386141**				**345599**				
Present and not voting									
Absent	**40542**								

The motion to approve the Board Item 8-5 (**M.I. No. 53449**) passed by a vote of 345,599 ayes; 0 noes; 0 abstain; 0 not voting; and 40,542 absent.

Director Peterson, using AB 2449 emergency circumstances, appeared on video and did not have anyone over the age of 18 present during the vote.

Directors Abdo and Armstrong left the meeting.

53450 Agenda Item 8-4, receive report on litigation in In re: Aqueous Film-Forming Foams Products Liability Litigation, Master Docket No.: 2:18-mn-2873-RMG, consider options, and provide direction on action in response to settlements in: (1) City of Camden, et al. v. 3M Company, Civil Action No.: 2:23-cv-03147-RMG; and (2) City of Camden, et al. v. E.I. DuPont De Nemours and Company (n/k/a EIDP, Inc.) et al., Civil Action No.: 2:23-cv-03230-RMG;was heard in closed session pursuant to Government Code Section 54956.9(d)(1).

53451 Agenda Item 8-6, an update on labor negotiations and to approve entering into a two-year extension of 2022-2024 Memorandum of Understanding between The Metropolitan Water District of Southern California and The American Federation of State, County and Municipal Employees, Association of The Metropolitan Water District of Southern California/AFSCME Local 1902 was heard in closed session pursuant to Government Code Section 54957.6.

Chair Ortega read the Non-Interest Disclosure Notice for Item 8-6 (attached to the minutes for the record)

Director Erdman recused himself on Item 8-4, as it Raytheon and 3M, companies in which he currently owns stock.

Director Dick recused himself on Item 8-4, as it involves Bayer, 3M, and Corteva a company in which he currently owns stock.

Director Ortega recused himself on Item 8-4, as it involves Honeywell, a company that is a source of income to him within the past 12 months.

Director Phan recused herself on Item 8-4, as it involves clients that are involved in litigations of her employer Rutan & Tucker, LLP.

Vice Chair Camacho chaired the meeting in Chair Ortega's absence.

Vice Chair Camacho called the meeting into closed session to discuss Agenda Items 8-4 and 8-6. Chair Ortega, Directors Erdman, Dick, and Phan left the meeting during the closed session discussion and vote on Item 8-4.

Directors Luna and McMillan left the meeting.

The Board returned to open session at 5:58 p.m.; in closed session, the Board discussed and conferred with legal counsel regarding Item 8-4. The Board voted to authorize the General Counsel to opt of the DuPont and 3M proposed settlements (**M.I. No. 53450**).

Chair Ortega, Directors Erdman, and Dick entered the meeting.

Chair Ortega called for a vote to approve Board Item 8-6 (**M.I. No. 53451)**.

Director Morris moved, seconded by Director Camacho that the Board authorize the General Manager to exercise discretion under Administrative Code Section 610(k) to enter into a reopener Memorandum of Understanding with AFSCME Local 1902 as follows:

Chair Ortega announced that the posted Board Letter had an error on the dollar amount for the commercial driver's license incentive, which was to be increased by $100 and not $50, to a total of $200 per month.

The following is a record of the vote:

Record of Vote on Item:	**8-6**								
Member Agency	**Total Votes**	**Director**	**Present**	**Yes**	**Yes Vote**	**No**	**No Vote**	**Abstain**	**Abstain Vote**
Anaheim	6038	Faessel							
Beverly Hills	4493	Pressman	x	x	4493				
Burbank	3175	Ramos	x	x	3175				
Calleguas Municipal Water District	13073	McMillan							
Central Basin Municipal Water District	19324	Garza							
		Chacon							
			Subtotal:						
Compton	641	McCoy	x	x	641				
Eastern Municipal Water District	11559	Armstrong							
Foothill Municipal Water District	2409	Bryant	x	x	2409				
Fullerton	2561	Jung							
Glendale	3985	Kassakhian							
Inland Empire Utilities Agency	16030	Camacho	x	x	16030				
Las Virgenes	3090	Peterson	x	x	3090				
Long Beach	6558	Cordero	x	x	6558				
Los Angeles	80172	Sutley	x	x	80172				
		Petersen							
		Quinn							
		Luna							
		Douglas							
			Subtotal:		80172				
Municipal Water Dist. of Orange County	64634	Ackerman	x	x	16159				
		Seckel	x	x	16159				
		Dick	x	x	16159				
		Erdman	x	x	16159				
			Subtotal:		64634				
Pasadena	3864	Kurtz	x	x	3864				
San Diego County Water Authority	67702	Fong-Sakai							
		Goldberg	x	x	67702				
		Miller							
		Smith							
			Subtotal:		67702				
San Fernando	260	Ortega	x	x	260				
San Marino	800	Morris	x	x	800				
Santa Ana	3431	Phan							
Santa Monica	4861	Abdo							
Three Valleys Municipal Water District	8634	De Jesus							
Torrance	3590	Lefevre	x	x	3590				
Upper San Gabriel Valley Mun. Wat. Dis	13418	Fellow	x	x	13418				
West Basin Municipal Water District	27064	Alvarez	x	x	27064				
		Gray							
			Subtotal:		27064				
Western Municipal Water District	14775	Dennstedt	x	x	14775				
Total	**386141**				**312675**				
Present and not voting									
Absent	**73466**								

The motion to approve the Board Item 8-6 (**M.I. No. 53451**) passed by a vote of 312,675 ayes; 0 noes; 0 abstain; 0 not voting; and 73,466 absent.

Director Peterson, using AB 2449 emergency circumstances, appeared on video and did not have anyone over the age of 18 present during the vote.

53452 Chair Ortega asked if there were questions or need for discussion for Board Information Item 9-1 or 9-2. No requests were made.

53453 Chair Ortega asked if there were any Other Matters Items. There were none.

53454 Chair Ortega asked if there were any Follow-Up Items. There were none.

53455 Chair Ortega asked if there were any Future Agenda Items. There were none.

53456 There being no objection, at 6:04 p.m., Chair Ortega adjourned the meeting.

LOIS FONG-SAKAI
SECRETARY OF THE BOARD

ADÁN ORTEGA
CHAIR OF THE BOARD

MINUTES

SPECIAL MEETING OF THE

BOARD OF DIRECTORS

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

December 5, 2023

53457 The Board of Directors of The Metropolitan Water District of Southern California met in a special session on Tuesday, December 05, 2023.

Board Vice Chair Sutley called the hybrid in-person and teleconference meeting to order at 8:34 a.m.

53458 The Pledge of Allegiance was given by Director Larry D. Dick, Municipal Water District of Orange County.

53459 Board Vice Chair Sutley called on Chair Ortega from the Metropolitan Gene Pumping Plant remote location to introduce and welcome Chairwoman Amelia Flores, Colorado River Indian Tribal Council.

Chairwoman Flores provided a blessing over the meeting and made remarks on the partnership between the Tribal Council and Metropolitan.

Director Peterson provided a blessing over the meeting.

53460 Board Secretary Fong-Sakai administered the roll call. Those responding present were: Directors Abdo (teleconference posted location), Alvarez (teleconference posted location), Armstrong (teleconference posted location), Bryant, Camacho (teleconference posted location), Chacon, Cordero (teleconference posted location), De Jesus (teleconference posted location), Dick, Douglas (teleconference posted location), Erdman (teleconference posted location), Faessel (teleconference posted location), Fellow (teleconference posted location), Fong-Sakai, Garza (teleconference posted location), Goldberg, Jung (teleconference posted location), Kurtz (teleconference posted location), Lefevre (teleconference posted location), McCoy (teleconference posted location), Miller (teleconference posted location), Morris (teleconference posted location), Ortega (teleconference posted location), , Peterson (teleconference posted location), Phan (teleconference posted location), Pressman (teleconference posted location), Ramos (teleconference posted location), Seckel, , and Sutley.

Those not responding were: Directors Ackerman, Luna, Petersen, and Smith.

Directors entered the meeting after the roll call: Directors Dennstedt, Gray, Kassakhian, McMillan, and Quinn.

Board Secretary Fong-Sakai declared a quorum present.

Directors McMillan and Kassakhian entered the meeting.

53461 Board Vice Chair Sutley invited members of the public to address the Board limited to the items listed on the agenda (in-person and teleconference).

	Name	Affiliation	Item
1.	Gonzalo Pantoja	AFSCME Local 1902	10-1
2.	Erin Monasmith	Metropolitan Employee	10-1
3.	Ellen Mackey	Metropolitan Employee	10-1

Directors Luna, Garza, Dennstedt, and Quinn entered the meeting.

53462 Board Vice Chair Sutley asked if there were any corrections to the report of events attended by Directors at Metropolitan's expense during the month of November, as previously posted and distributed to the Board. No amendments were made.

53463 Board Vice Chair Sutley referred to the Chair’s monthly report, which was previously posted and distributed to the Board. Board Vice Chair Sutley asked if there were any questions regarding the report. None were made.

53464 General Manager Hagekhalil summary of activities monthly report, which was previously posted and distributed to the Board. In addition, General Manager Hagekhalil reported on the following:

- Historical meeting at Gene Pumping Plant and acknowledged the essential employees that are a significant part of Metropolitan.
- Acknowledged the public speaker's workplace concerns and stated that management is committed to improving the conditions in housing and ensuring workplace retaliation will not be tolerated along with fair and equitable workplace conditions.
- Update on State Water Project allocation.
- Update on Delta Project.
- Update on Task Force evaluation criteria.
- Update on the upcoming State Water Resource Control Board hearing.

53465 General Counsel Scully's monthly report was previously posted and distributed to the Board. In addition, General Counsel Scully reported that Metropolitan has opted out of the Per- and polyfluoroalkyl substances (PFAS) settlement proposal as directed by the Board in November.

53466 General Auditor Suzuki stated he had nothing to add to the written report.

53467 Ethics Officer Salinas monthly report, which was previously posted and distributed to the Board. In addition, Ethics Officer Salinas reported that in 2024, the Ethics Office will provide live ethics training at the Gene Pumping Plant.

53467 Approval of Committee Assignments (Agenda Item 7A). No assignments were made. Chair Ortega announced he is recommending committee assignments in January. In addition, the Subcommittee on Long-Term Regional Planning Processes and Business Modeling (CAMP4W Task Force) meetings are open to all board members and the public.

53468 Board Vice Chair Sutley called on Directors who are requesting an item be pulled from the Consent Calendar Action Items.

Chair Ortega recused himself on Item 7-4, as it involves Honeywell, a company that is a source of income to him within the past 12 months.

Director Erdman recused himself on Item 7-4, as it involves Raytheon and 3M, companies in which he currently owns stock.

Director Miller recused himself on Item 7-4, as it involves 3M, a company in which he currently owns stock.

Director Dick recused himself on Item 7-4, as it involves Bayer, 3M, and Corteva Companies in which he currently owns stock.

Director Phan recused herself on Item 7-4, as it involves clients that are involved in litigations of her employer Rutan & Tucker, LLP.

53469 Adopt CEQA determination that the proposed actions related to the fallowing programs were previously addressed in various CEQA documents and related actions, and authorize the General Manager to enter into agreements for Reclamation to fund the generation of up to 408,000 AF of conserved Colorado River system water through 2026 and to enter into agreements with other Colorado River contractors to forbear rights to water generated in California under Reclamation's Lower Colorado River Basin System Conservation and Efficiency Program, as set forth in Agenda Item 7-1 board letter.

53470 Award a $250,974 contract to Access General Contracting, Inc. for improvements of the courtyard area located at the Metropolitan Headquarters Building, as set forth in Agenda Item 7-2 board letter.

53471 Award a $698,000 procurement contract to B&K Valves & Equipment Inc. for five globe valves, as set forth in Agenda Item 7-3 board letter.

Board Vice Chair Sutley asked if anyone would like to discuss Agenda Item 7-4 in closed session. No requests were made.

53472 Authorize an increase in maximum amount payable under contract for legal services with Marten Law LLP in the amount of $150,000 for a total amount not to exceed $400,000, as set forth in Agenda Item 7-4 board letter.
Director Morris moved, seconded by Director Peterson that the Board approve the Consent Calendar Items 7-1 through 7-4 as follows:

Director Quinn left the meeting.

The following is a record of the vote:

Record of Vote on Consent Item(s):	Items: 7-1 through 7-4								
Member Agency	**Total Votes**	**Director**	**Present**	**Yes**	**Yes Vote**	**No**	**No Vote**	**Abstain**	**Abstain Vote**
Anaheim	6038	Faessel	x	x	6038				
Beverly Hills	4493	Pressman	x	x	4493				
Burbank	3175	Ramos	x	x	3175				
Calleguas Municipal Water District	13073	McMillan	x	x	13073				
Central Basin Municipal Water District	19324	Garza	x	x	9662				
		Chacon	x	x	9662				
			Subtotal:		19324				
Compton	641	McCoy	x	x	641				
Eastern Municipal Water District	11559	Armstrong	x	x	11559				
Foothill Municipal Water District	2409	Bryant	x	x	2409				
Fullerton	2561	Jung	x	x	2561				
Glendale	3985	Kassakhian	x	x	3985				
Inland Empire Utilities Agency	16030	Camacho	x	x	16030				
Las Virgenes	3090	Peterson	x	x	3090				
Long Beach	6558	Cordero	x	x	6558				
Los Angeles	80172	Sutley	x	x	40086				
		Petersen							
		Quinn							
		Luna							
		Douglas	x	x	40086				
			Subtotal:		80172				
Municipal Water Dist. of Orange County	64634	Ackerman							
		Seckel	x	x	21545				
		Dick	x	x	21545				
		Erdman	x	x	21545				
			Subtotal:		64634				
Pasadena	3864	Kurtz	x	x	3864				
San Diego County Water Authority	67702	Fong-Sakai	x	x	22567				
		Goldberg	x	x	22567				
		Miller	x	x	22567				
		Smith							
			Subtotal:		67702				
San Fernando	260	Ortega	x	x	260				
San Marino	800	Morris	x	x	800				
Santa Ana	3431	Phan	x	x	3431				
Santa Monica	4861	Abdo	x	x	4861				
Three Valleys Municipal Water District	8634	De Jesus	x	x	8634				
Torrance	3590	Lefevre	x	x	3590				
Upper San Gabriel Valley Mun. Wat. Dist.	13418	Fellow	x	x	13418				
West Basin Municipal Water District	27064	Alvarez	x	x	27064				
		Gray							
			Subtotal:		27064				
Western Municipal Water District	14775	Dennstedt	x	x	14775				
Total	**386141**				**386141**				
Present and not voting									
Absent	**0**								

The motion to approve the Consent Calendar Items 7-1 through 7-4* (**M.I. No. 53469 through 53472**)* passed by a vote of 386,141 ayes; 0 noes; 0 abstain; 0 not voting; and 0 absent.

Note* individual vote tally for Item 7-4:
Chair Ortega, Erdman, Miller, Dick, and Phan recused themselves for Item 7-4.

The motion to approve the Consent Calendar Item 7-4 (**M.I. No. 53472**) passed by a vote of 382,450 ayes; 0 noes; 0 abstain; 3,691 not voting; and 0 absent.

53473 District Housing & Property Improvement Program Update, Agenda Item 10-1.

Board Vice Chair Sutley called on Shane Chapman, Assistant General Manager, to introduce Agenda Item 10-1.

The following Directors asked questions or made comments:

	Director(s)
1.	Camacho
2.	Ortega
3.	Miller
4.	Peterson
5.	Dennstedt
6.	Faessel
7.	Garza
8.	Fellow
9.	Kurtz
10.	Cordero
11.	Fong-Sakai

Staff responded to the Directors' comments or questions.

Board Vice Chair Sutley left the meeting.

Board Vice Chair Goldberg chaired the meeting in Board Vice Chair Sutley's absence.

Directors Gray and Quinn entered the meeting.

Board Vice Chair Golberg called on William Hasencamp, Manager of Colorado River Resources, to introduce Agenda Item 10-2.

53474 Discussion regarding the U.S. Bureau of Reclamation's development of post-2026 Colorado River reservoir operations guidelines and strategies for Lake Powell and Lake Mead, was heard in open and closed session. Closed session pursuant to Gov. Code Section 54956.9(d)(2) (Agenda Item 10-2).

The Board Office redisplayed the Consent Calendar Vote to reflect Director Abdo's vote correctly for the record.

Director Phan left the meeting.

Board Vice Chair Goldberg called the meeting into closed session at 11:20 a.m. to discuss a portion of Agenda Item 10-2.

Board Vice Chair Sutley entered the meeting.

Director Gray left the meeting.

The Board returned to open session at 12:42 p.m. In closed session, the Board discussed and conferred with legal counsel regarding Item 10-2. No action was taken on Item 10-2.

Director Kassakhian left the meeting.

53475 Board Vice Chair Sutley asked if there were any Follow-up Items. There were none.

53476 Board Vice Chair Sutley asked if there were any Future Agenda Items.

Director Peterson requested that an assessment survey that was conducted in the past be sent to all Metropolitan employees.

Chair Ortega thanked the General Manager and all the Metropolitan staff for the efforts it took to host the Special Board Meeting at Gene Pumping Plant. He also thanked the Directors who attended the meeting remotely at Gene Pumping Plant.

Chair Ortega offered condolences for the loss of Orange County Water District Director Kelly Rowe and Chair Emeritus Gray for the loss of her significant other, the late Mr. Leonard Tibbs. Chair Ortega asked that the meeting be adjourned in his honor on behalf of the Board.

53477 There being no objection, at 12:45 p.m., Board Vice Chair Sutley adjourned the meeting in honor of Mr. Leonard Tibbs.

LOIS FONG-SAKAI
SECRETARY OF THE BOARD

NANCY SUTLEY
VICE CHAIR OF THE BOARD

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

- **Board of Directors**
  Engineering, Operations, and Technology Committee

1/9/2024 Board Meeting

7-1

Subject

Authorize an agreement with the Center for Smart Infrastructure in an amount not to exceed $2 million to fund the organization's startup costs and focused water innovation research; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

Metropolitan staff have participated in startup planning for the Center for Smart Infrastructure (CSI) at the University of California at Berkeley since its inception in 2020. The CSI mission focuses on developing and testing emerging technologies in the water industry. While innovative water infrastructure research is currently underway, CSI requires startup funding primarily to make capital improvements to the facility, improvements which will enhance the capabilities of the center. Several other water sector public agencies, including the Los Angeles Department of Water and Power and East Bay Municipal Utility District (EBMUD), are also funding these startup activities. Metropolitan is not currently providing direct funding to the CSI beyond initial startup planning support.

This action authorizes an agreement with CSI to provide $1 million to support the startup of the facility and an additional $1 million to fund Metropolitan-focused research projects to be conducted at CSI over the next four years. This funding earns Metropolitan "Founding Partner" status, which allows staff to work directly with CSI to focus on research in areas of particular interest to Metropolitan.

Proposed Action(s)/Recommendation(s) and Options

Staff Recommendation: Option #1

Option #1

Authorize an agreement with the Center for Smart Infrastructure in an amount not to exceed $2 million for startup costs and focused research.

Fiscal Impact: $1 million in operating funds plus up to $1 million in budgeted operating funds or capital funds under projects included in the Capital Investment Plan. $250,000 in O&M funds will be incurred this fiscal year. The remaining funds will be accounted for in future biennial budgets.

Business Analysis: This option allows Metropolitan to help develop CSI as a sustainable water infrastructure research resource and allows Metropolitan and member agencies to use CSI as an opportunity for infrastructure innovation and water-related research.

Option #2

Authorize an agreement with the Center for Smart Infrastructure in an amount not to exceed $1 million for focused research only.

Fiscal Impact: Up to $1 million in budgeted operating funds or capital funds under projects included in the CIP. These funds will be expended and accounted for in future biennial budgets.

Business Analysis: Allows Metropolitan and member agencies to use CSI as an opportunity for infrastructure innovation and water-related research, but will not provide enhanced protection against the risk of CSI becoming unsustainable over the long term.

Option #3

Do not proceed with funding CSI at this time.

Fiscal Impact: None

Business Analysis: Under this option, Metropolitan would not have the ability to work with CSI on innovation initiatives or research opportunities, either foregoing areas of interest or finding other research opportunities in support of the General Manager's business plan goal of applying innovation and technology across project lifecycles.

Alternatives Considered

Staff considered an alternative to fund research by task only and not provide $1 million in startup funding. CSI's relationships with some agencies follow this funding model. However, this option may limit the type of tests that can be performed by CSI due to limited research infrastructure, and delay the development and delivery of higher-quality products. The selected alternative provides startup funding that will be used to make enhancements at the CSI test facility. This alternative affords Metropolitan the opportunity to invest in a facility that is able to test a wide variety of equipment, provides focused engineering research, and exposes students to the water industry.

Applicable Policy

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Related Board Action(s)/Future Action(s)

Informational item presented to the Engineering, Operations, and Technology Committee on August 14, 2023

Summary of Outreach Completed

Informational item presented to member agency engineering managers on June 1, 2023

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt from CEQA because the action consists of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of existing or former use and no possibility of significantly impacting the physical environment. In addition, the proposed action consists of basic data collection, research, experimental management, and resource evaluation activities that do not result in a serious or major disturbance to an environmental resource. (State CEQA Guidelines Sections 15301 and 15304).

CEQA determination for Option #2:

The proposed action is exempt from CEQA because the action consists of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of existing or former use and no possibility of significantly impacting the physical environment. In addition, the proposed action consists of basic data collection, research, experimental management, and resource evaluation activities that do not result in a serious or major disturbance to an environmental resource. (State CEQA Guidelines Sections 15301 and 15304).

CEQA determination for Option #3:

None required

Details and Background

Background

Metropolitan has a long history of participating in and supporting research and innovation in the water industry. From the development of new pump designs for the Colorado River Aqueduct (CRA) at the California Institute of Technology in the 1930s to inventing new pressure control valves at the Yorba Test Facility in the 1970s, Metropolitan continues to be a leader in the development of innovative water infrastructure technology.

In recent years, Metropolitan staff have cooperated with other agencies and academia to test the use of earthquake-resistant ductile iron pipe, flexible pipes that move with the ground during earthquakes, or in landslide areas. This innovative pipeline technology was recently installed on the Casa Loma Siphon and is the largest application of this pipe in the United States. Much of the seismic pipeline research for the Casa Loma project was done at Cornell University in New York, where they developed specialized test equipment to support this research. That laboratory was recently closed due in part to staff retirements.

Rather than dispose of that equipment, scientists, engineers, and faculty at the University of California at Berkeley moved these apparatuses to an empty warehouse at a campus facility. The collective gathering of this research equipment in Berkeley became the inception of the Center for Smart Infrastructure (CSI), a partnership between infrastructure owners, academia, industry, and regulators. The main focus of the center is to address the water industry's most pressing challenges, such as aging infrastructure, climate change, water supply, natural resources, and emergency and community preparedness.

The Center for Smart Infrastructure – Startup and Research Funding

CSI is unique in its capabilities. Its charter is to use a holistic approach to develop resilient systems through state-of-the-art laboratory and field-testing equipment, smart sensors and robotics, big data and machine learning, and multi-scale computer modeling and simulation tools. CSI has already established itself as the only pipe-testing facility on the West Coast and one of only two such facilities of this scale in the United States. CSI represents a rare opportunity to test innovative technologies and perform research on infrastructure problems.

CSI receives no funding from the University of California system and relies entirely upon funding from outside entities to operate. EBMUD provided CSI $1.5 million in startup funding at its inception. Los Angeles Department of Water and Power intends to provide CSI $1.5 million in startup funding. San Francisco Public Utilities Commission is considering providing significant funding for the same purpose. Other large organizations that have funded research at CSI include the State of California Energy Commission, the United States Army Corps of Engineers, the United States Department of Transportation, Caltrans, and the United States Department of Energy.

Since its inception in 2020, Metropolitan has engaged with other water agencies to help guide the direction of CSI since much of CSI's work focuses on water systems. The facility at UC Berkeley has performed tests and research in the below-listed areas. The results of these examples could prove helpful to Metropolitan and its member agencies:

- *Distributed sensors and networks using satellites, fiber optics, and wireless sensor networks - providing sensors everywhere*. This work could result in systems to continuously monitor the condition of Metropolitan's and its member agencies' pipelines and possibly link hydraulic models between Metropolitan and member agencies.
- *In-field autonomy using drones and robotics – for inspection, maintenance, and security activities*. This research could aid Metropolitan in continuous dam levee condition monitoring and autonomous security patrols.
- *High-performance cloud computational simulations using Big Data.* This area could potentially help Metropolitan by creating climate models specific to California's water supply or by modeling service area-wide post-seismic event damage assessment.

Planning is in place to perform Metropolitan-focused studies, including testing how Metropolitan's standard prestressed concrete cylinder pipe steel slip-lining design performs under seismic strain; and also modeling and

testing how the CRA's cut-and-cover unreinforced concrete "horseshoe" configuration performs under heavy above-ground loading. Additionally, Metropolitan staff are currently engaged with the Water Research Foundation to identify opportunities to perform joint studies at the CSI facility.

In cooperation with EBMUD, CSI has created a new class at UC Berkeley titled "CE 112 – Water and Wastewater Operations and Design". This class teaches water supply, water system design, and infrastructure resilience and sustainability from the perspective of a government water agency to create a pipeline of future workers in the water industry. There may be future opportunities for Metropolitan to participate in or expand upon this class and tap into this engineering resource.

In June 2023, CSI presented its vision to representatives from member agencies at the Member Agency Engineering Manager Forum held at Inland Empire Utilities Agency's headquarters. The response from member agency participants was positive, and staff intends to share both opportunities to participate in innovation activities and results from relevant research with Metropolitan member agencies.

At the September 2023 Engineering, Operations, and Technology Committee meeting, staff solicited feedback from directors on the CSI investment opportunity. Proceeding with an agreement with CSI at this time is based on the positive support for the initiative expressed by the directors at that meeting.

Innovation and Research Services (Center for Smart Infrastructure) – New Agreement

CSI is recommended to perform research and testing services in support of Metropolitan's innovation program and Capital Investment Plan. Startup funding for CSI will primarily be used to make capital improvements to the center's facilities in Berkeley and include procurement and installation of a new overhead crane, pipe bending equipment, a reinforced floor capable of supporting heavy equipment, and other facility upgrades. By making this contribution, Metropolitan will be recognized as a "Founding Partner" of CSI and will have Metropolitan's seal and name prominently displayed on the front of the building.

Planned activities for CSI include (1) capital improvements to the center's facility and staff funding; and (2) sponsor-focused research in support of Metropolitan O&M and capital projects.

This action authorizes a four-year agreement with CSI for a not-to-exceed amount of $2 million. This funding amount consists of two components. The first component of funding provides $250,000 per year for four years to fund the startup of CSI, which includes enhancements to the center's testing infrastructure. The startup funding would come from Metropolitan's operating budget. The second component of funding provides an additional amount of discretionary spending capacity of up to $250,000 per year for focused innovation research studies that would be negotiated by Metropolitan staff on a per-task basis. Funds for this focused research would come from operating or capital funds based on the nature of the work.

Project Milestone

End of 2024 – complete first Metropolitan research study with CSI

12/18.2023

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

12/19/2023

Adel Hagekhalil *Date*
General Manager

Ref# es12694105

Engineering, Operations, & Technology Committee

Center for Smart Infrastructure

Item 7-1

January 8, 2024

Item 7-1
Center for Smart Infrastructure

Subject

Authorize an agreement with the Center for Smart Infrastructure to fund the organization's startup costs and focused water innovation research

Purpose

This action authorizes an agreement with CSI to support the startup of the facility and to fund Metropolitan-focused research projects over the next four years

Recommendation and Fiscal Impact

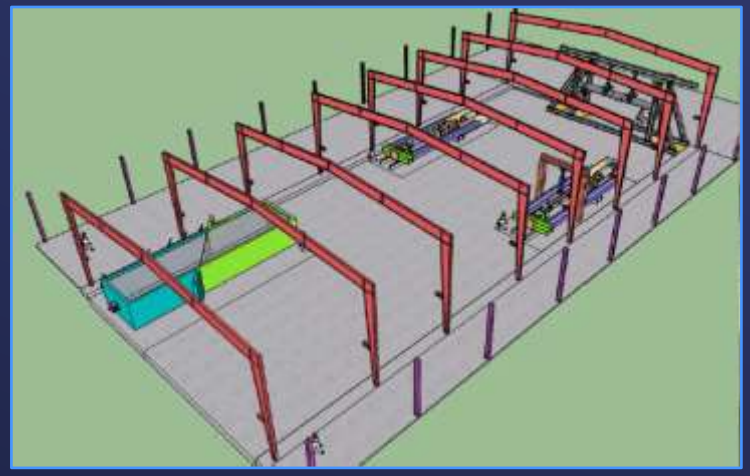
$1 million in operating funds plus up to $1 million in budgeted operating funds or capital funds under projects included in the CIP

Budgeted

Center for Smart Infrastructure

Background

- Located at UC Berkeley
  - Center was launched in 2021
  - UC Berkeley provided 23,000 sq ft building
  - UC Berkely provides on-going operational and maintenance staff to the facility
- Only pipe testing facility on west coast



CSI Building Layout

Center for Smart Infrastructure

Background

- Partnership between infrastructure owners, academia & industry to solve problems through innovation
- Mission: Develop resilient systems through state-of-the-art lab/field testing equipment, smart sensors and robotics, gig data & machine learning/multi-scale computer modeling & simulation
- Predominantly supported by outside funding

Background - “Owner” Collaborators

EBMUD

LA DWP

San Francisco Public Utilities Commission

Caltrans

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

THE Water Research FOUNDATION

STATE OF CALIFORNIA ENERGY COMMISSION

US Army Corps of Engineers®

PG&E®

Activities – Phase 1

- Initial organizational development & staffing
- Capital improvements to existing UC Berkeley facility
  - Install seismic slip plane box
  - Strengthen floor
  - Add pipe bending equipment & overhead crane

CSI Startup & Peer Funding

EBMUD - $1.5 M
LADWP - $1.5 M

Pre-Phase 1 CSI Building

Examples of Water-related Research Beneficial to Metropolitan

Metropolitan and Member Agency Benefits

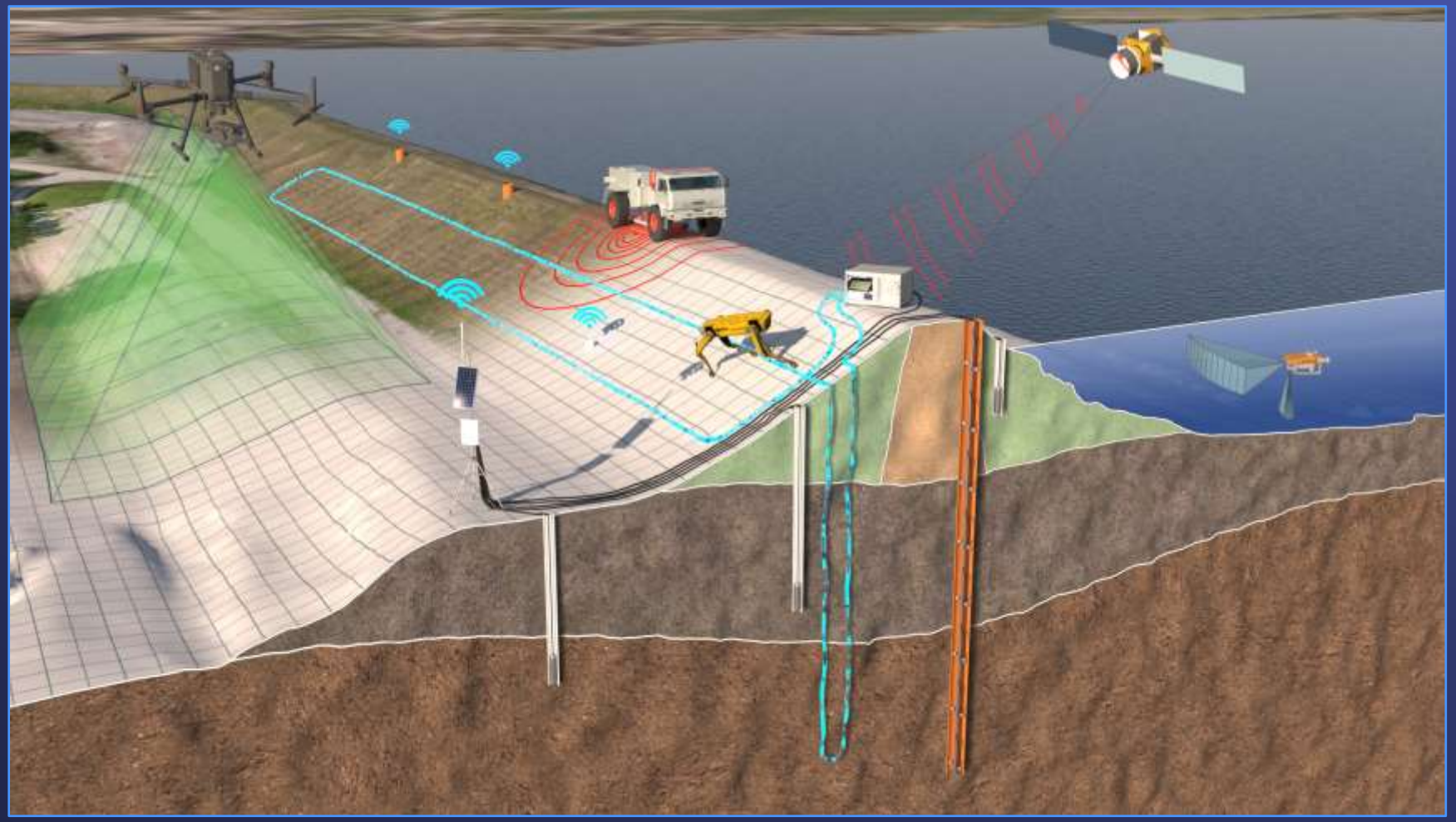
Polymer Pipe Testing

- Fiber optic pipe deformation monitoring across faults and in landslide zones
- Automatic Metering Infrastructure (AMI) testing
- Post-earthquake system vulnerability assessments and dam inspection criteria development
- Spillway subdrain performance testing
- Testing different pipeline materials, designs, & manufacturers

Levee Condition Monitoring

Research & Innovation Projects

- Levee condition assessments using satellites, ground penetrating radar, smart sensors and drones
- Metropolitan currently piloting this tech with WaterStart in the Bay-Delta

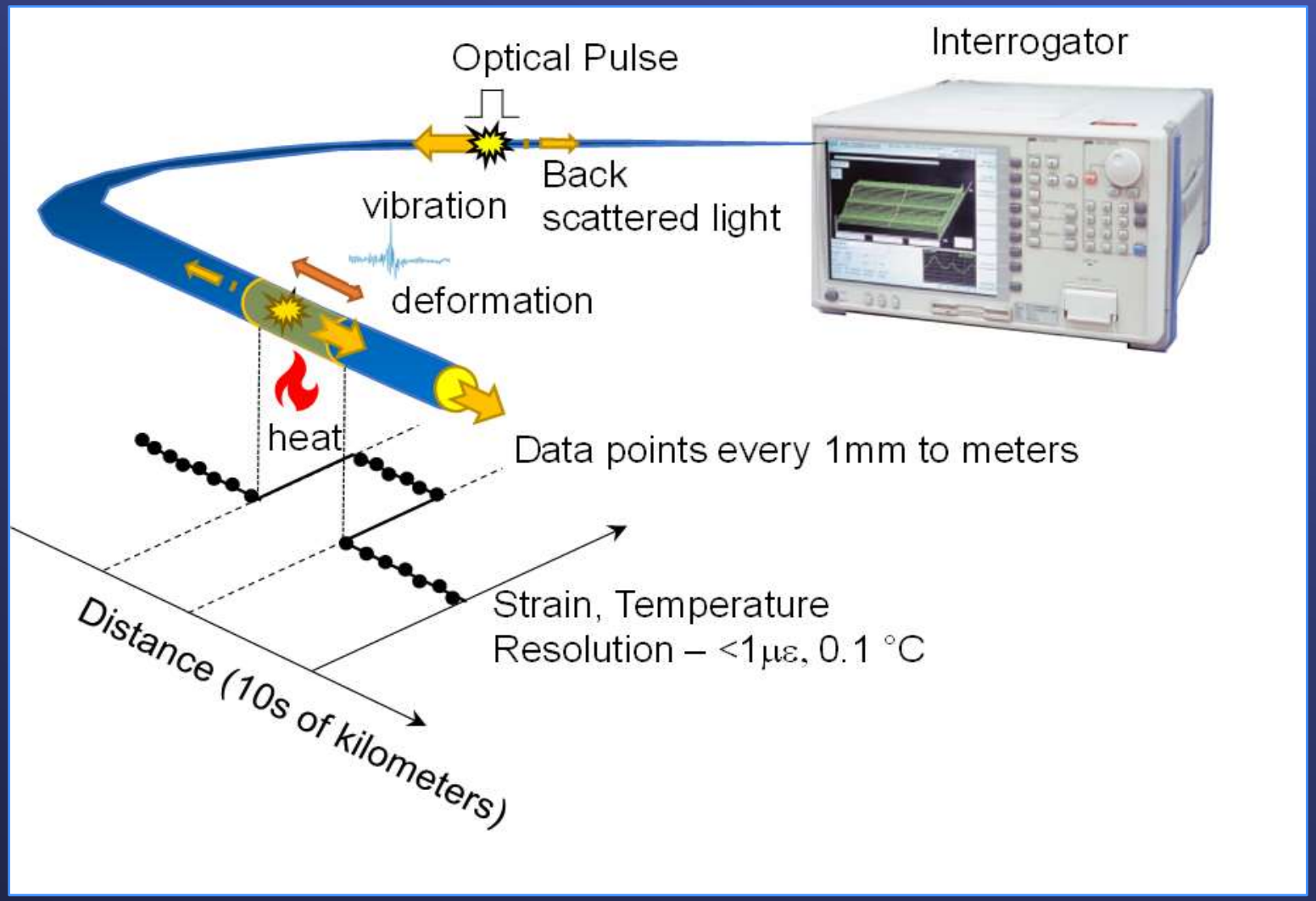


Technologies Used for Dam Assessment

Smart Infrastructure

Research & Innovation Projects

- Real-time fiber optic pipeline monitoring for deformation and strain
- CSI discussed this tech at Member Agency Engineering Managers annual meeting at IEUA on June 1, 2023



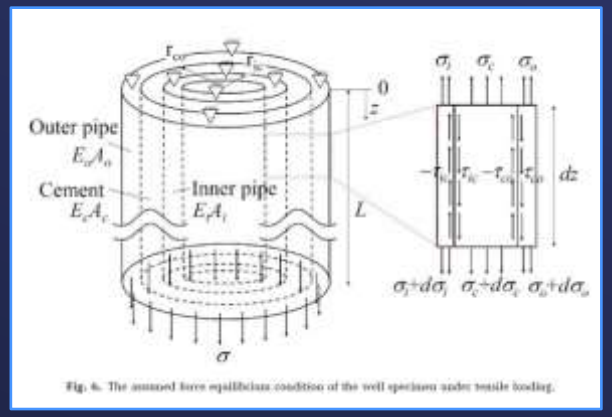
Fiber Optic Condition Monitoring

Earthquake Resistant Ductile Iron Pipe

Research & Innovation Projects

- Earthquake Resistant Ductile Iron Pipe (ERDIP) Testing – first ever test to failure
- Further development of technology

Center for Smart Infrastructure



Steel-lined PCCP Pipe in a Slide Zone

Future Opportunities for Metropolitan

- Testing other earthquake-resistant designs, fabricators, & products
- Testing PCCP slip-lining structure and developing in-house wire break risk curves
- Modeling and testing CRA cut/cover structural capabilities
- Analyzing Metropolitan service area water pipeline network for post-earthquake condition/response
- Developing advanced sensors, tools & analytics to monitor asset condition over time
- Recalibrating climate change & supply impact models with the latest climate data

Future Workforce Development

Center for Smart Infrastructure

UC Berkeley developing curriculum specific to the water business

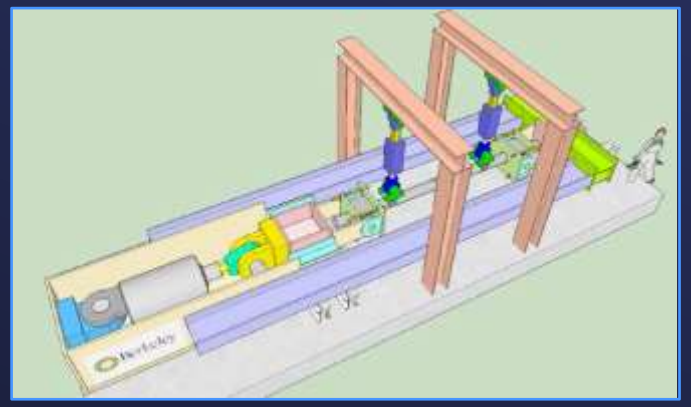
Looking at participating in their program, and developing partner programs in Metropolitan service area

UC Berkeley Students at CSI

Staff Recommendation

- Metropolitan to become a funding partner of the Center
  - Initial authority of $250k/year for four years to support the Center's startup activities
    - Funded through budgeted O&M
  - Additional authority of $250k/year for 4 years to fund focused research to benefit MWD or Member Agencies:
    - Funded by budgeted CIP projects or budgeted O&M

Center for Smart Infrastructure



Model of Bi-axial Pipe Test Apparatus

Board Options

- Option #1

  Authorize an agreement with the Center for Smart Infrastructure in an amount not to exceed $2 million for startup costs and focused research.

- Option #2

  Authorize an agreement with the Center for Smart Infrastructure in an amount not to exceed $1 million for focused research only.

- Option #3

  Do not proceed with funding CSI at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

- **Board of Directors**
  Engineering, Operations, and Technology Committee

1/9/2024 Board Meeting

7-2

Subject

Authorize an increase of $4,800,000 in change order authority for the contract to upgrade the domestic water treatment systems at the five Colorado River Aqueduct pumping plants; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

This action authorizes increasing the General Manager's change order authority for the Colorado River Aqueduct (CRA) Domestic Water Treatment System Upgrades. The increase in change authority will address the procurement, programming, and installation of nine programmable logic controllers (PLCs) to facilitate communication between the domestic water treatment systems and Metropolitan's Supervisory Control and Data Acquisition (SCADA) system. The original contract specified that Metropolitan would furnish and deliver to the contractor for installation nine remote terminal units (RTUs). The specialty vendor with whom Metropolitan has a longstanding partnership to supply these RTUs decided to take significant exceptions to Metropolitan's standard contract terms and conditions, which had the impact of halting the RTU procurement process. After numerous discussions, it became evident that a mutually agreeable resolution would not be reached. To resolve the issue, staff recommends that the construction contractor provide PLCs to support the communications requirements described above. The provision of the PLCs by the contractor, instead of Metropolitan-furnished RTUs, will require the contractor to conduct significantly more work than originally planned. Based on this scope increase to the existing contract, the extent of required extra work under the subject contract is projected to exceed the General Manager's current change order authority of $1,641,200.

Staff recommends that the General Manager's change order authority for this construction contract be increased by $4,800,000 at this time so the contractor can complete the remaining work without delay and at the lowest overall cost. See **Attachment 1** for the Financial Statement and **Attachment 2** for the Location Map.

Proposed Action/Recommendation and Options

Staff Recommendation: Option #1

Option #1

Authorize an increase of $4,800,000 in change order authority for the contract to upgrade the domestic water treatment systems at the five Colorado River Aqueduct pumping plants.

Fiscal Impact: Expenditure of up to $4,800,000 in capital funds. Approximately $1.3 million will be incurred in the current biennium and has been previously authorized. The remaining funds from this action will be accounted for in the next biennial budget.

Business Analysis: This option will allow the timely completion of all remaining work for the upgrades to the domestic water treatment systems at the five Colorado River Aqueduct pumping plants.

Option #2

Do not authorize an increase in change order authority.

Fiscal Impact: Additional costs would likely be incurred in the future as an additional contract(s) will need to be authorized to complete the work that was planned in the original contract.
Business Analysis: This option is unlikely to result in lower costs for the extra work performed and would delay the project's completion.

Alternatives Considered

Staff made multiple attempts to negotiate terms and conditions with the current RTU supplier. However, the final terms were deemed unfavorable and posed significant risks to Metropolitan with procurement delays, equipment quality, warranty concerns, and long-term equipment support. These risks could result in significant delays in the start-up and commissioning of the domestic water treatment systems and compromise the long-term reliability of the water supply for all the pumping plants. Additionally, since the industry is slowly transitioning to PLCs, there is limited availability of maintenance support and replacement parts for RTUs, making long-term maintenance challenging for staff. Using the current contractor to complete the PLCs procurement and installation minimizes construction delays, provides reliable water treatment systems, and ensures the most cost-effective approach.

Applicable Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Related Board Actions/Future Actions

By Minute Item 52628, dated December 14, 2021, the Board awarded a $32,824,000 contract to J.F. Shea Construction Inc. to upgrade the domestic water treatment systems at the five CRA pumping plants.

By Minute Item 21997, dated April 11, 2022, the Board appropriated a total of $600 million for projects identified in the Capital Investment Plan for Fiscal Years 2022/23 and 2023/24.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

On December 14, 2021, the Board approved the CRA Domestic Water Treatment System Upgrades Project. The General Manager determined the project to be exempt from CEQA pursuant to Sections 15301, 15302, and 15304 of the State CEQA Guidelines. The current board action does not result in any substantial change to the project. Accordingly, no further CEQA determinations or documentation are necessary.

CEQA determination for Option #2:

None required

Details and Background

Background

The CRA is a 242-mile-long conveyance system that transports water from the Colorado River to Lake Mathews. It consists of five pumping plants, 124 miles of tunnels, 63 miles of canals, and 55 miles of conduits, siphons, and reservoirs. The aqueduct was constructed in the late 1930s and was placed into service in 1941.

The CRA pumping plants and villages are located in remote areas of Riverside and San Bernardino Counties, where municipal water supplies are unavailable, necessitating reliance on local domestic water systems for potable water. The existing water treatment systems are early-generation membrane filtration units installed in 1993. While fully functional today, system components are deteriorating, requiring frequent repairs and adjustments. The domestic water treatment systems are critical infrastructure components supporting the CRA

pumping plants. The domestic water treatment systems need to be replaced to maintain compliance with drinking water regulations, reduce the frequency of repairs, and maintain reliable operation.

In December 2021, Metropolitan's Board awarded a $32,824,000 contract to J.F. Shea Construction Inc. to upgrade the domestic water treatment systems at all five CRA pumping plants, including replacing the water treatment units. Construction is approximately 20 percent complete and scheduled to be completed by late 2025.

Metropolitan's Administrative Code authorizes the General Manager to execute change orders on construction contracts in an aggregate amount not to exceed five percent of the initial amount of the contract or $250,000, whichever is greater. Change orders to construction contracts are issued for a variety of reasons, including (1) owner-initiated changes because they increase the overall project quality and efficiency; (2) to address design errors and/or omissions discovered after construction began; (3) to address field conditions that differ from those shown on the contract drawings and specifications; and (4) changes needed to benefit other related construction projects. Metropolitan staff negotiates the cost and schedule impacts of all change orders before they are formally authorized.

Metropolitan's construction contracts are typically completed with final change order amounts within the General Manager's Administrative Code authority. Since the beginning of 2018, Metropolitan has completed 115 public works contracts with a total awarded amount of approximately $571 million and total earnings after net extra work of $585 million. The average change order authority utilized over this period is 2.6 percent. All but five of the 115 contracts have stayed within their initially awarded change order authority amount.

If changes occur on a construction contract that exceeds the General Manager’s authority, additional authorization from the Board is required. For this contract, the original change order authority based on the construction contract amount is $1,641,200. At this time, the subject contract has experienced unforeseen circumstances when the contract was originally advertised for construction bids. Staff anticipates that the timely resolution of these issues will exceed the General Manager's Administrative Code authority.

CRA Domestic Water Treatment System Upgrades – Increase in Change Order Authority (Contract No. 1949)

The original scope of Contract No. 1949 required the contractor to install nine Metropolitan-furnished RTUs to facilitate communication between the new domestic water treatment systems and Metropolitan’s SCADA system. This approach has proven to be successful on past construction contracts and requires Metropolitan to procure the RTU equipment directly from a specialty vendor. Metropolitan’s RTUs interface with proprietary software developed in conjunction with this specialty vendor, which has been supplying equipment to Metropolitan for the past several years. This proprietary software contains enhanced security features to prevent Metropolitan’s SCADA system breaches. The RTUs are then programmed by in-house staff based on the individual project's specific requirements. The programmed RTUs are supplied to the general contractor for installation. Besides providing advanced security measures, this strategy offers competitive pricing, reduces supply chain risks, and ensures that the RTUs meet all the latest codes and security standards.

During the procurement of the RTUs for this project, the specialty vendor with whom Metropolitan has a longstanding partnership decided to make significant exceptions to the liability limits outlined in Metropolitan’s standard terms and conditions contract, thereby halting the procurement process. After numerous negotiation attempts, it became evident that a mutually agreeable resolution would not be reached. To minimize delays, and in consultation with Metropolitan’s Legal staff, it was decided to replace the RTUs with PLCs, which are an alternative product with similar functionalities to the RTUs. PLCs were selected since they can be readily programmed for integration with Metropolitan’s proprietary software and the SCADA system and procured relatively quickly in today’s market conditions. Additionally, the industry is slowly phasing out RTUs and transitioning to PLCs. Metropolitan is also transitioning to keep up with the evolving technology and the latest industry standards, and this evolution is evidenced in the ongoing SCADA replacement program that is currently underway at the Mills Plant.

The transition from RTUs to PLCs on this project has resulted in a revised and increased scope of work for the existing contractor. The changes necessitated significant revisions to existing design drawings, and the

development of new specifications were required to direct the contractor to purchase, program, test, and commission the PLCs. The contractor was also required to modify electrical cabinets, provide additional conduits and raceways, and reconfigure the layout of new electrical equipment within the pumphouse to accommodate the new PLCs. As part of the overall costs, Metropolitan has agreed to pay the existing contractor additional fees to expedite vendor submittals, procurement, and shipping to minimize any delays to the project. Metropolitan has taken a similar approach on a few other construction contracts, experiencing a similar situation with a high degree of success.

The changes described above and other more minor changes to the contract resulting from unforeseen field conditions have utilized most of the existing change order authority. Several months of work are required for PLC procurement, fabrication, installation, start-up, and commissioning. Consequently, it is expected that there will be additional unanticipated changes to the construction contract. This action increases the original change order authority to accommodate both the known issues listed above as well as potential unforeseen future issues.

Per Metropolitan's Administrative Code, the General Manager has the authority to execute change orders for this contract up to a maximum of $1,641,200. To date, approximately $700,105 in change orders have been executed. To fully resolve these issues and complete the re-design for replacement components, fabrication, installation, start-up, and commissioning of the SCADA components at all five CRA pumping plants, staff recommends that the change order authority be increased by $4,800,000 for a new maximum amount of $6,641,200. This increase will enable all remaining work to be performed expeditiously without delaying the contract completion. This action authorizes an increase in the General Manager's authority to execute change orders from $1,641,200 to an aggregate amount not to exceed $6,641,200 for the CRA domestic water upgrades project.

Project Milestone

December 2025 – Construction completion

12/14/2023

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

12/19/2023

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Location Map

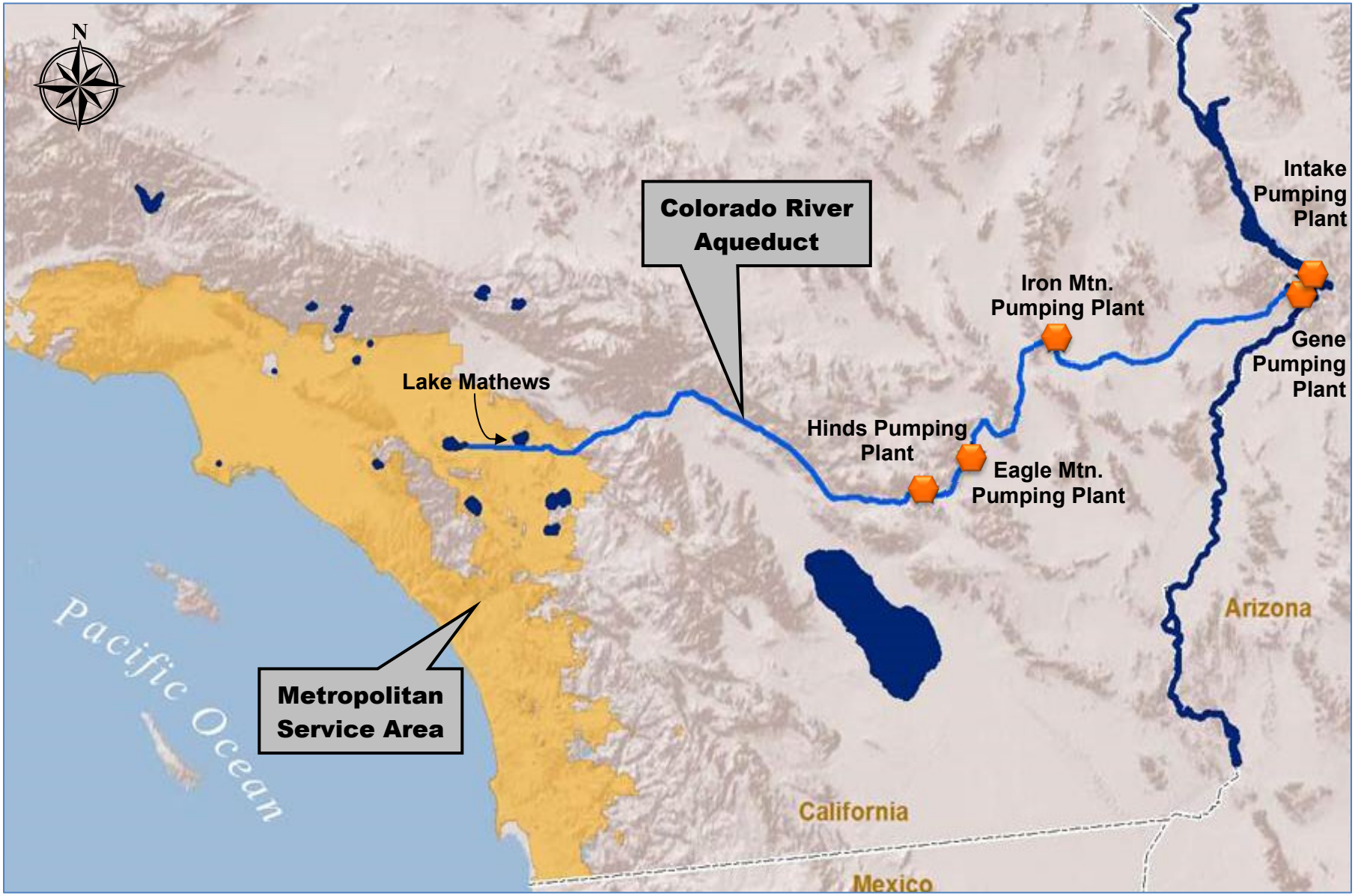
Ref# es12692467

Allocation of Funds for CRA Domestic Water Treatment System Upgrades

	Current Board Action (Jan. 2024)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	-
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Right-of-Way	-
Equipment Use	-
Contracts	-
J.F. Shea Construction Inc.	4,800,000
Remaining Budget	-
Total	**$ 4,800,000**

The total amount expended to date to replace the CRA Domestic Water Treatment Systems is approximately $20.5 million. The total estimated cost to complete the CRA Domestic Water Treatment Systems, including the amount appropriated to date and funds allocated for the work described in this action, is $52 million.

Location Map



Engineering, Operations, & Technology Committee

Change Order Authority Increase for CRA Domestic Water Treatment Systems Upgrades Project

Item 7-2

January 8, 2024

Item 7-2
Change Order Authority Increase for CRA Domestic Water Treatment Systems Upgrades Project

Subject

Authorize an increase in change order authority to upgrade the domestic water treatment systems at five Colorado River Aqueduct pumping plants

Purpose

Procure, program, and install 9 Programmable Logic Controllers (PLCs)

Recommendation and Fiscal Impact

Authorizes a $4.8 million increase in change order authority for the contract to upgrade the domestic water treatment systems.

Fiscal impact $4.8 million

Budgeted

Location Map

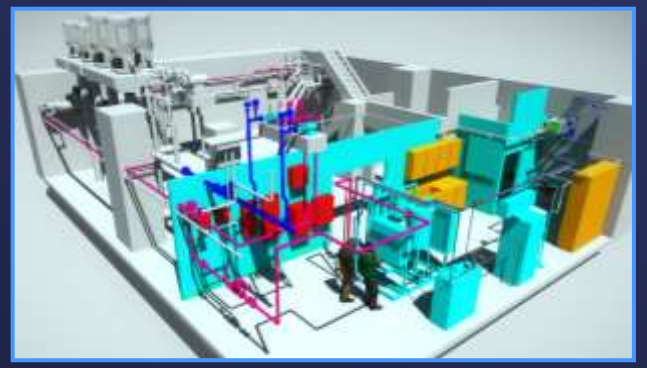
Change Order Authority Increase for CRA Domestic Water Treatment Systems Upgrades

Background

- Original treatment systems installed in 1993
  - Provides drinking water for CRA pumping plants & villages
  - Maintains compliance with drinking water regulations
  - First microfiltration systems approved by DDW for these purposes
- Equipment is deteriorating & requires frequent repairs
- Replacement parts difficult to obtain

Existing Microfiltration Units

Change Order Authority Increase for CRA Domestic Water Treatment Systems Upgrades



New Membrane Equipment & Piping

Contractor Scope

- Dec. 2021 – Contract awarded to J.F. Shea Construction Inc.
- Contract Amount - $32,824,000
- Contract Scope:
  - Replace membrane filtration units & piping
  - Construct temperature-controlled buildings
  - Upgrade water quality instrumentation & laboratory equipment
  - Replace electrical conduits & water piping
  - Install MWD-furnished process control equipment
  - Perform tie-ins & start-up testing
- Construction is approx. 35% complete

Change Order Authority Limits

Change Order Authority Increase for CRA Domestic Water Treatment Systems Upgrades

- Change order authority determined by Admin. Code (Section 8123)
  - GM authority to execute change orders is the greater of:
    - 5% of the original contract amount
    - $250,000
- Since 2018 – 115 contracts have been completed
  - 110 of the 115 contracts have stayed within their original change order authority amount
  - Average change order authority is 2.6%

Change Order Authority Increase

Contract No. 1949	
• Original contract value:	$32,824,000
• Original change order authority:	$1,641,200
Requested Action	
• Proposed increase for Contractor supplied PLCs:	$4,800,000
• New change order authority:	$6,441,200

Electrical Panel at
Intake Pumping Plant

Process Controls Approach

- Remote Terminal Units (RTUs) control process logic & facilitate communication between the domestic water treatment system & Metropolitan's SCADA system
  - RTUs purchased & programmed by District Forces
  - RTUs provided to contractor for installation
  - Total of 9 RTUs required for project
  - Specialty vendor took exceptions to Terms & Conditions
  - No mutually agreeable resolution
- RTUs replaced with Programmable Logic Controllers (PLCs)
  - Similar functionality
  - Programmed for integration with SCADA
  - Allows for enhanced security features

Existing RTU

Scope Changes Required to Convert to PLCs

- Revisions required to existing design drawings
- New specifications developed for PLCs
- Additional work by contractor
  - Procure, program, test, & commission PLCs
  - Procure and assemble PLC panels
  - Make additional electrical modifications required for PLCs
- Expedite submittals, procurement, & shipping to minimize construction delays

PLC Panels (Typical)

Change Order Authority

CRA Domestic Water Treatment Systems Upgrades

Alternatives

- Staff attempted to negotiate terms & conditions with current RTU supplier
  - Final terms were deemed unfavorable
  - Risk of procurement delays & substandard equipment quality
  - Concerns about warranty & long-term equipment support
- Selected Alternative – Issue change order for PLCs
  - Ensures reliable communication with water treatment systems
  - Minimizes construction delays
  - Most cost-effective approach

Project Schedule

Board Options

- Option #1

  Authorize an increase of $4,800,000 in change order authority for the contract to upgrade the domestic water treatment systems at the five Colorado River Aqueduct pumping plants.

- Option #2

  Do not authorize an increase in change order authority.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

- **Board of Directors**
  Engineering, Operations, and Technology Committee

1/9/2024 Board Meeting

7-3

Subject

Authorize agreements with (1) Jacobs Group Engineering Inc. in an amount not to exceed $3.425 million; and (2) Brown and Caldwell in an amount not to exceed $2.26 million for design of security system improvements at several facilities throughout Metropolitan's Distribution System; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA. [Consultation with Metropolitan Team Manager, Engineering Services, Sandip Budhia, or designated agents on threats to public services or facilities; may be heard in closed session pursuant to Gov. Code Section 54957(a)]

Executive Summary

Metropolitan safeguards critical infrastructure and personnel through a multi-layered combination of physical barriers, contracted security guard services, employee awareness, and a physical security system.
The 2003 Homeland Security Presidential Directive and North American Electric Reliability Corporation Critical Infrastructure Protection Plans require Metropolitan to operate and maintain video surveillance and intrusion detection systems at critical facilities. A recent comprehensive assessment of Metropolitan's facilities has identified the need for enhancements to the existing security measures at multiple facilities. The planned work under this action will provide security improvements at 14 additional sites and will be consistent with Metropolitan's latest security and technology standards for essential facilities.

This action authorizes two new agreements to provide design services for improvements to the security features at multiple water treatment plants, hydroelectric plants (HEPs), and pressure control structures (PCSs) throughout Metropolitan's Distribution System. See **Attachment 1** for the Allocation of Funds and **Attachment 2** for the Listing of Subconsultants.

Proposed Action(s)/Recommendation(s) and Options

Staff Recommendation: Option #1

Option #1

a. Authorize an agreement with Jacobs Engineering Group Inc. in an amount not to exceed $3.425 million for design of security system improvements at three water treatment plants; and
b. Authorize an agreement with Brown and Caldwell in an amount not to exceed $2.26 million for design of security system improvements at one water treatment plant and several HEPs and PCSs.

Fiscal Impact: Expenditure of $7.55 million in capital funds. Approximately $1 million in capital funds will be incurred in the current biennium and have been previously authorized. The remaining capital expenditures will be funded from future Capital Investment Plan budgets following board approval of those budgets.
Business Analysis: This option will enhance safety and security throughout Metropolitan's system.

Option #2

Do not proceed with the project at this time.
Fiscal Impact: None

Business Analysis: Under this option, the treatment plants, HEPs, and PCSs will continue to experience security system equipment failures.

Alternatives Considered

Alternatives considered for design of the security system improvements included utilizing in-house Metropolitan staff to conduct this work. Metropolitan's staffing strategy for utilizing consultants and in-house Metropolitan staff has been: (1) to assess current work assignments for in-house staff to determine the potential availability of staff to conduct this work; and (2) to use project-specific professional services agreements when resource needs exceed available in-house staffing or require specialized technical expertise in order to provide a concentrated engineering effort over an extended duration.

This strategy relies on the assumption that in-house engineering staff will handle the baseload of work on capital projects, while professional services agreements are selectively utilized to handle projects above this baseload or where specialized needs are required. This strategy allows Metropolitan's staff to be strategically utilized on projects to best maintain key engineering competencies and to address projects with special needs or issues. After assessing the current workload for in-house staff and the nature of the design work, staff recommends utilizing a professional services agreement for this work. This approach will allow for completion of not only this project, but also other budgeted capital projects within their current schedules and ensure that the work is conducted in the most efficient manner possible.

Applicable Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Related Board Action(s)/Future Action(s)

By Minute Item 52778, dated April 12, 2022, the Board appropriated a total of $600 million for projects identified in the Capital Investment Plan for Fiscal Years 2022/2023 and 2023/2024.

Future board actions are planned for the award of construction contracts for security system improvements at the facilities identified in this action.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt from CEQA because it involves only feasibility or planning studies for possible future actions which the Board has not approved, adopted or funded (Public Resources Code Section 21080.21; State CEQA Guidelines Section 15262.). In addition, the proposed action is categorically exempt from CEQA because it consists of basic data collection and research activities which do not result in a serious or major disturbance to an environmental resource, which may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded (State CEQA Guidelines Section 15306.)

CEQA determination for Option #2:

None required

Details and Background

Background

Metropolitan's service area covers approximately 5,200 square miles, extending from Ventura County to the Mexican border. It includes the Colorado River Aqueduct system, five water treatment plants, 830 miles of pipelines, and approximately 5,400 conveyance and distribution system structures.

Metropolitan currently employs hundreds of security surveillance and intrusion detection systems throughout its service area. In recent years, staff has conducted comprehensive threat and physical security assessments of Metropolitan's facilities and identified locations requiring improvements. Following these findings, staff initiated preliminary design to upgrade the site security systems in accordance with Metropolitan's latest security and technology standards for essential facilities.

Metropolitan's security system is being improved through several projects. Metropolitan's Board previously authorized agreements for final design of security improvements at the Joseph Jensen Water Treatment Plant in July 2022 and Colorado River Aqueduct facilities in July 2023. Staff recommends proceeding with final design of security system replacement at the other four treatment plants and ten distribution system facilities under this action. Final design for the remaining facilities, including 28 HEPs and PCSs, five reservoirs, and two lakes, is being performed under two existing board-authorized, on-call agreements.

Security System Improvements – Final Design

Planned improvements include upgrades to the security surveillance and intrusion detection systems at the identified facilities. Planned design activities by the consultants include: (1) detailed field investigations; (2) evaluation of equipment alternatives; (3) development of design and equipment criteria; (4) preparation of final design drawings and specifications for installation; (5) development of construction cost estimates; and (6) design support during advertisement. These activities will be performed by Jacobs Engineering Group Inc. and Brown and Caldwell, as discussed below. Metropolitan staff will provide design oversight, perform overall project management, and agreement administration.

A total of $7.55 million is required to perform this work. Allocated funds include $3.425 million for design activities by Jacobs Engineering Group Inc. and $2.26 million for design activities by Brown and Caldwell under new agreements for the facilities described below. Allocated funds for Metropolitan staff include $581,000 for design review; $1,007,000 for environmental support, project management, project control, security review, and preparation of multiple bid packages; and $277,000 for remaining budget. Jacobs Engineering Group Inc. is preparing design packages for three water treatment plants, while Brown and Caldwell are preparing design packages for the Mills plant and ten HEP/PCS facilities. Metropolitan's treatment plant facilities are located on relatively large sites with extensive underground site utilities, so the security systems for the treatment plants are more extensive and complex than at the PCS or HEP facilities. As a result, the design costs are higher. **Attachment 1** provides the allocation of required funds.

As described above, design will be performed by Jacobs Engineering Group Inc. and Brown and Caldwell. Engineering Services' performance metric target range for final design with construction of more than $3 million is 9 to 12 percent. For the security system improvements at the treatment plants (Jacobs Engineering Group Inc.), the performance metric for final design is 12.2 percent of the total construction cost. The estimated cost of final design is $3,670,000, which includes $3,425,000 for consultant design and $245,000 for Metropolitan staff review. The estimated cost of construction is anticipated to range from $30 million to $32 million. The final design performance metric for the treatment plant security systems exceeds the metric target range due to the complexity described above and the need to prepare separate construction contract packages for each site. This will allow staff to issue multiple construction contracts based on facility needs and risks. For the security system improvements at the HEPs and the PCSs (Brown and Caldwell), the performance metric for final design is 9.3 percent of the total construction cost, which is within the metric target range. The estimated cost of final design is $2,596,000, which includes $2,260,000 for consultant design and $336,000 for Metropolitan staff review. The estimated cost of construction is anticipated to range from $28 million to $30 million.

Security System Improvements (Treatment Plants)– New Design Services Agreement (Jacobs Engineering Group Inc.)

Jacobs Engineering Group Inc. (Jacobs) is recommended to perform design services for the security system improvements at the Diemer, Weymouth, and Skinner plants. Jacobs was prequalified through a competitive process via Request for Qualifications No. 1305. Jacobs was selected for these services based on the firm's knowledge of Metropolitan facilities and expertise in designing security systems. Jacobs performed preliminary design for the security system improvements.

This action authorizes an agreement with Jacobs for a not-to-exceed amount of $3.425 million to provide design services for security system improvements. For this agreement, Metropolitan has established a Small Business Enterprise participation level of 25 percent. Jacobs has agreed to meet this level of participation. See **Attachment 2** for a listing of the subconsultants.

Security System Improvements (Hydroelectric Plants & Pressure Control Structures)– New Design Services Agreement (Brown and Caldwell)

Brown and Caldwell is recommended to perform design services for the security system improvements for the Mills plant and ten HEP/PCS facilities. Brown and Caldwell were prequalified through a competitive process via Request for Qualifications No. 1305. Brown and Caldwell was selected for these services based on the firm's knowledge of Metropolitan facilities and expertise in designing security systems. Brown and Caldwell performed preliminary design for the security system improvements at these facilities.

This action authorizes an agreement with Brown and Caldwell for a not-to-exceed amount of $2.26 million to provide design services for security system improvements at the Mills plant and several HEPs and PCSs. For this agreement, Metropolitan has established a Small Business Enterprise participation level of 25 percent. Brown and Caldwell have agreed to meet this level of participation.

Summary

This action authorizes an agreement with Jacobs Engineering Group Inc. in an amount not to exceed $3.425 million and with Brown and Caldwell in an amount not to exceed $2.26 million to provide design services for the security system improvements at several water treatment plants, HEPs, and PCSs throughout Metropolitan's system.

Project Milestones

December 2024 – Completion of design for security system improvements at ten HEPs and PCSs and the Mills plants

April 2025 – Completion of design for security system improvements at three treatment plants

12/18/2023
John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

12/20/2023
Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Listing of Subconsultants

Ref# es12696031

Allocation of Funds for the Security System Upgrades

	Current Board Action (Jan. 2024)
Labor	
Studies & Investigations	$ -
Final Design	581,000
Owner Costs (Program mgmt., envir. support)	1,007,000
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Brown and Caldwell	2,260,000
Jacobs Engineering Group Inc.	3,425,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	277,000
Total	**$ 7,550,000**

The total amount expended to date is approximately $1.5 million. The total estimated cost for this project, including the amount appropriated to date, funds for the work described in this action, and future construction costs, is anticipated to range from $67 million to $79 million.

The Metropolitan Water District of Southern California

Subconsultants for Security System Upgrades Agreements

Consultant: Jacobs Engineering Group Inc.

Subconsultant and Location	Service Category; Specialty
DRP Engineering Inc. Monterey, California	Information Technology, Architectural, and Engineering

Consultant: Brown and Caldwell

Subconsultant and Location	Service Category; Specialty
Am-Tec Security Chino, California	Security
Projectline Technical Services Costa Mesa, California	Information Technology

Engineering, Operations, & Technology Committee

Security Systems Improvements

Item 7-3

January 8, 2024

Item 7-3
Security System Improvements

Subject

Authorize agreements with Jacobs Engineering Group Inc. and Brown and Caldwell for design of security system improvements at several facilities throughout Metropolitan's Distribution System

Purpose

Safeguard Metropolitan's critical infrastructure and personnel

Recommendation and Fiscal Impact

Authorize agreements with Jacobs Engineering Group Inc. and Brown and Caldwell

Fiscal impact $7.55 million

Budgeted

Security System Improvements

Background

- Federal security standards require security systems at Metropolitan facilities
- Comprehensive assessment identified the need for enhancements at several locations
- Planned scope of improvements
  - Video surveillance systems
  - Intrusion detection systems

Security System Improvements

Alternatives Considered

- Utilize Metropolitan staff
  - Assess current workload
  - Assess relative priority of projects
- Selected Alternative – Use consultant services
  - Specialized expertise
  - Will allow for timely & efficient completion of design activities

Security System Improvements

Jacobs Engineering Group Inc. – Agreement

- Prequalified via RFQ No. 1305
- Scope of Work - Weymouth, Diemer, & Skinner Plants
  - Detailed field investigation
  - Evaluate equipment alternatives
  - Develop design & equipment criteria
  - Prepare contract documents & construction cost estimate
  - Design support during advertisement phase
- NTE amount: $3,425,000
- SBE participation level: 25%

Security System Improvements

Brown and Caldwell – Agreement

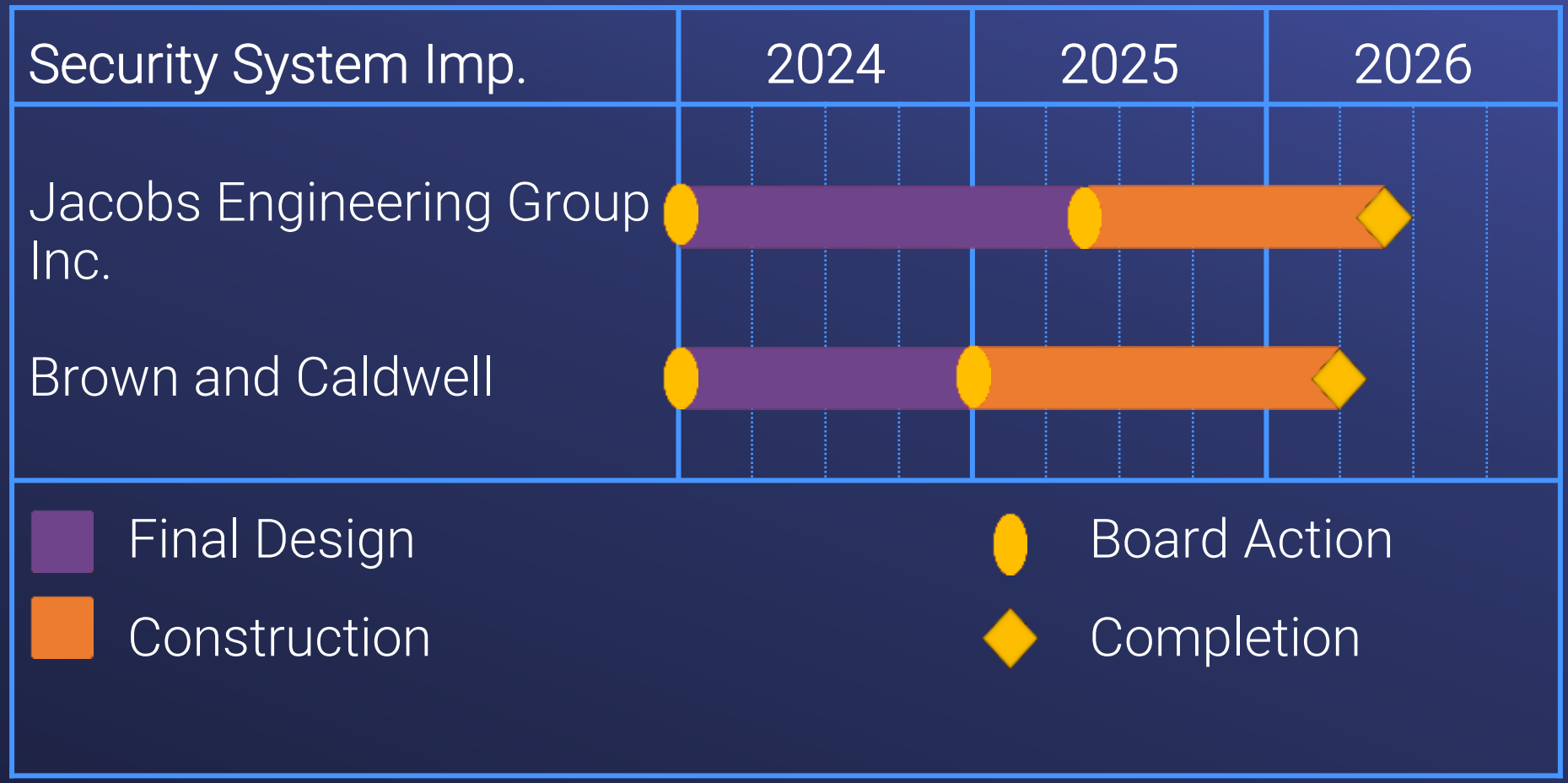
- Prequalified via RFQ No. 1305
- Scope of Work – Mills Plant & 10 HEP/PCS facilities
  - Detailed field investigation
  - Evaluate equipment alternatives
  - Develop design & equipment criteria
  - Prepare contract documents & construction cost estimate
  - Design support during advertisement phase
- NTE amount: $2,260,000
- SBE participation level: 25%

Allocation of Funds

Security System Improvements

Metropolitan Labor	
Final Design	$ 581,000
Owner Costs (Proj. Mgmt., Envir. Support)	1,007,000
Professional/Technical Services	
Brown and Caldwell	2,260,000
Jacobs Engineering Group Inc.	3,425,000
Remaining Budget	277,000
Total	$ 7,550,000

Project Schedule



Board Options

- Option #1
  a. Authorize an agreement with Jacobs Engineering Group Inc. in an amount not to exceed $3.425 million for design of security system improvements at three water treatment plants; and
  b. Authorize an agreement with Brown and Caldwell in an amount not to exceed $2.26 million for design of security system improvements at one water treatment plant and several HEPs and PCSs.
- Option #2

  Do not proceed with the project at this time.

Staff Recommendation

- Option#1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

- **Board of Directors**
  Engineering, Operations, and Technology Committee

1/9/2024 Board Meeting

7-4

Subject

Award a $549,592.04 contract to Caasi Flow Control for procurement of plug valves to be installed on the Foothill Feeder and Rialto Pipeline; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

The Foothill Feeder conveys untreated water from the West Branch of the State Water Project into the western portion of Metropolitan's service area, while the Rialto Pipeline conveys untreated water from the East Branch of the State Water Project into the eastern part of Metropolitan's service area. Several blowoff structures along the pipeline alignments are used to dewater the pipelines. Each blowoff structure has two plug valves: one for isolation and the other to control flows during dewatering episodes. Twenty 16-inch-diameter plug valves, located on Foothill Feeder and Rialto Pipeline, are from each pipeline's original construction. These valves have been in service for more than 50 years and require replacement.

This action awards a $549,592.04 procurement contract to Caasi Flow Control for 20 plug valves to be installed on the Foothill Feeder and Rialto Pipeline. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Abstract of Bids, and **Attachment 3** for the Location Map.

Proposed Action/Recommendation and Options

Staff Recommendation: Option #1

Option #1

Award a $549,592.04 procurement contract to Caasi Flow Control for 20 plug valves.

Fiscal Impact: Expenditure of $725,000 in capital funds. $19,000 will be incurred in the current biennium and has been previously authorized. The remaining funds from this action will be accounted for in the next biennial budget.

Business Analysis: This option will improve the operational reliability of two major pipelines within the distribution system.

Option #2

Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: This option would forego the opportunity to improve the operational reliability of the two pipelines.

Alternatives Considered

Staff considered refurbishing the existing valves, but refurbishment was deemed unviable based on the current deteriorated condition of the valves. Staff also considered substituting butterfly valves for the deteriorated plug valves. Butterfly valves are less expensive but are not as robust as plug valves. Butterfly valves are also susceptible to damage from cavitation when used in this particular dewatering application. Since the valves are

used for isolation and energy dissipation during dewatering, failure of a valve would require an unplanned shutdown of the pipeline for replacement. Replacement of the existing plug valves in kind was selected for its superior performance in this application and to maintain water delivery reliability.

Applicable Policy

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Related Board Action(s)/Future Action(s)

By Minute Item 52778, dated April 12, 2022, the Board appropriated a total of $600 million for projects identified in the Capital Investment Plan for Fiscal Years 2022/2023 and 2023/2024.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt from CEQA because it involves the repair and maintenance of existing public structures, facilities, and mechanical equipment involving negligible or no expansion of existing or former use and no possibility of significantly impacting the physical environment. (State CEQA Guidelines Section 15301.).

CEQA determination for Option #2:

None required

Details and Background

Background

The Foothill Feeder conveys untreated water from the West Branch of the State Water Project into the western portion of Metropolitan's service area. The feeder extends south from Castaic Lake, crosses under the Santa Clara River and several of its tributaries, and terminates at the Joseph Jensen Water Treatment Plant. The member agencies that rely on this supply include Calleguas Municipal Water District, Central Basin Municipal Water District, Las Virgenes Municipal Water District, West Basin Municipal Water District, and the cities of Beverly Hills, Burbank, Compton, Glendale, Long Beach, Los Angeles, San Fernando, Santa Monica, and Torrance.

Similarly, the Rialto Pipeline conveys untreated water from the East Branch of the State Water Project into the eastern part of Metropolitan's service area. The pipeline extends east from the Department of Water Resources' Devil Canyon Afterbay and terminates at the San Dimas Control Facility. In addition to serving the Weymouth plant, the Rialto Pipeline directly serves Three Valleys Municipal Water District and the Inland Empire Utilities Agency.

Dewatering of the pipelines utilizes several blowoff structures. Each blowoff structure has two plug valves: one for isolation and the other to control flow. The existing 16-inch-diameter valves on the Foothill Feeder and Rialto Pipeline are from the original construction and have been in service for more than 50 years. Although the valves have been maintained, they have deteriorated to the point that they leak and are no longer repairable.

Procurement specifications for the replacement of plug valves are complete, and bids have been received. Staff recommends proceeding with the procurement of replacement plug valves at this time. The valves will be installed by Metropolitan forces during planned pipeline shutdowns in 2025.

Foothill Feeder and Rialto Pipeline Blowoff Valve Replacements – Procurement

The scope of the work includes furnishing 20 16-inch-diameter lubricated plug valves, submittal review, fabrication inspection, and contract administration. Plug valves are the primary isolation and flow control valve types used at Metropolitan's blowoff facilities throughout the distribution system. Replacement of failed valves is critical for dewatering of the facilities and for maintenance of the distribution system as a whole. Installation of

the valves will be completed by Metropolitan forces during planned shutdowns of each pipeline, and funds for that work have been previously allocated.

A total of $725,000 is required for this work. In addition to the amount of the procurement contract described below, allocated funds for Metropolitan staff include $14,000 for submittal review; $59,000 for contract administration and fabrication inspections; $35,000 for project management; and $67,407.96 for remaining budget. **Attachment 1** provides the allocation of the required funds. The total estimated cost to complete the work, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from $3.0 million to $3.25 million.

Award of Procurement Contract (Caasi Flow Control)

Request for bids No. RFB-KK-423868 for procurement of 20 plug valves was advertised on October 20, 2023. As shown in **Attachment 2**, three bids were received and opened on November 13, 2023. The low bid from Caasi Flow Control, in the amount of $549,592.04, complies with the requirements of the specifications. This amount includes all sales and use taxes imposed by the State of California. The budgetary estimate for this material, based on previous procurements, ranged from $575,00 to $625,000. As a procurement contract, there are no subcontracting opportunities, and a Small Business Enterprise participation level was not established for this contract.

Project Milestone

February 2025 – Complete installation of the valves during upcoming planned shutdowns

12/14/2023

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

12/19/2023

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Abstract of Bids

Attachment 3 – Location Map

Ref# es12697418

Allocation of Funds for Plug Valve Replacements for Foothill Feeder and Rialto Pipeline

	Current Board Action Jan. 2024
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt.)	35,000
Submittals Review & Record Drwgs.	14,000
Fabrication Inspection & Support	59,000
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Right-of-Way	-
Equipment Use	-
Contracts	-
Caasi Flow Control	549,592.04
Remaining Budget	67,407.96
Total	**$ 725,000**

The expended amount for replacement of the 20 plug valves for the Foothill Feeder and Rialto Pipelines is $128,000. The total estimated cost to complete the valve replacement, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from $3,000,000 to $3,250,000.

The Metropolitan Water District of Southern California

Abstract of Bids Received on November 13, 2023 at 11:00 A.M.

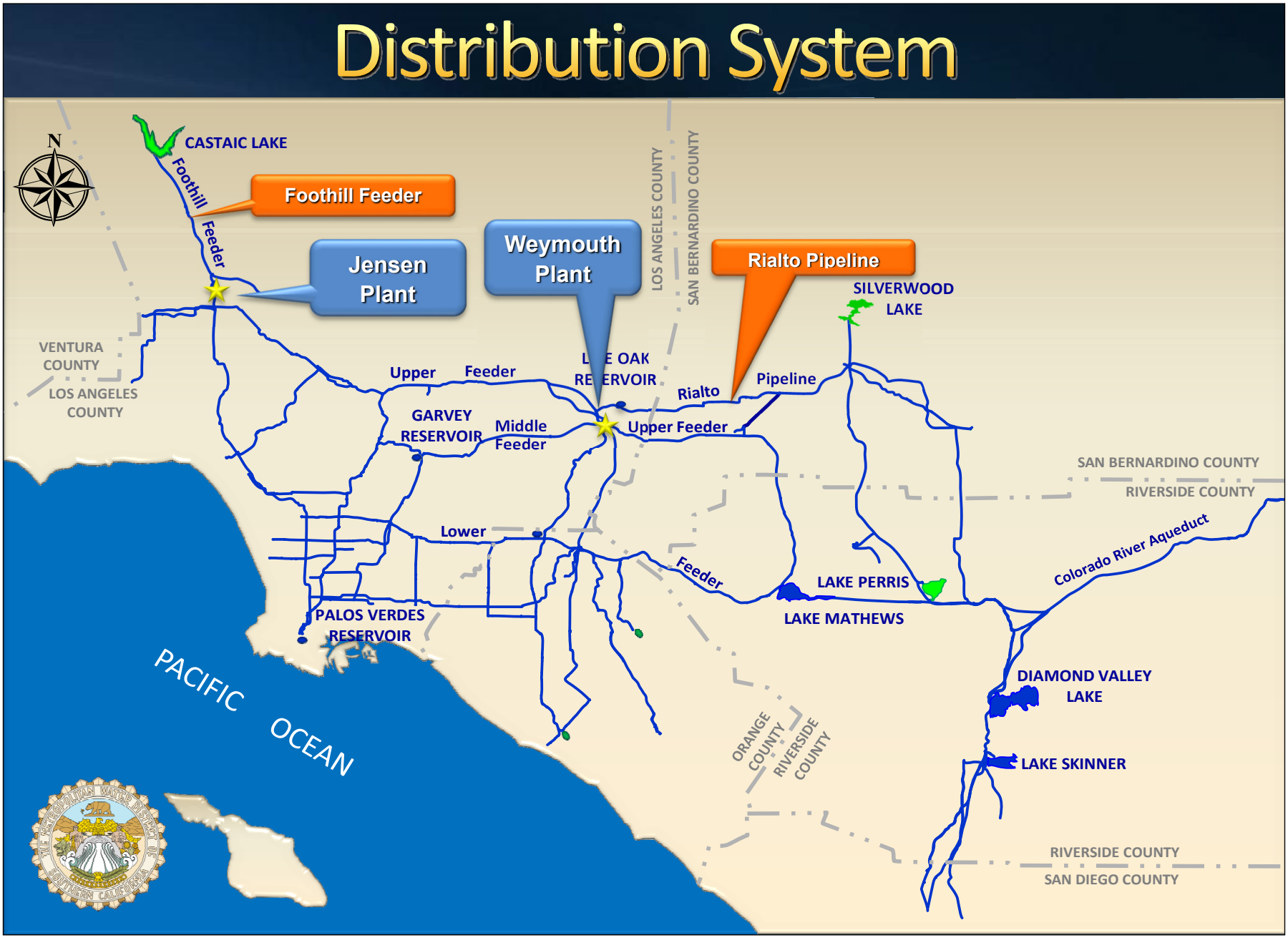
RFB No. RFB-KK-423868
Lubricated Plug Valves for Distribution System

The work includes procurement of 20 plug valves.

Budgetary estimate: $575,000 to $625,000

Bidder and Location	Total
Caasi Flow Control **San Ramon, CA**	**$549,592.04**
B&K Valves & Equipment Inc. Carlsbad, CA	$576,000
Southwest Valve & Equipment Irvine, CA	$649,026

[1] As a procurement contract, there are no subcontracting opportunities.
[2] Includes sales and use taxes of 7.75 percent imposed by the state of California


Distribution System
N
CASTAIC LAKE
Foothill Feeder
Foothill Feeder
Jensen Plant
Weymouth Plant
Rialto Pipeline
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
SILVERWOOD LAKE
VENTURA COUNTY
LOS ANGELES COUNTY
Upper Feeder
E OAK RESERVOIR
Rialto Pipeline
GARVEY RESERVOIR
Middle Feeder
Upper Feeder
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
Lower Feeder
Colorado River Aqueduct
LAKE PERRIS
LAKE MATHEWS
PALOS VERDES RESERVOIR
PACIFIC OCEAN
DIAMOND VALLEY LAKE
ORANGE COUNTY
RIVERSIDE COUNTY
LAKE SKINNER
RIVERSIDE COUNTY
SAN DIEGO COUNTY

Engineering, Operations, & Technology Committee

Blowoff Valve Procurement

Item 7-4

January 8, 2024

Item 7-4
Blowoff Valve Procurement

Subject

Award a $549,592.04 procurement contract to Caasi Flow Control for 20 plug valves to be installed on the Foothill Feeder and Rialto Pipeline

Purpose

Replacement of blowoff valves are needed to maintain system reliability

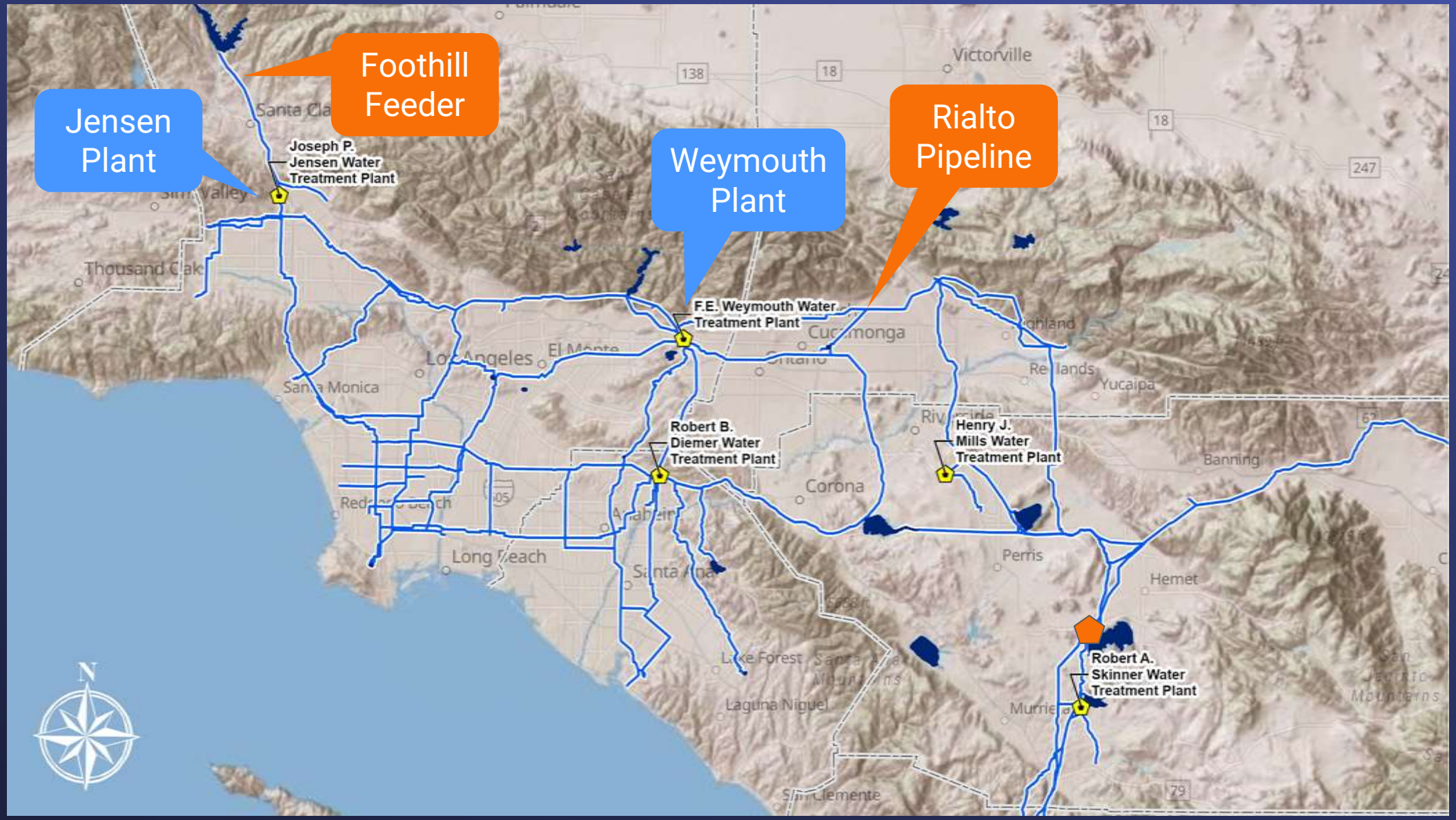
Recommendation and Fiscal Impact

Award of a procurement contract

Fiscal impact of $725,000

Budgeted

Distribution System



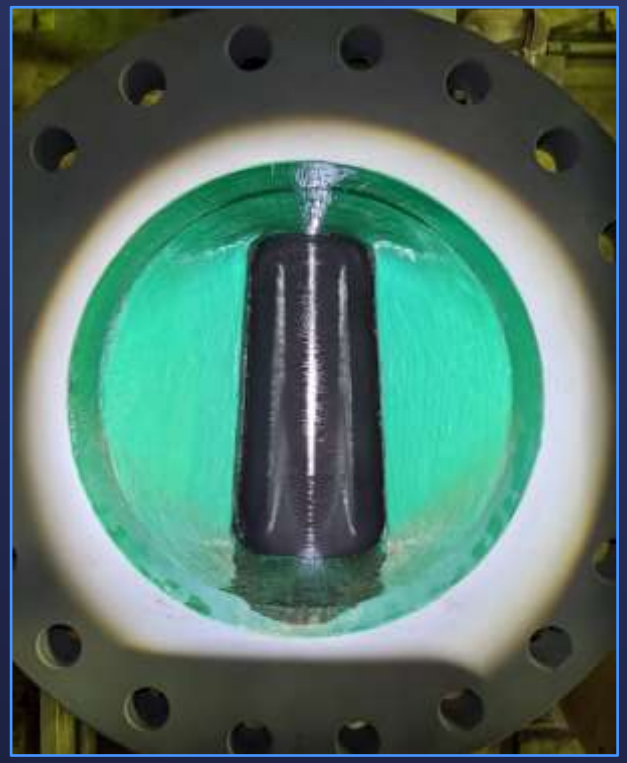
Plug Valves Procurement

Existing
Plug Valve Interior

Background

- Blowoff Structures
  - Used to dewater pipelines
  - Isolation valves – shutdown required to replace
- Twenty 16-inch replacement valves needed
  - (14) Foothill Feeder & (6) Rialto Pipeline
  - In service over 50 years
  - Valves are corroded, worn beyond repair

Plug Valves Procurement



New Plug Valve Interior

Alternatives Considered

- Refurbish existing valves
  - Existing valves too worn, deteriorated
  - Extended pipeline outage
- Replace with butterfly valves
  - More readily available
  - Less robust construction
  - Potential for damage in this application
- Selected alternative
  - Replace existing plug valves in-kind

Plug Valves Procurement

Plug Valve Installation

Scope of Work

- Contractor
  - Furnish 20 16-inch plug valves
- Metropolitan
  - Fabrication inspection, submittal review, contract administration
  - Project management, project controls

Bid Results

Request for Bids No. RFB-KK-423868

Bids Received	November 13, 2023
No. of Bidders	3
Lowest Responsible Bidder	Caasi Flow Control
Low Bid	$549,592.04
Range of Other Bids	$576,000 - 649,026
SBE Participation*	N/A

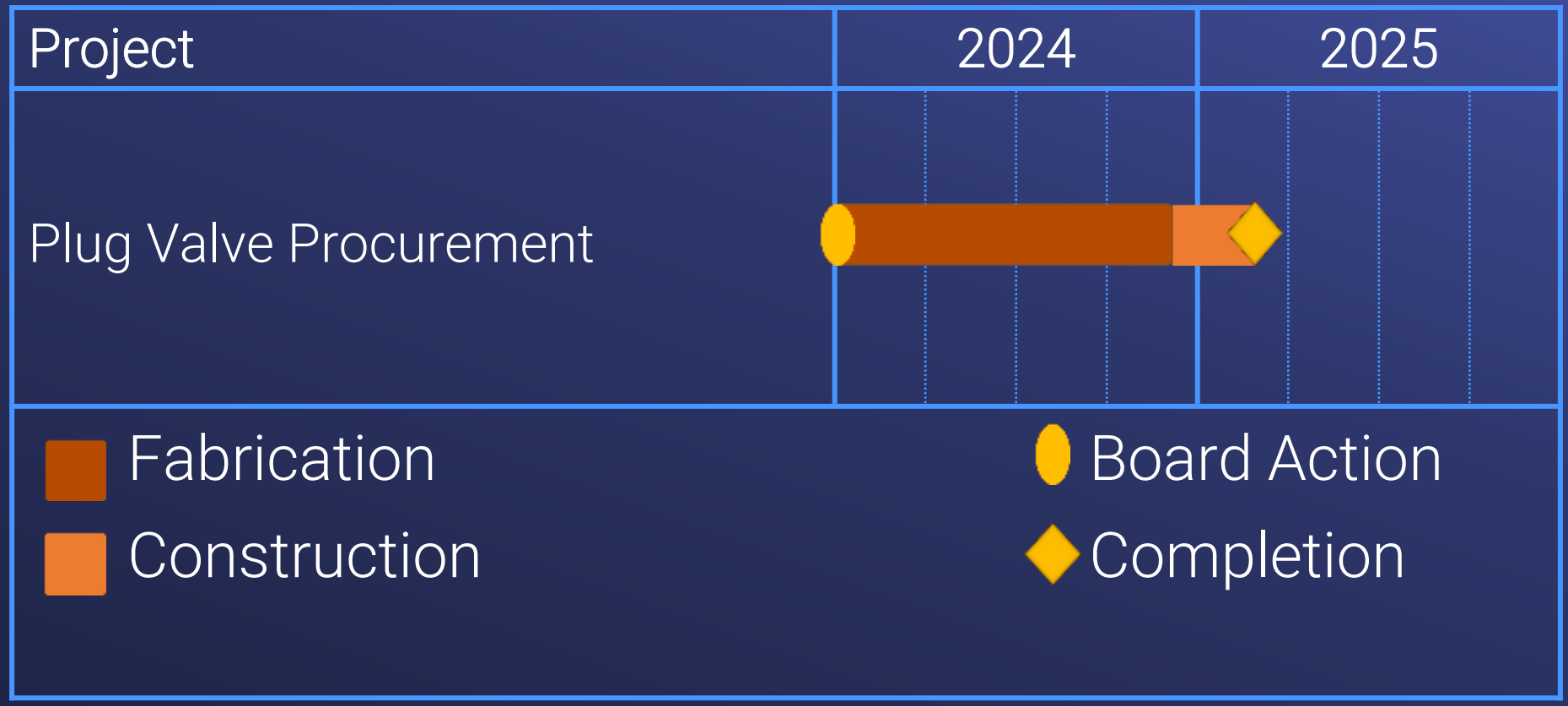
*SBE (Small Business Enterprise) participation level not established for procurement contract

Allocation of Funds

Plug Valves Procurement

Metropolitan Labor	
Owner Costs (Proj. Mgmt., Contract Admin.)	$ 35,000
Fabrication Inspection & Support	59,000
Submittals Review & Tech. Support	14,000
Contract	
Caasi Flow Control	549,592.04
Remaining Budget	67,407.96
Total	$725,000

Project Schedule



Board Options

- Option #1

  Award a $549,592.04 procurement contract to Caasi Flow Control for 20 plug valves.

- Option #2

  Do not proceed with the project at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

- **Board of Directors**
  Engineering, Operations, and Technology Committee

1/9/2024 Board Meeting

7-5

Subject

Authorize an agreement with Application Software Technology LLC in an amount not to exceed $800,000 for the Oracle E-Business Suite Procurement Services Module Implementation; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

Metropolitan is seeking services to implement a new Oracle E-Business Suite Procurement Services module, specifically for construction contracts, and other standard features for contract management. The new module shall be integrated with the existing E-Business Suite platform.

This action authorizes project management, design, and development of professional services for implementation of the Oracle Services Procurement module in the Oracle E-Business Suite. This implementation will streamline the Construction Contracts and Procurement business process, automating retention or other withholdings required to be specified as liabilities in the General Ledger. The implementation of this module would eliminate missed retention withholdings from future payments and record the transactions correctly and timely in the General Ledger, thereby avoiding penalties and saving funds for Metropolitan.

Proposed Action(s)/Recommendation(s) and Options

Staff Recommendation: Option #1

Option #1

Authorize an agreement with Applications Software Technology LLC in an amount not to exceed $800,000 for the Oracle E-Business Suite Procurement Services Module Implementation.

Fiscal Impact: Expenditures of $1,720,000 in capital funds
Business Analysis: This project provides accurate General Ledger reporting on financial commitments related to Construction Contracts at Metropolitan. The need for improved General Ledger reporting was identified by the Audit Department and Finance.

Option #2

Do nothing at this time
Fiscal Impact: No capital expenditures
Business Analysis: Maintain the current manual processes

Alternatives Considered

Construction Management Services proposed a solution from Textura, a third-party Payment Management Cloud Service on Oracle Cloud Infrastructure. This application does not meet all the requirements and does not integrate into Metropolitan's current Oracle E-Business Suite platform. This solution turned out to be very expensive due to the annual cloud subscription. No other alternatives were considered as third-party solutions will require customization to integrate with the Oracle E-Business Suite system, which would be cost prohibitive and problematic whenever the E-Business Suite platform is updated or upgraded.

Applicable Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Related Board Action(s)/Future Action(s)

By Minute Item 52778, dated April 12, 2022, the Board appropriated a total of $600 million for projects identified in the Capital Investment Plan for Fiscal Years 2022/23 and 2023/24.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt from CEQA because there is no potential for the activity in question to have a significant effect on the environment. (State CEQA Guidelines Section 15061(b)(3).)

CEQA determination for Option #2:

None required

Details and Background

Background

The Oracle E-Business Suite is the primary financial system used at Metropolitan for Purchasing, Accounts Payable, Accounts Receivable, Fixed Assets, iProcurement, Inventory, iExpenses, and General Ledger reporting. To improve process efficiency and comply with financial reporting requirements, an additional module for Services Procurement is recommended to be integrated with the existing E-Business Suite platform.

There have been several audit findings on retention transactions not being held from construction contract payments. When retention is performed correctly, the amount of retention is either sent to an escrow account or held as a liability in the General Ledger. Stop Notices and Liquidated Damages should also be held as liabilities in the General Ledger. In the current Oracle E-Business Suite, it is difficult to automate and record these types of transactions.

The Oracle on-premises Services Procurement Module automates retention transactions at the time of payment. The Services Procurement module is part of the Oracle E-Business Suite. The completion of this project will eliminate missed retention withholdings from future payments and record the transactions correctly and timely in the General Ledger.

This action authorizes $800,000 for the Oracle E-Business Suite implementation for the Services Procurement module. The total project budget is $1,720,000 and includes funds for awarding a new contract with Applications Software Technology LLC for $800,000 for professional and technical services. Other costs included are $668,000 for labor costs by Metropolitan staff, including owner costs and project management, $80,000 for software licenses, and $172,000 for remaining budget.

This project has been evaluated and recommended by Metropolitan's Capital Investment Plan Evaluation Team, and funds are available within the fiscal year 2023/24 capital expenditure plan. See **Attachment 1** for the Financial Statement.

Project Milestones

Request for Proposal via Request for Bids and Vendor Selection	May – Sep 2023
Board Letter and Action	Jan – 2024
Project Kick off and Discovery	Feb – 2024
Design and Implementation	Feb – Jul 2024
Testing and Deployment	Aug – Oct 2024
Go-Live	Nov – Dec 2024

12/18/2023

Charles Eckstrom *Date*
Group Manager, Information Technology

12/19/2023

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Financial Statement

Ref# IT12697556

Allocated Funds for Oracle EBS Module Implementation: Services Procurement

	Current Board Action (Jan. 2024)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt.)	668,000
Submittals Review & Record Drwgs	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	80,000
Incidental Expenses	-
Professional/Technical Services	800,000
Equipment Use	-
Contracts	-
Remaining Budget	172,000
Total	**$ 1,720,000**

Engineering, Operations & Technology Committee

Services Procurement Module Implementation on Oracle EBS

Item: 7-5

January 8, 2024

Item 7-5
Services Procurement Module Implementation on Oracle EBS

Subject

Authorize an agreement with Application Software Technology, LLC in an amount not to exceed $800,000 for the Oracle E-Business Suite Procurement Services Module Implementation.

Purpose

This implementation will streamline the Construction Contracts and Procurement business process, automating retention or other withholdings required to be specified as liabilities, eliminate missed retention withholdings from future payments and record the transactions correctly and timely in the General Ledger, thereby avoiding penalties and saving funds for Metropolitan.

Recommendation and Fiscal Impact

Authorize an agreement with Application Software Technology, LLC in an amount not to exceed $800,000 for the Oracle E-Business Suite Procurement Services Module Implementation.

Budgeted

Background

- The Oracle EBS is the primary financial system used at Metropolitan for Purchasing, Accounts Payable, Accounts Receivable, Fixed Assets, iProcurement, Inventory, iExpenses and General Ledger (GL) Reporting.
- Currently, the Service Contracts are not automated and are managed by the Construction Contracts staff in Engineering Services Group, in coordination with Finance for Payment Processing.
- Metropolitan is seeking Professional Services to implement a new Services Procurement module, for automating the process of handling the Engineering Construction Services contracts & Payments.

High Level Scope of Work

- The new Oracle on-prem Services Procurement Module will be integrated with the existing EBS platform.
- To improve the process efficiency and comply with the financial reporting and audit requirements.
- To automate retention transactions at the time of payment, as per the terms in construction contracts and agreements.
- To record the transactions correctly and timely in the GL, thereby eliminating missed retention withholdings from future payments, avoiding high penalties.

High Level Scope of Work

- To use other available standard features of this new module for contract management that better integrates with the existing Oracle EBS platform, providing a user-friendly interface for business users.
- To document the entire business process and perform knowledge transfer with adequate hands-on testing by the business users.

Procurement

- June 2, 2023 - RFP 1349 with Business Requirements issued.
- July 10, 2023 – Only one Vendor responded with the proposal.
- August 1, 2023 - Evaluation & Scoring completed. The Panel consisted of five scorers, one SME from each stakeholder group and two Technical Advisors.
- September 9, 2023 - Follow up Demo & Q&A conducted by Procurements & Contracts.
- September 26, 2023 – a Request To Award Memo (RTAM) for $800,000 was approved.

Vendor Selection

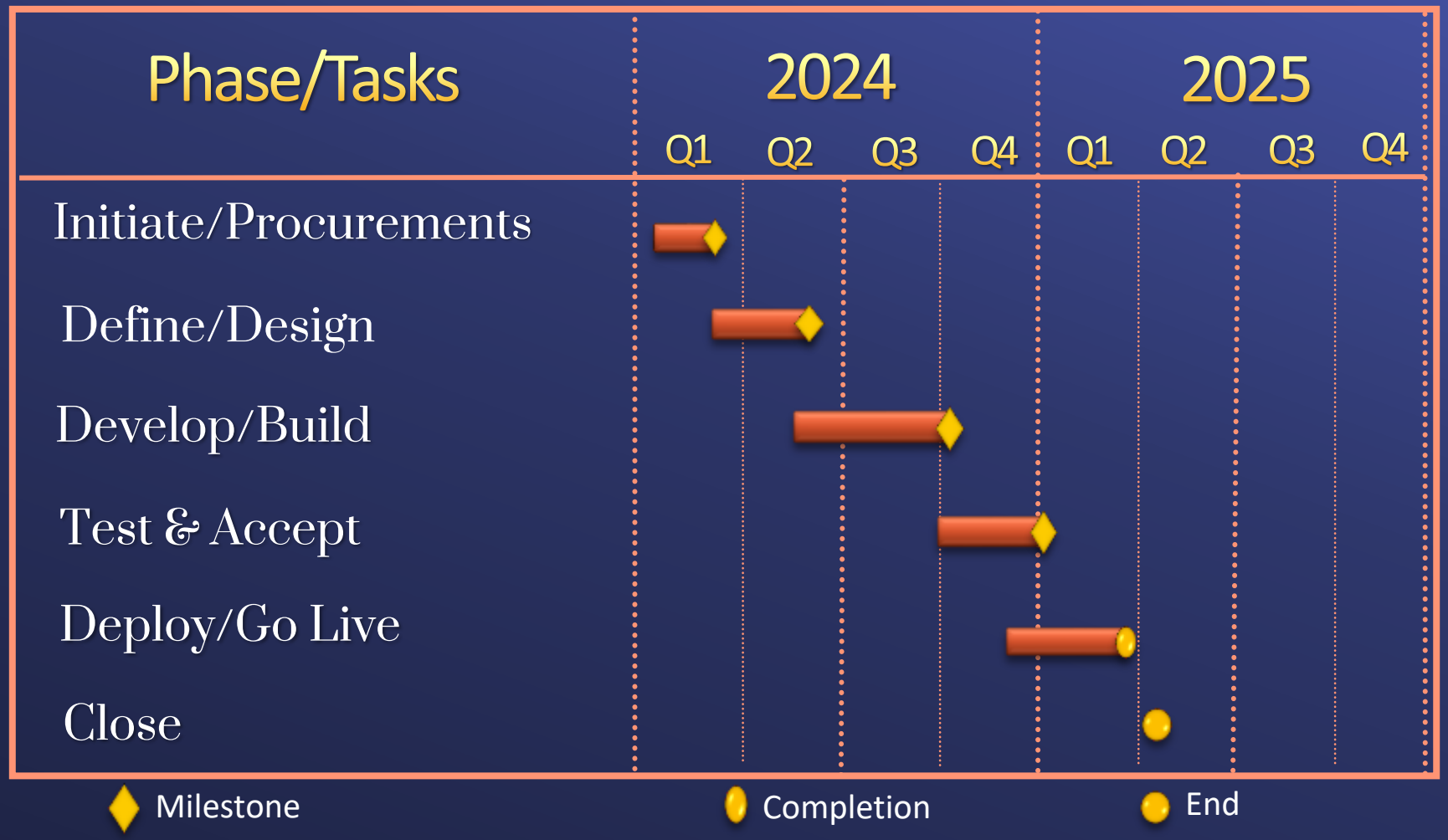
- Vendor selection was based on final scores derived from the evaluation criteria defined in the RFP.
- The SBE/RBE/DVBE participation goal designated for this solicitation was twenty-five percent (25%).
- The vendor did not qualify for SBE/RBE/DVBE.
- Application Software Technology, LLC was selected as the winning vendor.

Budget Cost Breakdown

Description	FY 2023-24	FY 2024-25	Total
Oracle Procurement Services Implementation			
MWD Labor	$ 300,000	$ 368,000	$ 668,000
Software Licenses		$ 80,000	$ 80,000
Professional & Technical Services	$ 500,000	$ 300,000	$ 800,000
Contingency		$ 172,000	$ 172,000
Total Project Budget	$ 800,000	$ 920,000	$ 1,720,000

Project Plan Milestones

Timeline Estimates



Board Options

Option #1

- Authorize an agreement with Application Software Technology, LLC in an amount not to exceed $800,000 for the Oracle E-Business Suite Procurement Services Module Implementation.

Option #2

- Do nothing at this time.

Staff Recommendation

Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

- **Board of Directors**
  Engineering, Operations, and Technology Committee

1/9/2024 Board Meeting

REVISED 7-6

Subject

Authorize agreements with: (1) Alvarez, LLC in an amount not to exceed $1,923,940 to provide professional services and technical support; and (2) Cloudhouse Technologies Limited in an amount not to exceed $801,900 for licenses for up to a period of three years, to migrate legacy applications to supported Windows servers for the Application Server Upgrade project; the General Manager has determined the proposed actions are exempt or otherwise not subject to CEQA. **[Revised Subject]**

Executive Summary

This action awards an agreement to Alvarez LLC (Alvarez) for services to execute the migration of legacy applications from hardware running Windows Operating Systems that are no longer supported by the vendor, Microsoft Inc., to new hardware running Microsoft-supported Windows Operating Systems. Alvarez will provide the professional services to execute the migration of the identified legacy applications and provide post-execution support as necessary. The licenses for Alchemy software provided by Cloudhouse Technologies Limited (Cloudhouse) are necessary to continue running the legacy applications on the new servers. The licenses will be for a period of up to three years.

There are a multitude of critical applications that are running on legacy Windows Operating Systems. Due to the technical challenges involved with moving off these systems or implementing an alternate solution, these instances must continue to run into 2024, if not longer. However, the continued use of these unsupported systems poses a significant operational, security, and financial risk to Metropolitan.

Proposed Action(s)/Recommendation(s) and Options

Staff Recommendation: Option #1

Option #1 (Revised)

Authorize agreements with: (1) Alvarez, LLC in an amount not to exceed $1,923,940 to provide professional services and technical support; and (2) Cloudhouse Technologies Limited in an amount not to exceed $801,900 for licenses for up to a period of three years, to migrate legacy applications to supported Windows servers for the Application Server Upgrade project.

Fiscal Impact: Expenditure of $2,955,000in capital funds
Business Analysis: The solution offered by Alvarez LLC was evaluated by a committee of Metropolitan subject matter experts who feel that it could overcome current technical challenges and extend the lifetime of legacy applications by migrating them onto hardware running Windows Supported systems

Option #2

Do nothing at this time
Fiscal Impact: No capital expenditures
Business Analysis: This option would maintain current use of Microsoft unsupported Operating Systems, and the Operational, Security, and financial risk to Metropolitan would remain.

Alternatives Considered

Alternative solutions by Yanilex Systems LLC and SHI International Corp were considered. However, their proposed solutions did not meet the technical requirements needed by Metropolitan. We felt that using either solution would result in the servers not being migrated efficiently and correctly, and ultimately require more work to maintain in the future.

Applicable Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Related Board Action(s)/Future Action(s)

By Minute Item 52778, dated April 12, 2022, the Board appropriated a total of $600 million for projects identified in the Capital Investment Plan for Fiscal Years 2022/23 and 2023/24.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt from CEQA because there is no potential for the activity in question to have a significant effect on the environment. (State CEQA Guidelines Section 15061(b)(3).)

CEQA determination for Option #2:

None required

Details and Background

Background

In June 2021, the current capital project was approved to upgrade all out-of-support operating systems. Over the past two years, many applications have either been upgraded, migrated onto a supported operating system, or completely replaced. However, during the migration and upgrade process, it was discovered there was a large number of applications with technical challenges that made upgrading, migrating, or replacement non-viable.

Given the security need to upgrade applications to supported servers, alternative solutions were explored leading to this current action.

This action authorizes agreements with (1) Alvarez, LLC in an amount not to exceed $1,923,940 to provide professional services and technical support and (2) Cloudhouse Technologies Limited in an amount not to exceed $801,900 for licenses for up to a period of three years, to migrate legacy applications to supported Windows servers for the Application Server Upgrade project The total project budget is $2,955,000 and includes funds for awarding a new contract with Alvarez LLC for $1,923,940 for professional and technical services. Other costs included are $229,160 for labor costs by Metropolitan staff, including owner costs and project management, and $801,900 for licensing costs.

This project has been evaluated and recommended by Metropolitan's Capital Investment Plan Evaluation Team, and funds are available within the fiscal year 2023/24 capital expenditure plan. See **Attachment 1** for the Financial Statement.

Project Milestones

Board approval	Jan 2024
Discovery/Design Phase	Feb – Mar 2024
Development Phase	Apr 2024
Deploy Phase	May – Aug 2024

1/3/2024

Charles Eckstrom *Date*
Group Manager, Information Technology

1/3/2024

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Financial Statement

Ref# IT12699102

Allocated Funds for Application Servers Upgrade

	Current Board Action (Jan. 2024)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt.)	229,160
Submittals Review & Record Drwgs	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	801,900
Incidental Expenses	-
Professional/Technical Services	1,923,940
Equipment Use	-
Contracts	-
Remaining Budget	-
Total	**$ 2,955,000**

Engineering, Operations & Technology Committee

Migration of Legacy Applications

Item 7-6

January 8, 2024

Item 7-6
Migration of Legacy Applications

Subject
Authorize agreements with (l) Alvarez, LLC in an amount not to exceed $1,923,940 to provide professional services and technical support and (2) Cloudhouse Technologies Limited in an amount not to exceed $801,900 for licenses for up to a period of three years, to migrate legacy applications to supported Windows servers for the Application Server Upgrade project.

Purpose
So that we may proceed with agreements with Alvarez and Cloudhouse Technologies Limited.

Recommendation and Fiscal Impact
Authorize agreements with (l) Alvarez, LLC in an amount not to exceed $1,923,940 to provide professional services and technical support and (2) Cloudhouse Technologies Limited in an amount not to exceed $801,900 for licenses for up to a period of three years, to migrate legacy applications to supported Windows servers for the Application Server Upgrade project.

Budgeted

Background

- Project to upgrade out of support Server operating systems.
- Technical Challenges (70 servers)
  - e.g. WINS – 9 Servers, EDMS – 6 Servers
- RFP was conducted to identify a solution to execute migrations.
- Recommended solution offered by Alvarez, LLC (“Alvarez”).

Scope of Work

- Procurement of Licenses to run Cloudhouse Alchemy solution.
  - Cloudhouse Alchemy allows applications to run on operating systems that normally would not be compatible.
- Alvarez to provide professional and technical services to execute migrations.

Procurement

- June 1, 2023: RFP 1344 issued
- July 17, 2023: 3 Proposals received
- September 12, 2023: Follow up interviews conducted with vendors
- October 16, 2023: Recommendation to Award (RTAM) approved

Alvarez, LLC	S/DVBE Yes	Achieved S/DVBE Participation Yes	RBE No

Vendor Selection

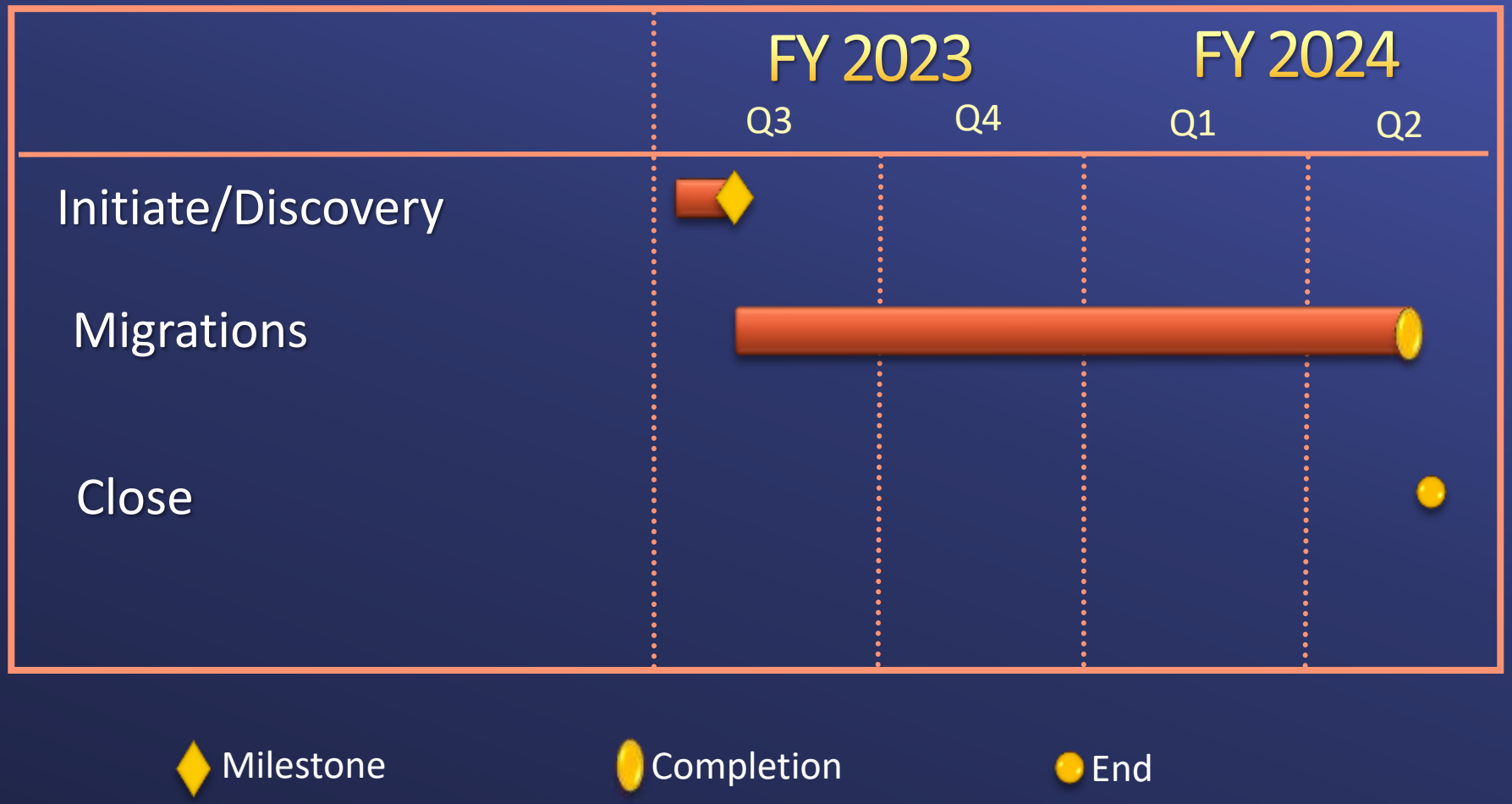
- Vendor selection was based on final scores derived from the evaluation criteria defined in the RFP.
- Scoring conducted by committee of MWD subject matter experts.
- September 19, 2023: Final scores were submitted

Cost Breakdown

Description	FY 2023-24	FY 2024-25	Total
Internal Labor	$ 152,812	$ 76,348	**$ 229,160**
Licenses	$ 561,330	$ 240,570	**$ 801,900**
Professional and Technical Services	$ 1,346,758	$ 577,182	**$ 1,923,940**
Total	**$ 2,158,400**	**$ 796,600**	**$ 2,955,000**

Plan Milestones

Timeline



Board Options

Option #1

- Authorize agreements with (l) Alvarez, LLC in an amount not to exceed $1,923,940 to provide professional services and technical support and (2) Cloudhouse Technologies Limited in an amount not to exceed $801,900 for licenses for up to a period of three years, to migrate legacy applications to supported Windows servers for the Application Server Upgrade project.

Option #2

- Do nothing at this time.

Staff Recommendation

Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

- **Board of Directors**
  Ethics, Organization, and Personnel Committee

1/9/2024 Board Meeting

7-7

Subject

Authorize an increase in contract authority for Skilled Trade Supplemental Labor Contract in the amount of $6 million for a total not-to-exceed amount of $8 million; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

Skilled Labor Supplemental Labor Contract

The full cost of this contract is covered by existing group budgets. Expenditures are currently budgeted and approved under the individual projects or will be paid using existing operations and maintenance funds.

No additional appropriations are requested.

Metropolitan is not obligated to spend the full contract authority. The additional requested authority will only be used if needed, and the full cost of the supplemental labor will be covered within the existing authorized budget.

Supplemental labor contracts allow Metropolitan to address core operational staffing needs that occur due to vacancies and help address peak workloads. Examples include support of ongoing projects and core operational needs such as addressing desert housing and providing operational support due to position vacancies.

Metropolitan maintains contract RFP-PR-381410 that provides flexibility to secure supplemental labor from six different vendors to address the complex and varied staffing needs of Metropolitan. The Contract Authority for RFP-PR-381410 is currently not to exceed $2 million per year and expires May 31, 2026.

Staff recommends authorizing an increase of the existing $2 million contract authority to a total not-to-exceed contract authority of $8 million per year.

Proposed Action(s)/Recommendation(s) and Options

Staff Recommendation: Option #1

Option #1

Authorize the General Manager to authorize an increase of the contract authority to a not-to-exceed amount of $8 million for skilled labor services under contract RFP-PR-381410.

Fiscal Impact: None; expenditures are budgeted and approved under the individual projects or from existing operations and maintenance funds.
Business Analysis: The supplemental labor contracts allow Metropolitan to meet staffing needs during peak workloads and to maintain operational continuity due to position vacancies.

Option #2

Do not authorize the General Manager to increase the amount payable.
Fiscal Impact: None
Business Analysis: Metropolitan would need to end the use of existing supplemental labor individuals and determine how to maintain core operational service levels without this staffing support.

Alternatives Considered

There are limited viable alternatives due to the nature of Metropolitan's work. Alternative contracts for similar services could be identified, but that approach would have a significant negative impact on daily operations and is not projected to result in any cost savings to Metropolitan.

Applicable Policy

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Related Board Action(s)/Future Action(s)

None

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

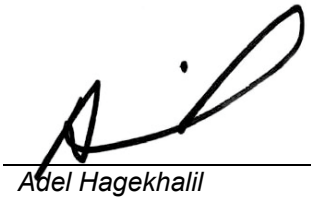
The proposed action is not defined as a project under CEQA because it involves organizational, maintenance, or administrative activities; personnel-related actions; and/or general policy and procedure making that will not result in direct or indirect physical changes in the environment. (Public Resources Code Section 21065; State CEQA Guidelines Section 15378(b)(2) and (5).)

CEQA determination for Option #2:

None required

12/19/2023

Mark A. Brower *Date*
Human Resources Group Manager



12/20/2023

Adel Hagekhalil *Date*
General Manager

Ref# hr12699525

Ethics, Organization, and Personnel Committee

Authorize an Increase in Contract Authority for Skilled Trade Supplement Labor Contract

Item 7-7

January 9, 2024

Item # 7-7

Authorize additional contract authority to Skilled Trade Supplemental Labor Contract

Subject

Authorize an increase in contract authority for Skilled Trade Supplemental Labor Contract in the amount of $6 million for a total not-to-exceed amount of $8 million; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Purpose

Supplemental labor contracts allow Metropolitan to address core operational staffing needs that occur due to vacancies, project support, and help address peak workloads.

Recommendation and Fiscal Impact

Authorize the General Manager to authorize an increase of the contract authority to a not to exceed amount of $8 million for skilled labor services under contract RFP-PR-381410.

Budgeted

Background

Supplemental Labor Contract

- Metropolitan has contract RFP-PR-381410 for skilled trade supplemental labor with various labor firms expiring May 31, 2024.
- Provides skilled trade labor services coverage for critical vacancies and project support.

Supplemental Labor Contract

Contract Details

- Contract authority is currently at not to exceed $2 million per contract year.
- Provides the flexibility to secure supplemental labor from six (6) different vendors.
- Renews each year on June 1st.
- Expires May 31st of each year up to 2026.

Options

- Option #1: Authorize the General Manager to authorize an increase of the contract authority to a not-to-exceed amount of $8 million for skilled labor services under contract RFP-PR-381410.
- Option #2: Do not authorize the General Manager to increase the amount payable.

Staff Recommendation

Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

- **Board of Directors**
  Finance, Audit, Insurance, and Real Property Committee

1/9/2024 Board Meeting

7-9

Subject

Authorize the General Manager to execute 47 license agreements to update the conditions and extend the term of existing secondary use agreements comprising Metropolitan fee-owned parcels in Los Angeles, Orange, Riverside and San Bernardino counties; the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA (Assessor Parcel Nos. 0201-821-49; 0239-182-46; 0262-051-21; 0262-071-40; 0264-011-31; 0266-041-59; 0643-221-06; 0643-221-06; 0643-221-07; 0646-081-07; 0649-031-06; 189-200-007; 2526-024-270; 291-480-008; 303-090-036; 390-151-19; 430-210-014; 430-190-028; 4493-014-906; 452-052-03; 516-030-013; 516-100-006; 5260-013-910; 6204-012-901; 6204-033-901; 6204-028-901; 6680-200-02; 6680-500-16; 811-100-007; 8666-059-904; 8381-006-906; 8381-006-909; 8381-019-900; 8381-020-902; 8381-020-903; 8381-023-901; 8381-030-902; 8381-030-903; 8381-036-906; 8381-036-905; 8669-013-901; 8684-008-270; 921-700-013; 922-110-022; Parcel on Fargo Canyon Road, Riverside)

Executive Summary

Metropolitan has entered into hundreds of active secondary use agreements (permits, licenses, leases) that have been in effect since as far back as 1970. Staff has identified 47 such "legacy" agreements, as shown on the map **(Attachment 1),** that have remained active on a year-to-year, holdover basis with outdated terms and conditions. The proposed 47 replacement license agreements and permits would have base terms and options for a total of up to 30 years and include payment amounts or in-kind contributions established through our fair market value appraisal process. The requested board action is intended to provide for more efficient processing of the subject's existing 47 license agreements and permits instead of seeking separate board authorization for each license agreement, given their similar status. See **(Attachment 2)** for the List of 47 Agreements. This consolidated approach will improve the management of secondary use agreements, ensuring compliance with contemporary standards and continued compatibility of those secondary uses with Metropolitan's core mission.

Proposed Action/Recommendation and Option

Staff Recommendation: Option #1

Option #1

Authorize the General Manager to execute 47 license agreements to update the conditions and extend the term of existing secondary use agreements comprising Metropolitan fee-owned parcels in Los Angeles, Orange, Riverside and San Bernardino counties.

Fiscal Impact: Metropolitan may recognize a net annual increase in revenue up to 8% from $280,692 to $303,147 for the 47 license agreements.

Business Analysis: Allowing compatible uses within Metropolitan's fee-owned property generates revenue and advances public interest and local private commerce.

Option #2

Authorize the General Manager to execute 47 license agreements comprising Metropolitan's fee-owned parcels at fair market value and resubmit to the Board any license agreements recommended at a modified fee less than fair market value for authorization to execute the agreements.

Fiscal Impact: Metropolitan may recognize a net annual increase in revenue up to 5% from $280,692 to $294,727 for the 47 license agreements.
Business Analysis: Allowing compatible uses within Metropolitan's fee-owned property generates revenue and advances public interest and local private commerce.

Option #3

Do not authorize the General Manager to execute 47 license agreements and continue to allow the existing agreements to roll over until new ones can be taken back to the Board.
Fiscal Impact: Revenue from the 47 license agreements remain unchanged.
Business Analysis: Existing agreements with outdated terms will continue to present unfavorable risk exposure.

Alternatives Considered

Not applicable

Applicable Policy

Metropolitan Water District Administrative Code Section 8230: Grants of Real Property Interests

Metropolitan Water District Administrative Code Section 8231: Appraisal of Real Property Interests

Metropolitan Water District Administrative Code Section 8121: General Authority of General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Related Board Action(s)/Future Action(s)

Not applicable

California Environmental Quality Act (CEQA)

CEQA determination for Option #1 and Option #2:

The proposed action is exempt from CEQA because it involves the licensing of existing public structures, facilities, involving negligible or no expansion of existing or former use, and no possibility of significantly impacting the physical environment. (State CEQA Guidelines Section 15301).

CEQA determination for Option #3:

None required

Details and Background

Background

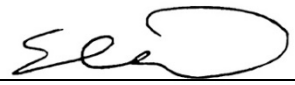
Metropolitan's Land Management Unit is responsible for managing a portfolio of 240 active secondary use agreements. This real estate portfolio is currently generating approximately $8 million in annual revenue, which includes the agriculture leases in Palo Verde and Bay Delta. Parties to the leases and land use licenses and permits range from member agencies, cities, and state and federal agencies to private businesses and organizations. The types of secondary uses authorized on Metropolitan's property include agriculture, recreation, parking, telecom, public roads, storage, access, infrastructure, and utilities.

The existing 47 license and permit agreements that are the subject of this authorization may include one or more of the following characteristics: below-market rates, the lack of current district standard terms and language, the lack of annual rent escalation terms, and holdover permittee or licensee status. Approximately a third of the subject leases or licenses entail long-term telecommunication tenancies at Black Metal Mountain. Your Board has authorized the upgrade of electrical infrastructure at Black Metal Mountain, and the related tenancies need to be updated in connection with this electrical upgrade project to ensure a fair share of these upgrade costs are passed on to the tenants. The continuation of these secondary use agreements will also be reviewed internally to ensure the current uses are compatible with Metropolitan's current and future use. Since all 47 licenses and permits have

been in effect for at least five years, board authorization is required to replace the old agreements with new license and permit agreements as recommended herein.

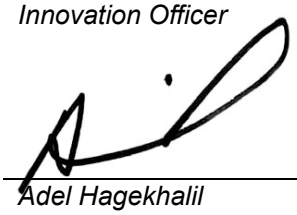
Proposed Key Provisions

- New Fair Market License Fee or Modified License Fee
- Annual Fee Increases of 4-5 percent
- New Liability and Insurance Terms
- Base Term and Optional Additional Term for a total of up to 30 years
- Reappraisal of License Fee every 5 Years
- Paramount Rights Provision
    - Staff is prepared to negotiate terms within the framework of the key provisions set forth herein, including conformance to the Administrative Code's fair market value guidelines. However, board authorization is also being requested to negotiate terms that may not be defined as a standard fair market rate as allowed by the Administrative Code. Pursuant to Administrative Code 8231(b), the General Manager or his designee is also authorized to enter into licenses or leases for less than appraised value based on offsetting mutual benefit factors and/or costs incurred by the licensee or permittee for things such as weed abatement, trespassing or illegal dumping costs. It is anticipated that a nominal percentage of the subject 47 licenses and permits will fall within this mutual benefit and cost offset category, as local conditions or licensed secondary uses lend themselves to in-kind contributions or shared site responsibilities.



12/18/2023

Liz Crosson *Date*
Chief Sustainability, Resilience and Innovation Officer



12/20/2023

Adel Hagekhalil *Date*
General Manager

Attachment 1 – General Location Map

Attachment 2 – List of 47 Agreements

Ref# sri12696274

General Location Map

Contract # (RL #)	Lessee	Size of Premises (Acres)	Use/Purpose	Location of Property or Facility Name	Lease Commencement Date	Lease Term (Yrs.)	Current Annual Amount	Annual Adjustmt	APNs	County
103	Frontier Communications, Inc.	N/A	Telecom	Gene Camp/Parker Dam	7/1/1970	1 Yr	$170.33	None	0649-031-06	San Bernardino
333	Rain for Rent		Storage	Box Springs Feeder	1/1/1977	Yr to Yr	$6,045.89	CPI	291-480-008	Riverside
334	State of California, Department of General Services-CHP	N/A	Telecom	Black Metal Mountain	7/1/1974	1 Yr.	$1,700.00	None	0649-031-06	San Bernardino
335	Frontier Communications, Inc. (Verizon GTE)	N/A	Telecom	Black Metal Mountain	7/1/1974	1 Yr.	$1,500.00	None	0649-031-06	San Bernardino
336	State of Arizona, Department of Public Safety	N/A	Telecom	Black Metal Mountain	7/1/1974	1 Yr.	$1,500.00	None	0649-031-06	San Bernardino
362	U.S. Department of the Interior, Bureau of Land Management	N/A	Telecom	Black Metal Mountain	9/1/1976	1 Yr.	$1,700.00	None	0649-031-06	San Bernardino
390	Southern California Edison Company, Property Acquisition, Real Properties	N/A	Telecom	Black Metal Mountain	2/1/1977	1 Yr.	$1,700.00	None	0649-031-06	San Bernardino
401	County of Los Angeles	1.37	Recreation	Foothill Feeder/Rialto Pipeline	6/1/1977	30 Years	$2,061.42	CPI	8666-059-904; 8381-006-906; 8381-006-909; 8381-019-900; 8381-020-902; 8381-020-903; 8381-023-901; 8381-030-902; 8381-030-903; 8381-036-906; 8381-036-905	Los Angeles
445	Shepherd of the Hill Lutheran Church	0.92	Parking	Foothill Feeder/Rialto Pipeline	6/1/1989	Yr to Yr	$1,458.18	CPI	0201-821-49	San Bernardino
451	U.S. Department of Transportation, FAA	N/A	Telecom	Black Metal Mountain	10/1/1979	Yr to Yr	$1,700.00	None	0649-031-06	San Bernardino
493	Woodbridge Village Association	0.05	Parking	East Orange County Feeder No. 2/Pressure Control Structure	6/1/1982	Yr to Yr	$100.00	None	452-052-03	Orange
513	Western Area Power	N/A	Telecom	Black Metal Mountain	7/1/1974		$1,500.00	None	0649-031-06	San Bernardino
591	U.S. Department of Justice, Federal Bureau of Investigation	N/A	Telecom	Black Metal Mountain	5/1/1985	22 Yrs 11 Mo	$141.66	None	0649-031-06	San Bernardino

Contract # (RL #)	Lessee	Size of Premises (Acres)	Use/Purpose	Location of Property or Facility Name	Lease Commencement Date	Lease Term (Yrs.)	Current Annual Amount	Annual Adjustmt	APNs	County
597	State of California, Department of Fish and Game	N/A	Telecom	Black Metal Mountain	8/1/1984	23 Yrs 4 Mo	$1,700.00	None	0649-031-06	San Bernardino
649	Terra Gen Development Company	10.00	Weather Tower	Colorado River Aqueduct/Whitewater	6/10/1985	Yr. to Yr.	$1,500.00	None	516-030-013	Riverside
672	EPNG Pipeline Company	4.68	Oil Pipeline	Colorado River Aqueduct	6/2/1986	30 Yrs	$4,188.00	2 Yr./PPI	0646-081-07	San Bernardino
686	Southern California Edison Company	0.99	Infrastructure	Colorado River Aqueduct	7/1/1986	30 Yrs.	$0.00	None	6680-200-02; 6680-500-16	San Bernardino
742	County of San Bernardino Office or Public Safety-Forestry & Fire Warden	N/A	Telecom	Black Metal Mountain	1/18/1988	20 Yrs	$0.00	Fixed Rate	0649-031-06	San Bernardino
841	Mountain View Congregation of Jehovah's Witnesses	0.26	Parking	Foothill Feeder/Rialto Pipeline	1/1/1993	Yr. to Yr.	$500.00	Fixed Rate	0239-182-46	San Bernardino
847	Palomar Properties, Inc.	0.77	Landscaping	San Diego Pipeline No. 5	5/1/1989	Yr. to Yr.	$1,429.70	4%	921-700-013	Riverside
874	Azusa Rock, Inc.	2.5	Access	Fish Canyon Adit	10/1/1989	Yr. to Yr.	$444.65	5%	8684-008-270	Los Angeles
924	Samaritan Health Services (DBA Airevac)	N/A	Telecom	Black Metal Mountain	11/1/1990	17.5 Yrs.	$1,700.00	Fixed Rate	0649-031-06	San Bernardino
964	U.S. Department of Justice, Drug Enforcement Administration	N/A	Telecom	Black Metal Mountain	8/9/1991	16 Yrs 6 Mo	$1,700.00	Fixed Rate	0649-031-06	San Bernardino
972	Jayofer Inc	0.12	Parking	Middle Cross Feeder	9/1/1991	29 Years	$850.96	3%	6204-012-901	Los Angeles
977	C & C Mountaingate, Inc.	0.215	Access	Sepulveda Canyon Control Facility	7/1/1992	Yr. to Yr.	$651.27	3%	4493-014-906	Los Angeles
982	Caltrans, Department of Transportation	0.413	Telecom	East Iron Mountain	8/1/1991	Yr. to Yr.	$1,500.00	Fixed Rate	0643-221-06; 0643-221-07	San Bernardino
1008	Martens, Mr. Eric W.	3.67	Telecom	Chuckwalla Communications Site	8/1/1992	Yr. to Yr.	$333.68	5%	811-100-007	Riverside
1294	Hafif, Mr. Herbert	3.59	Landscaping	Foothill Feeder/Rialto Pipeline	4/15/1995	Yr. to Yr.	$500.00	Fixed Rate	8669-013-901	Los Angeles

Contract # (RL #)	Lessee	Size of Premises (Acres)	Use/Purpose	Location of Property or Facility Name	Lease Commencement Date	Lease Term (Yrs.)	Current Annual Amount	Annual Adjustmt	APNs	County
1368	Coachella Valley Aggregates	1.22	Access	Colorado River Aqueduct	4/1/1995	24 Yrs.	$0.00	N/A	N/A Fargo Canyon Rd	Riverside
1387	Cemex Construction Materials Pacific, LLC	0.12	Access	San Diego Pipeline 4 & 5	4/1/1995	Yr. to Yr.	$3,704.37	3%	922-110-022	Riverside
1492	T-Mobile USA, Inc.	0.189	Telecom	Sepulveda Feeder	7/1/1996	25 Yrs.	$21,324.36	3%	4493-014-906	Los Angeles
1522	Southern California Gas Company - Los Angeles	N/A	Telecom	Black Metal Mountain	1/1/1997	Yr. to Yr.	$1,500.00	Fixed Rate	0649-031-06	San Bernardino
1635	RailAmerica, Inc.	0.012	Telecom	Iron Mountain Pumping Plant	7/1/1997	Yr. to Yr.	$0.00	N/A	0643-221-06	San Bernardino
1653	State of California	0.0034	Telecom	Iron Mountain Pumping Plant	2/1/1998	Yr. to Yr.	$0.00	N/A	0643-221-06	San Bernardino
1840	Whitewater Rock and Supply Company	14.426	Storage	Colorado River Aqueduct/Whitewater	11/1/2007	Month to Month	$12,127.80	4%	516-100-006	Riverside
1851	Riverside Auto Auction	4.896	Parking	Upper Feeder	12/1/2001	Yr. to Yr.	$46,773.36	4%	189-200-007	Riverside
1931	La Paz County	N/A	Telecom	Black Metal Mountain	5/1/2001	Yr. to Yr.	$0.00	N/A	0649-031-06	San Bernardino
2033	Middle Ranch	2.3	Equestrian	Foothill Feeder/Sunland Tunnel 1	8/1/2004	Yr. to Yr.	$13,474.80	5%	2526-024-270	Los Angeles
2193	Cemex Construction Materials Pacific, LLC	0.077	Access	Foothill Feeder/Rialto Pipeline	8/23/2004	Yr. to Yr.	$331.83	5%	0262-071-40; 0264-011-31	San Bernardino
2387	CalMat dba Vulcan Materials Company, Western Division	1.155	Access	Foothill Feeder/Rialto Pipeline	5/1/2006	14 Yrs.	$35,568.69	5%	0262-051-21	San Bernardino
2549	R & J Haringa Dairy	17	Agriculture	Colorado River Aqueduct/Casa Loma Siphon (1st Barrel)	1/1/2006	Yr. to Yr.	$1,497.12	CPI	430-210-014; 430-190-028	Riverside
2763	LA Community College District	0.25	Parking	Middle Cross Feeder	7/1/2008	Yr. to Yr.	$177.47	5%	6204-033-901; 6204-028-901	Los Angeles
2851	Industrial Parkway, LLC	1.8	Landscaping	Foothill Feeder/Rialto Pipeline	5/1/2008	Yr. to Yr.	$579.30	4%	0266-041-59	San Bernardino
2859	So Cal Gas	0.06	Telecom	Garvey Reservoir	8/1/2008	Yr. to Yr.	$17,393.38	CPI	5260-013-910	Los Angeles

Contract # (RL #)	Lessee	Size of Premises (Acres)	Use/Purpose	Location of Property or Facility Name	Lease Commencement Date	Lease Term (Yrs.)	Current Annual Amount	Annual Adjustmt	APNs	County
3274	River Rat Radio	0.084	Telecom	Black Metal Mountain	9/1/2012	Yr. to Yr.	$36,946.80	4%	0649-031-06	San Bernardino
3296	Selman Chevrolet	0.38	Parking	East Orange County Feeder No. 2/Pressure Control Structure	12/13/2012	Yr. to Yr.	$41,526.70	3%	390-151-19	Orange
4070	Duke Realty	0.296	Access	Colorado River Aqueduct	4/1/2017	5 Yrs.	$9,490.00	4%	303-090-036	Riverside

Finance, Audit, Insurance, and Real Property Committee

Replace 47 Outdated Secondary Use Agreements

Item 7-9

January 9, 2024

Overview of Replacing Outdated Agreements

Subject

- Authorize the negotiation and execution of 47 secondary use agreements (leases, licenses, permits) to replace the existing outdated terms.

Purpose

- Replace outdated agreements with new agreements that include Metropolitan's current standard terms and language.

Service Area & CRA Map

Portfolio Data

Outdated Terms

- Below-market Rates
- Lack of Insurance Requirements
- Inadequate Insurance Amounts
- Lack of Annual Rent Increase
- Holdover Tenancy Status
- Outdated Liability, Environmental and Paramount Rights Provisions

Key Provisions

- Mutually compatible uses subject to Metropolitan's paramount right
- Fair Market License Fee
- Modified Fair Market License Fee based on mutual benefits or shared site expenses
- Annual Fee Increase of 4-5%
- Current Liability and Insurance Terms
- Base Term of 5 Years
- Optional Extensions of 5-25 Years
- Reappraisal of License Fee every 5 Years

Board Options

Option No. 1

- Authorize the General Manager to negotiate and execute 47 license agreements.

Option No. 2

- Authorize the General Manager to negotiate and execute license agreements at fair market value (FMV) and resubmit to the Board any license agreements at less than FMV.

Option No. 3

- Do not authorize the negotiation and execution of 47 license agreements.

Board Options

Staff Recommendation

- Option No. 1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

- **Board of Directors**
  Finance, Audit, Insurance, and Real Property Committee

1/9/2024 Board Meeting

7-10

Subject

Review and consider the Final Environmental Impact Report certified by the City of Rancho Cucamonga, and authorize the General Manager to grant a permanent easement to the City of Rancho Cucamonga for public road and trail purposes on Metropolitan fee-owned property in the City of Rancho Cucamonga and identified Assessor Parcel Numbers 022-512-301; 022-512-302; 022-512-303; 022-512-304

Executive Summary

This action authorizes the General Manager to grant a permanent easement to the city of Rancho Cucamonga for public road and trail purposes for the extension of Wilson Avenue, which is along Metropolitan's fee-owned Rialto Pipeline right-of-way. The road and trail improvements are being constructed to accommodate a residential development located just north of the Rialto Pipeline. Board authorization to grant this permanent easement is required as the real property interest to be conveyed exceeds five years.

Proposed Action(s)/Recommendation and Options

Staff Recommendation: Option #1

Option #1

Review and consider the Final Environmental Impact Report certified by the city of Rancho Cucamonga and authorize the General Manager to grant a permanent easement to the city of Rancho Cucamonga for public road and trail purposes in the city of Rancho Cucamonga and identified Assessor Parcel Numbers 022-512-301; 022-512-302; 022-512-303; 022-512-304.

Fiscal Impact: Metropolitan will receive positive revenue in the form of a one-time payment of $1,361,000 as determined by a qualified licensed appraiser and a one-time processing fee of $8,500.
Business Analysis: Cooperation with other agencies, by granting easements and other rights of entry, furthers the public interest and facilitates Metropolitan obtaining easements and other property rights critical for its operations. Metropolitan will also receive positive revenue in the form of fees and fair market value for the easement.

Option #2

Do not approve the permanent easement.
Fiscal Impact: Metropolitan will forgo a one-time payment of $1,369,500.
Business Analysis: The city of Rancho Cucamonga will not be permitted to construct and maintain a public road and trail within Metropolitan property which may impact their future circulation in the area, and they may use eminent domain action to obtain the necessary easement. This option could hinder opportunities to obtain rights or permits for Metropolitan projects from the city in the future.

Alternatives Considered

Not applicable

Applicable Policy

Metropolitan Water District Administrative Code Section 8230: Grants of Real Property Interests

Metropolitan Water District Administrative Code Section 8231: Appraisal of Real Property Interests

Metropolitan Water District Administrative Code Section 8232: Terms and Conditions of Management

Related Board Action(s)/Future Action(s)

By Minute Item 48766, dated August 16, 2011, the Board adopted the proposed policy principles for managing Metropolitan's real property assets.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

Acting as the Lead Agency, the city of Rancho Cucamonga certified a Final Environmental Impact Report on June 16, 2004, for the Tentative Tract Map Number 16072. The Lead Agency also approved the Findings of Fact, the Statement of Overriding Considerations, and the Mitigation Monitoring and Reporting Program. The Final EIR and related CEQA documents are included in Attachments 2-8.

The Board has reviewed and considered these environmental documents and adopts the findings of the Lead Agency. (State CEQA Guidelines Section 15096.)

CEQA determination for Option #2:

None required

Details and Background

Background

The city of Rancho Cucamonga is requesting a permanent easement between 65' and 85' feet wide along Metropolitan's fee-owned property to allow for the extension of Wilson Avenue to accommodate a new residential development project located north of Wilson Avenue in the city of Rancho Cucamonga **(Attachment 1)**. The city is also extending an existing trail that will be parallel and just south of Wilson Avenue within Metropolitan's right-of-way. The new easement will cover the public street and trail. The cover over the 96-inch-inside-diameter prestressed concrete Rialto Pipeline has approximately 10 feet of cover in this area. The requested easement area is approximately four acres.

At the time of Metropolitan's acquisition of the property, Wilson Avenue was planned along our right-of-way but not accepted as a public road. Wilson Avenue and the related trail have already been constructed along our right-of-way west of this location. The proposed improvements will include a public road and related infrastructure, and a trail. The city of Rancho Cucamonga will assume responsibility for the public street and trail within the easement area. Staff evaluations have determined that the easement will not interfere with Metropolitan's operations.

The proposed permanent easement for public road purposes will have the following key provisions:

- Compatible use between two public entities with prior rights provisions for Metropolitan.
- For construction, operation, and maintenance of a public road and trail.
- The city of Rancho Cucamonga is responsible for the operation and maintenance of the public road and related facilities and for indemnifying Metropolitan.
- All plans for construction, maintenance, major repair, or replacement work shall be reviewed and approved by Metropolitan before the commencement of work.
- The city of Rancho Cucamonga will keep the easement area free of trespass, noxious weeds, and trash, at its sole cost and expense.

- Metropolitan will receive the fair market value for the proposed easement of $1,361,000 as determined by a qualified licensed appraiser and a one-time processing fee of $8,500.

12/19/2023

Liz Crosson *Date*
Chief Sustainability, Resilience and Innovation Officer

12/20/2023

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Site Map

Attachment 2 – Draft EIR Vol. 1

Attachment 3 – Draft EIR Vol. 2

Attachment 4 – Draft EIR Vol. 3

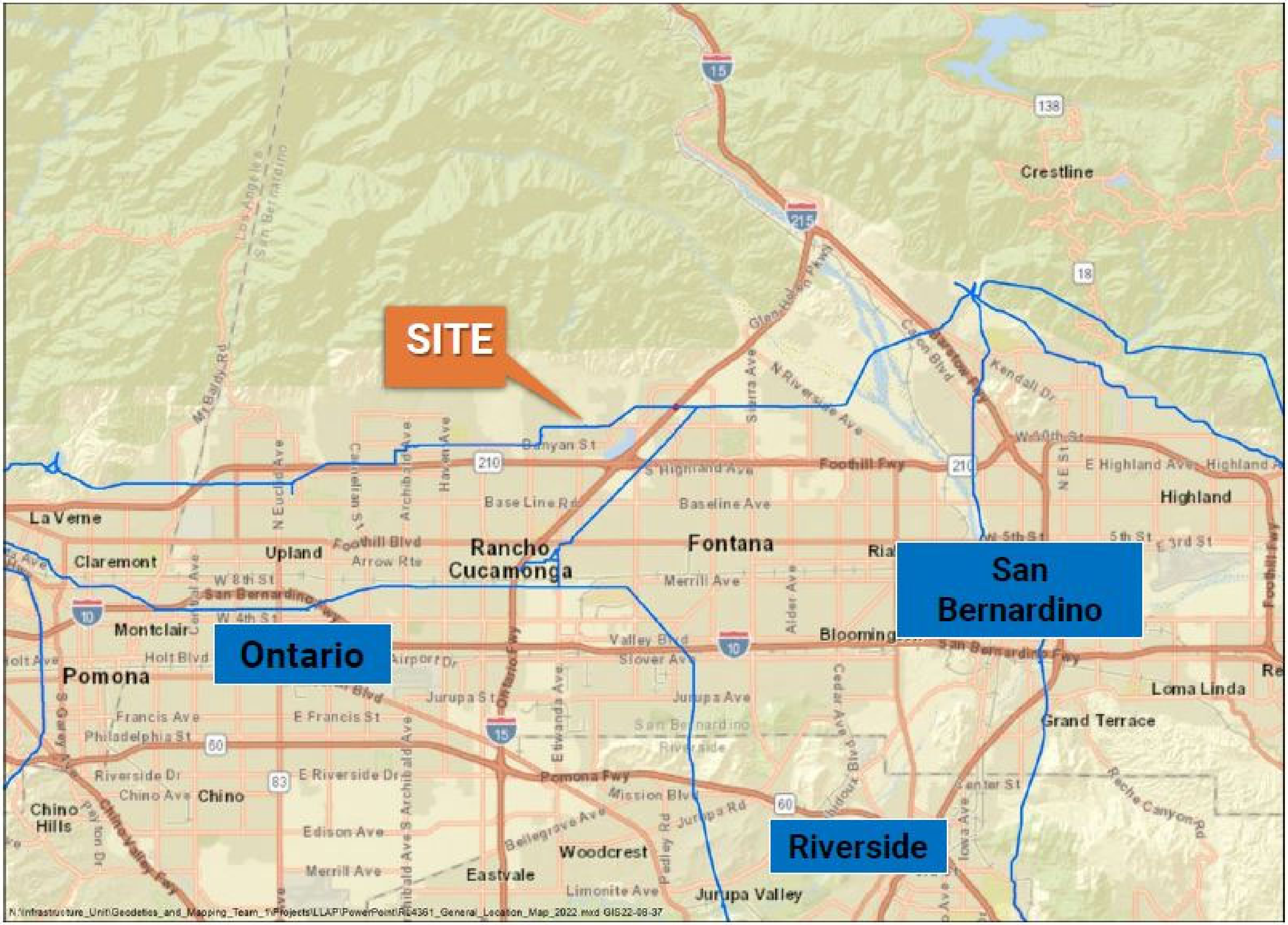
Attachment 5 – EIR Findings of Fact (FEIR)

Attachment 6 – EIR Certification (RESOLUTION 04-204)

Attachment 7 – EIR NOD and CDFG Filing Fee 2004

Attachment 8 – EIR Response to Comments

Ref# sri12691625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Draft
Environmental Impact Report

City of Rancho Cucamonga
Tentative Tract Map Number 16072
(State Clearinghouse 2002091053)

Volume I
Draft EIR

November 2003

VOLUME I
DRAFT
Environmental Impact Report
Rancho Cucamonga Tentative Tract Map Number 16072
Sch# 2002091053

Prepared for:

City of Rancho Cucamonga
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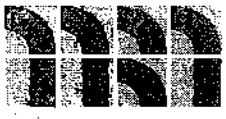
Michael E. Houlihan, Project Manager



November 25, 2003

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF TABLES

LIST OF EXHIBITS

SECTION 1
INTRODUCTION

1.1 Purpose of the EIR

This draft environmental impact report (EIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) to evaluate the potential environmental impacts associated with the Etiwanda Properties Residential Development (Tentative Tract Map #16072) in the northern Etiwanda area of unincorporated San Bernardino County, within the City of Rancho Cucamonga's Sphere of Influence. This EIR has been prepared in conformance with CEQA, California Public Resources Code Section 21000 et seq; the California CEQA guidelines (California Code of Regulations, Title 14, Section 15000 et seq); and the rules, regulations, and procedures for implementing CEQA as adopted by the City of Rancho Cucamonga. This is a Project EIR, in conformance with Section 15161 of the State CEQA Guidelines and examines the environmental impacts associated with a specific development project.

The draft EIR is intended to serve as an informational document for public agency decision-makers and the general public regarding the objectives and components of the proposed project. This document will address the potentially significant adverse construction and long-term occupancy of the proposed project as well as identify feasible mitigation measures and alternatives that may be adopted to reduce or eliminate these impacts.

This EIR is the primary reference document for the formulation and implementation of a mitigation monitoring program for the proposed project. Environmental impacts cannot always be mitigated to a level that is considered less than significant. In accordance with Section 15093(b) of the State CEQA Guidelines, if a lead agency approves a project that has significant impacts that are not substantially mitigated (i.e., significant unavoidable impacts), the agency shall state in writing the specific reasons for approving the project, based on the final CEQA documents and any other information in the public record for the project. This is defined in Section 15093 of the state CEQA Guidelines as "a statement of overriding considerations."

1.2 Scope of the EIR

The EIR will address the potential environmental effects of the proposed project. The scope of the EIR includes issues identified by the City of Rancho Cucamonga during preparation of the Initial Study (IS) and Notice of Preparation (NOP) for the proposed project, and issues raised by agencies and the general public in response to the IS/NOP.

Environmental Procedures

Approval of the proposed development project requires discretionary actions by the City of Rancho Cucamonga, the Lead Agency, and by responsible agencies such as the Local Agency Formation Commission, California Department of Fish and Game, Regional Water Quality Control Board, and U.S. Army Corps of Engineers. This document analyzes the environmental effects of the proposed project using a level of analysis that is consistent with state CEQA Guidelines. This EIR discusses both the direct and indirect impacts, as well as the associated short-term and long-term effects of this project.

CEQA requires the preparation of an objective, full disclosure document to inform agency decision-makers and the general public of the direct and indirect environmental effects of the proposed action; provide mitigation measures to reduce or eliminate potential adverse effects, and identify and evaluate reasonable alternatives to the proposed project.

Scoping Process

In compliance with State CEQA Guidelines, the City of Rancho Cucamonga has taken steps to maximize opportunities to participate in the environmental process. During the preparation of the draft EIR, various federal, state, regional and local governmental agencies and other interested parties were contacted to solicit comments and inform the public of the proposed project. This included the distribution of the IS/NOP on September 11, 2002. The project was described, potential environmental effects associated with project implementation were identified, and agencies and the public were invited to review and comment on the NOP. The close of the NOP comment period was October 11, 2002. The IS/NOP and comment letters received during the NOP review period are included in Appendix A of this EIR. Agencies, organizations, and interested parties not contacted or who did not respond to the request for comments about the project during the preparation of the draft EIR currently have the opportunity to comment during the 45-day public review period on the draft EIR.

1.3 EIR Focus and Effects Found to be Significant

Based on the findings of the IS/NOP, a determination was made that an EIR is required to address the potentially significant environmental effects of the proposed project. The scope of the EIR includes issues identified by the City of Rancho Cucamonga during the preparation of the IS/NOP for the proposed project, as well as environmental issues raised by agencies and the general public in response to the IS/NOP. The following issues are addressed in this EIR:

- Aesthetics
- Air Quality
- Biological Resources
- Noise
- Public Services
- Transportation and Traffic

- Cultural Resources
- Geology and Soils
- Utilities and Service Systems

The environmental issues that were determined not to be significantly affected by the proposed project and therefore, do not require evaluation in the document, per section 15063(c) of the State CEQA Guidelines, are as follows:

- Agricultural Resources
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Mineral Resources
- Recreation

The above environmental issues that were determined not to be significantly affected by the proposed project were addressed in the NOP (see Appendix A). The NOP and the following discussion are intended to provide adequate environmental documentation for the issues that will not be further addressed in the EIR.

- **Hydrology and Water Quality.** The proposed residential project includes a proposed storm drain system that will connect to the existing channel west of the project site to the Etiwanda Regional Spreading Grounds located east of the project site. The proposed channel will be 35-feet wide and extend along the northern boundary of the project site. The storm drain system has been designed to accommodate storm flow requirements.

  The project applicant proposes to construct the residential units in phases. During construction activities, the project includes a series of interim onsite detention basins in the fault zone open space area. These temporary facilities are required until the San Bernardino County Flood Control District completes planning and construction of the San Sevaine Regional Mainline Channel, regional flood control facilities for Etiwanda Creek outlined in the Etiwanda/San Sevaine Area 3 Master Plan Storm Drain facilities. The temporary facilities will adequately detain storm water runoff to reduce peak concentration so that no significant drainage impacts would occur. The detailed drainage evaluation is provided in *Tract 16072 Hydrology & Hydraulics Report* prepared by MDS Consulting in September 2002. This drainage study is available for review at the City of Rancho Cucamonga Planning Department at 10500 Civic Center Drive.

  The proposed residential uses have the potential to create contaminated runoff containing compounds such as landscape chemicals and automotive fluids. To reduce the potential water quality impacts, the implementation of the following mitigation measure would reduce the impact to less than significant.

  - Prior to the issuance of a grading permit, the project applicant will be required to prepare a Storm Water Pollution Protection Plan (SWPPP) and file a Notice of Intent with the Regional Water Quality Control Board (RWQCB). As part of standard construction practices, the City and RWQCB will require compliance with best management practices

(BMPs) to ensure potentially harmful chemicals or pollutants are not discharged from the site. Such measures may include sandbags, temporary drainage diversion and temporary containment areas.

- **Land Use and Planning.** The proposed residential development includes a density of approximately 2.4 dwelling units per acre which is consistent with the Rancho Cucamonga General Plan and the Etiwanda North Specific Plan. The proposed project will be implemented in accordance with the Specific Plan and would be compatible with the surrounding land uses that are also part of the Specific Plan. The project applicant proposes annexation of the site into the City. In accordance with Government Code Section 56375, the property to be annexed must be "prezoned" as a condition of approval by the Local Agency Formation Commission (LAFCO). The adopted Etiwanda North Specific Plan will be retained as the applicable zoning for the site. Implementation of the proposed project would not result in significant impacts associated with land use and planning.

- **Population and Housing.** According to the City's General Plan, there are approximately 13,524 new housing units anticipated to be constructed with buildout of the remaining land uses identified in the City's General Plan. This increase in housing units would also result in approximately 30,680 new residents. Development of the proposed 358 residential units would represent 2.6 percent of the remaining housing units anticipated to be constructed in the City's planning area. The anticipated increase of approximately 1,238 residents represent approximately 4 percent of the future residents within the City's planning area. The proposed project's increase in housing units and population would not affect the existing growth forecasts identified in the City's General Plan. Furthermore, the project site has been designated as an area for residential growth to occur according to the City of Rancho Cucamonga Etiwanda North Specific Plan which was approved over 10 years ago. Therefore, the proposed project would result in a less than significant affect on population and housing projections.

1.4 Components of the EIR Analysis

The analysis of each environmental category within Section 5 of this EIR, (Existing Conditions, Thresholds of Significance, Project Impacts, Cumulative Impacts, Mitigation Measures, and Level of Significance After Mitigation) is organized into the following subsections:

- "Existing Conditions" describes the physical conditions that exist at this time and which may influence or affect the issue under evaluation.

- "Thresholds of Significance" defines the parameters that are used to determine the significance of an environmental effect.

- "Project Impacts" describes the potential environmental changes to the existing physical conditions that may occur if the proposed project is implemented.

- "Cumulative Impacts" describes the potential environmental changes to the existing physical conditions that may occur with the proposed project, together with anticipated growth in the vicinity of the project site.
- "Mitigation Measures" are those specific measures that may be required of the project by the decision-makers in order to (1) avoid an impact, (2) minimize an impact, (3) rectify an impact by restoration, (4) reduce or eliminate an impact over time by preservation and maintenance operations, or (5) compensate for the impact by replacing or providing substitute resources or environment.
- "Level of Significance After Mitigation" discusses whether the project and the project's contribution to cumulative impacts can be reduced to levels that are considered less than significant.

1.5 Project Sponsors and Contact Persons

The City of Rancho Cucamonga is the lead agency in the preparation of the EIR. Michael Brandman Associates is the environmental consultant for the project. Preparers of this EIR are provided in Section 10. Key contact persons are as follows:

Lead Agency.....City of Rancho Cucamonga
Community Development Department
10500 Civic Center Drive
Rancho Cucamonga, CA 91730
909.477.2750
Debra Meier

Project Applicant.....Richland Pinehurst, Inc.
3 Imperial Promenade, Suite 150
Santa Ana, CA 92707
714.708.4740

Environmental Consultant.....Michael Brandman Associates
621 E. Carnegie Drive, Suite 100
San Bernardino, CA 92408
909.884.2255
Thomas J. McGill, Ph.D., Project Director

1.6 Review of the Draft EIR

This draft EIR is distributed to responsible and trustee agencies, other affected agencies, and interested parties, as well as all parties requesting a copy of the draft EIR in accordance with Public Resources Code 21092(b)(3). The Notice of Completion of the draft EIR is also distributed as required by CEQA. During the 45-day public review period, the EIR, including technical appendices,

is available for review at the City of Rancho Cucamonga, Community Development Department, 10500 Civic Center Drive, Rancho Cucamonga, California.

Written comments of the draft EIR should be addressed to:

Debra Meier
City of Rancho Cucamonga
Community Development Department
10500 Civic Center Drive
Rancho Cucamonga, CA 91729

Upon completion of the 45-day public review period, written responses to all significant environmental issues raised will be prepared and available for review at least 10 days prior to the public hearing before the City of Rancho Cucamonga City Council, at which the certification of the Final EIR will be considered. These environmental comments and their responses will be included as part of the environmental record for consideration by decision-makers for the project.

1.7 Incorporation by Reference

Environmental and planning documents prepared for development projects within the vicinity of the project site were reviewed in the preparation of this EIR. The following documents are hereby incorporated by reference and can be reviewed at the City of Rancho Cucamonga Planning Department:

- *Etiwanda North Specific Plan Environmental Impact Report*, City of Rancho Cucamonga, 1991.
- *Rancho Cucamonga General Plan Update Environmental Impact Report*, City of Rancho Cucamonga, 2001.

SECTION 2
EXECUTIVE SUMMARY

2.1 Proposed Project

The project includes of the annexation of land from unincorporated San Bernardino County into the City of Rancho Cucamonga, and the approval and development of Tentative Tract Map Number 16072 (TTM 16072) and associated Development Agreement. The project area is included in the City's General Plan, and has been pre-zoned by the Etiwanda North Specific Plan (Specific Plan).

The proposed project includes 358 detached single-family housing units on minimum lot sizes of 8,400 square feet, on approximately 150.8 acres. The northern portion of TTM 16072 includes development of 167 single-family homes on 56.61 acres, a density of 2.95 dwelling units per acre, with minimum lot sizes of 8,400 square feet and average lot sizes of 11,774 square feet. The southern portion includes development of 191 single-family homes on 65.71 acres, a density of 2.92 dwelling units per acre, with minimum lot sizes of 8,400 square feet and average lot sizes of 11,126 square feet. The combined density of the project is 2.93 dwelling units per acre. The gross density of the project including open space, flood control and streets is 2.38 dwelling units per acre.

2.2 Areas of Controversy/Issues to be Resolved

This EIR addresses 8 primary issues including geology and soils, biological resources, traffic and circulation, air quality, noise, aesthetics and views, cultural resources, and public services and utilities. One area of potential controversy is the proposed removal of Riversidian Alluvial Sage Scrub from the project area to construct the proposed project. No issues remain to be resolved.

2.3 Summary of Alternatives

Alternatives have been developed to avoid or substantially lessen environmental impacts of the proposed project. Section 15126.6 of the CEQA Guidelines, "states that an EIR shall include a range of reasonable alternatives to the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." Section 8 provides descriptions and analysis of each alternative in adequate detail to allow the decision-maker to decide whether or not an alternative should be adopted in lieu of the proposed project. The alternatives evaluated in the following EIR include the following:

- No Project/No Development Alternative
- Retention of Riversidian Alluvial Fan Sage Scrub Alternative

- Less Intense Development Alternative

Based on the evaluation of the alternatives in Section 8, the proposed project would be environmentally superior among all of the alternatives.

Following are the descriptions of each alternative.

No Project/No Development Alternative

The No Project/No Development Alternative would result in no additional environmental impacts relative to the proposed project. The significant unavoidable seismic ground shaking, loss of Riversidian alluvial fan sage scrub, short-term construction air emissions, long-term mobile emissions, and cumulative aesthetic/visual impacts associated with the proposed General Plan would not occur under this alternative. Furthermore, traffic, noise, and cultural impacts associated with the proposed project would also not occur under this alternative.

Retention of Riversidian Alluvial Fan Sage Scrub Alternative

Retention of Riversidian Alluvial Fan Sage Scrub (RAFSS) Alternative assumes that all vegetation classified as RAFSS are not affected by development. The project site contains approximately 10.6 acres of disturbed or ornamental woodland. In accordance with this alternative, development would only occur on the 10.6 acres. Based on the same residential density as the proposed project (i.e., 2.93 units per acre), 31 single-family housing units would be constructed. Although this level of development could eliminate the potential significant unavoidable effects associated with RAFSS, this alternative would not meet the objectives of the proposed project. Therefore, this alternative is not considered feasible.

Less Intense Development

The intent of this alternative is to avoid all significant, unavoidable, adverse long-term, air emission impacts. The long-term significant and unavoidable adverse impact associated with the proposed project is the potential generation of carbon monoxide (CO), oxides of nitrogen (NOx), and reactive organic compounds (ROC). To reduce long-term air emissions, approximately 104 residential units that are part of the proposed project would need to be eliminated for this alternative to reduce long-term air emissions to less than significant after the implementation of the mitigation measures identified for the proposed project. This would result in the development of approximately 255 residential units on the project site. With the development of approximately 255 residential units the dwelling units per acre would be approximately 1.7 units per acre compared to 2.4 units per acre identified in the proposed project. This alternative would not be consistent with the development

level contemplated in the Etiwanda North Specific Plan. This alternative also does not meet many of the objectives of the proposed project. Therefore, this alternative is not considered feasible.

2.4 Mitigation Monitoring Program

CEQA requires public agencies to set up monitoring report programs for the purpose of ensuring compliance with those mitigation measures adopted as conditions of approval in order to mitigate or avoid significant environmental effects as identified in the EIR. A mitigation monitoring program, incorporating the mitigation measures set forth in this document, will be adopted at the time of certification of the EIR.

2.5 Summary of Significant Environmental Impacts and Mitigation Measures

Table 2-1 summarizes the potential environmental effects of the proposed project, project design features that will reduce impacts, recommended mitigation measures, and the level of significance after mitigation. After the implementation of the project design features and recommended mitigation measures, the following impacts associated with the proposed project would remain significant: geology and soils (seismic ground shaking), air quality (short-term and long-term emissions), aesthetics/visual (cumulative views). Under this scenario, the City would be required to adopt a statement of overriding considerations in accordance with CEQA Section 21081.

If some project design features are not approved or some mitigation measures are not adopted, the proposed project may result in significant impacts after mitigation. Under this scenario, significant and unavoidable impacts may occur and the City could be required to adopt a statement of overriding considerations.

Impacts of the project are classified as (1) NS, not significant (adverse effects that are not substantial according to CEQA, but may include mitigation); (2) S, significant (substantial adverse changes in the environment); (3) PS, potentially significant (potentially substantial adverse changes in the environment); (4) B, beneficial (beneficial changes in the environment). Project design features are listed when applicable and mitigation measures are listed, when feasible for each impact. Table 2-1 also includes a summary of impacts associated with cultural resources which is discussed in Section 1.3 because mitigation measures are recommended to reduce potential impacts to less than significant. Section 1.3 also identifies other effects, which are either not considered significant or are beneficial effects of the proposed project, but these are not the focus of this summary. The reader is referred to the full text of this EIR for a description of the environmental effects of the proposed project, the project design features that reduce impacts and the feasible mitigation measures that are recommended.

Table 2-1: Executive Summary

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
GEOLOGY AND SOILS (SECTION 5.1)		
Seismic Hazards		
Fault-Induced Ground Rupture		
Development of the proposed project will result in the potential for fault-induced ground rupture at the project site. (S)	**GS-1:** Prior to issuance of a building permit for structures adjacent to the Etiwanda Avenue Scarp thrust fault on the project site, all structures north of this fault shall be set back 100 feet from the faulted zone and all structures south of this fault shall be set back 50 feet from the fault zone.	Not Significant.
Seismic Ground Shaking		
The proposed residential structures on the project site would be exposed to potentially high accelerations of ground motion. (S)	**GS-2:** Prior to the issuance of a building permit, structures will be designed and constructed in accordance with the Uniform Building Code and general engineering standards for seismic safety for development within Seismic Zone 4.	Significant and Unavoidable.
Fault Zone Detention Basins		
Two of the interim detention basins will be located within the fault zone traversing the central portion of the property. An analysis was completed to determine whether the water percolating into these basins would adversely affect the fault. The only known adverse effects associated with water percolation and seismicity are related to large lake-level changes. The interim basins will only hold water temporarily to a maximum of eight feet for less than 24-hours. Therefore, since the basins will be emptied relatively quickly there will be no significant seismic impacts associated with water impoundment. Furthermore, no fault gouge or clay was observed within the onsite fault zone and	No measures are required.	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
thus there is no preferential path for water infiltration into the fault zone. (NS)		
Liquefaction		
The alluvial fan sediments on the project site have a relatively high permeability, and the probability of the water table at the site rising in the future to within 50 feet of the ground surface is low. As a result, the hazard of liquefaction is considered low. (NS)	No measures are required.	Not Significant.
Seismically-Induced Slope Instability		
Development of the proposed project including the interim detention basins will include graded slopes of up to 40 feet in height and gradients of 3:1 or less. Strong ground motions could induce slope instability. (S)	**GS-3:** Prior to the issuance of a grading permit, engineered slopes of the project site shall be designed in accordance with the Uniform Building Code to resist seismically induced failures. Slope design shall be based on pseudo-static stability analyses using soil-engineering parameters established for the site.	Not Significant.
Ground Lurching		
Colluvial soils and loose cohesionless soils are present at the surface of the project site. Ground lurching due to seismic shaking could result in impacts to structures. (S)	**GS-4:** Prior to the issuance of a grading permit, the grading plans shall state that the loose, cohesionless soils located on the surface of the site shall be removed and recompacted during grading operations.	Not Significant.
Seismically-Induced Settlement		
Strong ground shaking can cause settlement by allowing greater compaction of the soil particles. (S)	**GS-5:** Prior to the issuance of a grading permit, the grading plans shall state that the native surficial and artificial fills on the project site that are of low density, shall be removed and recompacted or exported offsite.	Not Significant.
Earthquake-Induced Dam/Reservoir Failure		
No large-capacity reservoirs or water tanks that could fail during an earthquake are located	No measures are required.	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
upgradient from the project site. Furthermore, no reservoirs or tanks are proposed as part of the proposed project. Therefore, no impact from an earthquake-induced inundation at the project site is anticipated. (NS)		
Tsunami		
The project site is located at a minimum elevation of 1,635 feet above mean sea level and more than 45 miles inland. Due to the site's location, the risk of inundation from a tsunami is considered nil and not significant. (NS)	No measures are required.	Not Significant.
Seiche		
No large bodies of water are existing in the project area and none are proposed as part of the project. Therefore, the potential for a seiche to affect the project site is less than significant. (NS)	No measures are required.	Not Significant.
Slope Stability		
Implementation of the proposed project would result in slopes at 40 feet in height. (S)	**GS-6:** Prior to the issuance of a final grading approval, potentially unstable graded slopes that exceed approximately 15 feet in height will require additional stabilization measures such as buttressing cut slopes with compacted fill, adding geogrid reinforcement to fill slopes, using a higher compaction standard, and/or using retaining walls.	Not Significant.
Foundation Stability		
Compressible Soils		
The upper few feet of the native soil onsite is potentially compressible. Uncontrolled fills that exists on the project site due to old road fills and backfills from exploratory trenches are also compressible. These materials are of low density	**GS-7:** Prior to the issuance of a grading permit, the grading plans shall state that potentially compressible soils that are located on the project site shall be removed and recompacted in accordance with standard grading procedures.	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
and would settle under the weight of the proposed fills and structures. (S)		
Collapsible Soils		
Due to the potential for variation in grain size within the alluvial fan deposits located on the project site, localized areas could result in potential collapse of soil material. (S)	**GS-8:** Prior to the issuance of a grading permit, the project's soil engineer shall identify the method(s) of eliminating the potential for collapsible soils on the grading plan. Potential methods include excavation and recompaction and presaturation and pre-loading of the susceptible soils in-place to induce collapse prior to construction. After construction, infiltration of water into the subsurface soils shall be minimized by proper surface drainage which directs excess runoff from the proposed slopes and structures.	Not Significant.
Expansive Soils		
Due to the granular nature of the onsite soil, the expansion characteristics are considered in the low range. (NS)	No measures are required.	Not Significant.
Ground Subsidence		
Since the current groundwater pumping program within the Chino Groundwater Basin includes monitoring ground elevations for subsidence and there are no oil extraction operations near the project area, the hazard posed by land subsidence is considered less than significant. (NS)	No measures are required.	Not Significant.
Rippability and Oversize Rock		
Because there is no bedrock at or within hundreds of feet from the surface, rippability of the onsite soils is less than significant. However, due to the presence of large cobbles and boulders in the onsite alluvium, special handling of oversize rocks will be required. The removal of boulders from the site could result in deficiencies of fill	**GS-9:** Prior to the issuance of a grading permit, the grading plans shall state that during grading operations, the soil engineer shall be consulted to relocate oversize rocks on the project site to reduce the potential deficiency of fill materials that could result from the removal of oversize rocks on the project site.	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
material in the proposed balanced cut and fill grading design. Therefore, the presence of oversize rock could result in a potential significant impact. (S)		
BIOLOGICAL RESOURCES (SECTION 5.2) **Natural Communities**		
The proposed project will result in the loss of 147.7 acres of RAFSS. RAFSS is considered sensitive by the California Department of Fish and Game and loss of this plant community is considered significant. (S)	**B-1:** The project proponent will acquire and convey to the County of San Bernardino at a ratio of 1:1 (or 147.7 acres) of land within or near the North Etiwanda Open Space and Habitat Preservation Program (NEOSHPP) that supports similar RAFSS habitat. This measure will mitigate the loss of habitat that may support sensitive plants and animals as well as raptor foraging habitat. The quality of offsite mitigation land may affect the total acres needing to be acquired. If the offsite mitigation area contains a higher quality habitat, less land may need to be acquired, likewise, if a lower quality habitat is acquired, more land may need to be set aside as mitigation. If the proponent is unable to acquire all or a portion of the offsite mitigation land, the proponent will deposit the equivalent mitigation cost of $10,000 per developable acre with City-approved agency, which acquires and maintains open space. These funds will be used to purchase and manage mitigation lands. **B-2:** To reduce impacts on adjacent offsite habitat during site preparation, grading and clearing limits shall be staked prior to issuance of the grading permits. The limits of grading and clearing shall be staked at 50-foot intervals with	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	suitable indicators such as white PVC (polyvinylchloride) pipe with steel bases. Construction equipment shall not be operated beyond the grading and clearing limits, and a restoration program shall be incorporated to restore any disturbed offsite areas. **B-3:** Landscaping adjacent to natural areas offsite shall use native and drought-tolerant plant species. Such species shall be reflected on Project landscape plans. The use of species known to be weedy invasives, such as German ivy (Senecio milkaniodes), periwinkle (Vinca major), or iceplant (Carpobrotus spp.), shall be prohibited. **B-4:** In areas where night lighting may have adverse impacts on sensitive wildlife habitat, one or more of the following alternatives shall be utilized, recognizing the constraints of roadway lighting requirements: (1) low-intensity street lamps, (2) low-elevation light poles, or (3) shielding of internal silvering of the globes or external opaque reflectors. **B-5:** Provide residents of the future development literature pertaining to sensitive wildlife in the area and provide ways the residents can reduce effects on the wildlife, including effects pets have on native wildlife. A list of invasive plants that are commonly planted in landscaping will be included in this literature and it will be recommended that certain plants be avoided, such as giant reed (Arundo donax) castor bean (Ricinus communis) and Pampas grass (Cortaderia selloana). This literature shall be approved by the City of Rancho Cucamonga and included within the conditions, covenants, and restrictions	

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	(CC&Rs).	
Common Plant Species		
The City of Rancho Cucamonga has a local tree preservation ordinance that requires a City permit to remove any tree over 15 feet high and 15 inches in circumference. A total of 213 trees meet the City's "heritage tree" criteria. Approximately 175 eucalyptus trees, 11 ornamental trees, 14 pepper trees, 9 southern California black walnut trees, and 4 western sycamore trees occur on-site. All trees within the project boundary were assessed as being of fair to poor condition physiologically, structurally, and aesthetically. (S)	**B-6:** All 213 "heritage trees" shall be removed and replaced with native trees within the proposed development. Replacements have been proposed at a 1:1 ratio.	Not Significant.
Sensitive Plant Species		
Fifteen sensitive plant species have been identified as occurring within the general vicinity of the project site. Thirteen of these plants are listed as sensitive (List 1B) by the CNPS and are considered sensitive by CDFG. However, only Plummer's mariposa lilies were observed during field inventories. (S)	**B-7:** Prior to issuance of a grading permit, focused surveys for Plummer's mariposa lily shall be conducted by a qualified biologist. Surveys shall be conducted during flowering period (May to July) in all portions of the project site containing suitable habitat. If present, the number and location(s) will be documented and the resource agencies will be notified for consultation and possible collection and relocation.	Not Significant.
Sensitive Wildlife Species		
San Bernardino Kangaroo Rat		
The project site is within the Critical Habitat of the federally listed endangered San Bernardino kangaroo rat. Protocol surveys conducted for this species in 2001 and 2002 were negative and revealed that although there will be a significant loss of RAFSS, there will be no direct impacts to this species from project implementation. (NS)	**B-8:** A follow-up focus survey for the San Bernardino kangaroo rat shall be conducted prior to the issuance of grading permits. If this species is determined to be present onsite, consultation with USFWS under the Endangered Species Act shall occur and USFWS-approved mitigation measures shall be implemented.	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Coastal California Gnatcatcher		
The project site is within the known range and within designated Critical Habitat of the federally listed threatened coastal California gnatcatcher. Although the protocol surveys conducted in both 2001and 2002 were negative, 6 recent sightings have been documented within the immediate vicinity. Because the project site supports suitable habitat for this species, and the recent sighting on adjacent lands the potential for this species to use the project site is still considered high. Therefore, the loss or fragmentation of potential coastal California gnatcatcher habitat is considered significant. (PS)	**B-9:** A follow-up focused survey shall be conducted to confirm the absence of the coastal California gnatcatcher. Special focus will be placed in the northwest corner of the project site, which was not previously surveyed. If this species is determined to be present onsite, consultation with USFWS under the Endangered Species Act shall occur and USFWS-approved mitigation measures shall be implemented.	Not Significant.
Three species of rodents that were detected on the property are considered Species of Concern by CDFG. The three species present within the RAFSS habitat, include the Northwestern San Diego pocket mouse, San Diego desert woodrat, and the Los Angeles little pocket mouse. Because these three species are present onsite, the impacts to the habitat is considered significant (S)	**B-10:** The project proponent will have a qualified biological monitor present during initial brush clearing to reduce mortality to sensitive species, specifically sensitive rodent species, as well as incidental species.	Not Significant.
Raptors		
The project site does support nesting habitat for raptor species. Also, the project will result in the loss of 162.2 acres of raptor foraging habitat. The incremental loss and continued fragmentation of foraging habitat is considered adverse but not a significant impact. Raptors and all other bird species will find foraging habitat in the undeveloped areas to the north and west of the project site. (NS)	**B-11:** If grading activities are to occur during active nesting season (generally February 15 - August 31), a field survey shall be conducted by a qualified biologist to determine if active nests covered by the Migratory Bird Treaty Act and/or the CDFG Code are present. If active nests are present, the area will be flagged, along with a 100-foot buffer (300-feet for raptors) and will be avoiding until the nesting cycle is complete.	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Reptiles The project site provides suitable habitat for the San Diego horned lizard and orange-throated whiptail (State Species of Special Concern). Although neither species is formally listed, or proposed as endangered or threatened, the potential displacement of these sensitive species would be considered adverse but not significant by CDFG. (NS)	No measures are required.	Not Significant.
Regional Connectivity/Wildlife Movement Corridors The project site does not serve as a wildlife movement corridor or provide regional connectivity. No impacts to regional connectivity and/or wildlife movement corridors will occur with Project implementation. (NS)	No measures are required.	Not Significant.
Jurisdictional Areas A jurisdictional delineation was conducted by PCR on the project site on September 8, 2001 (Appendix C). Subsequent field surveys were also conducted by PCR in 2002. The survey revealed that there are three drainages found on the property that are considered under the jurisdiction of USACE and CDFG. Impacts to USACE areas would result in the removal of 1.13 acres of "waters of the U.S.", and no loss of wetlands. Total area of jurisdiction under the CDFG would also be approximately 1.13 acres. Jurisdictional determinations were also made for off-site portions of these drainages to the extent that they may be impacted by the proposed project. Drainages measured adjacent to the site include approximately 4,342 linear feet and 0.98	**B-12:** The project proponent shall obtain a Section 404 of the Clean Water Act permit from the U.S. Army Corps of Engineers and a 1603 Streambed Alteration Permit from California Department of Fish and Game prior to grading or any other groundbreaking activities, and shall comply with the permit's mitigation requirements.	Not Significant

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
acre of ACOE and CDFG jurisdictional streambed. None of these off-site areas meet the ACOE definition of a jurisdiction wetland. The proposed project would result in the loss of jurisdictional areas, both on and off site, of 2.01 acres of "waters of the U.S." and no loss of wetlands. Compliance with the mitigations that are required through the 404 process would reduce impacts to less than significant. (S)		
Conservation Plans Neither the City of Rancho Cucamonga nor the County of San Bernardino has released a habitat conservation plan that would address the lands within the project area or the species found or potentially occurring onsite. The proposed project would, therefore, not affect the County's development of their Multiple Species Habitat Conservation Plan or any approved local, regional, or state habitat conservation plan that addresses the lands within the project area. (NS)	No measures are required.	Not Significant.
TRAFFIC AND CIRCULATION (SECTION 5.3) **Trip Generation** The traffic generation for this project has been estimated, based upon the specific land use that has been planned for the proposed development. The proposed project consists of 358 single-family dwelling units. The proposed development is projected to generate approximately 3,436 daily trips. ***Opening Year (Year 2004)*** The following intersections would operate at an LOS F in the AM peak hour without and with the project.	The following measures are required to be implemented prior to issuance of a building permit. **TT-1:** The project applicant shall contribute its fair share toward local off-site traffic improvements. On-site improvements will be	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
• Etiwanda Avenue at Banyan Street • Etiwanda Avenue at Highland Avenue • East Avenue at Banyan STreet Although the project would not change the level of service, the contribution of project traffic to these three intersections during the AM peak hour represent a significant traffic impact. Without project traffic, all intersections would operate at LOS D or better during the PM peak hour which represents a less than significant impact. Except for the following intersection, all study area intersections operate at LOS D or better with the project during the PM peak hour. • Etiwanda Avenue at Banyan Avenue The intersection of Etiwanda Avenue at Banyan Avenue will operate at LOS E with the project which exceeds the City's standard and is considered a significant impact. (S)	required in conjunction with the phasing of the proposed development to ensure adequate circulation within the project itself. The fair share contribution of all off-site improvements and timing of all onsite traffic improvements shall be subject to an agreement with the City of Rancho Cucamonga. This agreement shall be in place prior to tract map approval. **TT-2:** The project applicant shall update construction cost estimates and prepare a current cost of the project's fair share contribution toward traffic improvements. **TT-3:** The project applicant shall construct Wilson Avenue from Etiwanda Avenue to East Avenue as a Special Divided Secondary Arterial (165 ft. Right-of-way) in conjunction with development of the proposed project or as determined by the Development Agreement with the City. **TT-4:** The project applicant shall construct the extension of East Avenue from the south project boundary with a minimum 36-foot two-way paved access to the project in conjunction with development of the proposed project or as determined by the Development Agreement with the City. **TT-5:** The project applicant shall construct East Avenue from the north project boundary to Wilson Avenue to provide 44-foot two-way paved access and the full shoulder (curb, gutter, street lights, and side walks) on west side of the street in conjunction with development of the proposed project or as determined by the Development Agreement with the City.	

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	TT-6: The project applicant shall construct Etiwanda Avenue from the north project boundary to Golden Prairie Drive at its ultimate half-section width as a Secondary Arterial (96 ft. Right-of-way) in conjunction with development of the proposed project or as determined by the Development Agreement with the City.	
Buildout Year 2020 Table 5.3-6 depicts the level of service at the study area intersections at buildout year (Year 2020) without and with the project. Table 5.3-6 shows the following intersections would operate at an LOS F in the AM peak hour without and with the project. • Etiwanda Avenue at Banyan Street • Etiwanda Avenue at Highland Avenue • East Avenue at Wilson • East Avenue at Banyan Street The project traffic contributed to these four study area intersections during the AM peak hour represent a significant traffic impact. Except for the following intersections, all study area intersections operate at LOS D or better during the PM peak hour without the project. • Etiwanda Avenue (South) at Wilson Avenue • Etiwanda Avenue at Banyan Street • East Avenue at Banyan Street These three intersections would operate at LOS F which exceeds the City's standard and is considered a significant impact. Except for the following intersections, all study area intersections would operate at LOS D or better	**TT-7.:** Prior to issuance of building permits, the applicant shall provide funds in accordance with the City's Transportation Development Fee. Collection of these fees shall represent the project's "fair-share" toward the following transportation improvements required for opening year (Year 2004): • Installation of a traffic signal at Etiwanda Avenue at Banyan Street. • Installation of a traffic signal at East Avenue at Banyan Street. • Construction of a southbound right turn lane at the intersection of Etiwanda Avenue at Highland Avenue. **TT-8** Prior to the issuance of building permits, the applicant shall provide funds in accordance with the City's Trasportation Development Fee. Collection of these fees shall represent the project's "fair share" toward the following transportation improvements required for Buildout Year 2020. • Construction of one additional northbound lane to provide a shared left and through lane, and a shared right and through northbound lane, and one additional southbound lane to provide a	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
during the PM peak hour with the project. • Etiwanda Avenue (South) at Wilson Avenue • Etiwanda Avenue at Banyan Street • East Avenue at Wilson Avenue • East Avenue at Banyan Street These four intersections would operate at LOS F which exceeds the City's standard and is considered a significant impact. (S)	shared left and through and a shared right and through southbound lane on East Avenue at Banyon Street. • Construction of a westbound through lane on Highland Avenue at Etiwanda Avenue. • Installation of a traffic signal at the intersection of Etiwanda Avenue (North) at Wilson Avenue. • Installation of a traffic signal at the intersection of Etiwanda Avenue (South) at Wilson Avenue. • Installation of a traffic signal at the intersection of East Avenue at Wilson Avenue.	
AIR QUALITY(SECTION 5.4) **Short-Term Construction-Related Emissions** Short-term emissions will include fugitive dust and other particulate matter, as well as exhaust emissions, generated by earthmoving activities and operation of grading equipment during site preparation (demolition and grading). Short-term emissions will also include emissions generated during construction of the buildings as a result of operation of equipment, operation of personal vehicles by construction workers, electrical consumption, and coating and paint applications. Projected NOx, ROC, and PM10 emissions are above the SCAQMD recommended daily thresholds and NOx and ROC are above the quarterly thresholds during construction of the first phase of the project. The primary sources of NOx emissions are trucks used for rock removal and importation of concrete. The primary source of ROC emissions is the application of architectural coatings, and the primary source of PM10 is fugitive dust from earthmoving activities. Even with the reductions associated with	**AQ-1:** The site shall be treated with water or other soil-stabilizing agents (approved by SCAQMD and RWQCB) daily to reduce PM10 emissions, in accordance with SCAQMD Rule 403. **AQ-2:** During construction, all haul roads shall be swept according to a schedule established by the City to reduce PM10 emissions associated with vehicle tracking of soil off-site. Timing may vary depending upon time of year of construction. **AQ-3:** Grading operations shall be suspended when wind speeds exceed 25 mph to minimize PM10 emissions from the site during such episodes. **AQ-4:** Chemical soil stabilizers (approved by SCAQMD and RWQCB) shall be applied to all inactive construction areas that remain inactive for 96 hours or more to reduce PM10 emissions. **AQ-5:** The construction contractor shall select the	Significant and Unavoidable.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
implementation of construction related mitigation measures, the daily and quarterly emissions of NOx and ROC remain above the SCAQMD suggested thresholds. (S)	construction equipment used on-site based on low emission factors and high-energy efficiency. The construction contractor shall ensure the construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications. **AQ-6:** The construction contractor shall utilize electric or clean alternative fuel powered equipment, where feasible. **AQ-7:** The construction contractor shall ensure that construction-grading plans include a statement that work crews will shut off equipment when not in use. **AQ-8:** The construction contractor shall use low VOC architectural coating during the construction phase of the project. **AQ-9:** During construction of the proposed improvements, temporary traffic control (e.g., flag person) will be provided during soil transport activities. Contractor will be advised not to idle trucks on site for more than ten minutes **AQ-10:** During construction of the proposed improvements, only low volatility paints and coatings as defined in SCAQMD Rule 1113 shall be used. All paints shall be applied using either high volume low pressure (HVLP) spray equipment or by hand application.	
Long-Term Emissions Long-term impacts for the proposed residential subdivision consist of mobile emissions and stationary emissions. Mobile emissions estimates	**AQ-11:** The proposed project will participate in the cost of off-site traffic signal installation and synchronization through payment of the traffic	Significant and unavoidable.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
are derived from motor vehicle traffic. Stationary emissions estimates are derived from the consumption of natural gas, electricity, the use of landscape equipment, and the storage and use of consumer products. When unmitigated emissions projections are compared with the SCAQMD suggested thresholds for significance, it is shown that long-term emissions exceed the applicable thresholds for NOx, CO and ROC. The primary source of these emissions is mobile emissions from vehicles. Even with the mitigation incorporated into the project NOx, CO and ROC emissions remain above the SCAQMD recommended threshold, and therefore the project may be expected to violate an ambient air quality standard. (S)	signal fair-share mitigation fee. This fee will be collected and utilized by the City to install and synchronize traffic lights as needed to prevent congestion of traffic flow on East Avenue between Banyan Street and the project boundary, and Etiwanda Avenue between Highland Avenue and the north terminus of Etiwanda Avenue. **AQ-12:** All appliances within the residential units of the project shall be energy-efficient as defined by SCAQMD. **AQ-13:** The project proponent shall contact local transit agencies to determine bus routing in the project area that can accommodate bus stops at the project access points and determine locations and feasibility of bus stop shelters provided at project proponent's expense.	
CO Hot Spot Analysis Roadway segments in this analysis include: • East Ave. from Victoria St. to the north project boundary (future north terminus of East St.), • Etiwanda Ave. from Highland Ave. to the north terminus of Etiwanda Ave., • Wilson Ave. from Day Creek Blvd. to Wardman Bullock Rd., • Proposed "A" St. from Wilson Ave. to the proposed north terminus within the project, • Proposed "N" St. from East Ave. to the proposed west terminus within the project, • Proposed "Q" St. and "U" St. from Etiwanda Ave. to the east terminuses within the project. Assuming worst-case conditions, the estimated 1-hour and 8-hour average CO concentrations in combination with background concentrations are	No measures are required.	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
below the State and Federal ambient air quality standards. No CO hot spots are anticipated as a result of traffic generated emissions by the proposed project in combination with other anticipated development in the area. (NS)		
Consistency Analysis		
The proposed project complies with the City of Rancho Cucamonga General Plan, which is consistent with the land use information that was the basis for the current AQMP. However, it is noted that the specific analysis indicates that both short-term and long-term emissions as a result of the project are above the SCAQMD thresholds. These emissions remain above the thresholds after implementation of mitigation measures. For this reason, it is appropriate to conclude that the proposed project is not in compliance with the AQMP. (S)	All feasible mitigation measures for reduction of air quality impacts have been incorporated into the project. However, short-term and long-term emissions remain above threshold levels for several pollutants after implementation.	Significant and unavoidable
Localized Sources of Toxic Air Contaminant Emissions		
A diesel fueled back-up generator is located at the potable water treatment plant (CCWD) on the south side of Wilson Avenue and would supply power to the critical components at the plant in the event of a power failure. The generator could present long-term exposure of diesel exhaust to future residents on the north side of Wilson Avenue closest to the plant (approximately 200 feet between the water treatment plant fence line to the proposed residential pads on the project site). All of the individual cancer risks are below the SCAQMD maximum threshold of 10 in one million—so long-term diesel emissions from the adjacent CCWD back-up generator will not pose a	No measures are required.	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
significant health risk to future residents on the project site . (NS)		
NOISE (SECTION 5.5) **Short-Term Construction-Related Impacts**		
The transport of workers and equipment to the construction site would incrementally increase noise levels along site access roadways. Even though there would be a relatively high single event noise exposure potential with passing trucks (a maximum noise level of 86 dBA at 50 feet), the increase in noise would be less than 1 dBA when averaged over a 24-hour period, and would, therefore, have a less than significant impact on noise receptors along the truck routes. (NS)	No measures are required.	Not Significant.
Local residents would be subject to elevated noise levels from the operation of construction equipment. The grading and site preparation phase tends to create the highest noise levels because the noisiest construction equipment is found in the earthmoving equipment category. Existing residential lots are located approximately 24 feet west of the southwestern portion of the project site. These residences will be subject to elevated noise levels during construction activities. Section 17.02.120 of the Development Code exempts noise sources associated with, or vibration created by, construction, repair, remodeling, or grading of any real property or during authorized seismic surveys, provided said activities do not take place between the hours of 8 p.m. and 6:30 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday. The project applicant is anticipated to comply with the construction time frames	While construction and grading activities are exempt from the City of Rancho Cucamonga Development Code, if conducted between the hours of 6:30 a.m. and 8:00 p.m. Monday through Saturday and no construction activities on Sundays and national holidays, the following mitigation measures are recommended to reduce potential construction-related noise. **N-1.** During all project site excavation and grading, the project contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufactures standards. **N-2.** When construction operations occur in close proximity to occupied residential areas, appropriate additional noise reduction measures shall be implemented, including: changing the location of stationary construction equipment to maximize the distance between stationary	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
identified in the City's Development Code. Construction noise effects created during these time frames are considered less than significant. (NS)	equipment and occupied residential areas, installing muffling devices on equipment, shutting off idling equipment, notifying adjacent residences in advance of construction, and installing temporary acoustic barriers around stationary construction noise sources. **N-3.** The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction related noise and the noise-sensitive receptors nearest the project site during all project construction. **N-4.** During all project site construction, the construction contract shall limit all construction related activities that would result in high noise levels to between the hours of 6:30 a.m. and 8:00 p.m. Monday through Saturday. No construction shall be allowed on Sundays and public holidays.	
Long-Term Operational Impacts *Onsite Impacts* An impact may be significant if the project sites a land use (i.e., residential) in an incompatible area due to excessive noise. The City has set a desireable daytime level of 60 dBA CNEL for residences. Based on the future (Buildout Year 2020) traffic volumes identified in Section 5.3, noise levels were calculated along the existing and future streets adjacent to the project site. These streets include Etiwanda Avenue, Wilson Avenue, and East Avenue. All of the residences proposed on the perimeter of the project site will be exposed to future year 2020 vehicular noise that range between 64.3 to 68.4 dBA CNEL. These future noise levels would result in significant noise impacts to the residences proposed on the	The following mitigation measures are required to reduce potential long-term vehicular traffic noise levels on the project site. **N-5.** The project applicant shall construct sound barriers adjacent to the project lots as shown in Exhibit 5.5-2. The heights of the sound barriers shall be between 3 and 6.5 feet and placed at the top of the proposed slope and at the edge of pads on the residential lots that border Etiwanda Avenue, Wilson Avenue, and East Avenue. The sound barriers may be constructed of earthen berms, masonry, wood, or other similar materials, or combination of these materials to attain the total height required. These sound barriers shall	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
perimeter of the site and adjacent to Etiwanda Avenue, Wilson Avenue, and East Avenue. (S)	be solid, with no openings from the ground to the indicated height. **N-6.** Prior to the issuance of a building permit, residential structures proposed on all lots adjacent to Etiwanda Avenue, Wilson Avenue, and East Avenue will require mechanical ventilation so that windows can remain closed. Furthermore, these residential lots will require upgraded windows such as double-pane windows, if these lots have second story structures. To ensure the specific type of mechanical ventilation and paned windows are included in the building plans, a final acoustical study shall be prepared for City approval prior to approval of Development Review applications for product development. The final acoustical study shall identify the specific requirements to reduce future interior noise levels to 45 dB CNEL or less.	
Offsite Impacts The project would not contribute to a significant project or cumulative impact of any of the offsite roadway segments that were analyzed. (NS)	No measures are required.	Not Significant.
AESTHETICS (SECTION 5.6)		
Existing visual characteristics of the natural vegetation located on the project site will be altered to a denuded character during grading activities. (NS)	No measures are required.	Not Significant.
Implementation of the proposed residential community will substantially alter the existing character of the project site as well as views of the San Gabriel Mountains. (S)	**AES-1:** The applicant shall install landscaping and perimeter walls prior to issuance of building permits for the following phases and locations as shown on the Project Phasing Plan (Exhibit 3-8): • Phase 1-Along Wilson and Etiwanda Avenues. • Phase 2-Along Wilson Avenue	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	• Phase 3-Along Etiwanda Avenue • Phase 4 Along East Avenue **AES-2:** Prior to approval of a landscape plan, the project applicant shall provide transitions between the developed and natural (unbuilt) environment through landscaping techniques. **AES-3:** Prior to approval of a landscape plan, the project applicant shall ensure that streetscape design along the roadways adjacent to the project site create a strong landscaped edge, provides a coherent high-quality appearance along a particular route, and enhances the image of adjacent development. **AES-4:** The project applicant shall provide for the undergrounding of utility lines and facilities, wherever feasible, to minimize the unsightly appearance of overhead utility lines and utility enclosures. **AES-5:** Prior to approval of a landscape plan, trees and structures shall be used to frame and orient such views at key locations, and obstruction of views should be kept to a minimum along Etiwanda Avenue and East Avenue.	
Development of the proposed project and cumulative development in the project vicinity will result in the permanent alteration of the visual landscape of the San Gabriel Mountains. (S)	Implementation of mitigation measures AES-1 through AES-5.	Significant and Unavoidable.
CULTURAL RESOURCES (SECTION 5.7) **Archeological/Historical Resources**		
The results of the records search indicated that three archeological sites are within the project area, including the new site located during the site	**CR-1:** Prior to the issuance of a grading permit, the project applicant shall retain a City-approved archaeologist to develop an archaeological	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
visit. It is also likely that prehistoric remains may still be buried. (PS)	mitigation plan and a discovery clause/treatment plan. Both of these plans shall be reviewed and approved by the City. The archaeological mitigation plan shall include monitoring 50 percent of the excavation activities on the project site by a City-approved archaeologist and/or their representative. The discovery clause/treatment plan shall include recovery and subsequent treatment of any archaeological or historical remains and associated data uncovered by brushing, grubbing or excavation. The treatment plan shall provide procedures for the curation of any detected cultural specimens. Any recovered cultural resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard professional archaeological practices. Examination by an archaeological specialist shall be included where necessary, dependent upon the artifacts, features, or sites that are encountered. Specialists will identify, date and/or determine significance potential. **CR-2:** If the archaeological monitor discovers cultural deposits, earthmoving shall be diverted temporarily around the deposits until the deposits have been evaluated, recorded, excavated and/or recovered, as necessary, and in accordance with a City-approved recovery plan. Earthmoving shall be allowed to proceed through the area after the archaeologist determines the artifacts are recovered and/or site mitigated to the extent necessary. **CR-3:** If a previously unknown cultural site is encountered during monitoring and it is determined by the archaeologist that a significance determination is required, the site	

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	shall be evaluated and recorded in accordance with requirements of the State Office of Historic Preservation (i.e., DPR 523 form). In this case, if the site is not determined to be significant, no measures subsequent to recording the site on appropriate forms are required. If any of the sites are determined to be significant, an adequate amount of artifacts at the specific archaeological site shall be collected by the City-approved archaeologist. The archaeologist shall determine the amount of artifacts needed to be collected. **CR-4:** If human remains are encountered during excavations associated with this project, all work shall halt and the County Coroner shall be notified (Section 5097.98 of the Public Resources Code). The Coroner will determine whether the remains are of forensic interest. If the coroner, with the aid of the City-approved archaeologist, determines that the remains are prehistoric, he/she will contact the Native American Heritage Commission (NAHC). The NAHC will be responsible for designating the most likely descendant (MLD), who will be responsible for the ultimate disposition of the remains, as required by Section 7050.5 of the California Health and Safety Code. The MLD will make his/her recommendations within 24 hours of their notification by the NAHC. This recommendation may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials (Section 7050.5 of the Health and Safety Code). **CR-5.** Any recovered archaeological resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard	

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	archaeological practices. Examination by an archaeological specialist should be included where necessary, dependent upon the artifacts, features or sites that are encountered. Specialists will identify, date and/or determine significance potential. **CR-6:** A final report of findings will be prepared by the City-approved archaeologist for submission to the City, project applicant, and the Archaeological Information Center of the San Bernardino County Museum. The report will describe the history of the project area, summarize field and laboratory methods used, if applicable, and include any testing or special analysis information conducted to support the resultant findings.	
Paleontological Resources According to the paleontological records search, the project area lies on surface exposures of Pleistocene older fan deposits. These deposits have high potential to contain fossil resources throughout their extent. No fossil resources are known for the project area and the nearest resources found in similar deposits are located approximately eight miles to the south. However, there is the likelihood of potential buried fossilized remains. (PS)	**CR-7:** Prior to the issuance of a grading permit, the project applicant shall retain a City-approved paleontologist. The City-approved paleontologist shall monitor all excavation activities in areas of the project underlain by previously undisturbed sediments. Earthmoving in areas of the site where previously undisturbed sediments will be buried but not disturbed will not be monitored. Monitoring shall begin once earthmoving reaches five (5) feet below the original ground surface. **CR-8:** Monitoring shall be conducted on a full-time basis in areas of the project underlain by sensitive rock units associated with older alluvium being encountered by earthmoving. **CR-9:** Should fossils be found within an area being cleared or graded, divert earth-disturbing	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	activities elsewhere until the monitor has completed salvage. If construction personnel make the discovery, the grading contractor should immediately divert construction and notify the monitor of the find. If too few fossil remains are found after 50 percent of earthmoving has been completed, monitoring can be reduced or discontinued in those areas at the project paleontologist's direction. **CR-10:** If paleontological resources are detected. Prepare, identify, and curate all recovered fossils for documentation in the summary report and transfer to an appropriate depository (i.e., San Bernardino County Museum). **CR-11:** A final report of findings will be prepared by the City-approved paleontologist for submission to the City, project applicant, and the San Bernardino County Museum. All collected specimens and the final report shall be provided to the San Bernardino County Museum.	
PUBLIC SERVICES AND UTILITIES (SECTION 5.8)		
Police Service		
The proposed project will create a demand for approximately 0.8 additional police officer. (NS)	No measures are required.	Not Significant.
Fire Services		
Development of the proposed project will create a need for approximately 0.22 additional fire protection staff. (NS)	**F-1:** Prior to the issuance building permits, the project applicant shall obtain approval from RCFD of the designs for the fire flow and proposed fire resistant structural materials.	Not Significant.
Water Service		
The proposed project will result in the demand for	**W-1:** Prior to the issuance of building permits,	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
approximately 220,760 gallons of water per day which represents a 0.7 percent increase in water currently demanded from existing development within the City's General Plan Planning Area. The project's demand for water is nominal; however, it will contribute to the potential significant cumulative impacts on water services. (S)	the project applicant will be required to submit a water services development fee to ensure that adequate water supplies and facilities are available to meet the project demand. **W-2:** Prior to the issuance of a building permit for each phase, the project applicant shall submit a landscaping and irrigation plan for common areas to the City for approval. Landscaping and irrigation within common areas shall be designed to conserve water through the principles of Xeriscape as defined in Chapter 19.16 of the Rancho Cucamonga Municipal Code.	
Wastewater Service		
Implementation of the proposed project will result in the generation of 96,930 gallons of wastewater per day. (S)	**WW-1:** Prior to the issuance of occupancy permits, the applicant shall provide funding to the Cucamonga County Water Agency for sewer service.	Not Significant.
Schools		
The construction of the proposed residential units will result in the generation of approximately 238 K-8 level students and 72 students in the 9 through 12 levels. (NS)	**S-1:** Prior to the issuance of building permits, the project applicant shall pay developer impact fees to the Etiwanda School District and Chaffey Joint Union High School District in accordance with Section 65995 of the Government Code for the proposed residences.	Not Significant.
HYDROLOGY AND WATER QUALITY (NOTICE OF PREPARATION)		
The project includes a proposed storm drain system that will connect to the existing channel west of the project site to the Etiwanda Regional Spreading Grounds located east of the project site. The storm drain system has been designed to accommodate storm flow requirements. (NS)	No measures are required.	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
The project includes a series of interim onsite detention basins in the fault zone open space area. These temporary facilities are required until the San Bernardino County Flood Control District completes planning and construction of the San Sevaine Regional Mainline Channel, regional flood control facilities for Etiwanda Creek outlined in the Etiwanda/San Sevaine Area 3 Master Plan Storm Drain facilities. (NS)	No measures are required.	Not Significant.
The proposed residential uses have the potential to create contaminated runoff containing compounds such as landscape chemicals and automotive fluids. (S)	Prior to the issuance of a grading permit, the project applicant will be required to prepare a Storm Water Pollution Protection Plan (SWPPP) and file a Notice of Intent with the Regional Water Quality Control Board (RWQCB). As part of standard construction practices, the City and RWQCB will require compliance with best management practices (BMPs) to ensure potentially harmful chemicals or pollutants are not discharged from the site. Such measures may include sandbags, temporary drainage diversion and temporary containment areas.	Not Significant.

SECTION 3
PROJECT DESCRIPTION

3.1 Project Location

The proposed project is located in the unincorporated area of the County of San Bernardino, in the Etiwanda portion of the City of Rancho Cucamonga's sphere of influence. The regional location is depicted on Exhibit 3-1. The project site is north of and includes the City-planned extension of Wilson Avenue between Etiwanda Avenue to the west and the proposed East Avenue extension to the east. The site is west of and includes East avenue from the existing terminus approximately 700 feet south of Wilson Avenue to the northern boundary of the existing Southern California Edison (SCE) utility corridor easement. Exhibit 3-2 shows the project vicinity.The site is generally south of the existing SCE easement.

3.2 Project Background and History

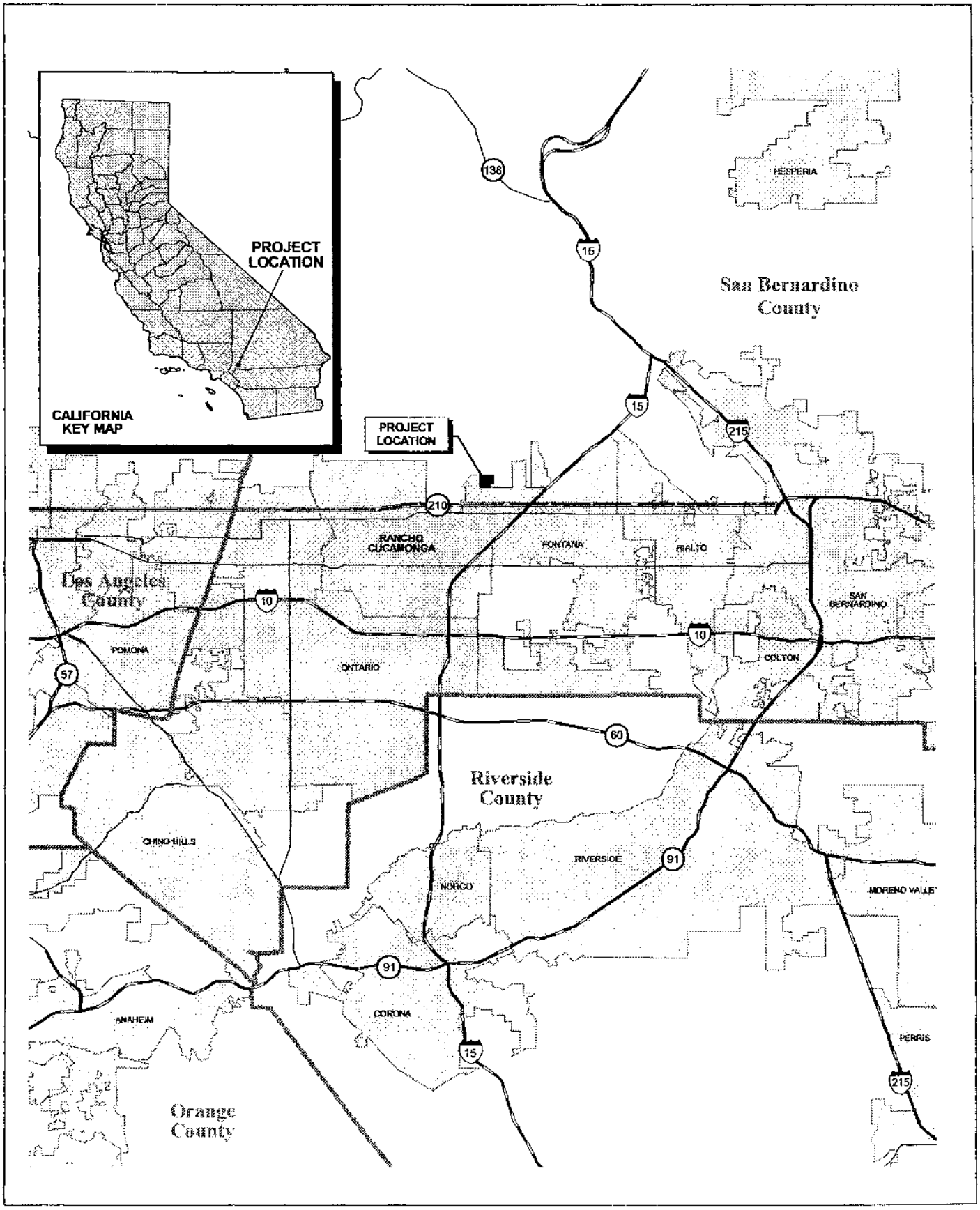
The project site is located in the Etiwanda North Specific Plan (ENSP) which was approved in 1991. The ENSP comprises of approximately 6,840 acres and a portion of this Specific Plan is located within the City of Rancho Cucamonga and the remainder is located within the City's Sphere of Influence. The project site is located within the City's Sphere of Influence. The proposed project encompasses 150.8 acres which represents approximately 2 percent of the ENSP. The project applicant is proposing to include housing at gross densities that are consistent with the densities identified in the ENSP.

3.3 Project Characteristics

The project includes of the annexation of land from unincorporated San Bernardino County into the City of Rancho Cucamonga, and the approval and development of Tentative Tract Map Number 16072 (TTM 16072).

3.3.1 Land Use

The proposed project includes 358 detached single-family housing units on minimum lot sizes of 8,400 square feet, on approximately 150.8 acres. The Red Hill Fault runs northeast across the project site and divides the tract into northern and southern phases. Exhibit 3-3 depicts the site plan of TTM 16072.



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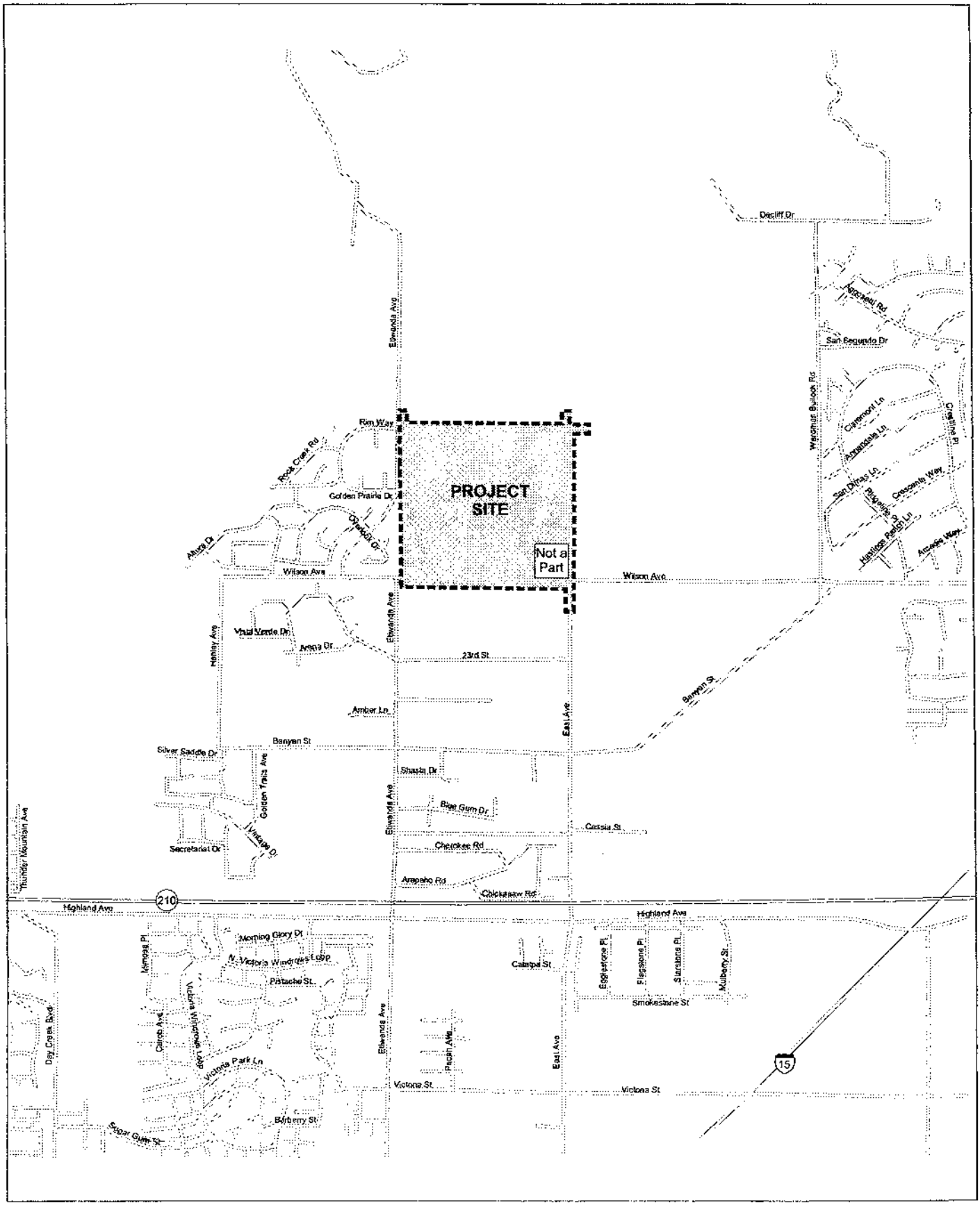
Michael Brandman Associates

00180027 • 11/2003 | 3-1_ Regional Location Map

Exhibit **3-1**

Regional Location Map

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072



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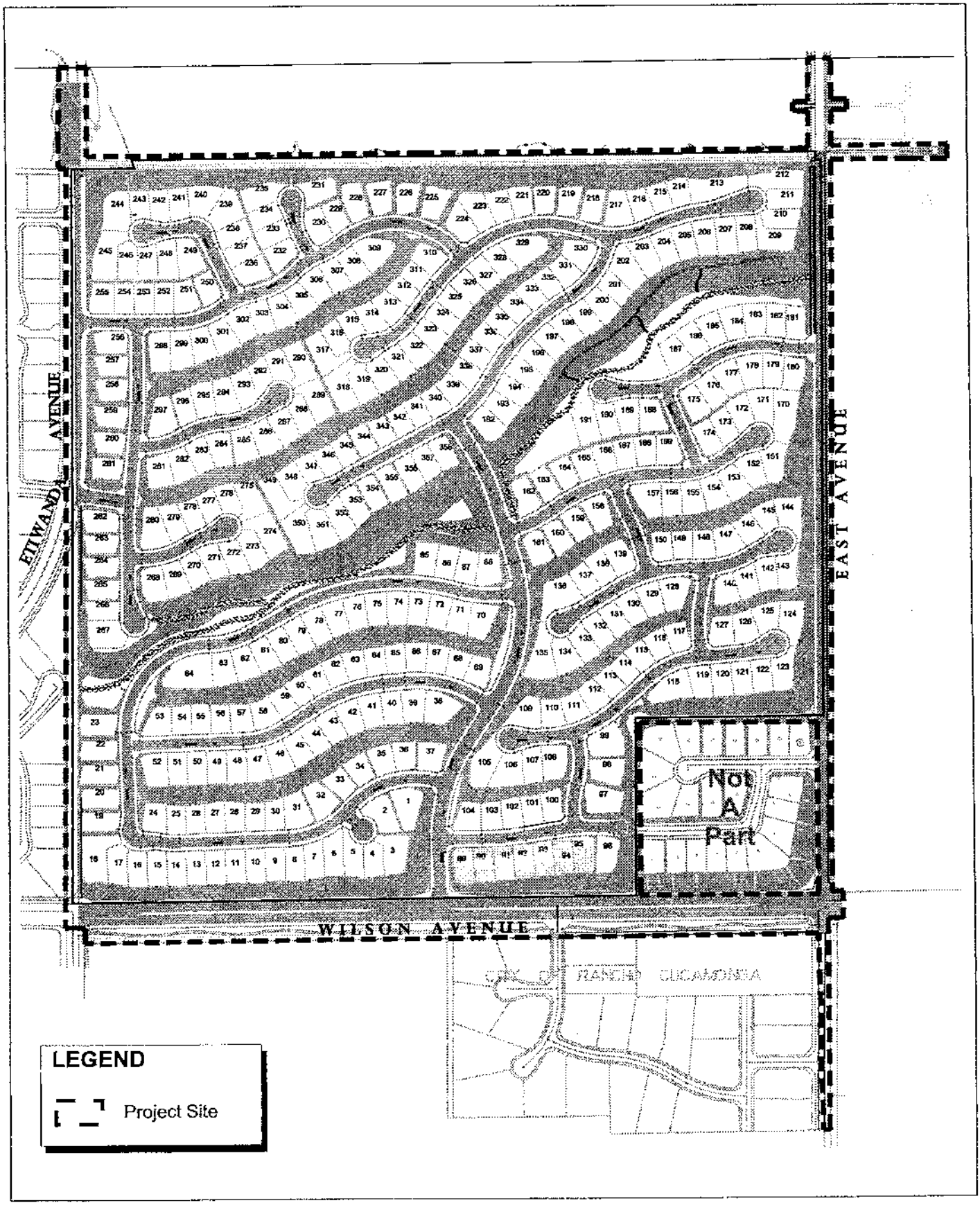
Michael Brandman Associates

00180027 • 11/2003 | 3-2_Vicinity Location Map.cdr

Exhibit **3-2**

Vicinity Location Map

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072



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Michael Brandman Associates

Exhibit 3-3

Site Plan

00180027 • 11/2003 | 3-3_Site Plan.cdr

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

The northern portion of TTM 16072 would include development of 167 single-family homes on 56.61 acres, a density of 2.95 dwelling units per acre, with minimum lot sizes of 8,400 square feet and average lot sizes of 11,774 square feet. The southern portion would include development of 191 single-family homes on 65.71 acres, a density of 2.92 dwelling units per acre, with minimum lot sizes of 8,400 square feet and average lot sizes of 11,126 square feet. The combined density of the project would be 2.93 dwelling units per acres. The gross density of the project including open space, flood control and streets would be 2.38 dwelling units per acre.

Based on a population factor of 3.48 persons per single family household, the project is expected to include 1,238 residents.

A landscaped open space, 20-foot-wide trail connecting the Etiwanda Avenue Community Trail to East Avenue is proposed along the Red Hill Fault. The trail intersects the project site traveling in a northeasterly direction towards the mountains. Internal undulating landscaped slopes will be designed at various slope inclinations (2:1 maximum) to provide meandering of the tops and toes of the slopes. The proposed project also includes the installation of underground utilities (such as electricity, phone, etc.).

Table 3-1 below provides a statistical summary of the various land uses associated with TTM 16072.

Table 3-1: Project Statistical Summary

Land Use	Gross Acreage	Percent
Single-family Detached Residential	94.18	62.50
Fault Zone/Open Space Area/Interim Detention Basin	13.24	8.78
Manufactured Open Space (Landscaped)	8.31	5.45
City Flood Channel	3.10	2.06
Public Streets	31.97	21.21
Total	150.80	100.00

Internal street patterns have been designed following the naturally trending terrain, which slopes at about 6 percent from the northwest to the southeast. Access to the project site would include two street connections to Etiwanda Avenue, one street connection to Wilson Avenue, and one street connection to East Avenue. No connections would be installed along the northern portion of the project site, adjacent to the SCE easement. In addition, the circulation system would provide for improvements to the existing streets along the perimeter of the project site. Along the western project boundary, Etiwanda Avenue is a partially improved secondary arterial street. The project would

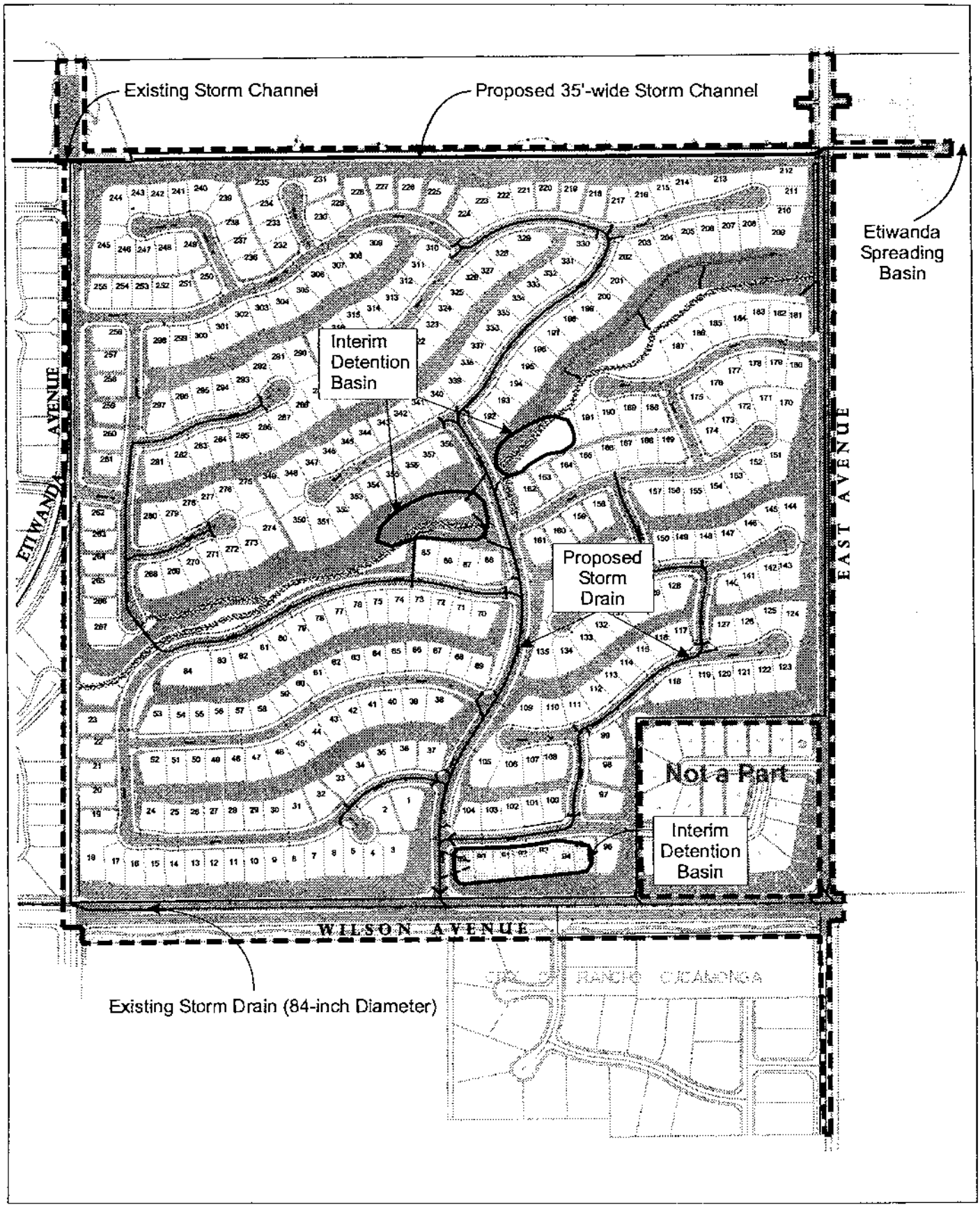
include half-width improvements (i.e., 52 feet wide) which would include the completion of full width improvements along the eastern side of Etiwanda Avenue from Golden Prairie Drive to the southern boundary of the SCE easement . Wilson Avenue is currently a well-graded dirt road along the southern project boundary. The project would include the full width development of Wilson Avenue (i.e., 165 feet wide) to a divided secondary arterial which includes improvements to the adjacent 65-foot wide Metropolitan Water District (MWD) easement. The proposed improvements to Wilson Avenue include a 4-foot meandering sidewalk on the north side of the right-of-way and a 7-foot meandering sidewalk and 12-foot trail along the south side of the right-of-way. East Avenue is currently a dirt road north of Summit Park to Wilson Avenue, and does not extend further north. The project would partially improve East Avenue from Summit Park to Wilson Avenue to provide pavement for two lanes of traffic (i.e., 20 feet wide). North of Wilson Avenue, the project would include half-width improvement of East Avenue (i.e., 33 feet wide) as a collector street to the southern boundary of the SCE easement. The project also includes full-width improvements (i.e., 66 feet wide) of Wilson Avenue within the SCE easement. Within the easement the project includes one driveway on each side of the right-of-way to allow SCE access to their utility facilities.

3.3.2 Infrastructure Improvements

Drainage System

The proposed project also includes onsite and offsite flood control and street improvements. Storm water conveyed from north of the project site will be directed to a proposed 35-foot wide storm channel located along the northern boundary of the project site. This proposed storm channel has been envisioned as a component of the Etiwanda/San Sevaine Area 3 Master Plan Storm Drain facilities. The proposed storm channel would protect the project site from upstream flows and would result in a modification of the site's current Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) designation of Zone D (area of undetermined flood hazard) to no significant flood hazard. The proposed culvert under Etiwanda Avenue is also part of the Master Plan. The implementation of these proposed drainage facilities would be consistent with the Master Plan.

Storm water collected from onsite areas north of the fault line will drain into interim detention basins placed within the open space/fault zone. The onsite areas south of the fault line will drain into an interim detention basin that is located in the southeastern portion of the project site directly adjacent to Wilson Avenue. The onsite detention basins will detain storm flows to reduce the potential peak concentrations flowing off of the project site and eventually into the existing 84-inch storm drain within the northern portion of the Wilson Avenue right-of-way (see Exhibit 3-4). The 84-inch storm drain currently conveys storm water to the east to Etiwanda Creek. The interim detention basins will not be required subsequent to the implementation of a future regional channel improvement at the confluence of the Etiwanda Creek and San Sevaine Creek Channels. Exhibit 3-5 illustrates the long-term drainage system plan for the proposed project.



SOURCE:

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SCALE IN FEET

Exhibit **3-4**

Michael Brandman Associates

Proposed Short Term Drainage System Plan

00180027 • 11/2003 | 3-4_Proposed Short Term Drainage.cdr

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

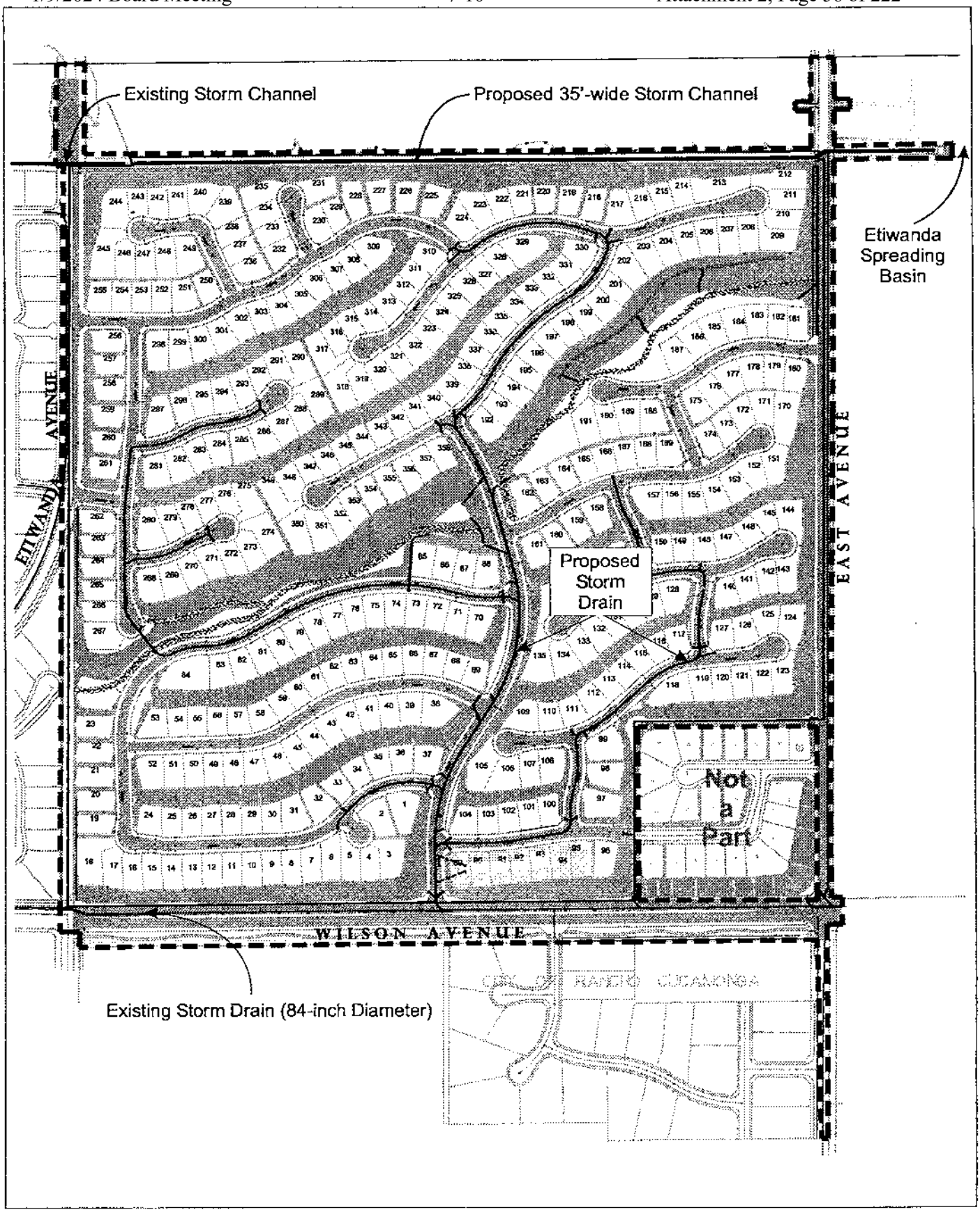

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Exhibit **3-5**

Michael Brandman Associates

Proposed Long Term Drainage System Plan

00180027 • 11/2003 | 3-5_Proposed Long Term Drainage.cdr

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

Water System

Domestic water would be provided to the project site by the Cucamonga County Water District (CCWD). Water lines on the project site would be connected to the existing 12" water line already in place along the southern project boundary on the Wilson Avenue alignment. The proposed lines extending west to Etiwanda Avenue will connect to the existing 10" water line located in Etiwanda Avenue (see Exhibit 3-6).

Sewer System

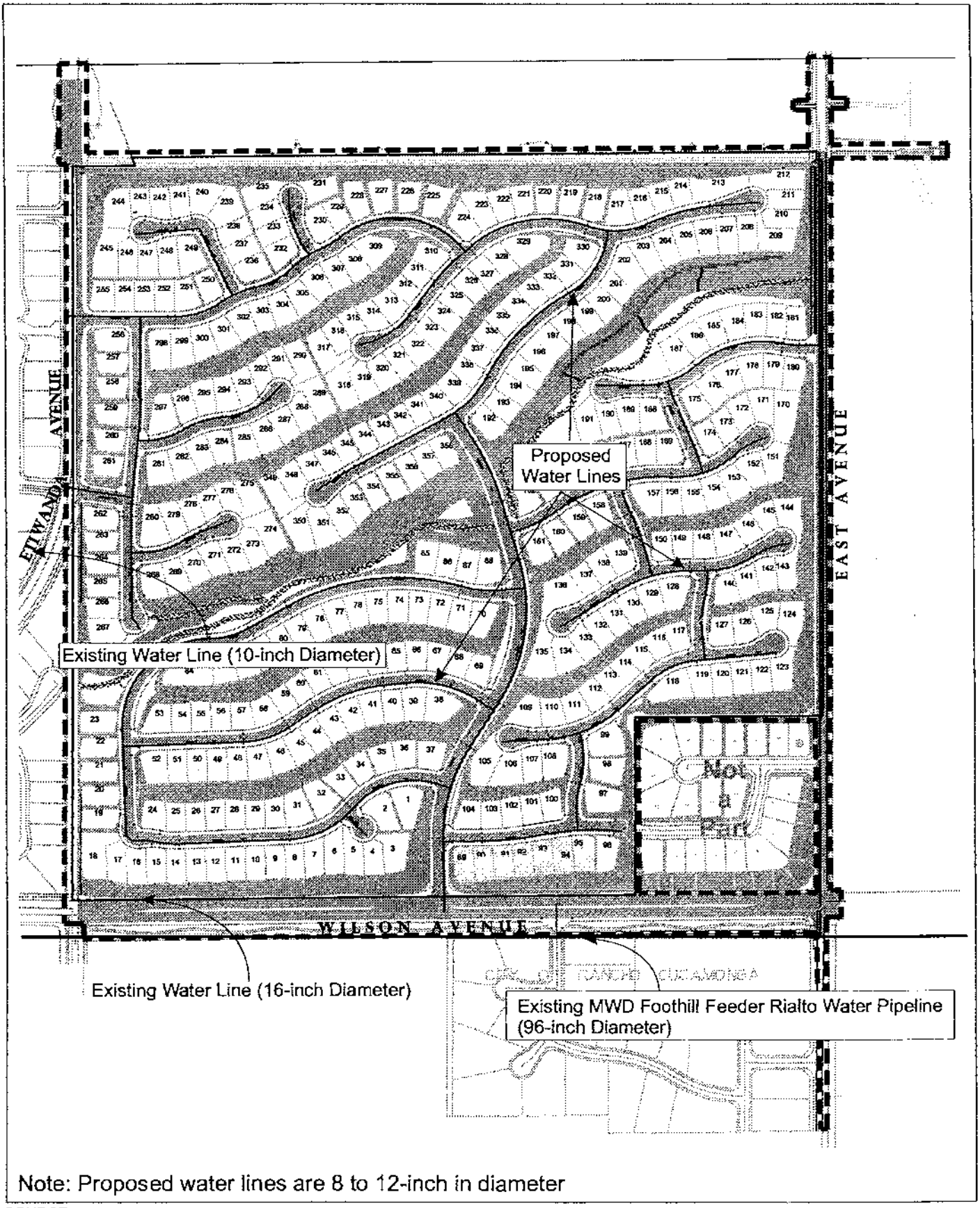
Wastewater treatment service would be provided by the Inland Empire Utilities Agency. A trunk sewer main is currently installed along Etiwanda Avenue at the eastern project boundary. In addition, a future trunk sewer main is planned on the East Avenue extension to meet the needs of planned and approved development projects. Wastewater service would be provided to the proposed project connecting to these existing and planned sewer mains (see Exhibit 3-7). CCWD provides sewer collection and conveyance systems to the wastewater treatment plants. Most of the project can gravity sewer southwesterly to the exchange sewer line at Wilson and Etiwanda Avenues until the East Avenue Trunk Sewer is completed

3.3.3 Fuel Modification Plan

The proposed *Fuel Modification Plan for Tract #16072* prepared by John B. Hatcher in June 2003 assesses the onsite and offsite wildland fire hazards and risks that may threaten life and property associated with proposed residential development within the Tract. The development plans in progress north and south of this area will provide additional barriers to an advancing wildland vegetation fire.

The purpose of this Fuel Modification Plan (FMP) is to provide native vegetation treatment direction for developers, architects, builders, and Rancho Cucamonga Fire Protection District (RCFPD) officials to use in making all proposed structures safe from wildland firest in the future. The FMP includes:

- A wildland fire hazard assessment and expeeted fire behavior of offsite and onsite native vegetative fuels.
- A long-term perimeter vegetative fuel modification treatment and maintenance plan to minimize any loss to residential structures within the project site due to wildland fire.
- A long term "firewise landscaping" and fuel modification treatment plan to be deployed around all structures.



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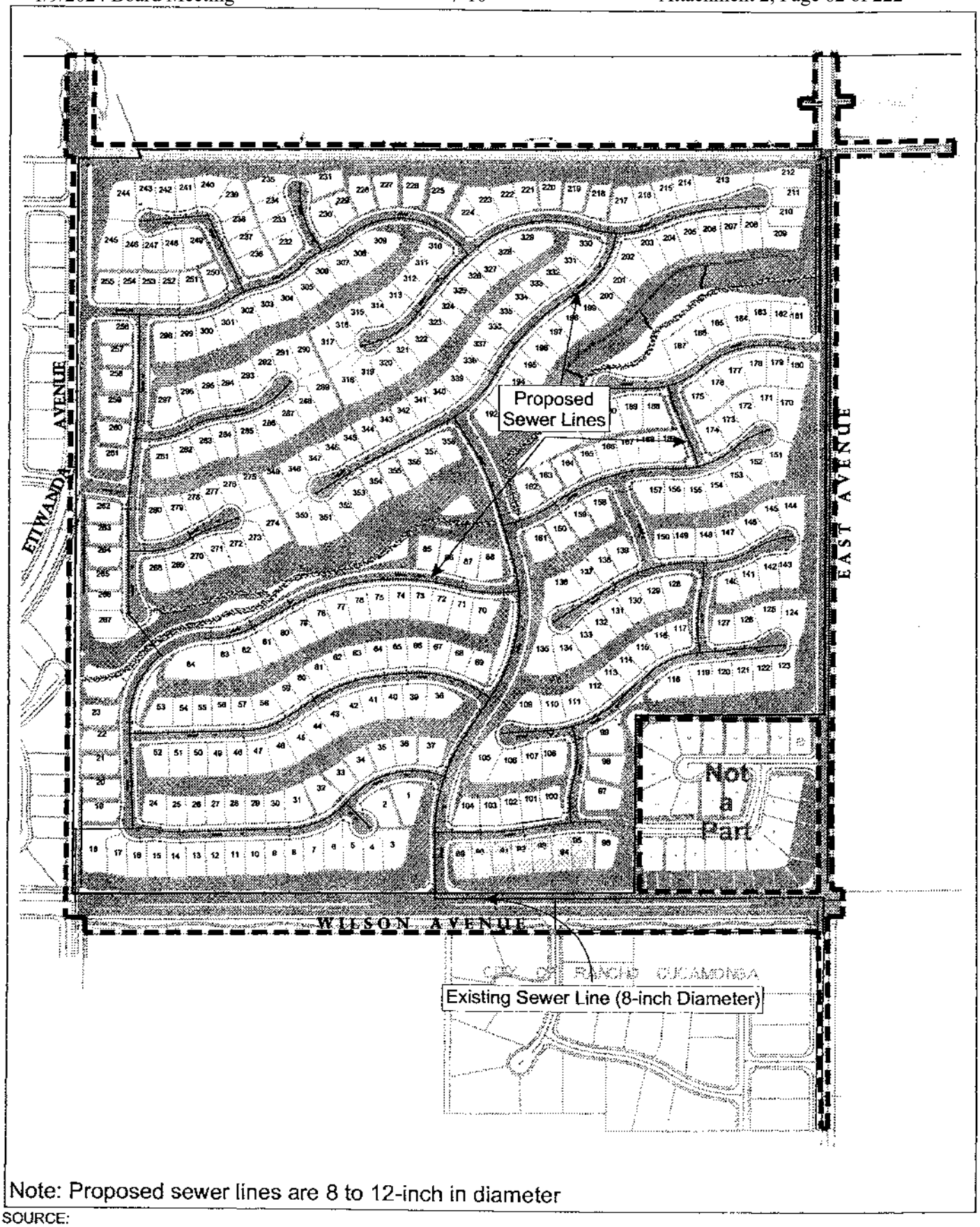
Michael Brandman Associates

Exhibit **3-6**

Proposed Water System Plan

00180027 • 11/2003 | 3-6_Proposed Water.cdr

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072



Note: Proposed sewer lines are 8 to 12-inch in diameter

SOURCE:

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SCALE IN FEET

Michael Brandman Associates

Exhibit 3-7

Proposed Sewer System Plan

00180027 • 11/2003 | 3-7_Proposed Sewer.cdr

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

The FMP is based upon requirements in the Rancho Cucamonga Fire District Ordinance #39, and San Bernardino County Building Codes and Fire Safety (FR) Overlay District criteria. The Fuel Modification Plan Guidelines prepared by the Los Angeles County Fire Department were also used as reference material. The RCFPD has reviewed the proposed plan and has provided preliminary approval. The proposed FMP is available for review at the City of Rancho Cucamonga Planning Department.

3.4 Project Objectives

The following are the objectives of the proposed project.

1. To provide single-family housing units consistent with the intent of the City's General Plan and the Etiwanda North Specific Plan.
2. To annex the proposed 150-acre tentative tract and an adjacent 10-acre area at the northwest corner of Wilson and East Avenue into the City of Rancho Cucamonga.
3. To be consistent with, and implement, the policies and goals of the City of Rancho Cucamonga General Plan, Etiwanda North Specific Plan, City Development Code, and all other City development guidelines.
4. To create a project that is generally consistent and compatible with other existing and proposed uses in the vicinity of the project and community of Etiwanda in general.
5. To provide project infrastructure including streets, water and sewer mains, and flood control consistent with City and regional plans related to these services.
6. To phase the development of the proposed project to ensure adequate utilities are provided.
7. Provide a system of public/community facilities, including parks, trails, open space areas, and landscaping to support the residents of the project and surrounding area in an efficient and timely manner.
8. To design and landscape the proposed project to create an aesthetically pleasing living environment.

3.5 Intended Uses of the EIR

This EIR has been prepared in accordance with the California Environmental Quality Act of 1970 (CEQA), as amended (Public Resources Code section 21000, et seq.), and the California CEQA Guidelines. This report also complies with the rules, regulations, and procedures for implementation of CEQA as adopted by the City Council. The City is responsible for project approvals and supervision. Therefore, the City will serve as the Lead Agency for the proposed project.

The EIR may be utilized for the following discretionary approvals and permits by the City:

- **Annexation.** Approval of annexing approximately 160 acres that comprise two parts; 150-acre project site and approximately 10 acres at the northwest corner of Wilson and East Avenues.

- **Tentative Tract Map.** Approval of TTM 16072 is required to subdivide the project site.
- **Development Agreement.** Approval of a development agreement for the proposed project will be required.
- **Design Review.** Approval of the proposed architecture, height, setbacks, landscaping, and other design components will be required.
- **Grading Permits.** Grading on the project site is subject to the review and approval of grading plans.
- **Building Permits.** Construction of development on the project site is subject to review and approval of building plans.

This DEIR may be used in the decision-making process for other approvals related to the project including but not necessarily limited to the following:

- **Local Agency Formation Commission.** Approval of prezoning and annexation of the approximately 150-acre project site as well as the adjacent 10-acre area at the northwest corner of Wilson and East Avenue will be required.
- **San Bernardino County Flood Control District.** The project will require a permit to connect the proposed storm channel along the northern boundary of the project site to the Etiwanda Spreading Grounds.
- **Federal Emergency Management Agency.** The project will require a revision of the site's Federal Emergency Management Agency's flood hazard designation on the Flood Insurance Rate Map (FIRM). The project applicant will be required to provide information showing that the proposed the proposed storm channel along the northern boundary of the project site would eliminate the existing flood hazard on the project site.
- **Army Corps of Engineers.** The project will require an USACE Section 404 permit because a portion of an area proposed for development is classified as "waters of the United States." The USACE has jurisdiction over developments in or affecting the navigable waters of the United States, pursuant to the Rivers and Harbors Act and the Clean Water Act. An USACE permit is required prior to discharging any dredge or fill material into United States waters, pursuant to Section 404 of the Clean Water Act.
- **Regional Water Quality Control Board.** The project will require a RWQCB Section 401 Water Quality Certification because a portion of an area proposed for development will disturb "waters of the United States" through discharging dredge or fill materials into these waters.
- **California Department of Fish and Game.** The project would require a CDFG agreement pursuant to Section 1603 of the Fish and Game Code for disturbance of drainage courses. A

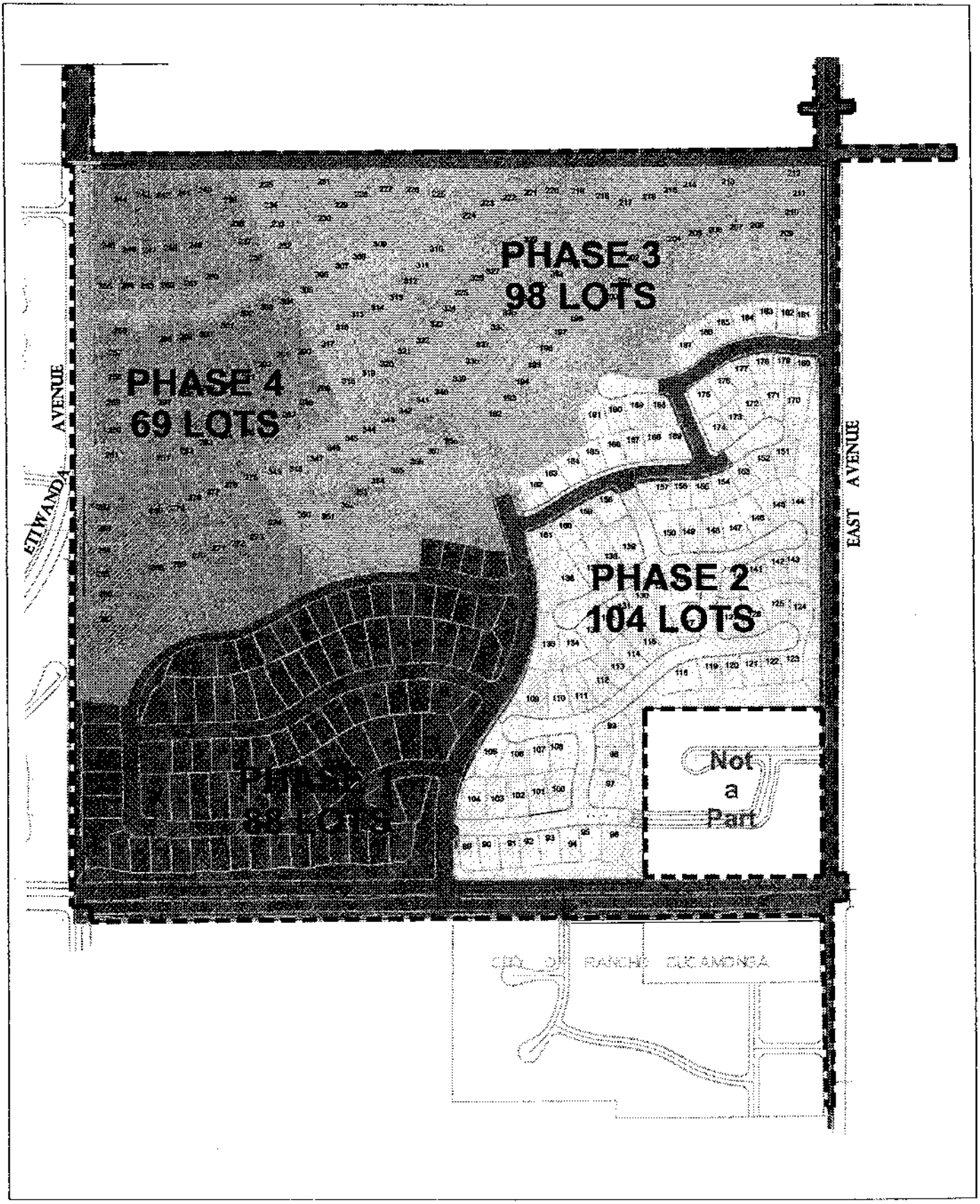
written agreement is required prior to allowing development that may threaten, harm, or destroy existing wildlife habitats within areas of jurisdiction.

3.6 Project Phasing

TTM 16072 would be developed in four phases, which would be preceded by grading of the entire project site. Grading is estimated to take approximately 8 months to complete and would include construction of interim detention basins. Construction grading would follow the general form of the existing topography. Earthwork cut and fill are anticipated to balance onsite, with total raw cut of approximately 1,000,000 cubic yards (cy). Some screening activities of fill material may also take place to reduce or eliminate the rocks and boulders presently found onsite.

Construction of the four phases is estimated to take place over approximately 4.5 years, but would also depend on actual housing market conditions. Exhibit 3-8 identifies the anticipated project phasing. Phase 1 is estimated to take one year and ten months to construct and entails the construction of 88 units, including 3 models, and construction of their associated utilities and streets. Phase 1 also includes the construction of the storm channel along the northern property boundary, Etiwanda Avenue, East Avenue north and south of Wilson Avenue, and the full width development of the Wilson Avenue right-of-way.

Phase 2 is estimated to take one year and eight months to construct and entails the construction of 103 units, and construction of their associated utilities and streets. Phase 3 is estimated to take one year and six months to construct and entails the construction of 98 units and associated utilities and streets. Finally, Phase 4 is estimated to take one year and one month to construct 69 units including associated utilities and streets.



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Michael Brandman Associates

Exhibit **3-8**

Project Phasing Plan

00180027 • 11/2003 | 3-8_Project Phasing Plan.cdr

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

SECTION 4
GENERAL DESCRIPTION OF ENVIRONMENTAL SETTING

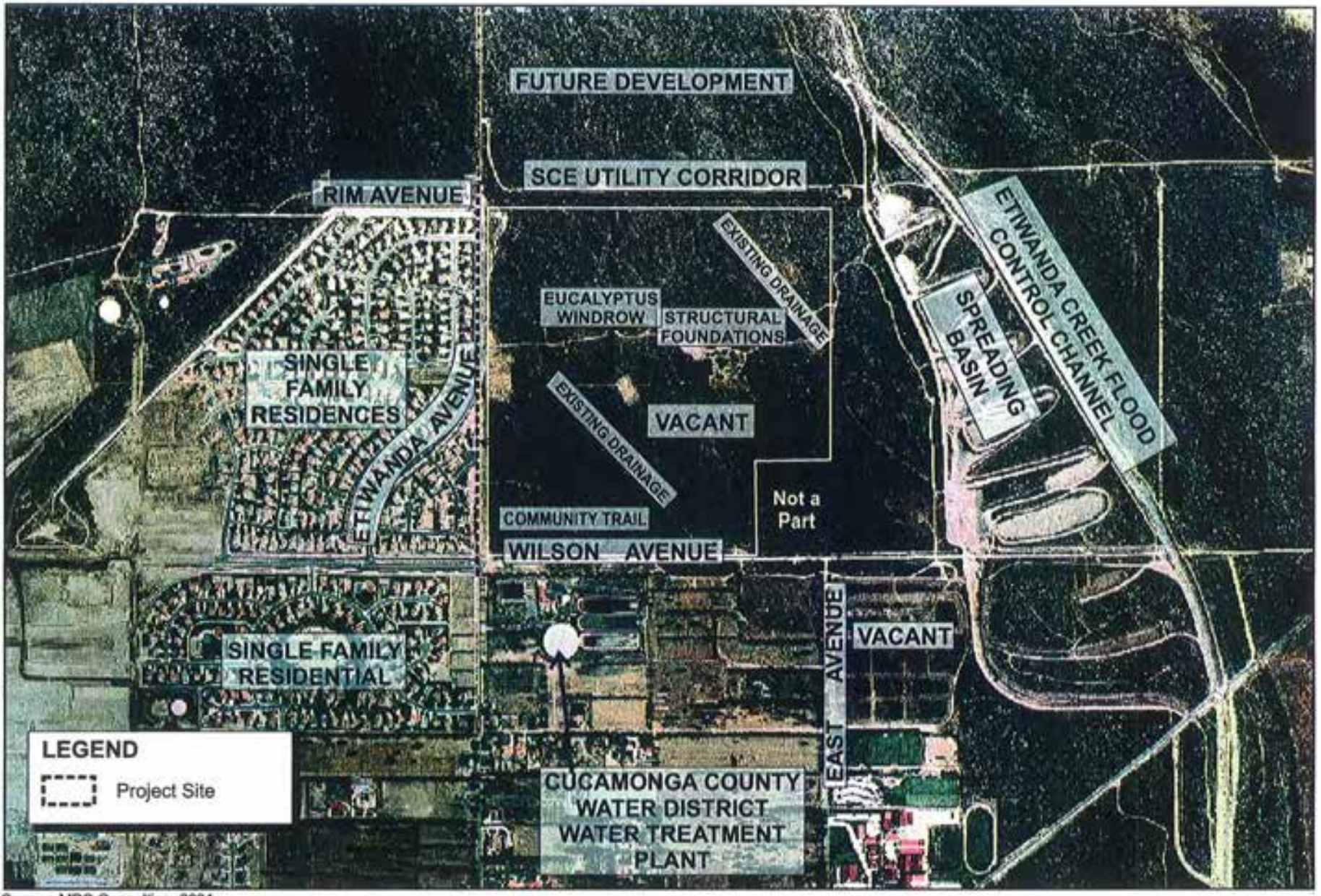
4.1 Overview of Environmental Setting

The project site is located in the unincorporated North Etiwanda area of San Bernardino County. This area lies within the City of Rancho Cucamonga Sphere of Influence and is proposed to be incorporated into the City as part of the project approval process. The 150.8-acre site is located immediately north of the planned Wilson Avenue extension, between Etiwanda Avenue to the west and the proposed East Avenue extension to the east. The undeveloped property is located on an alluvial fan at the base of the San Gabriel Mountains. Currently the project site is comprised of a natural vegetation community largely comprised of sage scrub species and several mature trees.

A water treatment plant is located immediately south of the project site, with residential development to the south of the treatment plant. There is an SCE utility corridor easement immediately north of the project boundary. A large residential subdivision is currently located to the west of the subject property across Etiwanda Avenue, while properties to the north and immediate east of the site are presently undeveloped (see Exhibit 4-1).

4.2 Related Projects

Section 15130 of the CEQA Guidelines requires that an EIR discuss cumulative impact of a project when the incremental effects of a project are cumulatively considerable. Cumulative impacts are defined as an impact that is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. Cumulatively considerable means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. According to the CEQA Guidelines, elements considered necessary to provide an adequate discussion of cumulative impacts of a project include either: (1) list of past, present, and probable future projects producing related or cumulative impacts; or (2) a summary of projections contained in an adopted General Plan or related planning document which describes regional or areawide conditions contributing to a cumulative impact.



Source: MDS Consulting, 2001

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Michael Brandman Associates

00180027 • 11/2003 | 4-1_Existing Environmental Setting.cdr

Exhibit 4-1
Existing Environmental Setting

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

The following are the approved and/or planned projects in the vicinity of Tentative Tract #16072:

- **Rancho Etiwanda.** This project is located west of the site along Wilson Avenue, approximately 4,000 feet, and proposes to construct 685 single family homes on 250 acres. The project is approved and units are under construction.
- **Rancho Etiwanda Estates.** Proposes to build 632 single family homes on 247 acres located northwest of the project site and the current terminus of Etiwanda Avenue. The project is approved, no construction has begun at this time.
- **Henderson Creek.** This project is located along Wardman Bullock Road, north of Wilson Avenue and northeast of the project site. It proposes construction of 126 single-family dwellings on 90 acres. The project is in the review process in the City of Rancho Cucamonga.
- **Tracy Development.** This project is located immediately north of the proposed development and proposes to construct 269 single-family homes on approximately 107 acres. The project is in the initial phases of the review process with the City. Included in the project proposal are two park sites, approximately 3 acres each.
- **Tentative Tract Map 16113.** This project is located south of the site along East Avenue and proposes 23 single family residential lots on 17 acres. This project is approved but construction has not begun at this time.
- **Tentative Tract Map 16114.** This project is located south of the site along East Avenue and proposes 21 single family residential lots on 15 acres. This project is approved but construction has not begun at this time.
- **Tentative Tract Map 16115.** This project is located south of the site along East Avenue and proposes 17 single family residential lots on 18 acres. This project is approved but construction has not begun at this time.
- **Tentative Tract Map 16116.** This project is located south of the site along East Avenue and proposes 48 single family residential lots on 37 acres. This project is approved but construction has not begun at this time.
- **Tentative Tract Map 16147.** This project is located south of the site along Etiwanda Avenue and proposes 70 single family residential lots on 48 acres. This project is approved but construction has not begun at this time.
- **Tentative Tract Map 14759.** This project is located south of the site along Etiwanda Avenue and proposes 358 single family residential lots on 132 acres. This project is approved but construction has not begun at this time.

SECTION 5
EXISTING CONDITIONS, PROJECT IMPACTS, CUMULATIVE IMPACTS, MITIGATION MEASURES, AND LEVEL OF SIGNIFICANCE AFTER MITIGATION

5.1 Geology and Soils

The following discussion is based on preliminary geotechnical investigations and supplemental geologic/fault investigations conducted by GeoSoils, Inc in 1998 and 2000 and the Geologic and Hydrologic Technical Background Report prepared by Earth Consultants International, Inc. in 2002 (see Appendix B).

5.1.1 Existing Conditions

Regional/Local Geology

The region surrounding the project straddles the junction between two major southern California geologic provinces, the Transverse Ranges to the north, and the Peninsular Ranges to the south, with the base of the San Gabriel Mountains and the Sierra Madre-Cucamonga fault system marking the boundary. The San Gabriel Mountains, part of the Transverse Ranges, are a province defined by a series of predominantly east-west trending mountain ranges and their intervening valleys. The ranges stretch across the northern portion of San Bernardino County, as well as parts of Riverside, Los Angeles, Ventura and Santa Barbara counties. The Santa Ana River Valley is considered to be a part of the Peninsular Ranges, a northwest-trending geologic and structural grain aligned with the San Andreas fault system, and represented by northwest-trending mountains and valleys extending to the Mexican border.

The eastern San Gabriel Mountains are located in the central part of the Transverse Ranges, where they abruptly rise to heights of more than 6,000 feet above the valley floor. Bounded by the San Andreas fault zone on the northeast and the Cucamonga fault zone on the south, the mountains are essentially a large block of the earth's crust that has been squeezed up and thrust over the valley floor by north-south compression along the San Andreas tectonic plate boundary. Along the mountain front, the Santa Ana River Valley is shaped by coalescing alluvial fans that have a range of ages that coincides with the rise of the San Gabriel Mountains. The project site is situated on geologically young alluvium that blankets fans emanating from the Day and East Etiwanda Canyons to the north. These young sediments are underlain by older alluvial fan deposits, and at great depth, by crystalling bedrock similar to that exposed in the nearby mountains.

Geologic Units

The site is underlain by alluvial fan sediments estimated to be several hundred feet thick. Locally, these sediments are covered by surficial deposits, including uncompacted artificial fill and colluvium.

Deposits of uncompacted artificial fill occur locally throughout the site and are generally associated with dirt roads and with backfilled test pits and exploratory fault trenches. These fault trenches were as much as approximately 1,130 feet in length, and range in depth from about 6 feet to almost 30 feet. The trench backfill consisted of native soils in a dry and loose condition; consequently the sites of these excavations are not currently suitable for support of fill embankments or building foundations.

During their preliminary geotechnical investigations, GeoSoils reported that colluvium mantles the alluvial fan deposits. Colluvium generally consists of silty, fine- to coarse-grained sand with scattered cobbles, and locally abundant cobbles. These materials are dry to damp, of low density, and are porous, especially near the surface. Because of these characteristics, colluvium is also unsuitable for the support of foundations and fill embankments.

The site is underlain by a thick section of Quaternary-age (deposited in the last two million years) alluvial fan deposits. The near-surface deposits, as observed in exploratory trenches, consist predominantly of silty sand or sand with pebbles, gravel, and cobbles, to sandy gravel/gravelly sand with cobbles and boulders. The stratigraphic sequence is medium- to thick-bedded, with bedding gently inclined to the south. Because the fan surfaces in this area are moderately dissected by streams and have moderate soil development, Morton and Matti (1987) classified these deposits as latest Pleistocene (between 11,000 and 2 million years old) and Holocene (less than 11,000 years old).

Regional Faulting and Seismicity

The project site is located in an area of large-scale seismic activity, as the Transverse Ranges province collides with terrain of the Peninsular Ranges province to the south. As mentioned above, the Sierra Madre-Cucamonga fault system delineates the boundary of these two provinces. This fault system was responsible for the destructive M6.4 San Fernando earthquake in 1971 and for the M5.8 Sierra Madre earthquake in 1991. In addition, evidence for prehistoric earthquakes along this fault system has been uncovered in numerous exploratory excavations in recent years. Consequently, most of this fault system has been assigned to an Alquist-Priolo Earthquake Fault Zone by the California Division of Mines and Geology (currently the California Geological Survey). Displacements on faults within this system are mainly of the thrust or thrust-oblique type, causing older geologic units to be pushed up along a series of faults that dip northward beneath the San Gabriel Mountains. In the Rancho Cucamonga area, this activity is represented by the Cucamonga fault zone.

Major active strike-slip faults are also present in the region, deforming the landscape and changing drainage patterns. Examples of this type of faulting include the San Andreas fault and the San Jacinto

fault, two of the most active fault systems in California. These structures are predominantly right-lateral faults and are responsible for creating linear valleys and ridges, as well as offset stream channels.

The faults mentioned above have the potential to generate strong ground motions at the project site. Other regional faults that could also produce significant ground shaking at the site include the San Jose fault and the Chino-Elsinore system. A summary of the various significant faults are described in the following paragraphs and summarized in Table 5.1-1.

Table 5.1-1: Summary of Major Known Active Faults with the Potential to Cause Severe Seismic Shaking at the Site

Seismic Source (Name of fault or *fault segment*)	Magnitude of the Maximum Magnitude Event	Peak Ground Accelerations (g)	Approximate Distance to Site (miles)
Cucamonga	7.0	0.72 – 0.92	<2
San Andreas			
San Bernardino	7.3	0.42 – 0.51	9
Coachella Valley	7.4	0.43 – 0.54	9
Mojave	7.1	0.35 – 0.41	11
1857 Rupture	7.8	0.44 – 0.57	11
San Jacinto			
San Bernardino	6.7	0.51 – 0.55	5
San Jose	6.5	0.34 – 0.38	10
Sierra Madre	7.0	0.32 – 0.39	13
Chino	6.7	0.25 – 0.28	15

* Ground accelerations at the site were calculated using the EQFAULT computer software developed by Blake (2000) and the most recent fault parameters issued by the California Division of Mines and Geology in 1996.

The intensity of ground shaking at the given location depends primarily on the earthquake magnitude, the distance from the epicenter to the site of interest, the type of fault that causes the earthquake, and the response characteristics of the soils or bedrock units underlying the site. Given its proximity, the Cucamonga fault zone is potentially capable of producing intense ground accelerations at the site. A maximum magnitude earthquake on this fault could produce seismic shaking at the site with peak horizontal ground accelerations estimated between 0.72 g and 0.97g, depending on the attenuation relation used. Earthquakes on other faults and fault segments located farther away from the site could be expected to produce lower peak horizontal ground accelerations at the site.

San Andreas Fault

The San Andreas extends over 750 miles from Cape Mendocino in northern California to the Salton Sea region in southern California. It is considered the "master fault" that controls seismic activity in southern California. Its activity is known from historic earthquakes and from many fault studies that have shown that the San Andreas fault offsets or displaces recently deposited sediments.

The San Andreas fault is divided into segments in order to evaluate future earthquake potential. The segmentation is based on physical characteristics along the fault, particularly discontinuities that may affect the rupture length. While this methodology is valuable in predicting earthquakes, historical records and prehistoric earthquakes show it is possible for more than one segment to rupture during a large quake or for ruptures to overlap into adjacent segments. The closest segments of the San Andreas fault to the project site are the San Bernardino Mountains and Coachella Valley segments.

Cucamonga Fault

At a distance of little more than a mile, the Cucamonga fault zone is the closest known active fault to the project site capable of producing an earthquake (the Etiwanda Avenue scarp that extends through the project site is an active fault, but it is not thought capable of generating an earthquake on its own). The Cucamonga fault zone consists of several discontinuous fault strands in the eastern part, merging in the central part, and forming a single strand to the west. The Red Hill fault and the Etiwanda Avenue Scarp are secondary faults that are thought to represent the southernmost segments of these fault strands.

The relationships between faulted geologic units, alluvial stratigraphy, soil ages, and fault scarp morphology have been studied in an attempt to estimate how large an earthquake the Cucamonga fault zone is capable of generating, the slip rate, and how often a large earthquake will occur. If the Cucamonga fault were to break along its entire length, it is thought capable of a magnitude 7.0 earthquake. Such an event could produce peak horizontal ground accelerations estimated at 0.72g to 0.97g at the site.

San Jacinto Fault

The San Jacinto fault system has been a significant source of moderate- to large-magnitude earthquakes in southern California, having generated about ten earthquakes greater than magnitude 6.0 in the last century. The San Jacinto fault is divided into five segments. The San Bernardino segment and the San Jacinto Valley segments are the closest segments, located about 5 miles and 19 miles away, respectively.

Of these, the San Bernardino segment is potentially capable of producing the most intense ground accelerations at the site. A magnitude 6.7 earthquake would generate estimated peak horizontal ground accelerations at the site of about 0.51g to 0.55g.

Other Faults

The San Jose fault is an 11 mile long fault splay that branches southwestward from the Cucamonga-Sierra Madre fault system in the Upland area. A worst-case scenario earthquake on this fault, rupturing the entire length of the fault, would result in a magnitude 6.5 earthquake that could cause peak horizontal ground accelerations at the site of 0.34g to 0.38g.

The Sierra Madre fault, a continuation of the Cucamonga fault to the west contains several portions that are known to be active. The closest segment of the Sierra Madre fault to the site is located about 13 miles from the site.

The Chino fault is the northward extension of the Elsinore fault zone north of the Puente Hills. Based on its length, the Chino fault is considered capable of generating a maximum magnitude earthquake of magnitude 6.7.

Onsite Faulting

Active faulting has been identified within the project boundaries, and it has deformed the gently sloping fan surface as represented by the low escarpment trending northeasterly across the site. This feature was named the Etiwanda Avenue Scarp and is thought to be an extension of the Red Hill fault. The Red Hill fault and the Etiwanda Avenue Scarp are thought to be structurally related to the Cucamonga fault zone. Because the deformation is considered to be fault-related, the State assigned the scarp to an Alquist-Priolo Earthquake Fault Zone.

The presence of active faulting was confirmed through exploratory fault trenching on the project site in 1986. The fault appears to be of the reverse/thrust type, and has offset young alluvium and colluvium. A seismic investigation performed in 1998 by GeoSoils indicates that active faulting is not likely to occur within the remainder of the site.

Liquefaction

Liquefaction occurs when loose, cohesionless, water-saturated soils are subjected to strong seismic ground motion of significant duration. These soils essentially behave like liquids, losing all bearing strength. Structures built on these soils tilt or sink when soils liquefy. Liquefaction more often occurs in earthquake-prone areas underlain by young alluvium where the ground water table is less than 50 feet below the ground surface.

In general, the likelihood of liquefaction occurring in most of the Rancho Cucamonga area is low to non-existent. The ground water level below the project site is in excess of 100 feet below the surface.

Slope Stability

Slope instability is a rare occurrence on gently sloping sites like the project site, and is usually limited to the banks of incised stream channels. Evidence for existing slope instability was not found during analysis of stereoscopic aerial photographs, or during site investigations. Because of the nearly flat gradient of the project site, it is not likely to be susceptible to seismically-induced landsliding.

Groundwater

Groundwater in the project area typically occurs in excess of 100 feet below the ground surface. Because of the nature of the alluvial fan deposits, it is possible for localized areas to have shallow purched water. However, springs, seeps, and other indicators of shallow, perched groundwater were not observed during the geologic investigations on the project site.

Soil Conditions

Soil Engineering Conditions

The upper 2 to 4 feet of native soils at the site are in a relatively dry, loose and porous condition, and as a result are considered to be highly compressible. Scattered artificial fills are also highly compressible.

Preliminary results of laboratory testing indicates that due to the granular nature of the onsite materials, expansion characteristics will generally be in the low range and sulfate attack on concrete, or corrosion of ferrous metals in contact with the soil is not likely to occur.

The granular, non-cohesive nature of the native soils indicates that they will have poor sidewall stability for trenching and finished slopes may be vulnerable to surficial instability.

Suitability as Fill Material

Natural moisture content of the native materials onsite is typically below the optimum amount required for proper compaction; consequently, additional moisture will need to be provided during compaction operations to provide for adequate compaction.

Rippability

Hard bedrock is not present in the shallow subsurface in the project area. The older fills, colluvium, and alluvium at the project site can be excavated (ripped) with conventional grading equipment.

5.1.2 Thresholds of Significance

A project is considered to have a significant impact on geology and soils if it:

- Exposes people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

- Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on the substantial evidence of a known fault.
- Strong seismic ground shaking.
- Earthquake induced ground shaking capable of causing liquefaction, slope stability, ground lurching, settlement, dam/reservoir failure, tsunamis, and seiche.

- Is located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project.

5.1.3 Project Impacts

Seismic Hazards

Fault-Induced Ground Rupture

Surface slip along a fault plane can severely damage structures built across a fault. To protect structures from the hazard of ground rupturing, the Alquist-Priolo Act prohibits the siting of structures designed for human occupancy on top of an active fault. As discussed previously, an Alquist-Priolo Earthquake Fault Zone has been delineated across the project site to encompass the Etiwanda Avenue Scarp. The zone delineates the portion of the property that must undergo the required geologic studies needed to evaluate the faulting prior to project approval by the local agency. Several subsurface fault studies have been conducted within the project boundaries and active fault traces have been mapped. Therefore, the potential for fault-induced ground rupture at the site is considered to be a significant impact.

Fault Zone Detention Basins

Two of the interim detention basins will be located within the fault zone traversing the central portion of the property (see Exhibit 3-4). An analysis was completed to determine whether the water percolating into these basins would adversely affect the fault (Refer to Appendix B, GeoSoils, Inc., April 10, 2003). The only known adverse effects associated with water percolation and seismicity are related to large lake-level changes. The interim basins will only hold water temporarily to a maximum of eight feet for less than 24-hours. Therefore, sinee the basins will be emptied relatively quickly there will be no significant seismic impacts associated with water impoundment. Furthermore, no fault gouge or clay was observed within the onsite fault zone and thus there is no preferential path for water infiltration into the fault zone.

Seismic Ground Shaking

The strong ground motion or shaking that occurs during an earthquake is the primary cause of earthquake damage. The acceleration of the ground shaking at any one point depends primarily on the earthquake magnitude, distance from the earthquake source, and the local geologic conditions. The most severe shaking would be caused by an earthquake on the Cucamonga, San Andreas, or San Jacinto faults, each of these faults has the potential of generating peak horizontal ground accelerations at the site greater than about 0.5g. An earthquake on the Cucamonga fault has the potential of

generating strong ground motions of nearly 1.0 g. Given the potentially high accelerations that could occur at this site, the impact of strong ground motion is considered to be a significant impact.

Seismic-Related Ground Failure

Liquefaction

Liquefaction occurs when loose, cohesionless, water-saturated soils (generally fine-grained sands) are subjected to strong seismic ground motion of significant duration. Structures built on these soils may tilt or sink when the soils liquefy. Liquefaction more often occurs in earthquake-prone areas underlain by young alluvium where the ground water table is less than 50 feet below the ground surface.

In their preliminary investigation, GeoSoils determined that the potential for liquefaction at the project site is unlikely since the sediments underlying the area are coarse grained and ground water is greater than 50 feet below the surface. Loose surficial soils will be removed and replaced with compacted fill as part of normal grading activities, further reducing the potential for liquefaction to occur. Due to the relatively high permeability of the alluvial fan sediments and the required drainage control for the developed site, the probability of the water table at the site rising in the future to within 50 feet of the ground surface is low. The hazard of liquefaction is therefore considered to be less-than-significant.

Seismically-Induced Slope Stability

Slope instability is a rare occurrence on gently sloping sites similar to the project area and is typically limited to the banks of incised stream channels. Because of the nearly flat gradient, in its existing condition, the site would not likely be susceptible to seismically induced landsliding.

Strong ground motions can worsen unstable conditions in natural and man-made slopes. Factors controlling the stability of slopes include 1) slope height and inclination, 2) engineering characteristics of the earth materials comprising the slope, and 3) the intensity of ground shaking. With project implementation, graded slopes up to 40 feet in height and gradients of 3:1 or less are proposed. Consequently, seismically induced slope instability is considered to be potentially significant.

A slope stability analysis was also performed for the interim detention basin to be located just north of Wilson Avenue (Refer to Appendix B, GeoSoils, Inc., April 10, 2003). The analysis was performed with respect to static conditions, seismic groundshaking conditions, and under rapid drawdown conditions. The analysis indicates that the basin would meet minimum safety standards assuming that the slopes are designed and constructed per Uniform Building Code standards and general engineering standards for seismic safety.

Ground Lurching
Certain soils have been observed to move in a wave-like manner in response to intense seismic ground shaking. At present, the potential for ground lurching to occur can be predicted only generally. Under strong seismic ground motion conditions, lurching can be expected within loose, cohesionless soils, or in clay-rich soils with a high moisture content. Colluvial soils and loose cohesionless soils are present at the surface of the site; therefore, ground lurching due to seismic shaking is considered to pose a potentially significant impact at the site in its present condition.

Seismically-Induced Settlement
Strong ground shaking can cause settlement by allowing greater compaction of the soil particles. Native surficial soils and artificial fills on the project site are of low density and are therefore susceptible to settlement. Therefore, the onsite soils could result in significant settlement impacts.

Earthquake-Induced Dam/Reservoir Failure
No large-capacity reservoirs or water tanks that could fail during an earthquake are located upgradient from the project site. Furthermore, no reservoirs or tanks are proposed as part of the proposed project. Therefore, no impact from an earthquake-induced inundation at the project site is anticipated.

Tsunami
The project site is located at a minimum elevation of 1,635 feet above mean sea level and more than 45 miles inland. Due to the site's location, the risk of inundation from a tsunami is considered nil and not significant.

Seiche
No large bodies of water are existing in the project area and none are proposed as part of the project. Therefore, the potential for a seiche to affect the project site is less than significant.

Slope Stability
There are no existing landslide on or near the project site that would threaten the stability of the proposed development. In addition, there are no natural slopes nearby that pose a hazard to the project. Therefore, the existing topography on the project site would not result in landslide impacts.

Graded slopes are proposed on the project site and gradients for the slopes will be variable to provide a natural visual appearance. Cut and fill slopes of approximately 40 feet high are proposed to be constructed. The highest proposed slope that will be constructed will be at a 2:1 gradient and approximately 30 feet high. Slopes higher than 30 feet, as well as many smaller slopes will be constructed at a 3:1 gradient. Based on the slope design recommendations in the geotechnical investigation, graded slopes shall not exceed approximately 15 feet in height. This restriction is due

to the grandular, non-cohesive nature of the onsite soils. Since the proposed project includes slopes at 40 feet in height, implementation of the proposed project could result in a slope stability impact.

Shallow Ground Water

Due to the unlikely presence of localized shallow perched groundwater and the highly permeable nature of the alluvium underlying the project site, impacts associated with shallow ground water would be less than significant.

Foundation Stability

Compressible Soils

The upper few feet of the native soil onsite is potentially compressible. Uncontrolled fills that exists on the project site due to old road fills and backfills from exploratory trenches are also compressible. These materials are of low density and would settle under the weight of the proposed fills and structures. This is considered a significant impact.

Collapsible Soils

Due to the potential for variation in grain size within the alluvial fan deposits located on the project site, localized areas could result in potential collapse of soil material. This is considered a significant impact.

Expansive Soils

Due to the granular nature of the onsite soil, the expansion characteristics are considered in the low range. Therefore, the potential for native soils on the project site to cause structural damage from expansion is considered less than significant.

Ground Subsidence

Since the current groundwater pumping program within the Chino Groundwater Basin includes monitoring ground elevations for subsidence and there are no oil extraction operations near the project area, the hazard posed by land subsidence is considered less than significant.

Rippability and Oversize Rock

Because there is no bedrock at or within hundreds of feet from the surface, rippability of the onsite soils is less than significant. However, due to the presence of large cobbles and boulders in the onsite alluvium, special handling of oversize rocks will be required. The removal of boulders from the site could result in deficiencies of fill material in the proposed balanced cut and fill grading design. Therefore, the presence of oversize rock could result in a potentially significant impact.

5.1.4 Cumulative Impacts

The proposed project will affect the earth resources of the site, and will also be affected by those resources. Earth resources affect the project and the project site through seismic and other potentially hazardous influences that occur naturally. Much of the area surrounding the project has been previously graded. The effects of the proposed project relate to modifying the site to accommodate development and to provide a safe and stable project foundation. However, soil and geologic influences tend to be inherent to a particular site, and therefore have little, if any cumulative relationship with planned and/or future development. The proposed project will expose future residents of the project site to significant and unavoidable seismic ground shaking due to the high potential for strong ground motion. The proposed project would contribute to a significant cumulative increase in residents that could be exposed to strong ground shaking.

5.1.5 Mitigation Measures

Fault-Induced Ground Rupture

GS-1 Prior to issuance of a building permit for structures adjacent to the Etiwanda Avenue Scarp thrust fault on the project site, all structures north of this fault shall be set back 100 feet from the fault zone and all structures south of this fault shall be set back 50 feet from the fault zone.

Seismic Ground Shaking

GS-2 Prior to the issuance of a building permit, structures will be designed and constructed in accordance with the Uniform Building Code and general engineering standards for seismic safety for development within Seismic Zone 4.

Seismic-Related Ground Failure

Liquefaction

No measures are required.

Seismically-Induced Slope Stability

GS-3 Prior to the issuance of a grading permit, engineered slopes on the project site shall be designed in accordance with the Uniform Building Code to resist seismically induced failures. Slope design shall be based on pseudo-static stability analyses using soil-engineering parameters established for the site.

Ground Lurching

GS-4 Prior to the issuance of a grading permit, the grading plans shall state that the loose, cohesionless soils located on the surface of the site shall be removed and recompacted during grading operations.

Seismically-Induced Settlement

GS-5 Prior to the issuance of a grading permit, the grading plans shall state that the native surficial and artificial fills on the project site that are of low density, shall be removed and recompacted or exported offsite.

Earthquake-Induced Dam/Reservoir Failure

No measures are required.

Tsunami
No measures are required.

Seiche
No measures are required.

Slope Stability
GS-6 Prior to the issuance of a final grading approval, potentially unstable graded slopes that exceed approximately 15 feet in height will require additional stabilization measures such as buttressing cut slopes with compacted fill, adding geogrid reinforcement to fill slopes, using a higher compaction standard, and/or using retaining walls.

Shallow Ground Water
No measures are required.

Foundation Stability
Compressible Soils
GS-7 Prior to the issuance of a grading permit, the grading plans shall state that potentially compressible soils that are located on the project site shall be removed and recompacted in accordance with standard grading procedures.

Collapsible Soils
GS-8 Prior to the issuance of a grading permit, the project's soil engineer shall identify the method(s) of eliminating the potential for collapsible soils on the grading plan. Potential methods include excavation and recompaction and presaturation and pre-loading of the susceptible soils in-place to induce collapse prior to construction. After construction, infiltration of water into the subsurface soils shall be minimized by proper surface drainage which directs excess runoff from the proposed slopes and structures.

Expansive Soils
No measures are required.

Ground Subsidence
No measures are required.

Rippability and Oversize Rock
GS-9 Prior to the issuance of a grading permit, the grading plans shall state that during grading operations, the soil engineer shall be consulted to relocate oversize rocks on the project site to reduce the potential deficiency of fill materials that could result from the removal of oversize rocks on the project site.

5.1.6 Level of Significance After Mitigation

Except for seismic ground shaking impacts, the implementation of the above mitigation measures will reduce geology and soil impacts to less than significant. Due to the potential for high accelerations of ground motions on the project site, seismic ground shaking would remain significant.

5.2 Biological Resources

This section addresses existing conditions and potential impacts to biological resources resulting from the proposed project. Information provided in this section was derived from a variety of sources, including the general and focused biological survey reports and biological resources assessment performed by PCR Services Corporation and located in Appendix C. Additional information was obtained through MBA biologists during field surveys conducted as part of this EIR and a literature review of applicable reference materials. The purposes of the biological resources investigations were to evaluate existing conditions onsite as a basis for evaluating potential project-related impacts and to determine available mitigation measures necessary for the protection of sensitive biological resources.

5.2.1 Existing Conditions

Sensitive Biological Resources

The following discussion provides a summary of the sensitive biological resources potentially occurring and/or observed on the project site. The potential for a species to occur onsite is based upon their known geographic ranges, elevational distributions, and presence of preferred habitats. The actual occurrence within the project site was determined by focused field surveys.

Sensitive Species Classifications

Sensitive biological resources are habitats or individual species that have special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, or rare. The CDFG, the United States Fish and Wildlife Service (USFWS), and special groups like the California Native Plant Society (CNPS) maintain watch-lists of such resources.

Federal Protection and Classifications

The Federal Endangered Species Act of 1973 (FESA) defines an endangered species as "...any species which is in danger of extinction throughout all or a significant portion of its range..." Threatened species are defined as "...any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of the FESA, it is unlawful to "take" any listed species. "Take" is defined in Section 3(18) of the Act as: "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Further, the USFWS, through regulation, has interpreted the terms "harm" and "harass" to include certain types of habitat modification as forms of "take." These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. In a case where a property owner seeks permission from a federal agency for an action that could affect a federally listed plant and animal species, the property owner and agency are required to consult with USFWS. Section 9(a)(2)(b) of the federal Endangered Species Act addresses the protections afforded to listed plants.

State of California Protection and Classifications

California's Endangered Species Act (CESA) defines an endangered species as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion of its range due to one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, or disease." The State defines a threatened species as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the commission as rare on or before January 1, 1985 is a threatened species." Candidate species are defined as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list." Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike FESA, CESA does not include listing provisions for invertebrate species.

Under the California Endangered Species Act, "take" is defined as "...hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Exceptions authorized by the state to allow "take" require "...permits or memorandums of understanding..." and can be authorized for "...endangered species, threatened species, or candidate species for scientific, educational, or management purposes." Sections 1901 and 1913 of the California Fish and Game Code provide that notification is required prior to disturbance.

California Native Plant Society (CNPS)

The California Native Plant Society is a California resource conservation organization that has developed an inventory of California's sensitive plant species (Skinner and Pavlik 1994). This inventory is the summary of information on the distribution, rarity, and endangerment of California's vascular plants. CDFG recognizes plants on the CNPS 1B list as "special status" species.

City of Rancho Cucamonga Heritage Tree Preservation Ordinance

The City of Rancho Cucamonga has established a set of Tree Preservation Guidelines designed at preserving many of the City's "heritage trees." According to these guidelines, the City requires a tree survey report before any "heritage trees" are removed as part of a development project. Under the City's guidelines, a heritage tree is defined as meeting any of the following criteria: (1) all eucalyptus windrows; or (2) all woody plants in excess of fifteen feet in height and having a single trunk circumference of fifteen inches or more; or (3) any multi-trunk tree(s) having a total circumference of thirty inches or more, as measured twenty-four inches from ground level; (4) a stand of trees the nature of which makes each dependent upon the others for survival; or (5) any other tree as may be

deemed historically or culturally significant by the city planner because of size, condition, location or aesthetic qualities.

Environmental Setting

The project site is located within an undeveloped area zoned for low to very low-density housing. To the west and south are residential communities, to the north is Southern California Edison (SCE) Corridor and additional undeveloped properties and to the east is undeveloped property, the Etiwanda Spreading Basin, and Etiwanda Creek flood control channel. Exhibit 4-1 illustrates the project site and vicinity.

The project site lies between the Day Creek flood control channel to the west and East Etiwanda Creek flood control channel to the east. Topographically, the project site is characterized by an alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. The Cucamonga Peak USGS topographic map identifies the area as having a blue-line stream bisecting the project site. However, flood control facilities, constructed subsequent to the preparation of the USGS map, have changed the area's drainage course and rechannelized the stream flows to the new concrete-lined channels. Flood flows from both Etiwanda Creek and Day Creek are now collected behind debris basins and levees at the top of the alluvial fans and diverted to the concrete channels. These alterations were completed in 1969 and have eliminated the historic sheet and debris flows on-site.

The project site is primarily undisturbed and vegetated with plant species which are associated with various stages of alluvial fan sage scrub communities.

PCR Services Corporation classified plant communities on the area proposed for Tentative Tract Map Number 16072 which encompasses approximately 150 acres. MBA evaluated the area within the boundary of Tentative Tract Map Number 16072 (150.8 acres) and five areas outside of the tract boundary which encompasses 11.4 acres. The five areas generally encompass (1) the storm channel extending to Etiwanda Spreading Basin east of the tract, (2) the northerly extension of East Avenue north of the tract, (3) the northerly extension of Etiwanda Avenue north of the tract boundary, (4) the ultimate right-of-way improvements along Wilson Avenue between Etiwanda Avenue and East Avenue, and (5) the southerly extension of East Avenue south of the tract. Therefore, the area that would experience direct effects from the implementation of the proposed tentative tract map as well as the associated improvements encompasses 162.2 acres. In addition, the study area for biological resources encompassed the area directly southeast of the tentative tract map and north of Wilson Avenue (9.2 acres), the area east of East Avenue to the Etiwanda Spreading Grounds (46.6 acres), and the portion of the SCE easement adjacent to the project site (10.5 acres). These additional areas were added to assess potential offsite impacts. The total area evaluated by MBA encompassed 228.5 acres.

The information provided below discussing existing vegetation, plant communities, and wildlife was based on a series of surveys and technical reports prepared by PCR Services Corporation. MBA reviewed these documents and performed limited field verification surveys in preparation of this evaluation.

Existing Vegetation Based on CNPS Classifications

The following discussion of existing vegetation is based on the *Biological Resources Assessment Etiwanda Subdivision Tentative Tract 16072* prepared by PCR Services Corporation. A copy of this report is in Appendix C. PCR Services Corporation's classification of plant communities on the project site was based on the CNPS *Manual of California Vegetation* (Sawyer and Keeler-Wolfe 1995), and CDFG's *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986), and the CNDDB *List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base* (CDFG 2002). PCR Services Corporation primarily relied on the plant community classifications identified in the CNPS Manual to define the plant communities present on the site; while, the Holland classification was used only to define the non-native grassland community.

The following plant communities along with their respective acreage, were identified by PCR Services Corporation as occurring on the project site. Exhibit 5.2-1 shows the location of each of these plant communities primarily based on the classifications provided in the CNPS Manual.

California Buckwheat-White Sage Scrub (44.1 acres)

California buckwheat-white sage scrub covers 44.1 acres of the site. Species that characterize this plant community are white sage (*Salvia apiana*), California buckwheat (*Eriogonum faciculatum*) and pinebush (*Ericameria pinifolia*). Sub-dominant species include deerweed (Lotus scoparious).

A cluster of approximately seven green-bark ceanothus (*Ceanothus spinosus*) individuals occurs adjacent to the ephemeral wash and scalebroom scrub near the northwest corner of the site. In addition, a few individuals of green bark ceanothus and hoaryleaf ceanothus (*Ceanothus crassifolius*) were observed at disparate locations within this vegetation type. Approximately eleven individuals of our Lord's candle (*Yucca whiplei*) were observed just north of the easternmost disturbed area. California croton occurs (*Croton californicus*) in low abundance throughout this vegetation type.

White Sage Scrub (82.5 acres)

White sage scrub covers 82.5 acres on-site. Species that characterize this vegetation type include white sage, California sagebrush (*Artemisia californica*), California buckwheat, and deerweed. White sage scrub on the eastern half of the site is dominated by white sage and deerweed with California buckwheat as sub-dominant in some areas. Dominants on the western half of the site include California sagebrush and white sage.

Source: PCR Services Corporation, 2002.

Exhibit **5.2-1**

Plant Communities Map (CNPS Classifications)

NORTH

400 200 0 400

SCALE IN FEET

Michael Brandman Associates

00180027 • 11/2003 | 5.2-1_Plant Communities Map

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

Other species observed included California croton, pinebush, bush mallow (*Malacothamnus* fasciculatus), green bark ceanothus, yerba santa (*Eriodycton trichocalyx* ssp. *trichocalyx*), rabbitbrush (*Chrysothamnus* naseosus ssp. *hololeucus*), California everlasting (*Gnaphalium californica*), southern California black walnut (*Juglans californica* var. *californica*), our Lord's candle, and holly-leafed cherry (*Prunus ilicifolia*). One southern California black walnut individual occurs within this vegetation type near the center of the site.

Scalebroom Scrub (11.2 acres)

Scalebroom scrub occupies approximately 11.2 acres on-site within the major ephemeral drainage that bisects the project site flowing northwest to southeast. Species that characterize this vegetation type are scalebroom, green bark ceanothus, California sagebrush, California buckwheat, yerba santa, white sage, and deerweed. Other species observed include mule fat (Baccharis salicifolia), needlegrass (*Achnatherum coronatum*), California sycamore (*Plantanus racemosa*), mugwort (*Artemisia douglasiana*), California aster (*Lessingia filaginifolia*), hoaryleaf ceanothus, California croton, our Lord's candle, black sage (*Salvia apiana*), and bush mallow.

Non-native Grassland (2.1 acres)

Non-native grassland covers approximately 2.1 acres near the center of the site in previously disturbed or developed areas. Non-native grassland on-site is dominated by wild oats (*Avena* sp.).

Disturbed (6.0 acres)

Disturbed areas on the project site include cleared land, geotechnical trenching areas, and dirt access roads covering 6.0 acres. Vegetation has re-established in some previously disturbed areas and these areas have been included in the aforementioned vegetation types. Disturbed areas on the project site may be devoid of vegetation or may include grasses and forbs typical of ruderal and non-native grassland communities. Species observed on-site include castor bean (*Ricinus* communis), filaree (*Eriodium* spp.), telegraph weed (*Heterotheca grandiflora*), black mustard (*Brassica nigra*), red brome (*Bromus madritensis*) and wild oats (*Avena* spp.)

Ornamental Landscaping (4.1 acres)

Ornamental species cover approximately 4.1 acres on-site. Eucalyptus (*Eucalyptus globules*) windrows occur in the center of the site and several ornamental species occur scattered throughout the site and in association with the remnant foundation including pepper tree (*Schinus molle*), olive tree (*Olea europaea*), oleander, and an unidentifiable ornamental tree near the southern property boundary.

Existing Vegetation Based on The Holland System

The Holland System is another approach to classifying plant communities. MBA has reviewed the site conditions using the Holland system. MBA determined that the Holland system would be more appropriate in providing consistent information to the various agencies since the Holland system has

been used on several projects within the area, including the Conservation Plan for the Etiwanda-Day Canyon Drainage System Supporting the Rare Natural Community of Alluvial Fan Sage Scrub (Joan Safford and Ronald Quinn, 1998), the City of Rancho Cucamonga General Plan Update EIR, and the Milliken Avenue Extension EIR.

Under the Holland System, Alluvial Fan Sage Scrub (AFSS) is a distinctive subtype of Coastal Sage Scrub, a plant community that is differentiated from chaparral communities by a number of geographic, structural, physiological and taxonomic features. AFSS is generally found on alluvial fans on the coastal sides of southern California mountain ranges. AFSS has been further subdivided into three southern geographic communities, which are: Riversidean, Venturan, and Diegan. Riversidean (RAFSS) is the more inland of the three scrub communities. RAFSS has been described as open vegetation adapted to alluvial fans and outwashes. It is found on sandy, rocky alluvial flood deposits at the base of the San Bernardino, San Gabriel and San Jacinto Mountains. The vegetation is composed of drought-deciduous shrubs and evergreen woody shrubs, with a substantial herbaceous/wildflower understory.

An analysis by California Department of Fish and Game (1998) of vegetation along the alluvial fans of the San Gabriel Mountains identified six "groupings" or plant associations that comprise the RAFSS community in this area. The six groupings are described below:

Etiwanda Alluvial Fan Group: This upland grouping of RAFSS is dominated by white sage and typically occurs on the fan outside the active flood ways (CDFG 1998). Species found within this grouping include Whipple's yucca, holly-leaved cherry, California buckwheat, and California croton.

Prickly Group: A group that includes a species-rich association with high cover of scalebroom and California buckwheat, as well as high cover of species such as yerba santa, California juniper, matchweed (Gutierrezia sp.), Croton sp., prickly pear/cholla cactus (Opuntia sp.) and yucca. This group is often typed as an intermediate or mature alluvial scrub community.

Alluvial Chaparral Group: This is characterized by very dense, chaparral-like shrub cover dominated by chamise, white sage, and California sagebrush, however, stands dominated by other combinations of chaparral species have been observed.

Riverside Group: This is a distinctive geographic grouping of very open stands, with very low cover of California buckwheat and scalebroom, and a particularly high diversity of annual plants.

Pioneer Group: This grouping consists of the "pioneer" stage of alluvial scrub near active floodways and consists of an association of California buckwheat and scalebroom.

Riparian Group: This grouping differs from the pioneer group by having higher species diversity, riparian tree species, and a relatively low cover of scalebroom.

The following discussion is based upon a literature review and field verification surveys conducted by MBA for this EIR. For purposes of this EIR, MBA identified plant communities using the Holland system. The "groupings" are based on the 1998 CDFG Conservation Plan, as described above.

During MBA's field verification survey, it was determined that the majority of the proposed project site is composed of two groupings of RAFSS plant communities along the San Gabriel foothills.

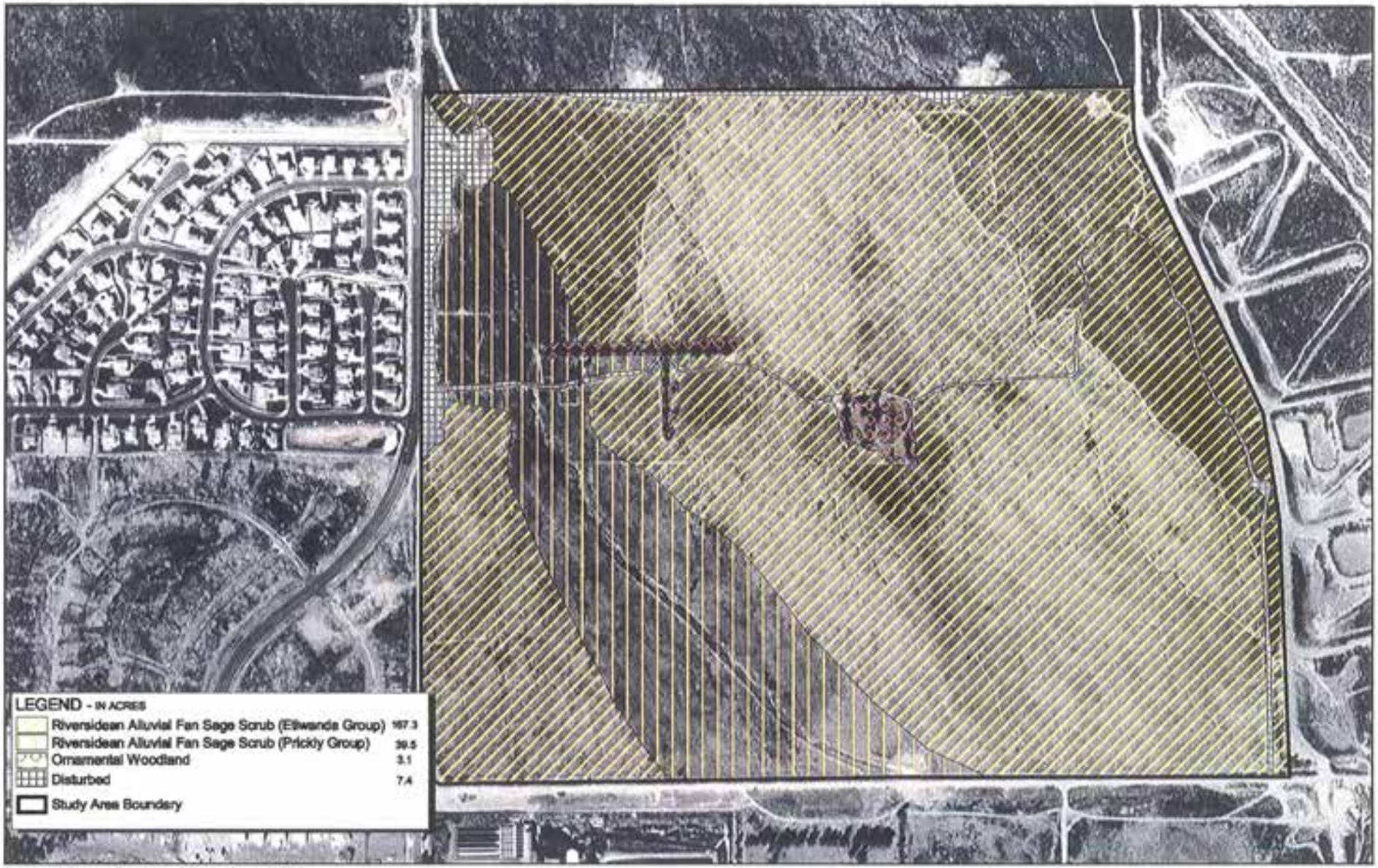
The plant communities found in the biological resources study area based on the Holland system are described below and shown in Exhibit 5.2-2.

The two groupings of RAFSS plant communities or habitats found on the project site are considered a sensitive biological resource by several regulatory and conservation agencies including USFWS, CDFG and CNPS. RAFSS vegetation in the vicinity of the project site is maturing due to lack of fluvial process and thus is becoming less diverse and species rich, being dominated by a few species.

Riversidean Alluvial Fan Sage Scrub (RAFSS)
The Etiwanda Alluvial Fan Group (171.3 acres)
This grouping of RAFSS is the most prevalent within the project site. The southeastern portion of the site contains 35.1 acres of RAFSS that has been disturbed by various activities that include fire, apiculture, soil exposure associated with road grading, recreational shooting, and some trash dumping. The RAFSS vegetation in this area is interspersed with open areas of exposed soil and non-native grasses.

Prickly group/Alluvial Chapparal Group (39.5 acres)
This grouping can be found bisecting the western portion of the project site within the area of an old creek bed that was diverted into a channel.

Ornamental Woodland and Disturbed (13.8 acres)
In addition to the above communities, MBA classified 3.1 acres as ornamental woodland and 10.7 acres as disturbed acreage.



Source: Michael Brandman Associates, 2003

Michael Brandman Associates

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Exhibit **5.2-2**

Plant Communities Map (Holland Classifications)

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

Summary of Classifying Plant Communities

As described above, two different classification systems were used for the project and resulted in separate conclusions. The CNPS classification system uses a very quantitative approach to classifying plant communities, based on observance of species and their relative dominance within the community. The Holland system uses a more qualitative multi-factor approach and is considered less precise, and potentially allows for overlap of communities. However, under the Holland classification system, evaluation criteria may include plant species mix, geographic location, and soil type, and other environmental factors.

Table 5.2-1 summarizes the classifications of vegetation communities on the project site.

Table 5.2-1: Summary of Survey Results

PCR Data		MBA Data	
CNPS Series	**Acreage**	**Holland**	**Acreage**
California Buckwheat - White Sage Scrub[a]	44.1	RAFSS - Etiwanda Alluvial Fan Group[a]	171.3
White Sage Scrub[a]	82.5	RAFSS - Prickly group/Alluvial Chaparral Group[a]	43.4
Scalebroom Scrub[a]	11.2	—	—
Non-native Grassland	2.1	Ornamental Woodland	3.1
Ornamental Landscaping	4.1	Disturbed	10.7
Disturbed	6.0	—	—
Total Area Surveyed	**150.0**	**Total Area Surveyed**	**228.5**

[a] Habitat is considered senstive.
Source: Michael Brandman Associates 2003.

As shown in Table 5.2-1, the PCR Services Corporation analysis found 137.8 acres of sensitive habitat on the 150-acre tentative tract map area. The MBA analysis included additional areas as described previously and found 214.7 acres of sensitive habitat in the biological resources study area which includes approximately 140.3 acres of sensitive habitat within the tentative tract map area. The differences in vegetation definition did not substantially alter the conclusions of the presence of sensitive habitat within the proposed tentative tract map area. However, due to consistency with recent biological evaluations in the project vicinity and the high sensitivity of RAFSS removal by the regulatory and conservation agencies, the use of the Holland system is the most appropriate.

Existing Wildlife

The site also supports a large number of wildlife species, many of which were observed during the focused surveys conducted over the past two years. Eight species of invertebrates were observed, 68

bird species, 4 reptile species and 13 mammal species were seen on the project site during the focused surveys. No amphibians were observed on the property; this is likely due to the previous modification of the creek causing the elimination of suitable habitat for amphibians. Predominantly common birds such as California towhees, mourning doves and Costa's hummingbirds were observed, however, several California sensitive bird species were also observed. Sensitive species will be discussed below in the Sensitive Resource section. A complete list of these species can be found in the species compendium in AppendixC. A focused small mammal survey was conducted in the summer of 2002. Small mammals trapped included Dulzura kangaroo rat, San Diego pocket mouse, desert woodrat, Los Angeles pocket mouse, cactus mouse, California vole, and deer mouse. For complete details on the mammal study, please refer to AppendixC.

Sensitive Plant Species

Table 5.2-2 lists 16 sensitive plant species identified by the CNDDB and a literature review as occurring in the vicinity of the project site. Suitable habitat for 5 of these species occurs on site. Additionally, previous focused plant surveys by PCR Services Corporation for Tentative Tract 16072 confirmed the presence of Plummer's mariposa lily and Southern California black walnut. None of the other species were observed. The potential for each of the plant species to occur onsite is or within areas proposed for offsite improvements (see Appendix C) is shown in Table 5.2-2 below.

Table 5.2-2: Sensitive Plant Species Potentially Occurring on the Project Site

Species		Status			Life Form	Blooming Period	Potential for Occurrence
Scientific Name	Common Name	USFWS	CDFG	CNPS			
Berberis nevinii	Nevin's barberry	FE	SE	1B	Shrub	March - April	Moderate - however none were observed during focused survey
Calochortus palmeri var. palmeri	Palmer's mariposa lily	none	none	1B	Perennial herb (bulberiferous)	May - July	Low- No suitable habitat
Calochortus plummerae	Plummer's mariposa lily	none	none	1B	Perennial Herb	May-July	Present
Centromadia pungens ssp. Laevis	smooth tarplant	none	none	1B	Annual Herb	April-September	Low- No suitable habitat
Chorizanthe parryi var *parryi*	Parry's spineflower	none	none	3	Annual Herb	April-June	Mod.-High, however, none were observed during focused survey
Claytonia lanceolota peirsonii	Peirson's spring beauty	None	None	1B	Perennial tuber	May-June	Absent
Dodecahema leptoceras	slender-horned spineflower	FE	SE	1B	Annual Herb	April-June	Mod.- however, none were observed during focused survey
Eriastrium densifolium sanctorum	Santa Ana river woollystar	FE	SE	1B	Perennial herb	July-August	Low-No suitable habitat
Eriogonum microthecum johnstonii	Johnston's buckwheat	None	None	1B	Shrub	July-September	No
Horkelis cuneata ssp. Puberula	mesa horkelia	none	none	1B	Perennial herb	February-September	Moderate
Lepidium virginicum robinsonii	Robinson's pepper-grass	None	None	1B	Annual Herb	January-July	Low-low quality habitat

Table 5.2-2 (Cont.): Sensitive Plant Species Potentially Occurring on the Project Site

Species		Status			Life Form	Blooming Period	Potential for Occurrence
Scientific Name	Common Name	USFWS	CDFG	CNPS			
Linanathus concinnus	San Gabriel linanthus	None	None	1B	Annual herb	April-July	Absent
Monardella pringlei	Pringle's monardella	None	None	1A	Annual herb	May-June	Low- no suitable habitat
Navarretia prostrata	prostrate navarretia	none	none	1B	Annual herb	April-July	Low- no suitable habitat
Opuntia Basilaris var. brachyclada	short-joint beavertail	None	None	1B	Succulent Shrub	April- June	Absent

Potential for Occurrence:
Low = Low potential for occurrence - No recent or historical records exist of the species occurring in the Project area or its immediate vicinity (within approximately 5 miles) and the diagnostic habitat requirements strongly associated with the species do not occur in the Project area or its immediate vicinity.
Moderate = Moderate potential for occurrence - Either a historical record exists of the species in the Project area or its immediate vicinity or the diagnostic habitat requirements associated with the species occur in the Project area or its immediate vicinity.
High = High potential for occurrence - A historical record exists of the species in the Project area or its immediate vicinity and the diagnostic habitat requirements strongly associated with the species occur in the Project area or its immediate vicinity.

U.S. Fish and Wildlife Service
FE Federal Endangered
FT Federal Threatened
PE Proposed Endangered
PT Proposed Threatened
FC Federal Candidate
FSC Species of Concern

California Department of Fish and Game
SE California Endangered
ST California Threatened
SR California Rare

California Native Plant Society
1A Plants presumed extinct in California.
1B Plants rare, threatened, or endangered in California and elsewhere.
2 Plants rare, threatened, or endangered in California, but more common elsewhere.
3 Plants about which we need more information.
4 Plants of limited distribution.

Source: PCR Services Corporation 2002

The following sensitive plant species that are ranked 1B by CNPS have a moderate to high potential to occur on site:

Plummer's mariposa lily (*Calochortus plummerae)* CNPS List 1B. This plant prefers dry, rocky areas in coastal sage scrub, chaparral and yellow pine forest. It occurs below 5,000 feet elevation. It is known from the Santa Monica Mountains to the San Jacinto Mountains, including the San Gabriel Mountains. This species was observed on the project site in 2001 and 2002 and is considered present.

Mesa horkelia (*Horkelis cuneata* ssp. *puberulla*) CNPS List 1B. This plant grows in chaparral, cismontane woodlands and coastal scrubs with sandy or gravely soils. It ranges from San Diego County to San Luis Obispo. Many historical populations have been extirpated due to integration with other subspecies. Moderately suitable habitat occurs on site, however, this plant was not observed during site inventories. There is a moderate potential for this species to occur within the project site.

Slender-horned spineflower (*Dodecahem aleptoceras*) FE, SE, CNPS List 1B. This plant prefers sandy and gravelly soils on alluvial fans and old floodplains; between 500 to 2,000 feet in elevation. This species is known to occur in Los Angeles, Riverside, and San Bernardino counties. Although the project site provides some suitable habitat for this species, the site is no longer subject to fluvial processes and, therefore, it has a lower potential to occur onsite. No slender-horned spineflowers were observed onsite, and this species is considered absent at this time.

Nevin's barberry (*Berbieris nevinii*) FE, SE. CNPS List 1B. This species is a perennial shrub that prefers sandy and gravelly places below 2,000 feet elevation, in coastal sage scrub and chaparral habitats. Known locations include the hills south of Loma Linda, San Bernardino County and in the area around Vail Lake, Riverside County. The project site is outside these known locations. Although the site provides marginal suitable habitat for this species, thus, it's moderate potential to occur onsite, however no specimens of this species were found during focused surveys. This species is considered absent from the site at this time.

Sensitive Wildlife Species

Eighteen (18) sensitive wildlife species identified by the CNDDB and a literature review occur in the vicinity of the project site (Table 3.3-2). During site surveys, seven sensitive wildlife species were observed onsite. State species of special concern that were observed onsite include the Cooper's hawk, Northern harrier, and San Diego desert woodrat. The Southern California rufous-crowned sparrow, Northwestern San Diego pocket mouse, Logger headed shrike, and Los Angeles little pocket mouse are both state and federal species of special concern. Focused surveys were conducted for the San Bernardino kangaroo rat (*Dipodomys merriami parvus*) in 2001 and 2002 and coastal California gnatcatcher (*Polioptila californica*) (letter reports of findings are contained in Appendix C) in 2001

and 2002. Although the findings of both surveys were negative, suitable habitat is present onsite. These species are, therefore, addressed below.

Table 5.2-3: Sensitive Wildlife Species Potentially Occurring on the Project Site

Species		Status		Potential for Occurrence
Scientific Name	Common Name	USFWS	CDFG	
Accipiter cooperi	Cooper's Hawk	None	SSC	Present
Aguila chrysaetos	Golden Eagle	None	SSC	High (foraging)
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	FSC	SSC	Present
Amphispiza belli belli	Bell's sage sparrow	None	SSC	Present
Batrachoseps gabrieli	San Gabriel slender salamander	None	None	Low- No suitable habitat
Chaetodipus fallax fallax	Northwestern San Diego pocket mouse	FSC	SSC	Present
Circus cyaneus	Northern harrier	None	SSC	Present
Cnemidophorus hyperythrus	Orange-throated whiptail	None	SSC	Moderate
*Dipodomys merriami parvus*San	San Bernardino Kangaroo Rat	FE	none	Moderate-High, however none were observed during focused surveys
Eumops perotis californicus	California mastiff bat	None	SSC	Moderate foraging
Lanius ludovicianus	Logger-headed shrike	FSC	SSC	Present
Neotoma lepida intermedia	San Diego desert woodrat	None	SSC	Present
Ovis canadensis nelsoni	Nelson's bighorn sheep	None	None	Low- elevation low as well as no habitat
Perognathus longimenbris brevinasus	Los Angeles little pocket mouse	FSC	SSC	Present
Phrynosoma coronatum blainvillei	San Diego Horned Lizard	None	SSC	Moderate-High

Table 5.2-3 (Cont.): Sensitive Wildlife Species Potentially Occurring on the Project Site

Species		Status		Potential for Occurrence
Scientific Name	Common Name	USFWS	CDFG	
Polioptila californica	Coastal California gnatcatcher	FT	SSC	Moderate, however, none were observed during focused surveys
Rana muscosa	Mountain Yellow-legged frog	PE	SSC	Absent- No suitable habitat
Rhinichthys osculus	Speckled dace	None	SSC	Absent-No suitable habitat
Rhphiomidas terminatus abdominalis	Delhi sands flower-loving fly	FE	None	Absent-Site lacks Dehli sands.

Potential for Occurrence:
Low = Low potential for occurrence - No recent or historical records exist of the species occurring in the Project area or its immediate vicinity (within approximately 5 miles) and the diagnostic habitat requirements strongly associated with the species do not occur in the Project area or its immediate vicinity.
Moderate = Moderate potential for occurrence - Either a historical record exists of the species in the Project area or its immediate vicinity or the some of the diagnostic habitat requirements associated with the species occur in the Project area or its immediate vicinity.
High = High potential for occurrence - A historical record exists of the species in the Project area or its immediate vicinity and the diagnostic habitat requirements strongly associated with the species occur in the Project area or its immediate vicinity.

U.S. Fish and Wildlife Service
FE Federal Endangered
FT Federal Threatened
PE Proposed Endangered
PT Proposed Threatened
FC Federal Candidate
FSC Species of Concern

California Department of Fish and Game
SE State Endangered
ST State Threatened
SSC State Species of Special Concern

Source: PCR Services Corporation, 2002.

San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE. The San Bernardino kangaroo rat (SBKR) is one of several kangaroo rat species that could occur within the vicinity and is no longer subject to the required fluvial processes. The Dulzura (*Dipodomys simulans*) and the Pacific kangaroo rat (Dipodomys agilis) occur in areas occupied by the San Bernardino kangaroo rat, but these other species have a wider habitat range. The habitat of the San Bernardino kangaroo rat is described as being confined to primary and secondary alluvial fan scrub habitats, with sandy soils deposited by fluvial (water) rather than aeolian (wind) processes. Burrows are dug in loose soil, usually near or beneath shrubs. The historic drainage system on the project site has been historically altered as a result of flood control efforts. This has resulted in a reduction in both the amount and quality of habitat available for SBKR.

Protocol live-trapping surveys for SBKR were conducted on the project site in July and August of 2001 (Appendix C). No SBKR were observed during the surveys. SBKR, therefore, does not currently occur within the areas surveyed.

Northwestern San Diego Pocket Mouse (*Chaetodippus fallax fallax*) SSC. This small rodent species prefers open, sandy habitats in the valley and foothills of southwestern California. Their range extends from Orange County to San Diego County and includes portions of Riverside and San Bernardino Counties. Urbanization and agriculture have reduced this mouse's historical range. This species was trapped during focused survey activities and is considered present on site.

Los Angeles Pocket Mouse (*Perognathus longimembris brevinasus*) SSC. This species occupies similar habitats as the San Diego pocket mouse; however, it is confined to lower elevation grasslands and coast sage scrub habitats and digs burrows in loose soils. This species was found during trapping efforts and is considered present.

San Diego Desert Woodrat (*Neotoma lepidus intermedia*) SSC. This relatively small pale gray rat with a distinctive bicolored tail can be found occupying old burrows of kangaroo rats and ground squirrels or in stick middens. It often forages on cactus and other desert forbes. It is often attracted to areas containing rock outcrops in southern Riverside, San Bernardino and San Diego County. This rodent is a California Species of Concern and was found onsite.

Coastal California Gnatcatcher (*Polioptila californica californica*) FT, SSC. The California gnatcatcher is a species with restricted habitat requirements, being an obligate resident of coastal sage scrub habitats that are dominated by coastal sagebrush. This species generally occurs below 750 feet elevation in coastal regions and below 1,500 feet inland. It ranges from the Ventura County south to San Diego County and northern Baja California. It is less common in coastal sage scrub with a high percentage of tall shrubs, it prefers habitat with more low-growing vegetation. Coastal California gnatcatchers breed between mid-February and the end of August, with the peak of activity from mid-March to mid-May. Population estimates indicate that there are approximately 1,600 to 2,290 pairs of gnatcatchers remaining. Declines are attributed to loss of coastal sage scrub habitat through development, and there is some evidence of cowbird nest parasitism.

Three focused surveys were conducted for the coastal California gnatcatcher by PCR Services Corporation between 1998 and 2002. All of these surveys were negative and it is concluded that this species does not currently occupy the site.

Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescans*) FSC. This species was found on site during the focused gnatcatcher surveys. Suitable habitat exists onsite for

the rufous-crowned sparrow, which generally prefers rocky hillsides and steep bushy or grassy slopes. This species is considered present.

Bell's Sage Sparrow (*Amphispiza belli belli*) SSC. This coastal sub-species is typically found in chaparral of slopes and foothills. The coastal variety of the Bell's sage sparrow has seen declines in populations due to loss of habitat. This species was observed on site and is considered present.

Cooper's Hawk (*Acipiter cooperii*) SSC. This species was observed foraging at the project site. Cooper's hawks are often seen in wooded urban areas and native woodland communities. Preferred nesting habitats include oak and riparian woodlands dominated by sycamores and willows. The project site provides very marginal nesting habitat for this species; however, it uses the site to forage. Cooper's hawks prey on small birds and rodents that live in woodland and occasionally scrub and chaparral communities. This species is considered present.

Golden Eagle (*Aquila chrysaetos*) SSC. The golden eagle is a year-round resident of southern California and prefers open habitats of the deserts, mountains, foothills, and plains. Golden eagle nests are most often located in isolated areas either on cliff ledges or in large solitary trees. The site provides suitable foraging habitat and several golden eagles nest on the south facing slopes of the San Bernardino Mountains. This species is a State Species of Special Concern and is also protected under the Federal Bald Eagle Act. The project site does not provide nesting habitat for the golden eagle; however, there is a high potential this species uses the site to forage.

Northern Harrier (*Circus cyanus*) SSC. This species is a year-round resident of southern California. It nests on the ground in open areas such as grasslands and agricultural fields. It also forages in these habitats, but also forages in areas with low growing shrubs such as Riversidean sage scrub. This species was observed on site and was determined to be nesting by PCR Services Corporation biologists. This species is considered present.

Logger-headed Shrike (*Lanius ludovicianus*) FSC, SSC. This species has been declining throughout the United States due to various reasons, including loss of habitat. This species of shrike hunts in open or brushy areas and nests in large shrubs such as ceanothus and lemonade berry. The site provides suitable nesting and foraging habitat. This species was observed on site and is considered present.

Orange-throated Whiptail (*Cnemidophorus hyperythrus*) SSC. The orange-throated whiptail occurs in open sage scrub or chaparral where loose soils and occasional rocky areas are found. It is known to occur in Orange, western Riverside, and southwestern San Bernardino counties. Although

no individuals were observed onsite, the project site provides some suitable habitat for this species. The orange-throated whiptail has a moderate potential to occur onsite.

San Diego Horned Lizard (*Phrynosoma coronatum blainvilleri*) FSC, SSC. This species generally occurs in grassland, sage scrub, and chaparral, but can also be found in coniferous forest and broadleaf woodland. It is usually found in open sandy areas such as ridge tops and washes, especially where harvester ants (*Pogonomyrmex* spp.) are found. This species was formerly common throughout southern California west of the deserts, but has declined substantially due to development and as a result of over-collecting for the pet trade. Recent evidence also indicates that its preferred food, the harvester ant, has declined dramatically in areas near human habitation with the introduction and spread of the non-native Argentine ant (*Iridiomyrmex humilis*), which out competes the native species. Although the project site provides suitable habitat for this species, it was not observed onsite. Therefore, the San Diego horned lizard has a moderate potential to occur onsite.

Regional Connectivity/Wildlife Movement Corridor

Most of the land within the City of Rancho Cucamonga has been converted from open space to commercial, industrial, residential, and recreational uses for the City of Rancho Cucamonga. Wildlife movement on a regional basis has predominantly ceased due to the development of the valley floor. However, the undeveloped areas to the north, within the County of San Bernardino, are likely to support east-west wildlife movement along the mountain foothills to the western portion of the San Gabriel Mountains as well as access to the San Bernardino Mountains.

The project site is surrounded by developed lands to the south and west. The site comprises the most southerly finger of the remaining undeveloped land along the San Gabriel foothills. Because the project site is surrounded by development to the south, east and west, it does not support regional wildlife movement across the area. Further, it does not link large open space areas together for wildlife. No significant impacts to wildlife corridors or regional wildlife connectivity are, therefore, expected to occur.

Jurisdictional Areas

The project site lies between Day Canyon wash and East Etiwanda Creek. There is an unnamed blue-line stream indicated on the Cucamonga Peak USGS topographic map that bisects the project site. A jurisdictional delineation was conducted on the project site on September 8, 1998 by PCR Services Corporation (Appendix C). Subsequent field assessments were also conducted by PCR Services Corporation in 2002 to address new parcels added to the study area and any offsite areas that would be potentially impacted by the proposed project. The survey was conducted to determine the U.S. Army Corps of Engineers (USACE) and California Department of Fish and Game (CDFG) jurisdictional areas. The survey revealed that there are three jurisdictional drainages found on the property which convey flows across the fan and have sufficient flows to form a defined ordinary high

water mark (OHM). The drainages total 6,335 linear feet and support 1.13 acres of USACE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State." None of the drainages meet the criteria of a jurisdictional wetland. All drainages are considered ephemeral in nature and support scrub vegetation. The site investigation also identified other minor drainages which exhibited indications of water flow. After consulting with the USACE, it was determined that these minor drainages were not considered jurisdiction because their width was less than one foot, the OHWM was not distinctive over the entire length of the drainage, and there was no riparian or wetland vegetation present in or around the minor drainages.

Jurisdictional determinations were also made for off-site portions of these drainages to the extent that they may be impacted by the proposed project. Drainages measured adjacent to the site include approximately 4,342 linear feet and 0.98 acre of USACE and CDFG jurisdictional streambed. None of these offsite areas meet the USACE definition of a jurisdiction wetland due to lack of hydrophytic vegetation and hydric soils. The proposed drainage improvement that extends into the Etiwanda Spreading Basin was also evaluated. According to PCR Services Corporation, this area is not expected to be regulated by USACE.

Heritage Tree Survey

A total of 213 trees were surveyed and determined to meet the City's "heritage tree" criteria, requiring a tree removal permit. Approximately 175 eucalyptus trees (Eucalyptus spp.), 11 unidentifiable ornamental trees, 14 pepper trees (*Schinus molle*), 9 southern California black walnut trees (*Juglans californica* var. *californica*), and 4 western sycamore trees (*Platanus racemosa*) occur onsite. In general, all trees within the project boundary were assessed as being of fair to poor condition physiologically, structurally, and aesthetically.

All 175 eucalyptus trees show signs of beetle and/or psyllid infestation. These trees have not been maintained and have been stressed making them easy targets for insect pests.

The pepper trees, sycamores, walnuts and ornamental trees are all in fair health or aesthetics but exhibit poor structure. The pepper and walnut trees especially have been damaged through paintball activities. Injuries to the trees include paintball pellets embedded into the trunks and branches.

The tree survey recommended that all 213 "heritage trees" be removed and replaced with native trees within the proposed development. Among the species suggested as replacement trees are coast live oaks (*Quercus agrifolia*), interior live oak (*Quercus wislizeni* var. *frutescens*), western sycamores (*Platanus racemosa*), and southern California black walnuts (*Juglans californica* var. *californica*). Replacements have been proposed at a 1:1 ratio.

5.2.2 Thresholds of Significance

Guidelines establishing the significance of potential impacts on biological resources were derived from CEQA (Appendix G). A significant impact would occur if the proposed project would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

FESA also provides legal protection for threatened and endangered species nationwide. In addition, certain plant and animal taxa are considered sensitive as a result of their declining populations, vulnerability to habitat change, and restricted distributions. California has similar mandates including CESA, the California Species Preservation Act of 1980, and the California Native Plant Protection Act of 1977.

Certain species listed as threatened or endangered by the USFWS and/or by the California Fish and Game Commission are also protected by the California Native Plant Protection Act. Some habitats are considered sensitive biological resources by the CDFG. The CNPS compiles and maintains an inventory of sensitive plant species, including State and federally recognized rare plant species and those plants determined to be rare by that organization and other experts. In accordance with these requirements, a project will normally be deemed to produce a significant or potentially significant impact on biological resources if the project will:

- Result in a violation of any applicable regulations promulgated by a State or federal resource agency for the protection of rare, threatened, endangered, or otherwise protected species and their habitats, including wetlands; or

- Result in a violation of any applicable State or federal laws prohibiting the elimination or net reduction in a site's or an area's biological value through either direct removal of sensitive or protected onsite or near-site biological value through the avoidance of such impacts or through the provision of substitute resources or environs or other measures providing reasonable and relatively equivalent compensation for such impacts.

5.2.3 Project Impacts

Natural Communities

The proposed project will result in the loss of 147.7 acres of RAFSS due to grading on the project site. Approximately 147.7 acres of RAFSS will be lost due to direct project impacts. RAFSS is considered sensitive by the California Department of Fish and Game and the loss of this plant community is considered significant. Implementation of the proposed project would not result in fragmenting offsite RAFSS habitat such as the habitat east of the site because this habitat is directly adjacent to the open space habitat within the Etiwanda Spreading Grounds.

Common Plant Species

The City of Rancho Cucamonga has a local tree preservation ordinance that requires a City permit to remove any tree over 15 feet high and 15 inches in circumference. A total of 213 trees meet the City's "heritage tree" criteria. Approximately 175 eucalyptus trees, 11 ornamental trees, 14 pepper trees, 9 southern California black walnut trees, and 4 western sycamore trees occur on-site. In general, all trees within the project boundary were assessed as being of fair to poor condition physiologically, structurally, and aesthetically. The tree survey recommended that all 213 "heritage trees" be removed and replaced with native trees within the proposed development. Replacements have been proposed at a 1:1 ratio.

Common Wildlife Species

The major impacts to wildlife in the vicinity of the project site involve elimination of habitat needed for cover, nesting, feeding, and open space. Small mammals such as rabbits, reptiles and bird species that occupy the RAFSS association will be displaced to other suitable habitat in the immediate vicinity. Project implementation will result in the encroachment on common wildlife species. Encroachment on common wildlife species is considered to be adverse but not a significant impact. Displaced wildlife species will likely find shelter in undeveloped areas on to the west. The area to the north is proposed to become developed.

Sensitive Plant Species

Fifteen sensitive plant species have been identified as occurring within the general vicinity of the project site (Table 5.2-2). Thirteen of these plants are listed as sensitive (List 1B) by the CNPS and are considered sensitive by CDFG. According to CEQA Guidelines (Appendix G), loss of CNPS special status plant species is adverse but is not considered significant. Seven species have a moderate to high potential to occur onsite; however, only Plummer's mariposa lilies were observed during field inventories. Although not listed as threatened or endangered, this species is considered rare throughout its range. Project implementation would impact a substantial population of this species and is considered potentially significant. Nevin's barberry, Santa Ana wooly star and slender-horned spineflower are listed by the USFWS and CDFG as endangered. Project related impacts to federal or state listed endangered or threatened species is considered significant. However, evaluation of habitat requirements showed that one of these three listed plant species has no potential to occur onsite. Although the other two endangered species have a low to moderate potential to occur, they were not observed during the focused plant surveys and are not considered to be present.

Sensitive Wildlife Species

San Bernardino Kangaroo Rat

The project site is within the Critical Habitat of the federally listed endangered San Bernardino kangaroo rat. Protocol surveys conducted for this species in 2001 and 2002 were negative and revealed that although there will be a significant loss of RAFSS, there is not anticipated to be any direct impacts to this species from project implementation. The long-term loss of fluvial processes has resulted in dense vegetation and subsequently, has resulted in the loss of open ground favored by SBKR. Therefore, impacts to SBKR are not considered to be significant at this time. However, a follow-up focused survey is recommended prior to grading.

Coastal California Gnatcatcher

The project site is within the known range and within designated Critical Habitat of the federally between listed threatened coastal California gnatcatcher. Although the three protocol surveys conducted between 1998 and 2002 were negative, sightings have been documented in the project vicinity. According to the California Fish & Game CNDDB, five individuals were recorded between 1990 and 1998 in washes to the north of the project site (i.e., Lytle Creek, Cajon, Etiwanda and Day Canyon) and south of the site near Etiwanda Avenue and Baseline Road. Because the Project site supports suitable habitat for this species, and due to the sightings on adjacent lands, the potential for this species to use the project site is still considered high. Therefore, a follow-up survey will be conducted prior to site grading.

Other Rodents

Three species of rodents that were detected on the property are considered Species of Concern by CDFG. The three species present within the RAFSS habitat, include the Northwestern San Diego

pocket mouse, San Diego desert woodrat, and the Los Angeles little pocket mouse. Because these three species are present onsite, the impacts to the habitat is considered significant.

Raptors

The project site does support nesting habitat for raptor species. Also, the project will result in the loss of 217 acres of raptor foraging habitat. The incremental loss and continued fragmentation of foraging habitat is considered adverse but not a significant impact. Raptors and all other bird species will find foraging habitat in the undeveloped areas to the north and west of the project site.

Reptiles

The project site provides suitable habitat for the San Diego horned lizard and orange-throated whiptail (State Species of Special Concern). Although neither species is formally listed, or proposed as endangered or threatened, the potential displacement of these sensitive species would be considered adverse but not significant by CDFG. Their possible presence will be assessed as part of the various focused surveys listed as mitigation measures below. Observation of any sensitive species during the surveys, including the San Diego horned lizard and orange-throated whiptail, would be documented and subsequent clearance surveys prior to grading would be required as indicated below. Loss of habitat for these two reptile species would be adverse but not significant.

Regional Connectivity/Wildlife Movement Corridors

The project site does not serve as a wildlife movement corridor or provide regional connectivity. No impacts to regional connectivity and/or wildlife movement corridors will occur with Project implementation.

Jurisdictional Areas

A jurisdictional delineation was conducted by PCR Services Corporation on the project site on September 8, 2001 (Appendix C). Subsequent field surveys were also conducted by PCR Services Corporation in 2002. The survey revealed that there are three drainages found on the property that are considered under the jurisdiction of USACE and CDFG. Impacts to USACE areas would result in the removal of 1.13 acres of "waters of the U.S.", and no loss of wetlands. Total area of jurisdiction under the CDFG would also be approximately 1.13 acres. Compliance with the mitigations that are required through the 404 process would reduce impacts to less than significant.

Jurisdictional determinations were also made for off-site portions of these drainages to the extent that they may be impacted by the proposed project. Drainages measured adjacent to the site include approximately 4,342 linear feet and 0.98 acre of ACOE and CDFG jurisdictional streambed. None of these off-site areas meet the ACOE definition of a jurisdiction wetland. The proposed project would result in the loss of jurisdictional areas, both on and off site, of 2.01 acres of "waters of the U.S." and

no loss of wetlands. Impacts to jurisdictional areas as a result of this project is considered to be less than significant.

Conservation Plans

Neither the City of Rancho Cucamonga nor the County of San Bernardino has released a habitat conservation plan that would address the lands within the project area or the species found or potentially occurring onsite. The County of San Bernardino has started the process of developing a Multi-Species Habitat Conservation Plan; however, it is not expected to be released before development begins on the site. The proposed project would, therefore, not affect the County's development of their Multiple Species Habitat Conservation Plan or any approved local, regional, or state habitat conservation plan that addresses the lands within the project area. A 768-acre preserve, the North Etiwanda Preserve (NEP), was established by the County of San Bernardino in 1994 as mitigation for the development of the I-210 Freeway. In addition, over 3,000 acres including the NEP have been established in North Etiwanda and along Etiwanda Creek as mitigation for a variety of projects.

5.2.4 Cumulative Impacts

Per the provisions of CEQA, actions, which have impacts that are individually limited, but cumulatively considerable, may be considered significant and adverse. Potential cumulative impacts on biological resources are primarily related to both the regional and local loss of RAFSS and the displacement of sensitive plant and sensitive wildlife species from this habitat. In the immediate vicinity of the project site, there are proposed residential developments that will result in the loss of RAFSS habitat. Cumulatively, this loss of RAFSS habitat is considered significant. The implementation of the proposed project will significantly contribute to the cumulative loss of RAFSS habitat.

5.2.5 Mitigation Measures

The permanent loss of biological resources during site preparation and construction of the Project would be an unavoidable adverse impact. The loss of 147.7 acres of RAFSS and potential impacts to the California gnatcatcher associated with the project are considered significant. Mitigation measures are available to minimize and reduce impacts to less than significant. Implementation of these additional measures would be practical and effective in reducing or preventing significant impacts.

The following mitigation measures will be implemented to reduce potential impacts to biological resources associated with the proposed project.

B-1 The proposed proponent will acquire and convey to the County of San Bernardino at a ratio of 1:1, or 147.7 acres, land within or near the North Etiwanda Open Space and Habitat Preservation Program (NEOSHPP) that supports similar RAFSS habitat. This measure will mitigate the loss of habitat that may support sensitive plants and animals as well as raptor foraging habitat. The quality of offsite mitigation land may affect the total acres needing to be acquired. If the offsite mitigation area contains a higher quality habitat, less land may need to be acquired, likewise, if a lower quality habitat is acquired, more land may need to be set aside as mitigation.

If the project proponent is unable to acquire all or a portion of the offsite mitigation land, the proponent will deposit the equivalent mitigation cost of $10,000 per developable acre with City- approved agency, which acquires and maintains open space. These funds will be used to purchase and manage mitigation lands.

B-2 To reduce impacts on adjacent offsite habitat during site preparation, grading and clearing limits shall be staked prior to issuance of the grading permits. The limits of grading and clearing shall be staked at 50-foot intervals with suitable indicators such as white PVC (polyvinyl chloride) pipe with steel bases. Construction equipment shall not be operated beyond the grading and clearing limits, and a restoration program shall be incorporated to restore any disturbed offsite areas.

B-3 Landscaping adjacent to natural areas offsite shall use native and drought-tolerant plant species. Such species shall be reflected on project landscape plans. The use of species known to be weedy invasives, such as German ivy (*Senecio milkaniodes*), periwinkle (*Vinca major*), or iceplant (*Carpobrotus* spp.), shall be prohibited.

B-4 In areas where night lighting may have adverse impacts on sensitive wildlife habitat, one or more of the following alternatives shall be used, recognizing the constraints of roadway lighting requirements: (1) low-intensity street lamps, (2) low-elevation light poles, or (3) shielding of internal silvering of the globes or external opaque reflectors.

B-5 Provide residents of the future development literature pertaining to sensitive wildlife in the area and provide ways the residents can reduce effects on the wildlife, including effects pets have on native wildlife. A list of invasive plants that are commonly planted in landscaping will be included in this literature and it will be recommended that certain plants be avoided, such as giant reed (Arundo donax) castor bean (Ricinus communis) and Pampas grass (Cortaderia selloana). This literature shall be approved by the City of Rancho Cucamonga and included within the conditions, covenants, and restrictions (CC&Rs).

B-6 All 213 "heritage trees" shall be removed and replaced with native trees within the proposed development. Replacements have been proposed at a 1:1 ratio, as stipulated in the tree removal permit.

B-7 Prior to issuance of a grading permit, focused surveys for Plummer's mariposa lily shall be conducted by a qualified biologist. Surveys shall be conducted during flowering period (May to July) in all portions of the project site containing suitable habitat. If present, the number and location(s) will be documented and the resource agencies will be notified for consultation and possible collection and relocation.

B-8 A follow-up focus survey for the San Bernardino kangaroo rat shall be conducted prior to the issuance of grading permits. If this species is determined to be present onsite, consultation with USFWS under the Endangered Species Act shall occur and USFWS

approved mitigation measures shall be implemented. Impacts to this species, if present, may be significant and unavoidably adverse.

B-9 A follow-up focused survey shall be conducted to confirm the absence of the coastal California gnatcatcher. Special focus will be placed in the northwest corner of the project site, which was not previously surveyed. If this species is determined to be present onsite, consultation with USFWS under the Endangered Species Act shall occur and USFWS-approved USFWS-approved mitigation measures shall beimplemented. Impacts to this species, if present, may be significant and unavoidably adverse.

B-10 The project proponent will have a qualified biological monitor present during initial brush clearing to reduce mortality to sensitive species, specifically sensitive rodent species, as well as incidental species.

B-11 If grading activities are to occur during active nesting season (generally February 15 - August 31), a field survey shall be conducted by a qualified biologist to determine if active nests covered by the Migratory Bird Treaty Act and/or the CDFG Code are present. If active nests are present, the area will be flagged, along with a 100-foot buffer (300-feet for raptors) and will be avoiding until the nesting cycle is complete.

B-12 The project proponent shall obtain a Section 404 of the Clean Water Act permit from the U.S. Army Corps of Engineers and a 1603 Streambed Alteration Permit from California Department of Fish and Game prior to grading or any other groundbreaking activities, and shall comply with the permit's mitigation requirements.

5.2.6 Level of Significance After Mitigation

Implementation of the above mitigation measures will reduce the project's impacts to biological resources as well as the project's contribution to significant cumulative impacts on biological resources.

5.3 Transportation/Traffic

Potential impacts related to parking capacity, air traffic patterns, emergency access and alternative modes of transportation were all found to be less than significant in the Notice of Preparation prepared for this project (see Appendix A). The focus of the following discussion is related to the potential impacts associated with the project traffic and circulation system. This discussion summarizes the traffic impact study for the project, which was prepared by RK Engineering Group, Inc. The traffic impact study (The *Etiwanda Properties (TTM 16072) Traffic Impact Analysis, Rancho Cucamonga, California, Revised June 17, 2002*) is provided in its entirety in Appendix D of this document.

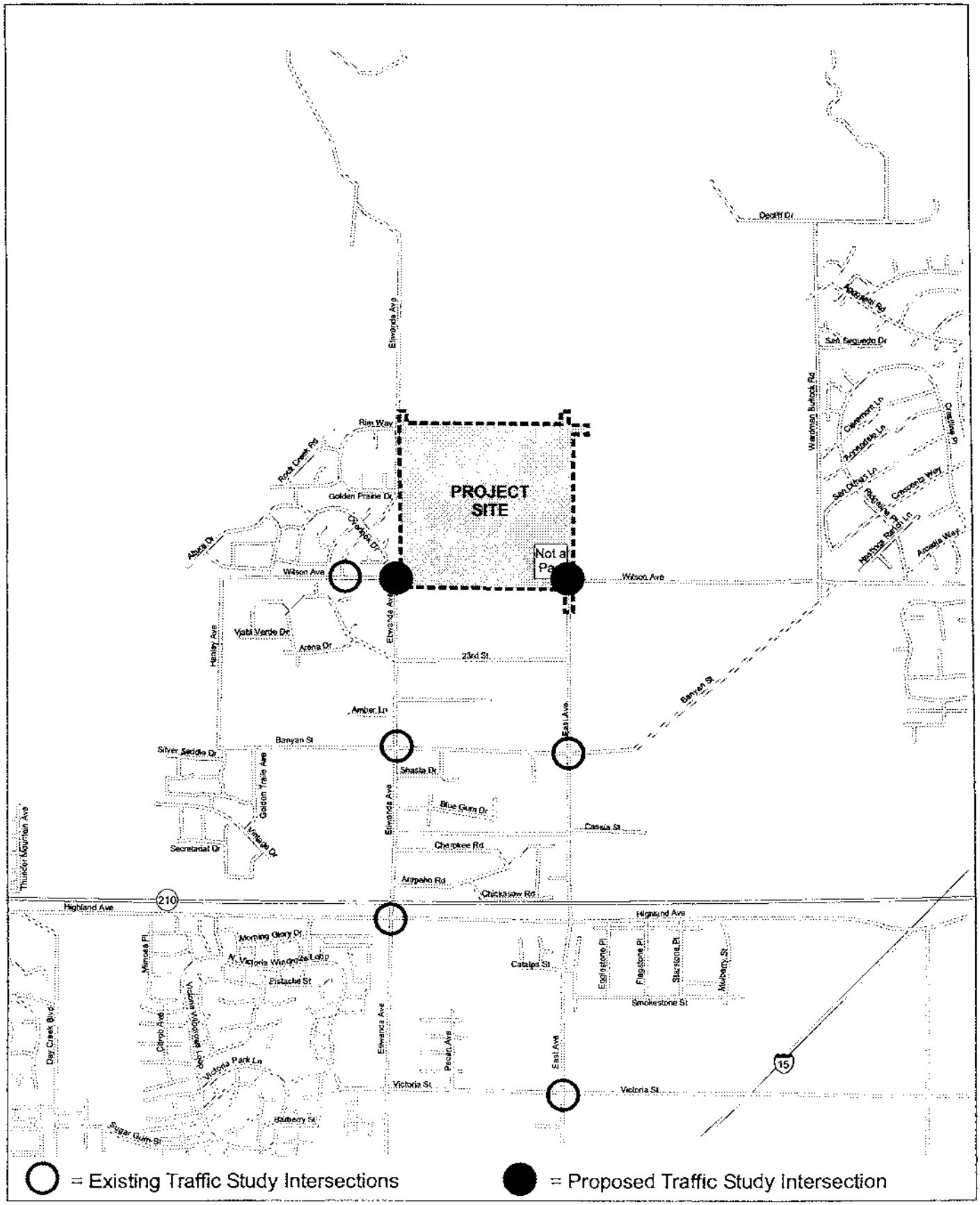
5.3.1 Existing Conditions

Traffic Characteristics

Tentative Tract 16072 is situated on the north side of Wilson Avenue, approximately one mile north of State Route 210 (SR-210) and 2.25 miles west of Interstate 15 (I-15) freeways, between East Avenue and Etiwanda Avenue. Regional access to the site is provided by SR-210 and I-15. Various arterial roadways in the vicinity of the site provide local access. Exhibit 5.3-1, identifies the existing roadways in the study area. The following roadways provide service to the area:

- **Wilson Avenue.** Wilson Avenue is an east-west road on the south boundary of the project site. This roadway is currently a four-lane divided road west of Etiwanda Avenue and east of Wardman Bullock Road, and an unimproved dirt road between Etiwanda Avenue (along the project boundary line) and Wardman Bullock Road. This roadway is designated by the City of Rancho Cucamonga General Plan's Circulation Element as a Special Divided Secondary Arterial (four-lane divided highway) with an ultimate 165-foot right-of-way along the project boundaries. This roadway provides project access to the local and regional road network and once Wilson is completely paved could provide freeway access to I-15 at the Summit Avenue interchange.

- **Etiwanda Avenue.** Etiwanda Avenue is a north-south road running along the west boundary of the project site. It can also provide project access to the local and regional road network. Etiwanda Avenue is currently a four-lane divided road between Wilson Avenue and Golden Prairie Drive, and a two-lane undivided road south of Wilson Avenue and north of Golden Prairie Drive. This roadway is designated by the Circulation Element as a Collector (two-lane undivided road) with an ultimate 120-foot right-of-way south of Banyan Street, a Secondary Arterial Highway (four-lane undivided) with an ultimate 96-foot right-of-way north of Wilson Avenue.



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Michael Brandman Associates

00180027 • 11/2003 | 5.3-1_ Project Traffic Study Intersections

Exhibit **5.3-1**

Project Traffic Study Intersections

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

- **East Avenue.** East Avenue is a north-south roadway, located southeast of the project site. Currently, East Avenue is a two-lane undivided road south of 23rd Street, and an unimproved dirt road between 23rd Street and Wilson Avenue. Currently East Avenue does not exist north of Wilson Avenue. This project proposes extending East Avenue as a paved roadway north of 23rd Street and along the eastern boundary of the project site. The future extension of East Avenue can provide project access to the local and regional roadway network. Designated by the City of Rancho Cucamonga General Plan's Circulation Element as a Collector north of Wilson and a secondary south of Wilson. East Avenue's ultimate right-of-way is 88 feet south of Wilson Avenue and 66 feet north of Wilson Avenue.

- **Banyan Street/Summit Avenue.** Banyan Street is an east-west roadway, running south of the project site. Currently, Banyan Street is a two-lane undivided road that connects between Etiwanda Avenue and Wardman Bullock Road providing freeway access to I-15 in the project area by way of the Summit Avenue interchange. This roadway is shown in the San Bernardino County Congestion Management Program (CMP) Network as Banyan Street between Haven Avenue and Rochester Avenue and Summit Avenue east of Rochester Avenue (see Exhibit 3.12.1) and is designated by the Circulation Element of the City General Plan as a Collector (2-lane undivided road), with ultimate right-of-way of 66 feet.

- **Highland Avenue.** Highland Avenue is an east-west roadway, running south of the project site paralleling State Route 210. State Route 210 incorporated portions of the former Highland Avenue into its right-of-way. Currently the remnant portions of Highland Avenue that still exist are two-lane undivided roadways. The Rancho Cucamonga General Plan Circulation Element designation for these remnant segments of Highland Avenue is Collector Street (two lane undivided road) with a 66-foot right-of-way.

- **Victoria Avenue.** Victoria Avenue is an east-west roadway, also running south of the project site. Victoria Avenue is a two-lane undivided road. Designated by the City of Rancho Cucamonga as a Collector Street (two-lane undivided road), also with a 66-foot right-of-way.

- **State Route 210.** A new 14-mile stretch of the Foothill Freeway, State Route 210, opened on November 24, 2002. The new lanes through La Verne, Claremont, Upland, Rancho Cucamonga connect with six miles of the freeway opened in Rancho Cucamonga and Fontana in August 2001. This 20-mile stretch of freeway creates a new east/west route between San Bernardino and Los Angeles counties and provides an alternative to Interstate 10. The new freeway can be accessed at Carnelian, Archibald, Haven and Milliken Avenues and Day Creek Boulevard in Rancho Cucamonga. Ultimately, this freeway will connect the local area to points as far west as Azusa and Pasadena and east as far as Redlands.

- **Interstate 15.** Interstate 15 is a six-lane freeway connecting the project area with Norco, Riverside, and San Diego to the south, and Devore, and the High Desert areas to the north. The I-15 freeway interchange nearest the project site is at Summit Avenue, approximately 2 ¼

miles east of the project. This access requires traveling south on East Avenue or Etiwanda Avenue to Banyan Street/Summit Avenue then east to the freeway. When Wilson Avenue is paved between Etiwanda Avenue and Wardman Bullock Road, it will provide direct freeway access to I-15 at the Summit Avenue interchange.

Other unpaved roads and firebreaks criss-cross the project site. An unpaved maintenance road for the transmission towers located in the Southern California Edison easement is immediately north of the project boundary of the site. Other onsite roads lead to the abandoned ruins of a house and out buildings. These roadways are not discussed in the following evaluation because the maintenance road will not convey area traffic and the other onsite unpaved roadways will be abandoned firebreaks will only be used for emergencies and maintenance.

The existing land uses near the project site are single-family residential, and open space which includes a road system that is in transition from rural to urban. Overall, the area is urbanizing rapidly. Currently there are no public transportation routes (e.g., bus routes) directly serving the project site because it is essentially vacant land. Sidewalks and bicycle lanes do not currently exist in the project area.

Methodology for Traffic Analysis

The ease at which intersections, within the study area, convey traffic largely controls the operation of the roadway system as a whole. Therefore, there was an analysis of traffic at study area intersections. Five existing and two proposed intersections within the study area were evaluated based on their potential to be significantly affected by project traffic. These intersections are:

- Etiwanda Avenue (north)/Wilson Avenue (existing)
- Etiwanda Avenue (south)/Wilson Avenue (proposed)
- Etiwanda Avenue/Summit Avenue (existing)
- Etiwanda Avenue/Highland Avenue (existing)
- East Avenue/Wilson Avenue (proposed)
- East Avenue/Summit Avenue (existing)
- East Avenue/Victoria Avenue (existing)

This analysis uses the Level of Service (LOS) system of categorization to evaluate the study area intersections. Traffic engineers use this LOS system of categorization to describe how well an intersection or roadway is functioning. The LOS measures several factors including operating speeds, freedom to maneuver, traffic interruptions, and average vehicle delay at intersections. The LOS approach uses a ranking system, similar to education, with level "A" being best and level "F" being worst. Table 5.3-1 describes the LOS levels. The City of Rancho Cucamonga has established an LOS D or better as the standard of acceptability except for 7 city intersections including the

intersection of Etiwanda Avenue at Highland Avenue. The City has established an LOS E or better as the standard of acceptability for the 7 intersections. LOS evaluations were conducted for study area intersections during peak hour traffic conditions. Peak hour traffic conditions refer to the amount of traffic that travels during the morning rush hour (AM Peak Hour) and evening rush hour (PM Peak Hour).

Pursuant City requirements, the 1997 Highway Capacity Manual (HCM; Operations Analysis method – Section 9) was used to analyze the level of service at intersections. The 1997 HCM evaluates level of service at signalized intersections based upon the average stopped delay (in seconds) per vehicle for various movements within the intersection. As defined by the 1997 HCM, the level of service for unsignalized intersections is based upon the worst-case delay by turning movement at the intersection (in seconds) per vehicle. Table 5.3-1 shows the criteria used to determine the level of service at intersections.

Table 5.3-1: Level of Service (LOS) Standards

Level of Service (LOS)	Signalized Intersections: Stopped Delay (seconds/vehicle)	Unsignalized Intersections: Stopped Delay (seconds/vehicle)	Qualitative LOS Description
A	≤ 10	≤ 10	Free flow: Low volumes; high speeds; speed not restricted by other vehicles; all signal cycles clear with no vehicles waiting through more than one signal cycle.
B	> 10 and ≤ 20	> 10 and ≤ 15	Stable flow: Operating speeds beginning to be affected by other traffic; between 1% and 10% of the signal cycles have one or more vehicles waiting through more than one signal cycle
C	> 20 and ≤ 35	> 15 and ≤ 25	Stable Flow, Increased Density: Operating speeds and maneuverability closely controlled by other traffic; between 11% and 30% of the signal cycles have one or more vehicles waiting through more than one signal cycle; recommended ideal design standards.
D	> 35 and ≤ 55	> 25 and ≤ 35	Stable Flow, High Density: Tolerable operating speeds; 31% to 70% of the signal cycles have one or more vehicles waiting through more than one signal cycle; often used as design standards in urban areas.
E	>55 and ≤ 80	> 35 and ≤ 50	Flow at or Near Capacity: maximum traffic volume an intersection can accommodate; restricted speeds; 71% to 100% of the signal cycles have one or more vehicles waiting through more than one signal cycle.

Table 5.3-1 (Cont.): Level of Service (LOS) Standards

Level of Service (LOS)	Signalized Intersections: Stopped Delay (seconds/vehicle)	Unsignalized Intersections: Stopped Delay (seconds/vehicle)	Qualitative LOS Description
F	> 80	> 50	Forced or Breakdown Flow: Long queues of traffic; unstable flow; stoppages of long duration; traffic volume and traffic speed can drop to zero; traffic volume will be less than the volume occurring at LOS 'E' due to decreased speeds.

Source: "Highway Capacity Manual," Highway Research Board Special Report 87, National Academy of Sciences, Washington D.C., 1997.

Existing Intersections Level of Service

Table 5.3-2 shows the existing traffic control status and the existing (2002) levels of service at the study intersections. As shown in Table 5.3-2, two intersections exceed the City's standard. Etiwanda Avenue at Summit Avenue and East Avenue at Summit Avenue are anticipated to operate at LOS "F" in the AM peak hour which is considered not acceptable.

Table 5.3-2: Existing (Year 2002) Levels pf Service at Study Area Intersections

Intersection	Traffic Control Status	City LOS Standard	AM Peak Hour LOS	PM Peak Hour LOS
Etiwanda Ave (North)/Wilson Ave.	AWSC	9.1	A	A
Etiwanda Ave/Summit Ave.	AWSC	161.0	F	C
Etiwanda Ave/Highland Ave.	Signal	57.8	E	B
East Ave/Summit Ave.	AWSC	50.6	F	A
East Ave/Victoria St.	Signal	13.1	B	B

AWSC – All Way Stop Controlled

Congestion Management Plan

The Congestion Management Plan (CMP) is a State of California mandated program as a result of Proposition 111 and implemented by the San Bernardino Associated Governments (SANBAG) in San Bernardino County. The purpose of the CMP is to provide comprehensive long range traffic planning in subregional areas such as the County of San Bernardino. A travel demand model has been developed for San Bernardino County, and it is referred to as the Comprehensive Transportation Plan (CTP) model. The CTP model is currently the only approved travel demand forecasting tool within the project study area because this model is the only one to receive the necessary "Finding of Consistency" from the SANBAG and Southern California Association of Governments (SCAG).

The San Bernardino County CMP uses a volume to capacity (V/C) ratio to evaluate if an intersection is deficient during a peak period. A V/C ratio that equals or exceeds 1.0 is considered deficient. Table 5.3-3 shows the existing V/C ratio for the study area intersections.

Table 5.3-3: Existing (Year 2002) Volume to Capacity (V/C)

Intersection	Traffic Control Status	AM Peak Hour V/C Ratio	Exceed V/C Ratio of 1.0?	PM Peak Hour V/C Ratio
Etiwanda Ave (North)/Wilson Ave.	AWSC	0.290	No	0.198
Etiwanda Ave/Summit Ave.	AWSC	1.417	Yes	0.732
Etiwanda Ave/Highland Ave.	Signal	0.982	No	0.568
East Ave/Summit Ave.	AWSC	1.063	Yes	0.299
East Ave/Victoria St.	Signal	0.153	No	0.166
AWSC – All Way Stop Controlled				

As shown above, two intersections would exceed the V/C ratio established in the San Bernardino County CMP. These intersections are Etiwanda Avenue at Summit Avenue and East Avenue at Summit Avenue.

5.3.2 Thresholds of Significance

The City of Rancho Cucamonga General Plan has a threshold of LOS "D" as an acceptable level of service for all intersections within the City except for seven intersections that are listed in the City of Rancho Cucamonga General Plan Transportation Policies which may operate at LOS "E" during peak hours upon completion of maximum feasible improvements. One of the seven intersections includes the intersection of Etiwanda Avenue at Highland Avenue.

In addition to the City's threshold for intersections, the CMP establishes a threshold of significant traffic impact as exceeding the V/C ratio of 1.0.

5.3.3 Project Impacts

Trip Generation

Trip generation represents the amount of traffic that is produced or attracted to a development. The traffic generation for this project has been estimated, based upon the specific land use that has been planned for the proposed development. The proposed project consists of 359 single-family dwelling units. Trip generation rates for the project are shown in Table 5.3-4. The trip generation rates are based upon the Institute of Transportation Engineers (ITE) publication *Trip Generation 6th Edition.*

Table 5.3-4 also shows the daily and peak hour trip generation for the proposed project. The proposed development is projected to generate approximately 3,436 daily trips.

Table 5.3-4: Project Trip Generation

	Peak Hour				Daily
	AM		PM		
	In	Out	In	Out	
Long Term Trip Generation Rates					
Single Family Dwelling Unit	0.19	0.56	0.65	0.36	9.57
Trip Generation					
359 Single Family Dwelling Units	68	201	233	129	3,436
Sources: Institute of Transportation Engineers (ITE), Trip Generation, 1997, Land Use Category 210.					

Traffic Distribution and Assignment

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the location of employment, commercial and recreational opportunities, and the proximity to the regional freeway system. The directional orientation of traffic was determined by evaluating existing and proposed land uses within the community and existing traffic volumes.

The project trip distribution (direction the traffic will travel) was developed based on a review of site access and projected future traffic patterns as predicted in the CTP Model. The project trip distribution for the opening year (Year 2004) scenario and the buildout year (Year 2020) scenario are illustrated on Exhibits 5.3-5 and 5.3-6, respectively.

Project Traffic Impact

Opening Year (Year 2004)

Table 5.3-5 depicts the levels of service at the study area intersections at opening year (Year 2004) without and with the project. Table 5.3-6 shows the following intersections would operate at an LOS F in the AM peak hour without and with the project.

- Etiwanda Avenue at Summit Avenue
- Etiwanda Avenue at Highland Avenue
- East Avenue at Summit Avenue

Although the project would not change the level of service, the contribution of project traffic to these three intersections during the AM peak hour represent a significant traffic impact. Without project traffic, all intersections would operate at LOS D or better during the PM peak hour which represents a

less than significant impact. Except for the following intersection, all study area intersections operate at LOS D or better with the project during the PM peak hour.

- Etiwanda Avenue at Summit Avenue

The intersection of Etiwanda Avenue at Summit Avenue will operate at LOS E with the project which exceeds the City's standard and is considered a significant impact.

Table 5.3-5: Opening Year (Year 2004) Levels of Service

Intersection	Traffic Control Status	City LOS Standard	AM Peak Hour LOS	PM Peak Hour LOS
Opening Year Without Project				
Etiwanda Ave North/Wilson Ave.	AWSC	≤D	A	A
Etiwanda Ave South/Wilson Ave.	TWSC	≤D	A	B
Etiwanda Ave/Summit Ave.	AWSC	≤D	F	D
Etiwanda Ave/Highland Ave.	Signal	≤E	F	B
East Ave/Wilson Ave.	TWSC	≤D	A	A
East Ave/Summit Ave.	AWSC	≤D	F	B
East Ave/Victoria St.	Signal	≤D	B	B
Opening Year With Project				
Etiwanda Ave North/Wilson Ave.	AWSC	≤D	A	A
Etiwanda Ave South/Wilson Ave.	TWSC	≤D	B	B
Etiwanda Ave/Summit Ave.	AWSC	≤D	F	E
Etiwanda Ave/Highland Ave.	Signal	≤E	F	C
East Ave/Wilson Ave.	TWSC	≤D	A	A
East Ave/Summit Ave.	AWSC	≤D	F	B
East Ave/Victoria St.	Signal	≤D	B	B

AWSC – All Way Stop Controlled
TWSC – Two Way Stop Controlled
NA – Not Applicable: V/C ratios calculated only for signal and AWSC.

Buildout Year 2020

Table 5.3-6 depicts the level of service at the study area intersections at buildout year (Year 2020) without and with the project. Table 5.3-6 shows the following intersections would operate at an LOS F in the AM peak hour without and with the project.

- Etiwanda Avenue at Summit Avenue
- Etiwanda Avenue at Highland Avenue
- East Avenue at Wilson

- East Avenue at Summit Avenue

The project traffic contributed to these four study area intersections during the AM peak hour represent a significant traffic impact. Except for the following intersections, all study area intersections operate at LOS D or better during the PM peak hour without the project.

- Etiwanda Avenue (South) at Wilson Avenue
- Etiwanda Avenue at Summit Avenue
- East Avenue at Summit Avenue

These three intersections would operate at LOS F which exceeds the City's standard and is considered a significant impact. Except for the following intersections, all study area intersections would operate at LOS D or better during the PM peak hour with the project.

- Etiwanda Avenue (South) at Wilson Avenue
- Etiwanda Avenue at Summit Avenue
- East Avenue at Wilson Avenue
- East Avenue at Summit Avenue

These four intersections would operate at LOS F which exceeds the City's standard and is considered a significant impact.

Table 5.3-6: Year 2020 Levels of Service

Intersection	Traffic Control Status	City LOS Standard	AM Peak Hour V/C Ratio	PM Peak Hour LOS
Year 2020 Without Project				
Etiwanda Ave North/Wilson Ave.	AWSC	≤D	A	C
Etiwanda Ave South/Wilson Ave.	TWSC	≤D	B	F
Etiwanda Ave/Summit Ave.	AWSC	≤D	F	F
Etiwanda Ave/Highland Ave.	Signal	≤E	F	C
East Ave/Wilson Ave.	TWSC	≤D	F	C
East Ave/Summit Ave.	AWSC	≤D	F	F
East Ave/Victoria St.	Signal	≤D	B	B

Table 5.3-6 (Cont.): Year 2020 Levels of Service

Intersection	Traffic Control Status	City LOS Standard	AM Peak Hour V/C Ratio	PM Peak Hour LOS
Year 2020 With Project				
Etiwanda Ave North/Wilson Ave.	AWSC	≤D	B	C
Etiwanda Ave South/Wilson Ave.	TWSC	≤D	B	F
Year 2020 With Project				
Etiwanda Ave/Summit Ave.	AWSC	≤D	F	F
Etiwanda Ave/Highland Ave.	Signal	≤E	F	C
East Ave/Wilson Ave.	TWSC	≤D	F	F
East Ave/Summit Ave.	AWSC	≤D	F	F
East Ave/Victoria St.	Signal	≤D	B	B

AWSC – All Way Stop Controlled
TWSC – Two Way Stop Controlled
NA – Not Applicable: V/C ratios calculated only for signal and AWSC.

Congestion Management Plan

As stated previously, a CMP transportation impact analysis is required for the proposed project. The San Bernardino County CMP uses a volume to capacity (V/C) ratio to evaluate if an intersection is deficient during a peak period. Table 5.3-7 and Table 5.3-8 depict the volume to capacity for the study area intersections at opening year (Year 2004) and buildout year 2020 without and with the project. As shown on these tables, all of the intersections identified above as exceeding the City's level of service standard would also exceed a V/C ratio of 1.0 except for two intersections. The V/C ratios for these two intersections (Etiwanda – South at Wilson and East Avenue at Wilson) are not applicable because V/C ratios are only calculated for signalized or all-way stop control intersections. These two intersections are two-way stop controlled intersections.

Table 5.3-7: Opening Year (Year 2004) Volume to Capacity

Intersection	Traffic Control Status	AM Peak Hour V/C Ratio	Exceed V/C Ratio of 1.0?	PM Peak Hour V/C Ratio	Exceed V/C Ratio of 1.0?
Opening Year Without Project					
Etiwanda Ave North/Wilson Ave.	AWSC	0.308	No	0.238	No
Etiwanda Ave South/Wilson Ave.	TWSC	NA	NA	NA	NA
Etiwanda Ave/Summit Ave.	AWSC	1.500	Yes	0.923	No
Etiwanda Ave/Highland Ave.	Signal	1.130	Yes	0.628	No
East Ave/Wilson Ave.	TWSC	NA	NA	NA	NA
East Ave/Summit Ave.	AWSC	1.836	Yes	0.396	No
East Ave/Victoria St.	Signal	0.200	No	0.227	No
Opening Year With Project					
Etiwanda Ave North/Wilson Ave.	AWSC	0387	No	0.312	No
Etiwanda Ave South/Wilson Ave.	TWSC	NA	NA	NA	NA
Etiwanda Ave/Summit Ave.	AWSC	1.566	Yes	1.066	Yes
Etiwanda Ave/Highland Ave.	Signal	1.180	Yes	0.688	No
East Ave/Wilson Ave.	TWSC	NA	NA	NA	NA
East Ave/Summit Ave.	AWSC	2.094	Yes	0.495	No
East Ave/Victoria St.	Signal	0.223	No	0.240	No

AWSC – All Way Stop Controlled
TWSC – Two Way Stop Controlled
NA – Not Applicable: V/C ratios calculated only for signal and AWSC.

Table 5.3-8: Year 2020 Volume to Capacity

Intersection	Traffic Control Status	AM Peak Hour V/C Ratio	Exceed V/C Ratio of 1.0?	PM Peak Hour V/C Ratio	Exceed V/C Ratio of 1.0?
Year 2020 Without Project					
Etiwanda Ave North/Wilson Ave.	AWSC	0.360	No	0.650	No
Etiwanda Ave South/Wilson Ave.	TWSC	NA	NA	NA	NA
Etiwanda Ave/Summit Ave.	AWSC	2.132	Yes	1.960	Yes
Etiwanda Ave/Highland Ave.	Signal	1.447	Yes	0.794	No
East Ave/Wilson Ave.	TWSC	NA	NA	NA	NA

Table 5.3-8 (Cont.): Year 2020 Volume to Capacity

Intersection	Traffic Control Status	AM Peak Hour V/C Ratio	Exceed V/C Ratio of 1.0?	PM Peak Hour V/C Ratio	Exceed V/C Ratio of 1.0?
Year 2020 Without Project					
East Ave/Summit Ave.	AWSC	2.897	Yes	1.149	Yes
East Ave/Victoria St.	Signal	0.412	No	0.581	No
Year 2020 With Project					
Etiwanda Ave North/Wilson Ave.	AWSC	0.435	No	0.705	No
Etiwanda Ave South/Wilson Ave.	TWSC	NA	NA	NA	NA
Etiwanda Ave/Summit Ave.	AWSC	2.140	Yes	2.178	Yes
Etiwanda Ave/Highland Ave.	Signal	1.491	Yes	0.845	No
East Ave/Wilson Ave.	TWSC	NA	NA	NA	NA
East Ave/Summit Ave.	AWSC	3.082	Yes	1.199	Yes
East Ave/Victoria St.	Signal	0.430	No	0.593	NA

AWSC – All Way Stop Controlled
TWSC – Two Way Stop Controlled
NA – Not Applicable; V/C ratios calculated only for signal and AWSC.

5.3.4 Cumulative Impacts

The cumulative analysis is based on the traffic projections in the San Bernardino County Comprehensive Transportation Plan model. These traffic projections include the year 2020. The year 2020 traffic analysis is provided in Table 5.3-6 and evaluated in Section 5.3.2. As described, cumulative (year 2020) traffic volumes would result in five different intersections that would operate at an LOS F in the AM and PM peak hour. Following is a list of these five intersections.

- Etiwanda Avenue (South) at Wilson Avenue
- Etiwanda Avenue at Summit Avenue
- Etiwanda Avenue at Highland Avenue
- East Avenue at Wilson
- East Avenue at Summit Avenue

These five intersections would operate at LOS F which exceeds the City's standard and is considered a significant impact. Implementation of the proposed project would contribute to the significant cumulative impacts to these intersections.

5.3.5 Mitigation Measures

The following mitigation measures would reduce potential impacts to the transportation network and traffic circulation associated with the project. Table 5.3-9 summarizes the improvements and associated costs required to meet the City's level of service standards and the CMP requirements for the study area intersection. The project fair share contribution for the improvements at each location is identified in Table 5.3-10.

Opening Year (Year 2004)

The following measures are required to be implemented prior to issuance of a building permit.

TT-1 The project applicant shall contribute its fair share toward local off-site traffic improvements. On-site improvements will be required in conjunction with the phasing of the proposed development to ensure adequate circulation within the project itself. The fair share contribution of all off-site improvements and timing of all onsite traffic improvements shall be subject to a Development Agreement with the City of Rancho Cucamonga. This agreement shall be in place prior to tract map approval.

TT-2 The project applicant shall update construction cost estimates and prepare a current cost of the project's fair share contribution toward traffic improvements.

TT-3 The project applicant shall construct Wilson Avenue from Etiwanda Avenue to East Avenue as a special Divided Secondary Arterial (165 ft. Right-of-way) in conjunction with development of the proposed project or as determined by the Development Agreement with the City.

TT-4 The project applicant shall construct the extension of East Avenue from the south project boundary with a minimum 36-foot two-way paved access to the project in conjunction with developmentof the proposed project or as determined by the Development Agreement with the City.

TT-5 The project applicant shall construct East Avenue from the north project boundary to Wilson Avenue to provide 44-foot two-way paved access and the full shoulder (curb, gutter, street lights, and side walks) on west side of the street in conjunction with development of the proposed project or as determined by the Development Agreement with the City.

TT-6 The project applicant shall construct Etiwanda Avenue from the north project boundary to Golden Prairie Drive at its ultimate half-section width as Secondary Arterial (96 ft. Right-of-way) in conjunction with development of the proposed project or as determined by the Development Agreement with the City.

TT-7 Prior to issuance of building permits, the applicant shall provide funds in accordance with the City's Transportation Development Fee. Collection of these fees shall represent the project's "fair-share" toward the following transportation improvements required for Opening Year (Year 2004):

- Installation of a traffic signal at Etiwanda Avenue at Summit Avenue.

- Installation of a traffic signal at East Avenue at Summit Avenue.
- Construction of a southbound right turn lane at the intersection of Etiwanda Avenue at Highland Avenue.

Buildout Year 2020

TT-8 Prior to the issuance of building permits, the applicant shall provide funds in accordance with the City's Trasportation Development Fee. Collection of these fees shall represent the project's "fair share" toward the following transportation improvements required for Buildout Year 2020.

- Construction of one additional northbound lane to provide a shared left and through lane, and a shared right and through northbound lane, and one additional southbound lane to provide a shared left and through and a shared right and through southbound lane on East Avenue at Banyon Street.
- Construction of a westbound through lane on Highland Avenue at Etiwanda Avenue.
- Installation of a traffic signal at the intersection of Etiwanda Avenue (North) at Wilson Avenue.
- Installation of a traffic signal at the intersection of Etiwanda Avenue (South) at Wilson Avenue.
- Installation of a traffic signal at the intersection of East Avenue at Wilson Avenue.

Table 5.3-9: Required Offsite Project Area Intersection Improvements

Intersection/Segment	Improvement	Total Cost
Etiwanda Ave.-North (NS) at:		
Wilson Ave. (EW)	Install Traffic Signal	$ 120,000
Etiwanda Ave.-Sourth- (NS) at:		
Wilson Ave. (EW)	Install Traffic Signal	$ 120,000
Summit Ave. (EW)	Install Traffic Signal	$ 120,000
Highland Ave. (EW)	Construct SB right turn lane	$ 50,000
	Construct WB through lane	$ 259,000
	Construct one additional SB lane to provide shared left and through, and shared right and through lane.	$ 259,000

Table 5.3-9 (Cont.): Required Offsite Project Area Intersection Improvements

Intersection/Segment	Improvement	Total Cost
	Construct EB left turn lane	$ 50,000
	Construct WB left turn lane	$ 50,000
Total		**$ 1,527,000**

Source: RK Engineering Group, Inc. 2002.
Notes: SB = South bound
WB = West bound
NB = North bound
EB = East bound

Table 5.3-10: Project Fair Share Contribution to Offsite Intersection Improvements

Intersection/ Segment	Total Cost	Existing Traffic	Year 2020 with Project Traffic	Project Traffic	Total New Traffic	Project % of New Traffic	Project's Fair Share Cost
Etiwanda Ave.-North (NS) at:							
Wilson Ave. (EW)	$120,000	319	1,402	142	1,083	13.1%	$15,734
Etiwanda Ave.-South- (NS) at:							
Wilson Ave. (EW)	$120,000	291	1,450	160	1,159	13.8%	$16,566
Summit Ave. (EW)	$120,000	928	1,983	112	1,055	10.6%	$12,739
Highland Ave. (EW)	$309,000	1,214	2,209	109	995	11.0%	$33,850
East Ave. (NS) at:							
Wilson Ave. (EW)	$120,000	0	1,305	165	1,305	12.6%	$15,172
Summit Ave (EW)	$738,000	510	1,656	106	1,146	9.2%	$68,262
Total	**$1,527,000**						**$162,324**

5.3.6 Level of Significance After Mitigation

After implementation of the above mitigation measures, no significant traffic impacts would occur. Table 5.3-11 shows the level of service and V/C ratio for each of the study area intersections. As shown, all intersections would operate at LOS D or better and the V/C ratio would be less than 1.0.

Table 5.3-11: Levels Of Service with Implementation of Mitigation Measures

Intersection	Traffic Control Status	AM Peak Hour		PM Peak Hour	
		V/C Ratio	LOS	V/C Ratio	LOS
Opening Year (2004) With Project					
Etiwanda Ave (West)/Wilson Ave.	AWSC	0.387	A	0.312	A
Etiwanda Ave (East)/Wilson Ave.	TWSC	NA	B	NA	B
Etiwanda Ave (East)/Summit Ave.	Signal	0.735	B	0.560	D
Etiwanda Ave (East)/Highland Ave.	Signal	0.935	D	0.570	B
East Ave/Wilson Ave.	TWSC	NA	A	NA	A
East Ave/Summit Ave.	Signal	0.735	B	0.370	B
East Ave/Victoria St.	Signal	0.223	B	0.240	B
Year 2020 With Project					
Etiwanda Ave (West)/Wilson Ave.	Signal	0.237	A	0.352	B
Etiwanda Ave (East)/Wilson Ave.	Signal	0.306	A	0.849	B
Etiwanda Ave (East)/Summit Ave.	Signal	0.888	C	0.917	C
Etiwanda Ave (East)/Highland Ave.	Signal	0.888	C	0.748	C
East Ave/Wilson Ave.	Signal	0.718	B	0.621	A
East Ave/Summit Ave.	signal	0.786	C	0.602	B
East Ave/Victoria St.	Signal	0.430	A	0.593	B

AWSC – All Way Stop Controlled
TWSC – Two Way Stop Controlled
NA – Not Applicable: V/C ratios calculated only for signal and AWSC.
[1] Average Delay calculated with Traffix, version 7.1R1 analysis software.

Once mitigation measures are implemented, project generated impacts to the transportation network and traffic circulation system are less than significant.

5.4 Air Quality

The following discussion summarizes the "Air Quality Impact Analysis Report for Tentative Tract No. 16072" (October 2002) prepared by Michael Brandman Associates. This report is contained in its entirety as Appendix E of this document. The focus of the following discussion is related to the potential impacts related to sensitive receptors, air quality plans, air quality standards, cumulative increases of pollutants, and production of odors.

5.4.1 Existing Conditions

Physical Setting

The proposed project is located within the South Coast Air Basin (SCAB), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAB consists of Orange County, the coastal and mountain portions of Los Angeles County, as well as Riverside and San Bernardino counties. Regional and local air quality within the SCAB is affected by topography, atmospheric inversions, and dominant onshore flows. Topographic features such as the San Gabriel, San Bernardino, and San Jacinto Mountains form natural horizontal barriers to the dispersion of air contaminants. The presence of atmospheric inversions limits the vertical dispersion of air pollutants. With an inversion, the temperature initially follows a normal pattern of decreasing temperature with increasing altitude, however, at some elevation, the trend reverses and temperature begins to increase as altitude increases. This transition to increasing temperature establishes the effective mixing height of the atmosphere and acts as a barrier to vertical dispersion of pollutants.

Dominant onshore flow provides the driving mechanism for both air pollution transport and pollutant dispersion. Air pollution generated in coastal areas is transported east to inland receptors by the onshore flow during the daytime until a natural barrier (the mountains) is confronted, limiting the horizontal dispersion of pollutants. The result is a gradual degradation of air quality from coastal areas to inland areas, which is most evident with the photochemical pollutants formed under reactions with sunlight, such as ozone.

Climate

Terrain and geographical location determine climate in the SCAB. The project site lies within the terrain south of the San Gabriel Mountains and north of the Santa Ana Mountains. The climate in the SCAB is typical of southern California's Mediterranean climate, which is characterized by dry, warm summers and mild winters. Winters typically have infrequent rainfall, light winds and frequent early morning fog and clouds that turn to hazy afternoon sunshine.

The following includes factors that govern micro-climate differences among inland locations within the SCAB: 1) the distance of the mean air trajectory from the site to the ocean; 2) the site elevation; 3) the existence of any intervening terrain that may affect airflow or moisture content; and 4) the

proximity to canyons or mountain passes. As a general rule, locations farthest inland from the ocean have the hottest summer afternoons, the lowest rainfall, and the least amount of fog and clouds. Foothill communities in the SCAB have greater levels of precipitation, cooler summer afternoons and may be exposed to wind funneling through nearby canyons during Santa Ana winds. Terrain will generally influence local wind patterns. The project site is located in an alluvial area at the base of the San Gabriel Mountains, with the mountain and canyon areas immediately to the north.

Annual average temperatures in the SCAB are typically in the low to mid-60s (degrees Fahrenheit). Temperatures above 100 degrees are recorded for all portions of the SCAB and in winter months, temperatures in the lower 30s can be experienced in parts of the SCAB including the project site.

The rainy season in the SCAB is November to April. Summer rainfall can occur as widely scattered thunderstorms near the coast and in the eastern portion and mountainous regions. Rainfall averages vary over the SCAB. The project site in Rancho Cucamonga averages 15.4 inches of rainfall, while Riverside averages 9 inches. Rainy days vary from 5 to 10 percent of all days in the SCAB, with the most frequent occurrences of rainfall near the coast.

The interaction of land (offshore) and sea (onshore) breezes control local wind patterns in the area. Daytime winds typically flow from the coast to the inland areas, while the pattern typically reverses in the evening, flowing from the inland areas to the ocean. Air stagnation may occur during the early evening and early morning during periods of transition between day and nighttime flows. Approximately 5 to 10 times a year, the project site vicinity experiences strong, hot, dry desert winds known as the Santa Ana winds. These winds, associated with atmospheric high pressure, originate in the upper deserts and are channelized through the canyons and passes of the San Gabriel Mountains and into the inland valleys. Santa Ana winds can last for a period of hours or days, and gusts of over 60 miles per hour have been recorded. (See Exhibit 3.1, Dominant Wind Patterns of the South Coast Air Basin).

High winds, such as the Santa Ana winds, affect dust generation characteristics and create the potential for off-site air quality impacts, especially with respect to airborne nuisance and particulate emissions. Local winds in the project area are also an important meteorological parameter because they control the initial rate of dilution of locally generated air pollutant emissions. Exhibit 3.2, Windrose, shows the wind direction and speed frequency distribution in the project area.

Categories of Emission Sources

Air pollutant emissions sources are typically grouped into two categories: stationary and mobile sources. These emission categories are defined and discussed in the following subsections.

Stationary Sources

Stationary sources are divided into two major subcategories: point and area sources. Point sources consist of a single emission source with an identified location at a facility. A single facility could have multiple point sources located onsite. Stationary point sources are usually associated with manufacturing and industrial processes. Examples of point sources include boilers or other types of combustion equipment at oil refineries, electric power plants, etc. Area sources are small emission sources that are widely distributed, but are cumulatively substantial because there may be a large number of sources. Examples include residential water heaters; painting operations; lawn mowers; agricultural fields; landfills; and consumer products, such as barbecue lighter fluid and hair spray.

Mobile Sources

Mobile sources are motorized vehicles, which are classified as either on-road or off-road. On-road mobile sources typically include automobiles and trucks that operate on public roadways. Off-road mobile sources include aircraft, ships, trains, and self-propelled construction equipment that operate off public roadways. Mobile source emissions are accounted for as both direct source emissions (those directly emitted by the individual source) and indirect source emissions, which are sources that by themselves do not emit air contaminants but indirectly cause the generation of air pollutants by attracting vehicles. Examples of indirect sources include office complexes, commercial and government centers, sports and recreational complexes, and residential developments.

Air Pollution Constituents

Air pollutants are classified as either primary, or secondary, depending on how they are formed. Primary pollutants are generated daily and are emitted directly from a source into the atmosphere. Examples of primary pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2) and nitric oxide (NO)—collectively known as oxides of nitrogen (NO_x), sulfur dioxide (SO_2), particulates (PM_{10} and $PM_{2.5}$) and various hydrocarbons (HC) or volatile organic compounds (VOC), which are also referred to as reactive organic compounds (ROC). The predominant source of air emissions generated by the project development is expected to be vehicle emissions. Motor vehicles primarily emit CO, NOx and VOC/ROC/HC (Volatile Organic Compounds/Reactive Organic Compounds/Hydrocarbons).

Secondary pollutants are created over time and occur within the atmosphere as chemical and photochemical reactions take place. An example of a secondary pollutant is ozone (O_3), which is one of the products formed when NOx reacts with HC, in the presence of sunlight. Other secondary pollutants include photochemical aerosols. Secondary pollutants such as oxidants represent major air quality problems in the SCAB.

The Federal Clean Air Act of 1970, established the National Ambient Air Quality Standards (NAAQS). Six "criteria" air pollutants were identified using specific medical evidence available at

that time, and NAAQS were established for those chemicals. The State of California has adopted the same six chemicals as criteria pollutants, but has established different allowable levels. The six criteria pollutants are: carbon monoxide, nitrogen dioxide, ozone, lead, particulates less than 10 microns in size, and sulfur dioxide. The following is a further discussion of the *criteria pollutants*, as well as volatile organic compounds.

Carbon Monoxide (CO) – A colorless, odorless toxic gas produced by incomplete combustion of carbon-containing fuels. Concentrations of CO are generally higher during the winter months when meteorological conditions favor the build-up of primary pollutants. Motor vehicles are the major source of CO in the SCAB, although various industrial processes also emit CO through incomplete combustion of fuels.

Oxides of Nitrogen (NO_X) – Important forms of nitrogen oxide in air pollution are nitric oxide (NO) and nitrogen dioxide (NO_2). The principal form of nitrogen oxide produced as a byproduct of fuel combustion is nitric oxide (NO), but NO reacts quickly with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. Combustion in motor vehicle engines, power plants, refineries and other industrial operations, as well as ships, railroads and aircraft, are the primary sources of NO_X. Although NO_2 concentrations have not exceeded national standards since 1991 and the state hourly standard since 1993, NO_X emissions remain of concern because of their contribution to the formation of O_3 and particulate matter.

Ozone (O_3) – A colorless toxic gas that irritates the lungs and damages materials and vegetation. O_3 is one of a number of substances called photochemical oxidants that is formed when volatile organic compounds (VOC) and NO_x react in the presence of ultraviolet sunlight. O_3 concentrations are higher in the SCAB than anywhere else in the nation and the damaging effects of photochemical smog are generally related to the concentration of O_3. Conditions that lead to high levels of O_3 are adequate sunshine, early morning stagnation in source areas, high surface temperatures, strong and low morning inversions, greatly restricted vertical mixing during the day, and daytime subsidence that strengthens the inversion layer.

Lead (Pb) - Lead concentrations once exceeded the state and federal air quality standards by a wide margin, but have not exceeded state or federal air quality standards at any regular monitoring station since 1982. Though special monitoring sites immediately downwind of lead sources recorded very localized violations of the state standard in 1994, no violations have been recorded at these stations since 1996.

Atmospheric Particulates (PM) – A large portion of total suspended particulate (TSP) is fine particulate matter. PM_{10} consists of extremely small suspended particles or droplets 10 microns or

smaller in diameter that can lodge in the lungs, contributing to respiratory problems. $PM_{2.5}$ is defined as particulate matter with diameter less than 2.5 microns. PM_{10} arises from such sources as road dust, agriculture, diesel soot, combustion products, tire and brake abrasion, construction operations, and fires. It is also formed from NO and SO_2 reactions with ammonia. PM_{10} scatters light and significantly reduces visibility. $PM_{2.5}$ consists mostly of products from the reaction of NO_X and SO_2 with ammonia, secondary organics and finer dust particles. The United States Environmental Protection Agency (USEPA) established its $PM_{2.5}$ standard in July 1997.

Sulfur Dioxide - Sulfur dioxide (SO_2) is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Although SO_2 concentrations have been reduced to levels well below state and federal standards, further reductions in SO_2 emissions are needed because SO_2 is a precursor to sulfate and PM_{10}.

Volatile Organic Compounds (VOCs) - It should be noted that there are no state or federal ambient air quality standards for VOCs because they are not classified as criteria pollutants. VOCs are regulated, however, because a reduction in VOC emissions reduces certain chemical reactions, which contribute to the formation of ozone. VOCs are also transformed into organic aerosols in the atmosphere, contributing to higher PM_{10} and lower visibility levels. Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations of VOC because of interference with oxygen uptake. In general, ambient VOC concentrations in the atmosphere are suspected to cause coughing, sneezing, headaches, weakness, laryngitis, and bronchitis, even at low concentrations. Some hydrocarbon components classified as VOC emissions are thought or known to be hazardous. Benzene, for example, is a hydrocarbon component of VOC emissions that is known to be a human carcinogen.

Monitored Air Quality

The project site is within SCAQMD Source Receptor Area (SRA) 32. The air quality monitoring station for SRA 32 is in the City of Upland approximately 6.5 miles west of the project site. The most recent published data for SRA 32 is presented in Table 5.4-1, Air Quality Monitoring Summary 1991-2001. This data shows that the baseline air quality conditions in the project area include occasional events of very unhealthful air. Even so, the frequency of smog alerts has dropped significantly in the last decade. The greatest recognized air quality problem in the SCAB is ozone. The yearly monitoring records document that prior to 1995, approximately one-third or more of the days each year experienced a violation of the state hourly ozone standard, with around ten days annually reaching first stage alert levels of 0.20 parts per million (ppm) for one hour. It is encouraging to note that ozone levels have dropped significantly in the last few years with less than one-eighth of the days each year experiencing a violation of the state hourly ozone standard in 2001. Locally, no first stage alert (0.20 ppm/hour) has been called by SCAQMD in over two years, and no second stage alert (0.35 ppm/hour) has been called by SCAQMD in the last ten years.

Although the overall air quality in SRA 32 is improving, one exception is the ambient concentrations of particulate matter smaller than 10 microns in diameter (PM_{10} and $PM_{2.5}$). Over the last decade the State air quality standard for PM_{10} has been consistently exceeded in the area. The 1997 Federal standards for $PM_{2.5}$ (annual arithmetic mean of 15 $\mu g/m^3$ and 24-hour average of 65 $\mu g/m^3$) were recently upheld by the U.S. Supreme Court in February 2001. SCAQMD monitoring data shows SRA 32 exceeding the federal annual and 24-hour standards since SCAQMD began monitoring $PM_{2.5}$ in 1999. Currently, there are no state standards established for $PM_{2.5}$. The sources contributing to particulate matter pollution include road dust, windblown dust, agriculture, construction, fireplaces and wood burning stoves, and vehicle exhaust.

Regulatory Setting

The Federal and California ambient air quality standards (AAQS) establish the context for the local air quality management plans (AQMP) and for determination of the significance of a project's contribution to local or regional pollutant concentrations. The California and Federal AAQS are presented in Table 5.4-1: Air Quality Monitoring Summary- 1991-2001. The AAQS represent the level of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other diseases or illness and persons engaged in strenuous work or exercise, all referred to as "sensitive receptors". SCAQMD defines a "sensitive receptor" as a land use or facility such as schools, child care centers, athletic facilities, playgrounds, retirements homes and convalescent homes.

Both federal and state Clean Air Acts require that each nonattainment area prepare a plan to reduce air pollution to healthful levels. The 1988 California Clean Air Act and the 1990 amendments to the federal Clean Air Act (CAA) established new planning requirements and deadlines for attainment of the air quality standards within specified time frames. A revised Air Quality Management Plan (AQMP) that reflected these new requirements from the federal and state government was adopted by the SCAQMD in July 1991. The 1994 revision to this plan was adopted by the SCAQMD's Governing Board in September 1994 and incorporated by ARB in the California State Implementation Plan (SIP), in November 1994. The California SIP was fully approved by the EPA in September 1996.

Table 5.4-1: Air Quality Monitoring Summary- 1991-2001

Pollutant/Standard Source: CARB 1/25/99 (Days Exceeded)	Monitoring Year										
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Ozone [a]											
California Standard											
1-Hour - 0.09 ppm	103[b]	136[b]	124[b]	116[b]	110[b]	87[b]	69[b]	60[b]	29[b]	48[b]	44[b]
Federal Primary Standards											
1-Hour – 0.12 ppm	67[b]	81[b]	55[b]	79[b]	67[b]	35[b]	12[b]	30[b]	4[b]	7[b]	13[b]
8-Hour - 0.08 ppm[a]							30[b]	40[b]	17[b]	27[b]	31[b]
Max 1-Hour Conc. (ppm)	0.27[b]	0.28[b]	0.24[b]	0.25[b]	0.24[b]	0.22[b]	0.19[b]	0.21[b]	0.15[b]	0.15[b]	0.165[b]
Max 8-Hour Conc. (ppm)[a]							0.13[b]	0.17[b]	0.12[b]	0.125[b]	0.136[b]
Carbon Monoxide											
California Standard											
1-Hour - 20 ppm	0[b]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]
8-Hour - 9.0 ppm	0[b]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]
Federal Primary Standards											
1-Hour - 35 ppm	0[b]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]
8-Hour - 9.5 ppm	0[b]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]
Max 1-Hour Conc. (ppm)	7.0[b]	7.0[c]	7.0[c]	9.0[c]	6.3[c]	6.0[c]	8.0[c]	6.0[c]	5.0[c]	5.0[c]	4.0[c]
Max 8-Hour Conc. (ppm)	4.6[b]	5.9[c]	6.0[c]	6.5[c]	5.9[c]	4.6[c]	6.0[c]	4.6[c]	4.0[c]	4.3[c]	3.25[c]
Nitrogen Dioxide											
California Standard											
1-Hour - 0.25 ppm	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
Federal Primary Standards											
Annual Standard - 0.053ppm	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]
Max. 1-Hour Conc. (ppm)	0.21[b]	0.14[b]	0.15[b]	0.17[b]	0.20[b]	0.11[b]	0.14[b]	0.11[b]	0.13[b]	0.15[b]	0.13[b]

Table 5.4-1 (Cont.): Air Quality Monitoring Summary- 1991-2001

Pollutant/Standard Source: CARB 1/25/99 (Days Exceeded)	Monitoring Year										
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Sulfur Dioxide											
California Standard											
1-Hour – 0.25 ppm	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]
24-Hour – 0.04 ppm	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]
Federal Primary Standards											
24-Hour – 0.14 ppm	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]
Annual Standard – 0.03 ppm	No[e]	No[e]	No[e]	No[e]	No[e]	No[e]	No[e]	No[e]	No[e]	No[e]	No[e]
Max. 1-Hour Conc. (ppm)	0.05[d]	0.02[d]	0.01[d]	0.03[d]	0.02[d]	0.01[d]	0.01[d]	0.02[d]	0.01[d]	0.02[d]	0.01[d]
Max. 24-Hour Conc. (ppm)	0.01[d]	0.012[d]	0.001[d]	0.009[d]	0.010[d]	0.007[d]	0.001[d]	0.010[d]	0.010[d]	0.010[d]	0.010[d]
Inhalable Particulates (PM_{10})											
California Standard											
24-Hour - 50 µg/m^3	35[d]	31[c]	34[c]	38[c]	35[c]	35[c]	29[c]	28[c]	36[c]	31[c]	34[c]
Annual Geometric Mean (µg/m^3)	57.7[d]	48.9[c]	46.3[c]	52.7[c]	50.6[c]	48.2[c]	47.6[c]	41.3[c]	54.3[c]	47.1[c]	43.8[c]
Federal Primary Standards											
24-Hour – 150 µg/m^3	0[d]	0[d]	0[d]	0[d]	2[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]
Annual Arithmetic Mean (µg/m^3) /m^3)	63.1[d]	56.1[d]	57.1[d]	60.0[d]	61.0[d]	55.1[d]	53.7[d]	50.2[d]	60.2[d]	52.6[d]	60.5[d]
Max. 24-Hour Conc. (µg/m^3)	127[d]	105[d]	143[d]	147[d]	178[d]	130[d]	122[d]	101[d]	116[d]	108[d]	105[d]
Inhalable Particulates (PM_{25})											
Federal Primary Standards											
Annual Standard – 15µg/m^3									Yes[f]	Yes[f]	Yes[f]
24-Hour – 65 µg/m^3									3[e]	2[e]	4[e]
Annual Arithmetic Mean (µg/m^3) (µg/m^3)									25.9[e]	24.5[e]	24.3[e]
Max. 24-Hour Conc. (µg/m^3)									98.0[e]	72.9[e]	74.6[e]

Table 5.4-1 (Cont.): Air Quality Monitoring Summary- 1991-2001

Pollutant/Standard Source: CARB 1/25/99 (Days Exceeded)	Monitoring Year										
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001

Note: [a] 1997 is first year of SCAQMD records for federal 8-hour Ozone standard.
[b] Upland air monitoring station (SRA 32) data summaries for ozone, NO2, and Ozone during all years, and CO in 1991.
[c] San Bernardino monitoring station (also in SRA 34 data summaries for CO during 1992 through 2001.
[d] Fontana air monitoring station (SRA 34) data summaries for SOx and PM10 during all years
[e] Fontana monitoring station data summaries (SRA 34) for PM2.5. 1999 is first year of SCAQMD records for federal 24-hour PM2.5 standard.
[f] Exceedance of the Annual Standards are expressed as either Yes or No indicating whether or not the standard has been exceeded for that year.

In November 1996, the SCAQMD Governing Board adopted a revised AQMP that modified the ozone attainment strategy for the SCAB and presented an attainment strategy for the national PM_{10} standard. This revision was submitted by the ARB to the United States Environmental Protection Agency (USEPA) in February 1997 for approval. The 1997 Air Quality Management Plan is the most current Governing Board adopted AQMP.

The California Air Resources Board maintains records as to the attainment status of air basins throughout the state, under both State and Federal criteria. For 2001, the portion of the SCAB within which the project is located is designated as a non-attainment area for ozone and PM_{10} under state standards, and as a non-attainment area for ozone, carbon monoxide, and PM_{10} under federal standards. AAQS are presented in 5.4-1 Air Quality Monitoring Summary 1991-2001. The AAQS represent the level of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other diseases or illness and persons engaged in strenuous work or exercise, all referred to as "sensitive receptors." SCAQMD defines a "sensitive receptor" as a land use or facility such as schools, child care centers, athletic facilities, playgrounds, retirements homes and convalescent homes.

Both federal and state Clean Air Acts require that each nonattainment area prepare a plan to reduce air pollution to healthful levels. The 1988 California Clean Air Act and the 1990 amendments to the federal Clean Air Act (CAA) established new planning requirements and deadlines for attainment of the air quality standards within specified time frames. A revised Air Quality Management Plan (AQMP) that reflected these new requirements from the federal and state government was adopted by the SCAQMD in July 1991. The 1994 revision to this plan was adopted by the SCAQMD's Governing Board in September 1994 and incorporated by ARB in the California State Implementation Plan (SIP), in November 1994. The California SIP was fully approved by the EPA in September 1996.

In November 1996, the SCAQMD Governing Board adopted a revised AQMP that modified the ozone attainment strategy for the SCAB and presented an attainment strategy for the national PM_{10} standard. This revision was submitted by the ARB to the United States Environmental Protection Agency (USEPA) in February 1997 for approval. The 1997 Air Quality Management Plan is the currently adopted AQMP.

The California Air Resources Board maintains records as to the attainment status of air basins throughout the state, under both State and Federal criteria. For 2001, the portion of the SCAB within which the project is located is designated as a non-attainment area for ozone and PM_{10} under state standards, and as a non-attainment area for ozone, carbon monoxide, and PM_{10} under federal standards.

Project Compliance with Existing Regulations

The Air Quality Management Plan (AQMP) for the SCAB establishes a program of rules and regulations administered by SCAQMD and directed at attainment of the state and national air quality standards.

SCAQMD rules and regulations that apply to this project include SCAQMD Rule 403, which governs emissions of fugitive dust. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites.

SCAQMD Rule 1108 governs the sale and use of asphalt and limits the VOC content in asphalt used in the South Coast Air Basin. Although this rule does not directly apply to the project, it does dictate the VOC content of asphalt available for use during the construction.

SCAQMD Rule 1113 governs the sale of architectural coatings and limits the VOC contents in paints and paint solvents. Although this rule does not directly apply to the project, it does dictate the VOC content of paints available for use during the construction of the buildings.

5.4.2 Thresholds of Significance

The State CEQA Guidelines define a significant effect on the environment as "a substantial adverse change in the physical condition which exists in the area affected by the proposed project." In order to determine whether or not the proposed project would cause a significant effect on the environment,

the impact of the project must be determined by examining the types and levels of emissions generated and their impacts on factors that affect air quality. To accomplish this determination of significance, the SCAQMD has established air pollution thresholds against which a proposed project can be evaluated and assist lead agencies in determining whether or not the proposed project is potentially significant. If the thresholds are exceeded by a proposed project, then it should be considered significant.

While the final determination of whether or not a project is significant is within the purview of the lead agency pursuant to § 15064(b) of the State CEQA Guidelines, the SCAQMD recommends that the following air pollution thresholds be used by lead agencies in determining whether the proposed project could result in a significant impact. If the lead agency finds that the proposed project has the potential to exceed these air pollution thresholds, the project should be considered significant. Each of these threshold factors is discussed below.

Thresholds for Construction Emissions

The following significance thresholds for construction emissions have been established by the SCAQMD. Projects in the South Coast Air Basin with construction-related emissions that exceed any of these emission thresholds should be considered to be significant:

- 2.5 tons per quarter or 75 pounds per day of ROG
- 2.5 tons per quarter or 100 pounds per day of NOx
- 24.75 tons per quarter or 550 pounds per day of CO
- 6.75 tons per quarter or 150 pounds per day of PM_{10}
- 6.75 tons per quarter or 150 pounds per day of SOx

Thresholds for Operational Emissions

Specific criteria for determining whether the potential air quality impacts of a project are significant are set forth in the SCAQMD Handbook. The criteria include emissions thresholds, compliance with State and National air quality standards and conformity with existing State Implementation Plan (SIP) or consistency with the current Air Quality Management Plan (AQMP). The daily operational emissions "significance" thresholds are:

Regional Emissions Thresholds

- 55 pounds per day of ROG
- 55 pounds per day of NOx
- 550 pounds per day of CO
- 150 pounds per day of PM_{10}
- 150 pounds per day of SOx

Projects in the South Coast Air Basin with operation-related emissions that exceed any of the emission thresholds should be considered to be significant.

Local Emission Standards

- California State 1-hour CO standard of 20.0 ppm
- California State 8-hour CO standard of 9.0 ppm

The significance of localized project impacts depends on whether ambient CO levels in the vicinity of the project are above or below State and federal CO standards. If ambient levels are below the standards, a project is considered to have significant impacts if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. The SCAQMD defines a measurable amount as 1.0 ppm or more for the 1-hour CO concentration by or 0.45 ppm or more for the 8-hour CO concentrations.

The SCAQMD indicates in Chapter 6 of the *CEQA Air Quality Handbook* (SCAQMD 1993) (*Handbook)*, that they consider a project to be mitigated to a level of insignificance if its emissions are mitigated below the thresholds provided above.

Operational Phase (Secondary Effects)

The SCAQMD recommends that "additional indicators" should be used as screening criteria with respect to air quality. Relevant additional factors identified in the *Handbook* include the following significance criteria:

- interference with the attainment of the federal or State Ambient Air Quality Standards by either violating or contributing to an existing or projected air quality violation
- generation of vehicle trips that cause a CO "hot spot"
- projects that emit toxic air contaminants (TACs) or for projects that could be occupied by sensitive receptors within ¼ mile of a facility that emits TACs, emissions that individually or cumulatively exceed the maximum individual cancer risk of 10 in 1 million are considered significant.

The SCAQMD indicates in Chapter 6 of the *Handbook* that they consider a project to be mitigated to a level of insignificance if its secondary effects are mitigated below the thresholds provided above.

Standard Conditions and Uniform Codes

All projects constructed in the South Coast Air Basin are subject to standards conditions and Uniform Codes. Compliance with these provisions is mandatory and as such, does not constitute mitigation under CEQA. Those conditions specific to air quality are included below:

- Adherence to SCAQMD Rule 403, which requires that "...every reasonable precaution (is taken) to minimize fugitive dust emissions..." from grading operations to control particulate emissions, shall be implemented during the grading and construction phase.

- Adherence to SCAQMD Rules 431.1 and 431.2 which require the use of low sulfur fuel for stationary construction equipment.
- Adherence to SCAQMD Rule 1108 which sets limitations on ROG content in asphalt.
- Adherence to SCAQMD Rule 1113 which sets limitations on ROG content in architectural coatings.
- The project shall comply with Title 24 energy-efficient design requirements as well as the provision of window glazing, wall insulation, and efficient ventilation methods in accordance with the requirements of the Uniform Building Code.

Since the project is located within the South Coast Air Basin under the jurisdiction of the SCAQMD and current air quality in the project area is typical of the air basin as a whole, these thresholds are considered valid and reasonable.

5.4.3 Project Impacts

Short-Term Construction-Related Emissions

Short-term emissions will include fugitive dust and other particulate matter, as well as exhaust emissions, generated by earthmoving activities and operation of grading equipment during site preparation (demolition and grading). Short-term emissions will also include emissions generated during construction of the buildings as a result of operation of equipment, operation of personal vehicles by construction workers, electrical consumption, and coating and paint applications. See Appendix B for a complete discussion of assumptions used to calculate the following short-term emissions as a result of the proposed project.

Short-term emissions were evaluated with the URBEMIS 2001, version 6.2.1 computer program. The URBEMIS 2001 model sets default values for worker trips and the use of asphalt and architectural coatings. Model inputs include the projected types of land uses and their square footage areas, the year in which construction is to begin, and the length of the construction period. For the purposes of this analysis as a worst-case scenario, construction is slated to begin in the year 2004 and the construction period is anticipated to require approximately 12 months. Table 5.4-2, summarize the results of these evaluations. See Appendix E for a complete discussion of assumptions used to calculate the following short-term emissions as a result of the proposed project.

Table 5.4-2: Estimated Short-Term Emissions

Pollution Source	NOx	CO	ROC	SOx [1]	PM_{10}
Grading and Demolition	NG[1]	NG[1]	NG[1]	NG[1]	122.63
Mobile Grading Equipment	286.93	151.25[2]	26.20	41.72	41.77
Stationary Equipment	10.28	39.90[2]	12.60	0.15	0.60
Mobile Construction Equipment	97.96	39.32[2]	7.49	8.00	7.13
Commuting Traffic	9.86	18.71	6.97	NG[1]	1.89
Architectural Coatings	NG[1]	NG[1]	122.11	NG[1]	NG[1]
Asphalt Paving	NG[1]	NG[1]	8.34	NG[1]	NG[1]
Emissions Totals (lbs/day)	**405.03**	249.18	**183.71**	49.87	**174.02**
Emissions Totals (tons/quarter)[3]	13.16	8.10	**5.97**	1.62	5.65
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr
Exceeds Threshold?	YES	NO	YES	NO	YES

Notes: [1] Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).
[2] CO emissions for mobile equipment were calculated from the CEQA Air Quality Handbook.
[3] Quarterly emission totals for all criteria pollutants reflect 65 workdays per quarter of construction activity.
Bold = Above SCAQMD Thresholds.

The URBEMIS 2001 model assumes all aspects of construction of the project is additive. In actuality, initial grading, subsequent structure installation, and the application of paints and coatings are typically phased over the construction period and are not strictly additive; though in some large-scale projects these phases may overlap. Evaluation of the preceding tables indicates that projected NOx, ROC, and PM_{10} emissions are above the SCAQMD recommended daily thresholds and NOx and ROC are above the quarterly thresholds during construction of the first phase of the project. The primary sources of NOx emissions are trucks used for rock removal and importation of concrete. The primary source of ROC emissions is the application of architectural coatings, and the primary source of PM_{10} is fugitive dust from earthmoving activities.

Odors

Odor sensation is a personal response. Not all people are equally sensitive, and they do not always agree about the severity of an odor once it is detected. The human nose is still the best means of determining the strength of an odor. Precise documentation of the strength and nature of an odor is generally unavailable because of the large number of gases involved and their effects on each other. Additionally, odor measurement is difficult because no instrument has been found to successfully measure odor and all its components. The SCAQMD CEQA Handbook recommends that if quantitative analysis is not feasible, as is the case with odors, at minimum the evaluation should be addressed on a qualitative basis. Therefore, the following qualitative analysis was conducted.

The project presents the potential for generation of objectionable odors in the form of diesel exhaust and fumes from painting and asphalt applications during construction of the project in the immediate vicinity of the project site. The closest area with substantial numbers of people is the existing residential development west of Etiwanda Avenue. Local prevailing winds in the area travel from the southwest to northeast. These emissions would rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Recognizing the wind direction and the dispersion of the pollutants, the project will not subject a substantial number of people to objectionable odors.

Long-Term Emissions

Long-term impacts for the proposed residential subdivision consist of mobile emissions and stationary emissions. Mobile emissions estimates are derived from motor vehicle traffic. Stationary emissions estimates are derived from the consumption of natural gas, electricity, the use of landscape equipment, and the storage and use of consumer products.

Table 5.4-3, is a summary of the total daily long-term project emissions derived by combining both mobile (motor vehicle emissions) and stationary (electrical and natural gas consumption, consumer product use, and emissions resulting from landscaping equipment) emissions at project build out. See Appendix B for a complete discussion of assumptions used to calculate the following long-term emissions as a result of the proposed project.

Table 5.4-3: Composite Long-Term Emissions

Pollution Source	NOx (Lbs/Day)	CO (Lbs/Day)	ROC (Lbs/Day)	SOx (Lbs/Day)	PM_{10} (Lbs/Day)
Mobile Emissions	59.06	774.62	64.44	0.47	36.20
Electrical Consumption	0.87	1.16	0.06	0.70	0.23
Natural Gas Consumption	4.71	2.00	0.36	NG	0.01
Landscape Emissions	0.06	5.39	0.64	0.16	0.01
Consumer Products	NG	NG	22.38	NG	NG
Emissions Totals	**64.70**	**783.17**	**87.88**	1.33	36.45
SCAQMD Thresholds	55	550	55	150	150
Exceeds Threshold?	YES	YES	YES	NO	NO
Note: NG designates criteria pollutants that have estimated negligible values.					

When unmitigated emissions projections are compared with the SCAQMD suggested thresholds for significance, it is shown that long-term emissions exceed the applicable thresholds for NOx, CO and ROC. The primary source of these emissions is mobile emissions from vehicles.

CO Hot Spot Analysis

In addition to total project emissions quantification, the project needs to be analyzed for the potential to create any localized concentration of pollutants that are in violation of the federal or state ambient air quality standards. These localized concentrations of pollutants are also referred to as "Hot Spots." Carbon Monoxide (CO) was used as an indicator pollutant to determine "Hot Spot" potential because it is a localized problem associated with traffic congestion and idling or slow-moving vehicles. The SCAQMD recommends that projects with sensitive receptors or projects that could negatively impact levels of service (LOS) of existing roads use the screening procedures outlined in the SCAQMD CEQA Air Quality Handbook to determine the potential to create a CO hot spot. The proposed project is both a sensitive receptor and has the potential to negatively impact the LOS on adjacent roadways and therefore, requires a CO hotspot analysis.

The SCAQMD CEQA Air Quality Handbook recommends using CALINE4, the fourth generation California Line Source Roadway Dispersion Model developed by the California Department of Transportation (Caltrans), to estimate 1-hour CO concentrations from roadway traffic. Input data for this model includes meteorology, street network geometrics, traffic information, and emissions generation rates. Meteorological data required includes average temperatures, wind direction, sigma theta (standard deviation of wind direction), and wind speed. Street network geometrics require the use of an x,y coordinate system onto which the modeled roadways can be overlain in order to identify the relative location of traffic lanes to nearby receptors. Total traffic volume of the adjacent roadway segments was calculated using total projected volumes generated from 375 homes combined with future traffic volumes for the year 2020 from the sub-regional travel demand model currently in use for long range planning in San Bernardino County. These calculations were estimated from intersection volumes found in the project specific traffic study for year 2020 (R K Engineering Group 2002) Emission factors were calculated in grams/mile/vehicle using the EMFAC2001 computer model.

Roadway segments in this analysis include:

- East Avenue from Victoria Street to the north project boundary (future north terminus of East Street.),
- Etiwanda Avenue from Highland Avenue to the north terminus of Etiwanda Avenue,
- Wilson Avenue from Day Creek Blvd. to Wardman Bullock Road.,
- Proposed "A" Street from Wilson Avenue to the proposed north terminus within the project,
- Proposed "N" Street from East Avenue to the proposed west terminus within the project,
- Proposed "Q" Street and "U" St. from Etiwanda Avenue to the east terminuses within the project.

The PM peak hour traffic volumes were used in this analysis because they represent the highest traffic volumes. Receptor placement in the CALINE4 model also took into account the location to the roadway network in relation to the planned and existing residential developments. The model procedure that was followed combined the results of the traffic analysis for year 2020 assuming very restrictive dispersion conditions in order to generate a worst-case impact assessment. Output from the CALINE4 model is in 1-hour CO concentrations in parts per million (ppm) at the selected receptor locations. The predicted 1-hour CO concentrations were determined by adding the ambient background 1-hour CO concentrations to the model projected 1-hour CO concentration. The 8-hour CO concentration was estimated by multiplying the 1-hour model estimate by the persistence factor for the project area (0.6) and adding the ambient background 8-hour CO concentration. The results from this screening procedure are presented in Table 5.4-4.

Table 5.4-4: Microscale CO Concentrations

Receptor/Closest Intersection	Number of Vehicles/hr[1]	Traffic Generated CO Concentration[2]	Distance to Intersection	Background CO Concentration[3]	Estimated CO Concentration[4]	State Standards	Federal Standards
Worst Case 1-hour Average CO Concentrations							
Receptor 1 East Av./ Wilson Av.	1756	0.60 ppm	60 ft.	4.00 ppm	4.60 ppm	20 ppm	35 ppm
Receptor 2 East Av./ North Boundary APN 225-083-14.	1756	0.30 ppm	30 ft.	4.00 ppm	4.30 ppm	20 ppm	35 ppm
Receptor 3 East Av./Proposed "N"St.	1756	0.00 ppm	30 ft.	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 4 East Av./Proposed "N" St.	1756	0.00 ppm	30 ft.	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 5 Wilson Av./West Boundary APN 225-083-14	308	0.00 ppm	60 ft.	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 6 Wilson Av./Proposed "A"St.	308	0.00 ppm	60 ft.	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 7 Wilson Av./Proposed "A" St.	308	0.00 ppm	60 ft.	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 8 Wilson Av./Etiwanda Av.	308	0.20 ppm	60 ft.	4.00 ppm	4.20 ppm	20 ppm	35 ppm
Receptor 9 Etiwanda Av./Proposed "U" St.	296	0.50 ppm	30 ft.	4.00 ppm	4.50 ppm	20 ppm	35 ppm
Receptor 10 Etiwanda Av./Proposed "U" St.	296	0.40 ppm	30 ft.	4.00 ppm	4.40 ppm	20 ppm	35 ppm
Receptor 11 Etiwanda Av./Proposed "U" St..	296	0.30 ppm	35 ft.	4.00 ppm	4.30 ppm	20 ppm	35 ppm

Table 5.4-4 (Cont.): Microscale CO Concentrations

Receptor/Closest Intersection	Number of Vehicles/hr[1]	Traffic Generated CO Concentration[2]	Distance to Intersection	Background CO Concentration[3]	Estimated CO Concentration[4]	State Standards	Federal Standards
Worst Case 1-hour Average CO Concentrations							
Receptor 12 Etiwanda Av./Proposed "Q" St.	296	0.20 ppm	20 ft.	4.00 ppm	4.20 ppm	20 ppm	35 ppm
Receptor 13 Etiwanda Av./Proposed "Q" St.	2329	0.10 ppm	20 ft.	4.00 ppm	4.10 ppm	20 ppm	35 ppm
Receptor 14 Etiwanda Av./Proposed "Q" St.	2009	0.10 ppm	30 ft.	4.00 ppm	4.10 ppm	20 ppm	35 ppm
Worst Case 8-hour Average CO Concentrations							
Receptor 1 East Av./ Wilson Av.	406/943	0.36 ppm	60 ft.	3.25 ppm	3.61 ppm	9 ppm	9.5 ppm
Receptor 2 East Av./ North Boundary APN 225-083-14.	406/8	0.18 ppm	30 ft.	3.25 ppm	3.43 ppm	9 ppm	9.5 ppm
Receptor 3 East Av./Proposed "N"St.	53/53	0.00 ppm	30 ft.	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm
Receptor 4 East Av./Proposed "N" St.	1756	0.00 ppm	30 ft.	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm
Receptor 5 Wilson Av./West Boundary APN 225-083-14	308	0.00 ppm	60 ft.	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm
Receptor 6 Wilson Av./Proposed "A"St.	308	0.00 ppm	60 ft.	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm
Receptor 7 Wilson Av./Proposed "A" St.	308	0.00 ppm	60 ft.	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm

Table 5.4-4 (Cont.): Microscale CO Concentrations

Receptor/Closest Intersection	Number of Vehicles/hr[1]	Traffic Generated CO Concentration[2]	Distance to Intersection	Background CO Concentration[3]	Estimated CO Concentration[4]	State Standards	Federal Standards
Worst Case 8-hour Average CO Concentrations							
Receptor 8 Wilson Av./Etiwanda Av.	308	0.12 ppm	60 ft.	3.25 ppm	3.37 ppm	9 ppm	9.5 ppm
Receptor 9 Etiwanda Av./Proposed "U" St.	296	0.30 ppm	30 ft.	3.25 ppm	3.55 ppm	9 ppm	9.5 ppm
Receptor 10 Etiwanda Av./Proposed "U" St.	296	0.24 ppm	30 ft.	3.25 ppm	3.49 ppm	9 ppm	9.5 ppm
Receptor 11 Etiwanda Av./Proposed "U" St..	296	0.18 ppm	35 ft.	3.25 ppm	3.43 ppm	9 ppm	9.5 ppm
Receptor 12 Etiwanda Av./Proposed "Q" St.	296	0.12 ppm	20 ft.	3.25 ppm	3.37 ppm	9 ppm	9.5 ppm
Receptor 13 Etiwanda Av./Proposed "Q" St.	2329	0.06 ppm	20 ft.	3.25 ppm	3.31 ppm	9 ppm	9.5 ppm
Receptor 14 Etiwanda Av./Proposed "Q" St.	2009	0.06 ppm	30 ft.	3.25 ppm	3.31 ppm	9 ppm	9.5 ppm

Note: [1] Generated from project specific Traffic Study for local streets and Caltrans for freeway segments.
[2] Maximum CO 1-hour and 8-hour average concentrations in SRA 32 for 2001
[3] Predicted using CALINE4 computer model
[4] Traffic generated CO concentrations + background CO concentrations
See Appendix B for CALINE4 output report

Assuming worst-case conditions, the estimated 1-hour and 8-hour average CO concentrations in combination with background concentrations are below the State and Federal ambient air quality standards. No CO hot spots are anticipated as a result of traffic generated emissions by the proposed project in combination with other anticipated development in the area.

Consistency Analysis

The Air Quality Management Plan (AQMP) for the SCAB sets forth a comprehensive program that will lead the SCAB into compliance with all federal and state air quality standards. The AQMP control measures and related emission reduction estimates are based upon emissions projections for a future development scenario derived from land use, population, and employment characteristics defined in consultation with local governments. Accordingly, conformance with the AQMP for development projects is determined by demonstrating compliance with local land use plans and/or population projections.

The proposed project complies with the City of Rancho Cucamonga General Plan, which is consistent with the land use information that was the basis for the current AQMP. However, it is noted that the specific analysis indicates that both short-term and long-term emissions as a result of the project are above the SCAQMD thresholds. These emissions remain above the thresholds after implementation of mitigation measures. For this reason, it is appropriate to conclude that the proposed project is not in compliance with the AQMP.

Localized Sources of Toxic Air Contaminant Emissions

A diesel fueled back-up generator is located at the potable water treatment plant (CCWD) on the south side of Wilson Avenue and would supply power to the critical components at the plant in the event of a power failure. The generator could present long-term exposure of diesel exhaust to future residents on the north side of Wilson Avenue closest to the plant (approximately 200 feet between the water treatment plant fence line to the proposed residential pads on the project site). This diesel fueled back-up generator is approximately 600 hp and will be test run once a week for 15 minutes. SCAQMD Rule 1110.1 limits the operation of the back-up generator to 200 hours per year or less.

The California Air Resources Board (CARB) has designated particulates within diesel exhaust as a toxic air contaminant (TAC). The CARB's Scientific Review Panel has established 3.0×10^{-4} per $\mu g/m^3$ as a unit risk value for diesel exhaust particulates. The unit risk value is a theoretical value of contracting cancer over a 70-year life span of exposure. SCAQMD uses a significance standard of 10 in one million as the maximum acceptable health risk.

SCREEN3, a U.S. EPA computer model designed to estimate maximum ground-level concentrations of air contaminants, was used to evaluate potential ambient concentrations of diesel particulates at

varying distances from the back-up generator. It is assumed that the back-up generator is at least 200 feet from the proposed neighboring residential units. Therefore, the model calculated ambient concentrations of diesel particulates at 20-meter intervals starting at 61 meters (approximately 200 feet) and continuing to a 200 meters (approximately 656 feet) distance from the water treatment plant fence line. The model output is in Appendix F.

The unit health risk value assumes constant exposure over a 70-year life span (total of 613,200 hours of exposure). The back-up generator will be test run once a week for fifteen minutes, which equates to a minimum run time of 13 hours per year (total exposure of 910 hours over 70 years). The SCAQMD permit for emergency generators allows a maximum run time of 200 hours per year (total exposure of 14,000 hours over 70 years). Therefore, the model output was multiplied by 0.00148 to convert modeled one-hour concentrations to average annual exposure concentrations if the back-up generator ran the minimum 13 hours per year, and 0.02283 to convert modeled one-hour concentrations to average annual exposure if the back-up generator ran the maximum 200 hours per year. Table 5.4-5, Health Risk Assessment, shows individual cancer risks associated with varying run times and distances from the back-up generator.

The model procedure assumed that the back-up generator is operating at the facility fence line and assumed very restrictive dispersion conditions in order to generate a worst-case impact assessment.

Table 5.4-5: Health Risk Assessment

Distance From Generator	Ambient Concentration	Unit Risk Factor	Individual Cancer Risk
Health risk Associated with the Minimum Runtime of 15 minutes per Week of the Back-up Generator			
61 Meters (200 ft.)	0.000118 $\mu g/m^3$	3.0×10^{-4}	0.035 in one million
80 Meters (262 ft.)	0.000078 $\mu g/m^3$	3.0×10^{-4}	0.023 in one million
100 Meters (328 ft.)	0.000054 $\mu g/m^3$	3.0×10^{-4}	0.016 in one million
120 Meters (394 ft.)	0.000039 $\mu g/m^3$	3.0×10^{-4}	0.012 in one million
140 Meters (459 ft)	0.000033 $\mu g/m^3$	3.0×10^{-4}	0.010 in one million
160 Meters (525 ft.)	0.000031 $\mu g/m^3$	3.0×10^{-4}	0.009 in one million
180 Meters (591 ft.)	0.000028 $\mu g/m^3$	3.0×10^{-4}	0.008 in one million
200 Meters (656 ft.)	0.000026 $\mu g/m^3$	3.0×10^{-4}	0.008 in one million

Table 5.4-5 (Cont.): Health Risk Assessment

Distance From Generator	Ambient Concentration	Unit Risk Factor	Individual Cancer Risk
Health risk Associated with the Maximum Runtime of 200 hours per Year of the Back-up Generator			
61 Meters (200 ft.)	0.00182 $\mu g/m^3$	3.0 X 10^{-4}	0.546 in one million
80 Meters (262 ft.)	0.00120 $\mu g/m^3$	3.0 X 10^{-4}	0.360 in one million
100 Meters (328 ft.)	0.00083 $\mu g/m^3$	3.0 X 10^{-4}	0.248 in one million
120 Meters (394 ft.)	0.00060 $\mu g/m^3$	3.0 X 10^{-4}	0.180 in one million
140 Meters (459 ft)	0.00050 $\mu g/m^3$	3.0 X 10^{-4}	0.150 in one million
160 Meters (525 ft.)	0.00047 $\mu g/m^3$	3.0 X 10^{-4}	0.140 in one million
180 Meters (591 ft.)	0.00043 $\mu g/m^3$	3.0 X 10^{-4}	0.130 in one million
200 Meters (656 ft.)	0.00039 $\mu g/m^3$	3.0 X 10^{-4}	0.118 in one million

All of the individual cancer risks are below the SCAQMD maximum threshold of 10 in one million—so long-term diesel emissions from the adjacent generator will not pose a significant health risk to sensitive receptors and the surrounding community within the proposed project.

Considering the concentration and dispersion of the localized levels of CO and the level of health risk associated with localized sources of toxic air contaminants, future residents of the proposed project will not be exposed to substantial pollutant concentrations.

5.4.4 Cumulative Impacts

The SCAB is designated a non-attainment area for ozone, carbon monoxide, and PM_{10}. As described in the previous discussion of thresholds of significanee for air quality impacts, a dctermination can be made of the project's incremental contribution to cumulative air quality impacts based upon a project's compliance (or lack of compliance) with the AQMP. Compliance with the AQMP is demonstrated by conformance to the two key criteria of consistency—1) the population density of the project is consistent with the population projections used in the AQMP, and 2) project-generated emissions do not exceed the SCAQMD thresholds for short-term and long-term emissions. Although the proposed population density of the project is consistent with the population projections in the AQMP, the project-specific evaluation of emissions presented in the preceding analysis shows that even with recommended mitigation measures, NOx, CO and ROC emissions exceed the recommended SCAQMD threshold. Therefore, the project does not meet the second criteria for consistency with the AQMP. The greatest cumulative impact on regional air quality will be incremental pollutant emissions from increased traffic in the area and increased energy consumption from this project and other planned projects. This will be a significant air quality impact both on a project level and on a regional basis. Ultimate development of the area will generate thousands of

additional vehicle trips per day based on standard trip generation conditions. While this amount of additional pollution can be considered cumulatively considerable, the proposed project will comply with applicable transportation management and emission control measures imposed by the SCAQMD pursuant to the current and pending AQMP. Compliance with the currently adopted (and any future) AQMP is likely to reduce future emissions; however, this impact would remain significant.

5.4.5 Mitigation Measures

The following measures shall be implemented to reduce potentially significant impacts to air quality:

AQ-1 The site shall be treated with water or other soil-stabilizing agents (approved by SCAQMD and RWQCB) daily to reduce PM_{10} emissions, in accordance with SCAQMD Rule 403.

AQ-2 During construction, all haul roads shall be swept according to a schedule established by the City to reduce PM_{10} emissions associated with vehicle tracking of soil off-site. Timing may vary depending upon time of year of construction.

AQ-3 Grading operations shall be suspended when wind speeds exceed 25 mph to minimize PM_{10} emissions from the site during such episodes.

AQ-4 Chemical soil stabilizers (approved by SCAQMD and RWQCB) shall be applied to all inactive construction areas that remain inactive for 96 hours or more to reduce PM_{10} emissions.

AQ-5 The construction contractor shall select the construction equipment used on-site based on low emission factors and high-energy efficiency. The construction contractor shall ensure the construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.

AQ-6 The construction contractor shall utilize electric or clean alternative fuel powered equipment, where feasible.

AQ-7 The construction contractor shall ensure that construction-grading plans include a statement that work crews will shut off equipment when not in use.

AQ-8 The construction contractor shall use low VOC architectural coating during the construction phase of the project.

AQ-9 During construction of the proposed improvements, temporary traffic control (e.g., flag person) will be provided during soil transport activities. Contractor will be advised not to idle trucks on site for more than ten minutes

AQ-10 During construction of the proposed improvements, only low volatility paints and coatings as defined in SCAQMD Rule 1113 shall be used. All paints shall be applied using either high volume low pressure (HVLP) spray equipment or by hand application.

AQ-11 The proposed project will participate in the cost of off-site traffic signal installation and synchronization through payment of the traffic signal fair-share mitigation fee. This fee will be collected and utilized by the City to install and synchronize traffic lights as

needed to prevent congestion of traffic flow on East Avenue between Summit Avenue and the project boundary, and Etiwanda Avenue between Highland Avenue and the north terminus of Etiwanda Avenue.

AQ-12 All appliances within the residential units of the project shall be energy-efficient as defined by SCAQMD.

AQ-13 The project proponent shall contact local transit agencies to determine bus routing in the project area that can accommodate bus stops at the project access points and determine locations and feasibility of bus stop shelters provided at project proponent's expense.

5.4.6 Level of Significance After Mitigation

In an effort to reduce estimated NOx, CO, PM_{10} and ROC emissions, a range of mitigation measures for short-term and long-term emissions listed above were considered. The following is a summary of an analysis of emissions after the implementation of mitigation measures. A more detailed explanation of the analysis can be found in the project specific Air Quality Impact Analysis Report located in Appendix E of this document.

Short-term Emissions

In an effort to reduce estimated short-term emissions of NOx, ROC, and PM_{10} emissions a range of reduction measures was considered. Effective emission reduction measures were narrowed to include properly maintaining mobile construction equipment (5% reduction of all mobile equipment emissions), provide temporary traffic control (e.g., flag person) during rock removal and concrete transport activities (5% reduction of all mobile equipment emissions), prohibit truck idling in excess of ten minutes (4% reduction of all mobile equipment emissions), apply low volatility paints as defined in SCAQMD Rule 1113 using either high volume low pressure (HVLP) spray equipment or by hand application (minimum of 65% reduction of architectural coating ROC emissions), and water all unpaved haul roads during construction three times a day (46% reduction in fugitive dust).

Table 5.4-6: Mitigated Short-Term Emissions

Pollution Source	NOx	CO	ROC	SOx	PM_{10}
Maximum Daily Emissions (lbs/day)	**351.15**	222.50	**99.62**	42.91	110.76
Emissions Totals (tons/quarter)	**11.41**	7.23	**3.24**	1.39	3.60
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr
Exceeds Threshold?	YES	NO	YES	NO	NO
Note: Bold TYPE indicates emissions that are above the SCAQMD Thresholds.					

As shown in Table 5.4-7, even with the reductions associated with implementation of construction related mitigation measures, the daily and quarterly emissions of NOx and ROC remain above the SCAQMD suggested thresholds.

Long-term Emissions

Mitigation measures for long-term mobile source emissions include synchronizing traffic lights on streets impacted by the project (reduction of 6% for all emissions) and construct on-site bus turnouts and/or bus stop shelters (reduction of 0.85% for all emissions). A stationary source mitigation measure includes the use of energy-efficient appliances (reduction of 3%for NOx and CO, 2.5% for ROC, and 6.5% for PM_{10}). Table 5.4-5 shows the estimated total mitigated long-term emissions. Table 5.4-7, Mitigated Long-Term Emissions shows long-term emissions totals with identified mitigation measures incorporated into the project.

Table 5.4-7: Mitigated Long-Term Emissions

Pollution Source	NOx (Lbs/Day)	CO (Lbs/Day)	ROC (Lbs/Day)	SOx (Lbs/Day)	PM_{10} (Lbs/Day)
Mobile Emissions	55.01	721.56	60.03	1.10	33.72
Electrical Consumption	0.85	1.11	0.06	0.70	0.22
Natural Gas Consumption	4.36	1.94	0.34	NG	0.01
Landscape Emissions	0.06	5.39	0.64	0.16	0.01
Consumer Products	NG	NG	22.38	NG	NG
Emissions Totals	**60.28**	**730.00**	**83.45**	1.33	33.96
SCAQMD Thresholds	55	550	55	150	150
Exceeds Threshold?	YES	YES	YES	NO	NO
Note: NG designates criteria pollutants that have estimated negligible values.					

Even with the mitigation measures described above incorporated into the project NOx, CO and ROC emissions remain above the SCAQMD recommended threshold, and therefore the project may be expected to violate an ambient air quality standard. Accordingly, the proposed project would result in significant unavoidable, air quality impacts is supported.

5.5 Noise

The focus of the following discussion addresses existing conditions and potential noise and groundborne vibration effects contributed to and by the proposed project. This discussion is based primarily upon a noise analysis prepared by RK Engineering Group Inc. (October 2002). This report is included as Appendix F.

5.5.1 Existing Conditions

Noise is defined as unwanted or objectionable sound. The effect of noise on people can include general annoyance, interference with speech communication, sleep disturbance and, in the extreme, hearing impairment. The unit of measurement used to describe a noise level is the decibel (dB). The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, the "A-weighted" noise scale, which weights the frequencies to which humans are sensitive, is used for measurements. Noise levels using A-weighted measurements are written dBA. Decibels are measured on a logarithmic scale which quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling a traffic volume, would increase the noise level by 3 dBA; a halving of the energy would result in a 3 dBA decrease.

Noise Scales

Equivalent Noise Level (L_{eq}): Since noise levels are seldom constant, varying from moment to moment and throughout the day or night, the A-weighted noise level needs to be further described to provide meaningful data. Noise assessments are often based on the average equivalent energy concept where $L_{eq(X)}$ represents the average energy content of a fluctuating noise source over a sample period and the subscript (x) represents the period of time in which the energy is computed and measured. For example, $dBA_{Leq\ 20\ minutes}$ would represent the twenty-minute average of A-weighted noise measured in decibels.

Day Night Noise Level (Ldn): The Ldn scale represents a time weighted 24-hour average noise level based on the A-weighted decibel scale. Time weighted means that a noise occurring during certain sensitive time periods is penalized for occurring at these times. For the Ldn scale, the nighttime period (10:00 PM to 7:00 AM) noises are penalized by 10 dBA.

Community Noise Equivalent Level (CNEL): Noise levels can be further refined into Community Noise Equivalent Level (CNEL), where noise that occurs during certain hours of the evening and night are weighted (penalized) because they are considered subjectively more annoying during these time periods. CNEL is a 24-hour weighted average measure that adds 5 dBA to the average hourly noise levels between 7 p.m. and 10 p.m. (evening hours) and 10 dBA to the average hourly noise

levels between 10 p.m. and 7 a.m. (nighttime hours). This weighting accounts for the increased human sensitivity to noise in the evening and nighttime hours.

Sensitive receptors are areas where humans are participating in activities that may be subject to the stress of significant interference from noise. Land uses associated with sensitive receptors often include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, education facilities, and libraries. Other receptors include office and industrial buildings, which are not considered as sensitive as single family homes, but are still protected by local land use compatibility standards.

Regulatory Environment

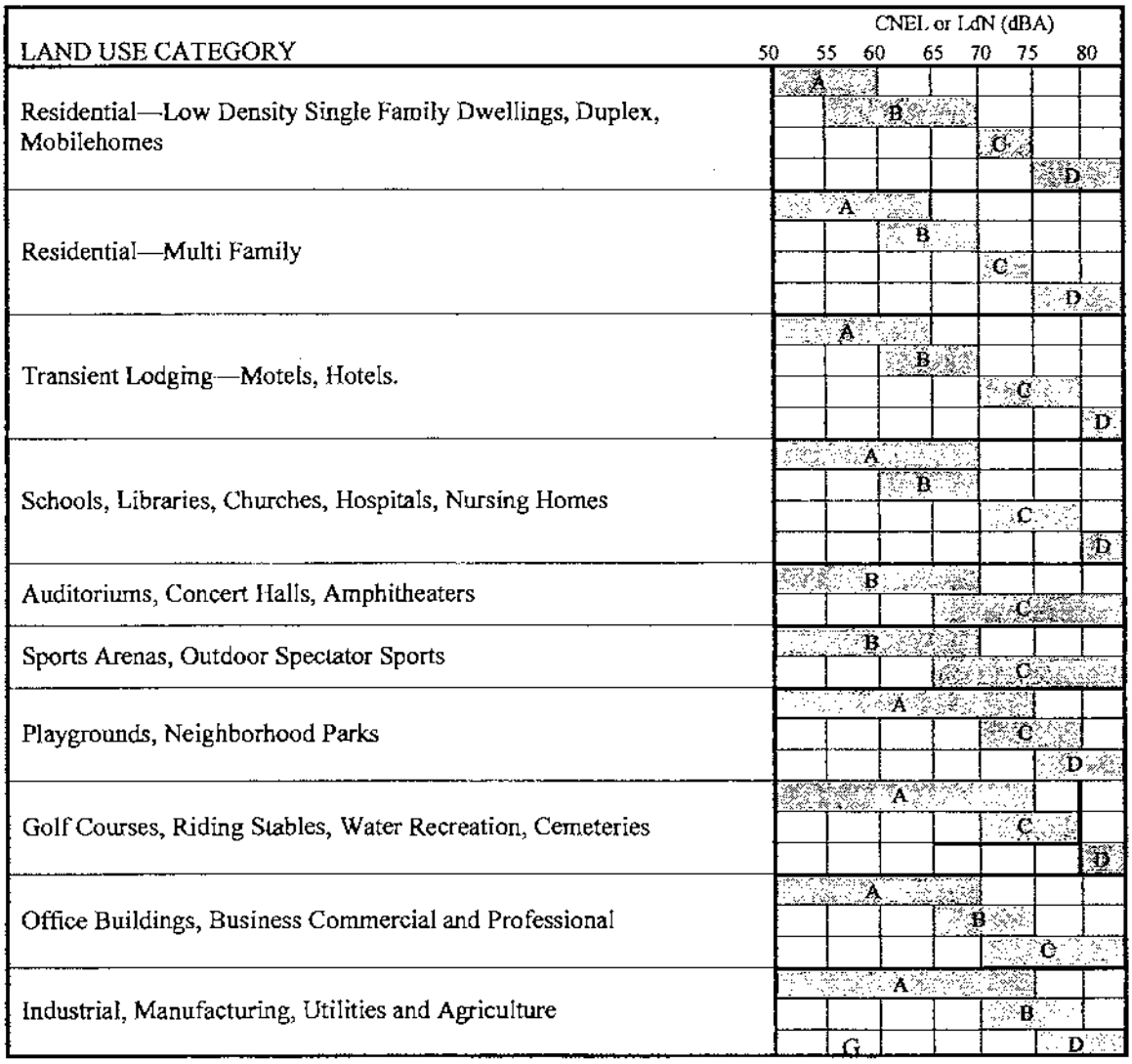
State of California Standards

Exhibit 5.5-1 is a land use compatibility chart for community noise prepared by the California Office of Noise Control. It identifies normally acceptable, conditionally acceptable and clearly unacceptable noise levels for various land uses. A conditionally acceptable designation implies new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use is made and needed noise insulation features are incorporated in the design. By comparison, a normally acceptable designation indicates that standard construction can occur with no special noise reduction requirements.

County of San Bernardino Noise Standards

The San Bernardino County General Plan presents interior and exterior noise level standards for both mobile and locally regulated sources. The overall purpose of the County General Plan is to protect the citizens of the County from the harmful and annoying effects of exposure to excessive noise, and to protect the economic base of the County by preventing the encroachment of incompatible land uses within areas affected by existing noise-producing uses. Under the County General Plan, noise sources which are stationary are regulated under stationary source noise standards which limit the level of noise that can be transmitted from one site to another. These noise level limits are not to exceed the values included in Table 5.5-1 for 30 minutes in any hour. The level may be increased by 5 dBA for 15 minutes, 10 dBA for 5 minutes and 15 dBA for 1 minute in any hour. Noise levels are not to exceed the noise standard plus 20 dBA for any period of time.

Exhibit 5.5-1: City of Rancho Cucamonga Land Use Noise Compatibility Matrix



A—Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

B—Conditionally Acceptable: Development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, with closed windows and fresh air supply systems or air conditioning will normally suffice.

C—Normally Unacceptable: Development should generally be discouraged. If development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

D—Clearly Unacceptable: Development should generally not be undertaken.

Source: City of Rancho Cucamunga General Plan Noise Element

With respect to mobile sources, the various types of land uses are limited to exterior Ldn or CNEL values presented in Table 5.5-2. Both residential and commercial land uses are limited to a level of 60 dBA Ldn or CNEL or 65 dBA, if substantially mitigated. This level would apply to any traffic that may pass any sensitive receptors. Open space areas, such as parks and recreational areas are limited to an Ldn or CNEL level of 65 dBA.

Table 5.5-1: County of San Bernardino Noise Standards Stationary Noise Sources

Affected Land Uses (Receiving Noise)	7:00 a.m. – 10:00 p.m. Leq (dBA)	10:00 p.m. – 7:00 a.m. Leq (dBA)
Residential	55	45
Professional Services	55	55
Other Commercial	60	60
Industrial	70	70

dBA - Decibel
Leq (Equivalent Energy Level) – The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period, typically 1, 8 or 24 hours.

Table 5.5-2: County of San Bernardino Noise Standards and Adjacent Mobile Noise Sources

Land Use		Ldn (or CNEL), dBA	
Categories	Uses	Interior[a]	Exterior[b]
Residential	Single and multi-family, duplex, mobile homes	45	60[c]
Commercial	Hotel, motel, transient housing	45	60[c]
	Commercial retail, bank, restaurant	50	n/a
	Office building, research and development, professional offices	45	65
	Amphitheater, concert hall, auditorium, movie theater	45	n/a
Institutional/Public	Hospital, nursing home, school classroom, church, library	45	65
Open Space	Park	n/a	65

Table 5.5-2 (Cont.): County of San Bernardino Noise Standards and Adjacent Mobile Noise Sources

Land Use		Ldn (or CNEL), dBA	
Categories	Uses	Interior[a]	Exterior[b]

n/a – Not applicable
dBA -- Decibel
CNEL -Community Noise Equivalent Level
Ldn -- Day-night average sound level
[a] Indoor environment excluding: bathrooms, kitchens, toilets, closets and corridors
[b] Outdoor environment limited to:
Private yard of single-family dwellings Park picnic areas
Multi-family private patios or balconiesSchool playgrounds
Mobile home parks Hotel and motel recreational areas
Hospital/office building patios
[c] An exterior noise level of up to 65 dB (or CNEL) will be allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dB Ldn (or CNEL) with windows and doors closed. Requiring that windows and doors remain closed to achieve an acceptable interior noise level will necessitate the use of air conditioning or mechanical ventilation.

City of Rancho Cucamonga Noise Standards

The City of Ranch Cucamonga's noise standards are included in the City's Development Code for each land use district, as presented in Table 5.5-3. Additionally, the City has adopted a Noise Abatement section of the Development Code (Section 17.02.120) that has special provisions for determining and addressing noise issues. The City provides for an exemption from the noise guidelines when construction activity is limited to the hours of 6:30 a.m. to 8:00 p.m. excluding Sundays and all national holidays. (City Development Code Section 17.08.080(C)(2)) If the project would deviate from the criteria stated above this would result in a violation of the City Noise Ordinance and the project would result in significant noise impacts.

Table 5.5-3: Land Use Noise Standards

Land Use	Interior Standards	Exterior Standards
Residential		
-10pm to 7am	40dBA	45dBA
-7am to 10pm	55dBA	60dBA
Commercial/Office		
-10pm to 7am	None Identified	60dBA
-7am to 10pm	None Identified	65dBA
Industrial		
-Class A (industrial park)	60Ldn	65Ldn
-Class B (general industrial)	65Ldn	75Ldn

Table 5.5-3 (Cont.): Land Use Noise Standards

Land Use	Interior Standards	Exterior Standards
-Class C (heavy industrial)	65Ldn	85Ldn
dBA – Decibel Ldn = Day-night average sound level		

Existing Noise Levels

Onsite Noise Environment

Limited sources of onsite noise exist within the essentially vacant project site. Adjacent land uses that can be considered noise sources in the project area include residential uses, Etiwanda Avenue immediately west and southwest of the project site, and the Cucamonga County Water District (CCWD) Water Treatment Plant immediately south of the project site.

Offsite Noise Environment

Existing sources of offsite noise within the project area are primarily backyard activities at residential areas in close proximity to the project site, vehicular traffic on Etiwanda Avenue immediately west of the project, and the Cucamonga County Water District (CCWD) Water Treatment Plant south of the project. Portions of the project site adjacent to the intersection of Etiwanda Avenue at Wilson Avenue were considered to have the highest existing noise levels because of the traffic conditions on Etiwanda Avenue, the close proximity to residential land uses, and the CCWD Water Treatment Plant. Table 5.5-4 shows existing and baseline (opening year without project) noise levels at various roadway segments in the project vicinity.

Table 5.5-4: Existing & Baseline Noise Contours[1]

Roadway	Segment	Existing CNEL at 100 feet (dBA)[2]	Baseline CNEL at 100 feet (dBA)[2]
Wilson Avenue	w/o Etiwanda Avenue West	54.1	55.7
Wilson Avenue	w/o Etiwanda Avenue East	59.3	60.0
Wilson Avenue	e/o East Avenue	—	—
Summit Avenue	w/o Etiwanda Avenue	58.6	59.7
Summit Avenue	East Avenue to Etiwanda Avenue	60.3	60.9
Summit Avenue	e/o East Avenue	60.3	62.2
Highland Avenue	w/o Etiwanda Avenue	65.5	63.7
Highland Avenue	East Avenue to Etiwanda Avenue	59.1	59.7
Victoria Street	East Avenue to Etiwanda Avenue	58.5	59.6
Victoria Street	e/o East Avenue	60.4	61.1

Table 5.5-4 (Cont.): Existing & Baseline Noise Contours[1]

Roadway	Segment	Existing CNEL at 100 feet (dBA)[2]	Baseline CNEL at 100 feet (dBA)[2]
Etiwanda Avenue	Summit Avenue to Wilson Avenue	59.8	60.1
Etiwanda Avenue	SR-210 Freeway to Summit Avenue	63.6	64.0
Etiwanda Avenue	Victoria Street to Highland Avenue	61.1	61.7
East Avenue	Summit Avenue to Wilson Avenue	52.0	58.6
East Avenue	SF-210 Freeway to Summit Avenue	56.5	58.6
East Avenue	Victoria Street to Highland Avenue	60.7	61.0

[1] Existing noise contours and baseline contours (i.e., opening year without project traffic) are modeled using the traffic data provided in the Etiwanda Properties (TTM 16072) Traffic Impact Analysis 6/17/02.
[2] Measured from the centerline of the street.
— Not built yet.

5.5.2 Thresholds of Significance

A project will have a significant noise effect on the environment if it meets both of the following criteria:

- increase substantially the ambient noise levels for adjoining areas, and
- conflict with adopted environmental plans and goals of the community where it is located

The applicable noise standards governing the project site are the City of Rancho Cucamonga Noise Standards. Mobile sources of noise, such as truck deliveries are exempt from local ordinance but are still subject to CEQA and would be significant if the project generates a volume of traffic which would result in a substantial increase in mobile source-generated noise or sites sensitive land uses in incompatible noise areas.

CEQA does not define what is a "substantial increase". Webster's dictionary defines substantial as "considerable in quantity." As noted above in the discussion of noise definitions, the human ear can detect changes of 3 dBA and changes of less than 3 dBA, while audible under controlled circumstances, are not readily discernable in an outdoor environment. Thus, a change of 3 dBA is considered as a barely audible change. But CEQA uses a "substantial change" as its criterion. Because most people can readily hear a change of 5 dBA CNEL in an exterior environment, this value was established for the project as the CEQA criterion for substantial change for project only noise levels. A project is considered to contribute substantially to a significant cumulative noise impact if the project contributes a noise level of 3 dBA CNEL or greater. As a point of reference, Caltrans defines a noise increase as substantial when the predicted noise levels with the project would exceed existing noise levels by 12 dBA Leq.

5.5.3 Project Impacts

The generation of noise associated with the proposed project would occur over the short-term for site preparation and construction activities to implement the proposed project. In addition, noise would result from the long-term operation of the project. Both short-term and long-term noise impacts associated with the project are examined in this analysis.

Short-Term, Construction-Related Impacts

Noise levels associated with construction activities would be higher than the ambient noise levels in the project area today, but would subside once construction of the proposed project is completed.

Two types of noise impacts could occur during the construction phase. First, the transport of workers and equipment to the construction site would incrementally increase noise levels along site access roadways. Even though there would be a relatively high single event noise exposure potential with passing trucks (a maximum noise level of 86 dBA at 50 feet), the increase in noise would be less than 1 dBA when averaged over a 24-hour period, and would, therefore, have a less than significant impact on noise receptors along the truck routes.

The second type of impact is related to noise generated by on-site construction operations, and local residents would be subject to elevated noise levels due to the operation of this equipment. Construction activities are carried out in discrete steps, each of which has its own mix of equipment, and consequently its own noise characteristics. These various sequential phases would change the character of the noise levels surrounding the construction site as work progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow noise ranges to be categorized by work phase. Table 5.5-5 lists typical construction equipment noise levels recommended for noise impact assessment at a distance of 50 feet.

The grading and site preparation phase tends to create the highest noise levels, because the noisiest construction equipment is found in the earthmoving equipment category. This category includes excavating machinery (backfillers, bulldozers, draglines, front loaders, etc.) and earthmoving and compacting equipment (compactors, scrapers, graders, etc.) Typical operating cycles may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Noise levels at 50 feet from earthmoving equipment range from 73 to 96 dBA while Leq noise levels range up to about 89 dBA. The later construction of structures is somewhat reduced from these values and the physical presence of the structure may break up line-of-sight noise propagation.

Table 5.5-5: Noise Associated with Typical Construction Equipment

Type of Equipment	Range of Sound Levels Measured (dBA at 50 feet)	Suggested Sound Levels for Analysis (dBA at 50 feet)
Pile Drivers, 12,000-18,000 ft-lb/blow	81-96	93
Rock Drills	83-99	96
Jack Hammers	75-85	82
Pneumatic Tools	78-88	85
Pumps	68-80	77
Dozers	85-90	88
Tractor	77-82	80
Front-End Loaders	86-90	88
Hydraulic Backhoe	81-90	86
Hydraulic Excavators	81-90	86
Graders	79-89	86
Air Compressors	76-86	86
Trucks	81-87	86
Source: Noise Control for Buildings and Manufacturing Plants, BBN 1987.		

Existing residential lots are located approximately 24 feet west of the southwestern portion of the project site. These residential lots have fences along their properties; however, these fences are a combination of block wall and iron-rod fence that do not attenuate noise levels because the line-of-sight between a future construction noise source and the residence is not broken. Therefore, during project construction activities within the first 10 feet of the western boundary of the project site, noise levels could periodically exceed the levels identified above in Table 5.5-4. During the majority of the construction period, noise levels would be 30 to 40 dBA lower, ranging from 50 to 60 dBA, due to lower power settings and sound attenuation effect provided by longer distances to the construction equipment activities.

The City recognizes that construction noise is difficult to control and establishes allowable hours for this intrusion. Section 17.02.120 of the Development Code exempts noise sources associated with, or vibration created by, construction, repair, remodeling, or grading of any real property or during authorized seismic surveys, provided said activities do not take place between the hours of 8 p.m. and 6:30 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday. The project applicant is expected to comply with the construction time frames identified in the City's Development Code. Construction noise effects created during these time frames are considered less than significant.

Another potential impact of construction is that of vibration. Groundborne vibration is typically associated with blasting operations and potentially, the use of pile drivers.

Long-term Operational Impacts

Onsite Impacts

An impact may be significant if the project sites a land use (i.e., residential) in an incompatible area due to excessive noise. The City has set a desirable daytime level of 60 dBA CNEL for residences. Based on the future (Buildout Year 2020) traffic volumes identified in Section 5.3, noise levels were calculated along the existing and future streets adjacent to the project site. These streets include Etiwanda Avenue, Wilson Avenue, and East Avenue. All of the residences proposed on the perimeter of the project site will be exposed to future year 2020 vehicular noise that range between 64.3 to 68.4 dBA CNEL. This future noise levels would result in significant noise impacts to the residences proposed on the perimeter of the site and adjacent to Etiwanda Avenue, Wilson Avenue, and East Avenue.

Offsite Impacts

Table 5.5-6 shows noise levels along the same roadway segment analyzed under existing conditions, for opening year with and without the project. Based on the threshold for significant impacts established previously, the project would not contribute to a significant impact at any of the roadways at opening year.

Table 5.5-6: Opening Year Project Contributions

Roadway	Segment	CNEL at 100 Feet (dBA)		Project Contribution	Project Contribution Significant?
		Without Project	With Project		
Wilson Avenue	w/o Etiwanda Avenue West	55.7	57.3	1.6	No
Wilson Avenue	W/o Etiwanda Avenue East	60.0	60.9	0.9	No
Wilson Avenue	e/o East Avenue	not built yet	not built yet	----	No
Summit Avenue	w/o Etiwanda Avenue	59.7	59.7	0.0	No
Summit Avenue	East Avenue to Etiwanda Avenue	60.9	60.9	0.0	No
Summit Avenue	e/o East Avenue	62.2	62.7	0.5	No
Highland Avenue	w/o Etiwanda Avenue	63.7	64.0	0.3	No
Highland Avenue	East Avenue to Etiwanda Avenue	59.7	59.7	0.0	No
Victoria Street	East Avenue to Etiwanda Avenue	59.6	59.6	0.0	No

Table 5.5-6 (Cont.): Opening Year Project Contributions

Roadway	Segment	CNEL at 100 Feet (dBA)		Project Contribution	Project Contribution Significant?
		Without Project	With Project		
Victoria Street	e/o East Avenue	61.1	61.4	0.3	No
Etiwanda Avenue	Summit Avenue to Wilson Avenue	60.1	61.1	1.0	No
Etiwanda Avenue	SR-210 Freeway to Summit Avenue	64.0	64.4	0.4	No
Etiwanda Avenue	Victoria Street to Highland Avenue	61.7	62.0	0.3	No
East Avenue	Summit Avenue to Wilson Avenue	58.6	60.3	1.7	No
East Avenue	SF-210 Freeway to Summit Avenue	58.6	59.6	1.0	No
East Avenue	Victoria Street to Highland Avenue	61.0	61.6	0.6	No

5.5.4 Cumulative Impacts

Onsite Impacts

Implementation of the proposed project and future developments in the project vicinity will result in vehicular traffic noise levels that were evaluated in Section 5.5.3 (i.e., Onsite Impacts). As discussed, future (Year 2020) traffic noise levels generated from the proposed project and other developments in the project vicinity will result in significant noise levels affecting the project residences proposed along Etiwanda Avenue, Wilson Avenue, and East Avenue.

Offsite Impacts

Table 5.5-6 shows project contribution to noise levels for the year 2020. As shown, the project will not contribute to a significant cumulative impact at any of the analyzed segments.

Table 5.5-7: Year 2020 Project Contribution

Roadway	Segment	CNEL at 100 Feet (dBA)		Project Contribution	Project Contribution Significant?
		Without Project	With Project		
Wilson Avenue	w/o Etiwanda Avenue West	59.9	60.6	0.7	No
Wilson Avenue	W/o Etiwanda Avenue East	62.8	63.3	0.5	No
Wilson Avenue	e/o East Avenue	63.6	63.8	0.2	No
Summit Avenue	w/o Etiwanda Avenue	63.1	63.1	0.0	No

Table 5.5-7 (Cont.): Year 2020 Project Contribution

Roadway	Segment	CNEL at 100 Feet (dBA)		Project Contribution	Project Contribution Significant?
		Without Project	With Project		
Summit Avenue	East Avenue to Etiwanda Avenue	62.8	62.8	0.0	No
Summit Avenue	e/o East Avenue	63.9	64.0	0.1	No
Highland Avenue	w/o Etiwanda Avenue	64.8	65.0	0.2	No
Highland Avenue	East Avenue to Etiwanda Avenue	62.1	62.1	0.0	No
Victoria Street	East Avenue to Etiwanda Avenue	62.9	62.9	0.0	No
Victoria Street	e/o East Avenue	63.8	64.0	0.2	No
Etiwanda Avenue	Summit Avenue to Wilson Avenue	61.5	62.3	0.8	No
Etiwanda Avenue	SR-210 Freeway to Summit Avenue	66.0	66.3	0.3	No
Etiwanda Avenue	Victoria Street to Highland Avenue	64.4	64.6	0.2	No
East Avenue	Summit Avenue to Wilson Avenue	61.8	62.5	0.7	No
East Avenue	SF-210 Freeway to Summit Avenue	63.7	64.0	0.3	No
East Avenue	Victoria Street to Highland Avenue	62.6	63.0	0.4	No

5.5.5 Mitigation Measures

While construction and grading activities are exempt from the City of Rancho Cucamonga Development Code, if conducted between the hours of 6:30 a.m. and 8:00 p.m. Monday through Saturday and no construction activities on Sundays and national holidays, the following mitigation measures are recommended to reduce potential construction-related noise.

N-1 During all project site excavation and grading, the project contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufactures standards.

N-2 When construction operations occur in close proximity to occupied residential areas, appropriate additional noise reduction measures shall be implemented, including: changing the location of stationary construction equipment to maximize the distance between stationary equipment and occupied residential areas, installing muffling devices on equipment, shutting off idling equipment, notifying adjacent residences in advance of

construction, and installing temporary acoustic barriers around stationary construction noise sources.

N-3 The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction related noise and the noise-sensitive receptors nearest the project site during all project construction.

N-4 During all project site construction, the construction contract shall limit all construction related activities that would result in high noise levels to between the hours of 6:30 a.m. and 8:00 p.m. Monday through Saturday. No construction shall be allowed on Sundays and public holidays.

The following mitigation measures are required to reduce potential long-term vehicular traffic noise levels on the project site.

N-5 The project applicant shall construct sound barriers adjacent to the project lots as shown in Exhibit 5.5-2. The heights of the sound barriers shall be between 3 and 6.5 feet and placed at the top of the proposed slope and at the edge of pads on the residential lots that border Etiwanda Avenue, Wilson Avenue, and East Avenue. The sound barriers may be constructed of earthen berms, masonry, wood, or other similar materials, or combination of these materials to attain the total height required. These sound barriers shall be solid, with no openings from the ground to the indicated height.

N-6 Prior to the issuance of a building permit, residential structures proposed on all lots adjacent to Etiwanda Avenue, Wilson Avenue, and East Avenue will require mechanical ventilation so that windows can remain closed. Furthermore, these residential lots will require upgraded windows such as double-pane windows, if these lots have second story structures. To ensure the specific type of mechanical ventilation and paned windows are included in the building plans, a final acoustical study shall be prepared for City approval prior to approval of Development Review applications for product development. The final acoustical study shall identify the specific requirements to reduce future interior noise levels to 45 dB CNEL or less.

5.5.6 Level of Significance After Mitigation

Implementation of the above mitigation measures will reduce potential short-term and long-term noise impacts to less than significant.

5.6 Aesthetics

The following analysis addresses visual resources in the project vicinity and the potential for visual impacts to occur as a result of implementing the proposed project. An evaluation of the local policies and goals was conducted to help determine the value of an area's scenic vista as perceived by the local community. The information provided in the General Plans for the City of Rancho Cucamonga and the County of San Bernardino was used to determine the local significance of the area's visual character.

5.6.1 Existing Conditions

The project site is located in the north Etiwanda area of unincorporated San Bernardino County, just north of the City of Rancho Cucamonga and within the City's Sphere of Influence. This area is located on an alluvial fan at the base of the San Gabriel Mountains and provides a dramatic and significant backdrop to the community. Currently the project site is comprised of a natural vegetation community largely comprised of sage scrub species and several mature trees.

The visual character of the site is a gentle slope from the northwest to the southeast on the Etiwanda Alluvial Fan. The site is covered with native vegetation, and a prominent ridge, known as the Etiwanda Avenue Scarp, travels across the project site in a northeasterly direction. Significant scenic view corridors exist within this area which include panoramic views of the San Gabriel mountains and the City.

The project area may be viewed as a backdrop to the San Bernardino National Forest and the San Gabriel Mountains for many residents and visitors to the region. The project site is within the Etiwanda North Specific Plan area. The Etiwanda North Specific Plan identifies Wilson Avenue and East Avenue as view corridors. The City of Rancho Cucamonga and County of San Bernardino have also designated Wilson Avenue as a scenic corridor in their respective General Plans. The scenic corridor designation was established to ensure that development along Wilson Avenue preserves the scenic quality of this view corridor. Key viewsheds for enjoying the San Gabriel Mountains are located along Wilson Avenue west of Wardman Bullock Road and east of San Sevaine. A third mountain viewshed is located west of Day Creek Boulevard.

The project site is at a transition point within the project area. Development in the North Etiwanda area is changing the formerly natural landscape. Residential development is ongoing to the west and south of the project area. A water treatment plant is located immediately south of the project site, with additional residential development to the south of the treatment plant. The panoramic views of the valley area are also shifting from natural vegetation to developed urban areas.

Properties to the north and immediate east of the site are presently undeveloped. Under the City's General Plan, conservation areas have been established along the base of the San Gabriel Mountains and include the U.S. Forest Service Conservation Area and the North Etiwanda Preserve. The San Sevaine Preserve lies to the north and east of the project site. These conservation areas continue to provide a natural backdrop to the scenic mountain vista.

Photographs of the project site and surrounding area were taken. A location index of the photographs is provided in Exhibit 5.6-1. Photographs of the various features described above are located in Exhibit 5.6-2 and Exhibit 5.6-3.

5.6.2 Thresholds of Significance

A determination that a change in visual character and aesthetics of a project site is subjective. For purposes of this analysis, an impact on visual and aesthetic nature of the project area is considered to be significant if the project would:

- Have a substantial adverse effect on a scenic vista;
- Substantially degrade the existing visual character or aesthetic quality of the site and its surroundings.

5.6.3 Project Impacts

Short-Term Impacts

Construction activities associated with the proposed project will result in the removal of the natural vegetation on the project site. The proposed grading on the project site is planned to occur within eight months from issuance of a grading permit. Scrapers, bulldozers, and graders will be visible during the grading operations. The existing visual characteristics of the natural vegetation on the project site will be removed and some additional views of the base of the San Gabriel Mountains will be provided. The residents located west of the project site will experience the greatest change in the visual character; however, the proposed construction activities are not expected to result in a substantial degradation of existing visual characteristics. Therefore, the proposed construction activities would result in a less than significant visual impact on the adjacent residents.

Long-Term Impacts

Implementation of the proposed residential community will substantially alter the existing character of the project site. Views from Wilson Avenue to the north are of the San Gabriel Mountains and the alluvial fan. The proposed residences will include similar structural heights as the adjacent residential communities. In addition, the proposed project will be consistent with the landscape policies and design standards identified in the Etiwanda North Specific Plan. These policies ensure a smooth visual transition for development yet retain the area's rural character. Greenbelts are proposed on the

Source: MDS Consulting, 2001

NORTH

1,060 530 0 1,060
SCALE IN FEET

Michael Brandman Associates

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Exhibit **5.6-1**
Photograph Index Map

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

Photograph 1: View to the north from Wilson Avenue.

Photograph 2: View to the northeast from Wilson Avenue.

Michael Brandman Associates

Exhibit **5.6-2**

Site Photographs 1 and 2

Photograph 3: View to the east from Wilson Avenue.

Photograph 4: View to the west from Wilson Avenue.

Michael Brandman Associates

Exhibit **5.6-3**

Site Photographs 3 and 4

project site to soften the impact of residential structures and rows of trees are proposed to be planed to the east and south of the development to minimize visual impacts. The project includes the extension of the community trail through the center of the project site. The trail will be landscaped to provide shade and visual character to the Community Trail.

Paved roadways would be placed within the project and to the east (East Avenue) and south (Wilson Avenue) of the project. The scenic vista, looking north from Wilson Avenue, would be permanently altered as a result of this project.

Existing conservation areas, such as the North Etiwanda Preserve and the U.S. Forest Service will preserve the natural visual character of the North Etiwanda area, however, the proposed project will partially obscure the views of these natural environments to residents and travelers along Wilson Avenue. Views of the natural environment will still be found east of the site near the San Sevaine Preserve. The proposed project could potentially create significant aesthetic impacts to the area.

Streetlighting, security lighting, and residential lighting would be installed creating a new source of light and glare in the area. Areas to the west and south of the project site have been developed and currently provide sources of nighttime glare.

5.6.4 Cumulative Impacts

Future developments in the project vicinity (i.e., north, south, and west) will permanently alter the visual landscape of this region and obscure panoramic vistas. As part of urbanization, new streets will be developed and new lighting sources will be added increasing nighttime glare. Cumulative impacts to views and aesthetics in the project vicinity are considered to be significant. Development of the proposed project would contribute to significant cumulative impacts to views and aesthetics in the project vicinity.

5.6.5 Mitigation Measures

The City has provided for the protection of essential view corridors which provide valuable vistas of the San Gabriel Mountains as well as vista points of the community. In the City's EIR for the General Plan Update, the City determined that the conversion of open space to urban uses result in a potential significant visual impact.

In the City's EIR for the General Plan Update, mitigation measures were established to minimize impacts to the area's visual character. Mitigation measures which apply to the preservation of scenic vistas are as follows:

AES-1 The applicant shall install landscaping and perimeter walls prior to issuance of building permits for the following phases and locations as shown on the Project Phasing Plan (Exhibit 3-8):

- Phase 1-Along Wilson and Etiwanda Avenues.
- Phase 2-Along Wilson Avenue
- Phase 3- Along Etiwanda Avenue
- Phase 4- Along East Avenue

AES-2 Prior to approval of a landscape plan, the project applicant shall provide transitions between the developed and natural (unbuilt) environment through landscaping techniques.

AES-3 Prior to approval of a landscape plan, the project applicant shall ensure that streetscape design along the roadways adjacent to the project site create a strong landscaped edge, provides a coherent high-quality appearance along a particular route, and enhances the image of adjacent development.

AES-4 The project applicant shall provide for the undergrounding of utility lines and facilities, wherever feasible, to minimize the unsightly appearance of overhead utility lines and utility enclosures.

AES-5 Prior to approval of a landscape plan, trees and structures shall be used to frame and orient such views at key locations, and obstruction of views should be kept to a minimum along Etiwanda Avenue and East Avenue.

5.6.6 Level of Significance After Mitigation

Implementation of the above measures will reduce visual impacts associated with the development of the proposed project to less than significant. However, the project will still contribute to a significant cumulative impact due to the multiple residential developments that are planned to occur along the view corridor within the next several years.

5.7 Cultural Resources

This section summarizes information contained in an archaeological and paleontological resource evaluation and significance assessment of the project site prepared by Michael Dice, M.A. Senior Archeologist, Michael Brandman Associates in June 2003. The report includes a cultural resource records search, field survey, paleontological records search and archaeological/historical significance test for the project Area of Potential Effect (APE). The complete report can be found in Appendix G of this EIR

5.7.1 Existing Conditions

Prehistoric and Ethnographic Background

The Paleo-Indian Period of North America (~13,000-11,000 Years Before Present, YBP)

Little is known of Paleo-Indian peoples in the California archaeological record, and the culture history of this period generally follows that described for North America as a whole. Current thinking suggests that the period begins with the crossing of man from Siberia, following a route from the Bering Strait into Canada and the Northwest Coast some time after the Wisconsin Ice Sheet receded (~14,000 YBP) and before the Beringia land bridge was submerged (~12,000 YBP). The timing, manner and location of the crossing is under great dispute, but the initial migration probably occurred as a result of a reduction of the Laurentide ice sheet along the Alaskan Coast and interior Yukon. With the possible exception of the Meadowcroft Rockshelter, an unequivocally dated human settlement in North America is unknown prior to the earliest defined date from the Clovis complex (~11,200 YBP: Fagan 1995). This includes the controversial Monte Verde Creek site in Chile and the Meadowcroft rockshelter. Both sites exhibit early levels dated roughly at 12,000 YBP.

Most of the known California Late Paleo-Indian/early Archaic sites are located near extinct desert valley lakes, caves and on the Channel Islands off the coast. These consist of occupation sites, butchering stations and burials. Late Paleo-Indian/early Archaic burials are known along the southern California coast (Chartkoff and Chartkoff 1984). As glaciation receded, large stream-fed lakes were left behind throughout the American West. Many early sites in California are known along these dry lake margins. Dates are generally late (e.g. Moratto 1984) relative to other Paleo-Indian sites in North America. Lakeshore occupation sites exhibit artifacts such as large projectile points (Clovis, Folsom), debitage, and fire-cracked rock concentrations.

The Paleo-Indian period ends with a marked extinction of large game native to North America and a modification of the prehistoric toolkit. The late Pleistocene-early Holocene geologic period (~11,000 YBP) in California is marked by generally warmer temperatures in desert valleys and less precipitation in mountainous areas.

The Archaic Period (~11,000-2,500 YBP)

Most of the known California Late Paleo-Indian/early Archaic sites are located near extinct desert valley lakes, caves and on the Channel Islands. These consist of occupation sites, butchering stations and burials. Late Paleo-Indian/early Archaic burials are known along the southern California coast (Chartkoff and Chartkoff 1984). As the glaciers receded, large stream-fed lakes were left behind throughout the American West. Many early sites in California are known along these dry lake margins in the Mojave Desert. Dates are generally late (e.g. Moratto 1984) relative to other Paleo-Indian sites in North America. Lakeshore occupation sites exhibit artifacts such as large projectile points (Clovis, Folsom), debitage, and fire-cracked rock concentrations.

The Late Prehistoric Period (~2,500 YBP- A.D.1769)

The late prehistoric period was characterized by the increasing importance of acorn processing, in addition to other hunting and gathering. Meighan (1954) identified the period after AD 1400 as the San Luis Rey complex. San Luis Rey I (AD 1400 – 1750) is associated with bedrock mortars and milling-stones, cremations, small triangular projectile points with concave bases, and Olivella beads. The San Luis Rey II (AD 1750-1850) period is marked by the addition of pottery, red and black pictographs, cremation urns, steatite arrow straighteners, and non-aboriginal materials (Meighan 1954:223, Keller and McCarthy 1989:6). The San Luis Rey complex most likely represents the forbearers of the Luiseño (Bean and Shipek 1978:550). Work at Cole Canyon and other sites suggests that the origins of this complex, and of the ethnographically described lifeway of the native people of the region, is believed to have been well established by at least AD 1000 (Keller and McCarthy 1989:80).

Indigenous Native American Presence

According to Bean and Smith (1978), the project area lies in the western portion of an area utilized by the Gabrielino. Kroeber (1925) and Bean and Smith (1978) form the primary historical sources for this group. The arrival of Spanish explorers and the establishment of missions and outposts during the 18th century ended the prehistoric period in California and, due to the introduction of diseases such as smallpox and mass removal of local Indian groups to the Missions San Gabriel and Mission San Juan Capistrano, Gabrielino society began to fragment. The project area lies within an area near the Santa Ana Rifer floodplain that is clearly defined as Gabrielino territory: the Juaneno group lies several dozen miles to the southeast.

The Gabrielino spoke a language that belongs to the Cupan group of the Takic subfamily of the Uto-Aztecan language family (a language family that includes the Shoshoean groups of the Great Basin). The total Gabrielino population at about 1770 AD was roughly 5,000 persons, based on an estimate of 100 small villages of 50-200 people apiece. Their range is generally thought to have been located on the Pacific coast from Malibu to San Pedro Bay and south to Aliso Creek, then east to Temescal Canyon, then north to the headwaters of the San Gabriel River. Also included were several islands, including Catalina. This large area encompasses the city of Los Angeles, much of Rancho

Cucamonga, Corona, Glendale, and Long Beach. By 1800, most Gabrielinos had either been killed, or fully subjugated by their Spanish conquerors.

The first modern social analyses of Gabrielino culture took place in the early part of the 20th century (Kroeber 1925), but by that time acculturation and disease had nearly extirpated this once strong people. The population studied was a mere remnant. Nonetheless, the early ethnographers viewed the Gabrielino as a chief-oriented society of semi-sedentary hunter-gatherers. Influenced by coastal and interior environmental settings, their material culture was quite elaborate and consisted of well-made wood, bone, stone and shell items. Included among these was a hunting stick made to bring down numerous types of game. Located in an area of extreme environmental diversity, large villages may have been permanent (such as that found on or near Red Hill), with satellite villages utilized seasonally. Their living structures were large, domed and circular thatched rooms that may have housed multiple families. The society exhibited ranked individuals, possibly chiefs, who possessed a much higher level of economic power than unranked persons.

Historic Alta Loma and Rancho Cucamonga

The historic data described below was taken primarily from Stoebe et al (1981) and Clucas (1979). Following the collapse of the Mexican/Spanish Rancho economic system in California in the middle part of the 19th century, modern growth in Southern California could not begin until three limiting issues could be overcome: potable and reliable water, reliable transportation of goods and services and an agricultural-friendly governmental organization. The history of the Alta Loma area is an excellent example of how basic changes in these limitations throughout Southern California are reflected in the local history. Alta Loma, a small town now subsumed with the City of Rancho Cucamonga, was begun as part of an effort by wealthy businessmen in the late 19th century to subdivide vast tracts of land, make a handsome profit as a result of the sale, and allow small-scale orchardists to take advantage of a climate suitable for the growth of tropical produce. As part of that effort, the developers created or utilized existing rail transportation and associated communication services that made shipping agricultural products possible. In addition, the development of water storage and irrigation systems allowed small orchards to survive, while local government infrastructure was designed to provide maximum service to the small farmer.

Originally known as "Ioamosa", Alta Loma was created out of the remnants of the original Rancho Cucamonga. The original rancho was owned by Isaac Williams, the richest cattle baron in California (Rasmussen 2001). Upon his death, Williams willed half of the Rancho to Dona Merced Williams. Eventually marrying John Rains, Dona Merced was forced to sell the entire Rancho in 1870 as a result of a massive accumulation of debts after her husbands' violent death. These lands were quickly purchased by homesteaders to grow produce and businessmen looking for property to subdivide, including Adolph Petsch, Benjamin Eaton and Isaias Hellman. In 1871, Hellman obtained title of the Rancho after the death of John Rains.

Forming the Cucamonga Homestead Association (CHA) before 1880, Hellman and his partners increased the size of their holdings by adding lands lying outside the original Rancho boundary, and then brought water to CHA lands via a flume built in the upper reaches of Cucamonga Canyon. In 1881, A. Petsch created a new subdivision, the Hermosa Tract, out of lands not originally a part of the Rancho. That same year, Hellman created the nearby Iowa tract. The two subdivisions were combined to create the community of Ioamesa in 1887, which was the same year water was brought to the area. An 1888 California State Engineering Department map shows water for the Hermosa tract originating from Deer Creek and springs in the steep canyons a few miles west of the study area, while that for the Iowa tract originated from Cucamonga Canyon. Metal pipelines constructed by Chinese labor served both.

Assessors parcel books and archived parcel maps show that many of the properties in Ioamesa were divided into small parcels on or just prior to 1887. Nearly all of the subdivisions were sold as 20 acre parcels with the long axis running from east-to-west. This configuration was probably set to take advantage of the main water outlet locations and associated gravity fed irrigation systems. In addition, 20 acres was probably the minimum needed by a family orchard to survive on his crop. The assessor's parcel books show that most landowners in Ioamosa held more than one 20-acre parcel.

By 1886, rail transportation was probably reliable enough to assume that crop shipments could take place on a regular basis. The ATSF (California Central Railway) railroad served the Upland, Cucamonga and Rialto areas, the Southern Pacific served the South Cucamonga and Ontario areas, and the Pacific Electric ran through Alta Loma. This latter rail allowed shipments of local lemons, peaches and grapes to Los Angeles, San Bernardino and other points east. That same year, the town of Alta Loma was incorporated.

Although the survey detected remnants of irrigation systems associated with wells and/or flume outlets, it is not believed that the property has ever been utilized for citriculture. A 1953 Rupp aerial photograph (see below, Exhibit 5) bears no evidence of orchards, cut trees or irrigation alignments. Based on our experience with other pieces of land that once bore orchards, it is likely that landowners found the ground too rocky for such crops.

Archival Research

Robin Laska, Assistant Center Coordinator for the Archaeological Information Center (AIC) of the San Bernardino County Museum conducted the archaeological record search at the AIC, on September 20, 2002. This consisted of a search for any previously recorded cultural resource sites and/or isolates on or within a one-mile radius about the study area by examining topographic maps for previous survey or study locations as well as locations of previously recorded archaeological sites. The California Office of Historic Preservation Directory of Historic Properties was reviewed, along with the National Register of Historic Places list, the list of California State Historic Landmarks, and

the California Points of Historic Interest list. The AIC research indicated that none of the study area had been directly surveyed for the existence of cultural resources. Two historic sites lie within the direct area of potential impact (APE) of the project. These sites have not yet been evaluated for significance under CEQA and Section 106 of the NHPA. Nine historic sites and one prehistoric isolated tool are located within a one-mile radius of the study area. Two of these historic sites appear to be National-Register eligible and one appears to lie within the indirect APE of the project. It was determined through map research that five or more structures had been plotted on various archival maps for the project area.

Eric Scott, PhD., Curator of Paleontology at the San Bernardino County Museum (SBCM) conducted the paleontological literature and records review at the SBCM on September 17 2002. The SBCM research showed that the Tract is situated on "Pleistocene older fan deposits". These deposits have high potential to contain fossil resources throughout their extent.

Christeen Taniguchi M.A., MBA architectural historian and MBA staff archaeologist Dustin Kay, B.S., evaluated three historic archaeological sites for significance.

Results

Previous Research and Records Review Results

The record search indicated that the study area may have been directly surveyed for cultural resources in 1991, as part of a cultural resource study associated with the North Etiwanda Specific Plan (McKenna 1991). The search also indicated that two historic sites have been recorded within the search radius.

Known Cultural Resources in the Project Vicinity

According to AIC files, ten known area-specific archaeological investigations have occurred within a one-mile radius of the Study Area. Five non-specific overviews of the project area have also been produced. Eleven known historic archaeological sites lacking significance determinations are within the search radius, along with two National Register eligible historic archaeological sites and one isolated prehistoric artifact. Of these, site P#1081 1/H Locus west, site P#1081 1/H Locus east and site P#1081-19/H are located in the project area. Although older site recordation forms associated with these sites are available for review, they had not been previously evaluated for significance under CEQA.

A review of the National Register Index for San Bernardino County (NRHP 2003) showed that no National Register-eligible sites are located in the study area. Review of NR-eligible sites showed that two are located within the search radius. These are noted in Table 5.7-1.

Table 5.7-1: Known Cultural Resource Located Within One Mile of the Study Area

Site Number	Site Description
P1081-1/H east	Light scatter of historic artifacts and rock alignment.
P1081-1/H west	Multiple historical components associated with irrigation pipes and refuse deposits.
P1081-15/H	Three rock alignments and cluster of rock piles.
P1081-16/H	Historic trash scatter located east of structure complex known as 19H.
P1081-19/H east	Ranch complex.
P1081-19/H west	Ranch complex.
P1081-35/H	1880s weir box with later structural additions.
P36-060,255	Isolated obsidian biface.
CA-SBR-82	CPHI-82: first house utilizing hydroelectric power in California. May be considered NR-eligible if intact.
CA-SBR-3131/H	Rock wall possibly associated with 1880s Etiwanda Water Company base camp.
CA-SBR-4946/H	12 rectangular rock cairns.
CA-SBR-7661/H	3 concrete structure foundations and 18 refuse dumps. Early twentieth century.
CA-SBR-7694	Also known as PSBR-36H. Boulder 1 and Boulder 2 transmission lines. NR-eligible. Lies approximately ½ mile north of the study area.
CA-SBR-10296/H	Three historic refuse deposits and an overgrown trail.
CA-SBR-10297/H	Historic rock wall, rock pile and eucalyptus trees.

NR-eligible CA-SBR-7694 lies approximately ½ mile north of the project area. We do not believe that the development of the project will impact this site as the power lines lies well outside the direct APE. Site CA-SBR-82 is quite probably NR-eligible, but this site is also located well outside the APE and cannot be seen from the project area.

Cultural Resources Fieldwork

MBA Senior Archaeologist Michael Dice, and MBA staff archaeologists Marnie Vianna and Dustin Kay undertook a reconnaissance of the project area on September 19, 2002. The entire 160-acre project area was surveyed to protocol utilizing 15 to 20 meter transect spacing. During the survey, two previously recorded sites, and one new site were observed within the study area. The two ranch complexes P1081-19/H (Locus A, West; Locus B, East) were clearly observed and extensive photographs were taken of this site. The site is unusual as it exhibits numerous well-made rock alignments in and around the complex. Two structural complexes were observed. Locals currently use Locus B as an informal paintball course.

Irrigation features and rock alignments associated with the west loci of P1081-1/H were also observed and photographed. This appears to be relatively intact due to its isolation. No remnants of the east loci of P1081-1/H were found. A rock berm associated with flood control construction, built prior to

1953, was detected on the archival photograph and then located during the survey. The significance of both sites is evaluated in Section 5.7.3.

5.7.2 Thresholds of Significance

A project is considered to have a significant impact if it would cause a substantial adverse change on a historical or archaeological resource.

5.7.3 Project Impacts

Cultural Resources

General

Based upon the types of historic and prehistoric occupation in the area, it is likely that artifacts could be found within the project area. Encountering a buried site would increase our knowledge of the prehistoric and historic use of the area as well as increase our understanding of the potential for other buried sites.

Three archeological sites are within the project area, including the new site located during the site visit. It is also likely that prehistoric remains may still be buried. Due to the likelihood of potential buried historic and prehistoric remains, impacts to archeological and prehistoric resources from development of the proposed project are considered potentially significant.

Significance of Known Cultural Features Onsite

In order to determine whether the cultural resources are eligible for inclusion in the National Register of Historic Places, or any State or local cultural resource roll, four evaluative criteria (A, B, C and D) must be utilized as follows:

A) Is associated with events that have made a significant contribution to the broad patterns of our history;

B) Is associated with the lives of persons significant in our past;

C) Embodies the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possesses high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction; or

D) That have yielded or may be likely to yield, information important in prehistory or history.

If avoidance of a site cannot occur as a result of an action, the project developmental plans must be evaluated in order to determine whether the action would cause a "substantial adverse change" in the Significance of the resource utilizing the criteria above. Adverse changes to such resources are defined in 36CFR800.5. All archaeological or historical sites must be carefully evaluated relative to the effects of the action, even if they have been or have not been listed at the time the proposed action

will take place. Although avoidance of cultural resources is always the best choice, where necessary, impacts to previously listed or potentially listed resources must be mitigated for.

Should it be determined that a cultural resource is or could be potentially listed on the National Register of Historical Resources or the California Register, a testing and/or historical structure evaluation of the resource must take place prior to impact. Should it be determined that the resource is significant and that impacts will cause a substantial adverse change in its significance, that resource must undergo data collection prior to impact. Under CEQA, should Phase 2 test results determine that the resource will not qualify for listing in the California (or National) Register of Historical Resources, no further mitigation of any kind is required. At the federal level, a Section 106 consultation shall determine the level of additional mitigative needs once data collection has taken place. In June 2003, MBA conducted a historical significance assessment for the known historical resources onsite and the results are summarized below.

Ranch Complex P#1081-19/H (Locus B, East)

On February 23, 1991, Jeanette McKenna recorded this site on DPR422A forms during work on the Etiwanda North Specific Plan. The AIC labeled the site P#1081-19/H. The west ranch complex was not discussed at that time. For the purposes of analysis, the two complexes were treated separately. Locus A consists of the eastern portion with cobble foundations representing long-abandoned structures, while Locus B consists of all historical materials found in the northwest quarter of the study area. Locus B exhibits the remains of two cobble wall and mortar structures, along with other features surrounding the foundations. One foundation is near the center of the property (with low irregular wall remnants; its ground plan or use could not be determined. The second foundation was most likely the main building on the property. A property must be shown to be significant for one or more of the four Criteria for Evaluation: A, B, C, or D. Based on these criteria, Locus B is evaluated below.

- ***Criterion A: Event.*** Locus B does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at the state or national level. The property may, however, have some local significance for its association with Rufus Putnum "Put" Perdew, a locally known resident of Etiwanda.
- ***Criterion B: Person.*** Locus B does not qualify under California Register Criterion B: Person, as historical research failed to identify any of the past owners or occupants of the house as historically significant at the state or national level. The resource may, however, have some local significance for its association with Rufus Putnum "Put" Perdew, a locally known resident of Etiwanda.
- ***Criterion C: Design/Construction.*** Locus B does not qualify under California Register Criterion C: Design/Construction at the state or national level as a property that embodies the distinctive characteristics of a type, period, or method of construction; is not representative of the work of a master or creative individual; and does not qualify as a structure possessing high artistic values.

- ***Criterion D: Information Potential.*** It is possible that subsurface study of Locus B may lead to further information, but not likely with regard to the historical and architectural significance of the property. The history of this ranch complex is virtually unknown and has not been previously investigated. Unfortunately, most of the important data associated with historical sites in California is associated with characteristics of the superstructure. Buried historical materials, except under unusual circumstances (such as human burials or privies), typically do not yield substantial amounts of historical information. In this case, MBA does not think that excavation would yield substantial amounts of historical information that might change the significance rating of the complex. However, if human remains or privies were uncovered during grading, such deposits would constitute features that, after analysis, might be of importance to the understanding of the historic nature of early Rancho Cucamonga.

Ranch Complex P#1081-19/H (Locus A, West)

This ranch complex (Locus A, West) consists of structures and features that appear to be of later construction than those within the other ranch complex (Locus B, East). At the northernmost side of Locus A is an aging eucalyptus wind break with a low cobble wall that parallels it just to the north (see DPR forms, Feature 1). Both are about 240 meters long and run east to west. Running perpendicular to the south of the windbreak is an irregular row of eucalyptus trees about 110 meters long (Feature 2). At the south end of the property is another cobble wall, about 140 meters long, running east to west (Feature 3). There is a dirt access road running east to west through this property; Locus B shares this road. The significance of Locus A is evaluated below.

- ***Criterion A: Event.*** Locus A does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at either the local, state or national level.
- ***Criterion B: Person.*** Locus A does not qualify under California Register Criterion B: Person, as historical research failed to identify any of the past owners or occupants of the house as historically significant at the state or national level. It is possible that the resource has some local significance through a local family such as the Perdews, but this has not been established.
- ***Criterion C: Design/Construction.*** The subject resource does not qualify under California Register Criterion C: Design/Construction at the state or national level as a property that embodies the distinctive characteristics of a type, period, or method of construction, or as representative of the work of a master or creative individual. Furthermore, Locus A does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as a structure possessing high artistic values.
- ***Criterion D: Information Potential.*** Subsurface study of the resource may lead to further information, but likely not with regard to the historical and architectural significance of the property. The history of Locus A is virtually unknown and has not been investigated previously. Unfortunately, most of the important data associated with historical sites in California is associated with characteristics of the superstructure. Buried historical materials, except under unusual circumstances (such as human burials or privies), typically does not commonly yield substantial amounts of historical information. In this case, we do not feel that excavation would yield substantial amounts of historical information that might change the significance rating of the complex. However, if human remains or privies were uncovered during grading, we feel that such deposits would constitute features that, after analysis, might be of importance to the understanding of the historic nature of early Rancho Cucamonga.

The location of the subject resource has remained the same since its construction. It, therefore, retains its location element for integrity purposes. The subject is currently a historic archaeological ruin. The design elements are no longer clearly distinctive. The subject ranch Locus A possesses a high degree of original setting. Locus A was constructed of typical materials and a common pattern for its time and location. The subject property is currently a historic archaeological ruin. The workmanship is, however, reflective of early twentieth century vernacular architectural styles in southern California that used locally available building materials such as cobblestone. The subject is currently a historic archaeological rnin, but has enough structural elements to retain the aesthetic or historic sense of a particular period. The subject resource is not linked directly with any event or person significant in California history at the state or national level. Its local significance as linked with the Perdew family has not been established.

Irrigation Complex P#1081-1/H

On February 23, 1991, Jeanette McKenna recorded this site on DPR422A forms during work on the Etiwanda North Specific Plan. The AIC labeled the site P#1081-1/H (Locus West) and P#1081-1/H (Locus East). The eastern portions of the complex could not be observed in the field, suggesting that this portion of the site has been graded over or lost to pot hunting. The site consists of remnants of a disused water irrigation system near the dirt portion of Etiwanda Avenue. The site is about 180 meters long. At the northwest end is a subsurface concrete structure (see DPR forms, Feature 1), surrounded by ceramic pipe fragments and concrete structural remains. There are also foundation remains of a nearby concrete standpipe and trash scatter. A rock berm defines the line of the system as it runs southeast (Feature 2). There are currently ceramic pipe and concrete fragments scattering the areas surrounding the berm. About 90 meters south from the concrete substructure is a concrete circular water diversion system with a subterranean ceramic pipe. A construction date could not be established, although it appears to be from the early quarter of the twentieth century. The irrigation system is visible in an 1938 aerial photograph. The significance of the irrigation complex is evaluated below.

- ***Criterion A: Event.*** The resource does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at either the local, state or national level.
- ***Criterion B: Person.*** The subject resource does not qualify under California Register Criterion B: Person, because historical research failed to identify any significant person associated with this irrigation system at the local, state or national level.
- ***Criterion C: Design/Construction.*** The subject resource does not qualify under California Register Criterion C: Design/Construction at the local, state or national level as a property which embodies the distinctive characteristics of a type, period, or method of construction. The subject resource does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as representative of the work of a master or creative individual. The subject resource does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as a structure possessing high artistic values.

- ***Criterion D: Information Potential.*** Subsequent study of the subject resource is not likely to lead to further information regarding the historical and architectural significance of the property. The location of the subject resource has remained the same since its construction. It, therefore, retains its location element for integrity purposes. It appears that the irrigation system's original design elements remain intact for integrity purposes. The subject irrigation system possesses a high degree of original setting.

This irrigation system was constructed of materials typical of its likely construction period of the early quarter of the twentieth century.

The workmanship is reflective of irrigation system construction during the likely time at the early quarter of the twentieth century. Although in ruinous condition, most of the structural elements appear intact and have not been compromised. It retains its feeling element for integrity purposes. The subject resource is not linked directly with any event or person significant in California history at the local, state or national level.

Evaluation of Berm Temp #1

This man made flood control berm was the only new historic site detected during the survey. It is approximately 18 meters wide, 520 meters long and 2 meters high. It may have been initially used as a firebreak and later for control of water that runs through the intermittent stream channel that crosses the project area from northwest to southeast. Two circular concrete bench markers were detected during the survey. They have inscribed metal plates indicating that the structure was built in 1949 by the San Bernardino County Flood Control District. The historical significance of this feature is described below.

- ***Criterion A: Event.*** The resource does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at either the local, state or national level.
- ***Criterion B: Person.*** The subject resource does not qualify under California Register Criterion B: Person, as historical research failed to identify any significant person associated with this berm at the local, state or national level.
- ***Criterion C: Design/Construction.*** The subject resource does not qualify under California Register Criterion C: Design/Construction at the local, state or national level as a property which embodies the distinctive characteristics of a type, period, or method of construction; as representative of the work of a master or creative individual, or as a structure possessing high artistic values.
- ***Criterion D: Information Potential.*** Subsequent study of the subject resource is not likely to lead to further information regarding the historical and architectural significance of the property.

The location of the subject resource has remained the same since its construction. It, therefore, retains its location element for integrity purposes. Although somewhat obscured with vegetation

growth, the berm's original design elements remain intact for integrity purposes. The subject berm possesses a high degree of original setting. This feature was constructed of material typical of berm construction. The workmanship is reflective of berm construction. Although obscured by vegetation, the berm is intact and has not been compromised. It retains its feeling element for integrity purposes. The subject resource is not linked directly with any event or person significant in California history at the local, state or national level.

Based on the above evaluation, none of the four onsite features were deemed to be architecturally or historically significant utilizing the criteria established by state and federal protocols. Therefore, none of these cultural resources are eligible for inclusion in the National Register of Historic Places, or any State or local cultural resource roll

Paleontological Resources

According to the paleontological records search, the project area lies on surface exposures of Pleistocene older fan deposits. These deposits have high potential to contain fossil resources throughout their extent. No fossil resources are known for the project area and the nearest resources found in similar deposits are located approximately eight miles to the south.

However, due to the likelihood of potential buried fossilized remains, impacts on paleontological resources from development of the proposed project are considered potentially significant.

5.7.4 Cumulative Impacts

Implementation of the proposed project and related projects would result in the impact of known cultural resources, and the potential impact for buried paleontological resources. As a result, implementation of the proposed project would contribute to significant cumulative impacts to prehistoric and historic resources.

5.7.5 Mitigation Measures

The following measures are recommended to reduce impacts on archaeological resources:

CR-1 Prior to the issuance of a grading permit, the project applicant shall retain a City-approved archaeologist to develop an archaeological mitigation plan and a discovery clause/treatment plan. Both of these plans shall be reviewed and approved by the City. The archaeological mitigation plan shall include monitoring 50 percent of the excavation activities on the project site by a City-approved archaeologist and/or his/her representative. The discovery clause/treatment plan shall include recovery and subsequent treatment of any archaeological or historical remains and associated data uncovered by brushing, grubbing or excavation. The treatment plan shall provide procedures for the curation of any detected cultural specimens. Any recovered cultural resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard professional archaeological practices. Examination by an archaeological

specialist shall be included where necessary, dependent upon the artifacts, features, or sites that are encountered. Specialists will identify, date and/or determine significance potential.

CR-2 If the archaeological monitor discovers cultural deposits, earthmoving shall be diverted temporarily around the deposits until the deposits have been evaluated, recorded, excavated and/or recovered, as necessary, and in accordance with a City-approved recovery plan. Earthmoving shall be allowed to proceed through the area after the archaeologist determines the artifacts are recovered and/or site mitigated to the extent necessary.

CR-3 If a previously unknown cultural site is encountered during monitoring and it is determined by the archaeologist that a significance determination is required, the site shall be evaluated and recorded in accordance with requirements of the State Office of Historic Preservation (i.e., DPR 523 form). In this case, if the site is not determined to be significant, no measures subsequent to recording the site on appropriate forms are required. If any of the sites are determined to be significant, an adequate amount of artifacts at the specific archaeological site shall be collected by the City-approved archaeologist. The archaeologist shall determine the amount of artifacts needed to be collected.

CR-4 If human remains are encountered during excavations associated with this project, all work shall halt and the County Coroner shall be notified (Section 5097.98 of the Public Resources Code). The Coroner will determine whether the remains are of forensic interest. If the coroner, with the aid of the City-approved archaeologist, determines that the remains are prehistoric, he/she will contact the Native American Heritage Commission (NAHC). The NAHC will be responsible for designating the most likely descendant (MLD), who will be responsible for the ultimate disposition of the remains, as required by Section 7050.5 of the California Health and Safety Code. The MLD will make his/her recommendations within 24 hours of their notification by the NAHC. This recommendation may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials (Section 7050.5 of the Health and Safety Code).

CR-5 Any recovered archaeological resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard archaeological practices. Examination by an archaeological specialist should be included where necessary, dependent upon the artifacts, features or sites that are encountered. Specialists will identify, date and/or determine significance potential.

CR-6 A final report of findings will be prepared by the City-approved archaeologist for submission to the City, project applicant, and the Archaeological Information Center of the San Bernardino County Museum. The report will describe the history of the project area, summarize field and laboratory methods used, if applicable, and include any testing or special analysis information conducted to support the resultant findings.

Paleontological Resources

CR-7 Prior to the issuance of a grading permit, the project applicant shall retain a City-approved paleontologist. The paleontologist shall review the approved development and construction plans. The City-approved paleontologist shall monitor all excavation activities in areas of the project underlain by previously undisturbed sediments. Earthmoving in areas of the site where previously undisturbed sediments will be buried

but not disturbed will not be monitored. Monitoring shall begin once earthmoving reaches five (5) feet below the original ground surface.

CR-8 Monitoring shall be conducted on a full-time basis in areas of the project underlain by sensitive rock units associated with older alluvium being encountered by earthmoving.

CR-9 Should fossils be found within an area being cleared or graded, divert earth-disturbing activities elsewhere until the monitor has completed salvage. If construction personnel make the discovery, the grading contractor should immediately divert construction and notify the monitor of the find. If too few fossil remains are found after 50 percent of earthmoving has been completed, monitoring can be reduced or discontinued in those areas at the project paleontologists direction.

CR-10 If paleontological resources are detected. Prepare, identify, and curate all recovered fossils for documentation in the summary report and transfer to an appropriate depository (i.e., San Bernardino County Museum).

CR-11 A final report of findings will be prepared by the City-approved paleontologist for submission to the City, project applicant, and the San Bernardino County Museum. All collected specimens and the final report shall be provided to the San Bernardino County Museum.

5.7.6 Level of Significance After Mitigation

Implementation of the above mitigation measures would ensure that impacts on the existing and potential archeological and paleontological resources will be reduced to a less than significant level.

5.8 Public Services and Utilities

5.8.1 Police Service

Existing Conditions

The City of Rancho Cucamonga has contracted with the San Bernardino County Sheriff's Department (SBCSD) since 1978 for police service. The project area is currently located within SBCSD's service area and receives police protection per the City's contract with SBCSD. The project site is proposed to be annexed into the City of Rancho Cucamonga and police service will continue to be provided by SBCSD under the existing City contract. Currently the City of Rancho Cucamonga is served by 93 uniformed officers including 11 sergeants, 2 lieutenants and 1 captain). With a population of approximately 146,700 people (January 2003 California Department of Finance estimate), the current ratio of officers to residents is approximately 0.63 officers for every 1,000 residents. The projected average response time to an emergency call for service within the project vicinity is approximately five (5) minutes (D.waters, pers. com.). The police station located nearest the project site is at 10510 Civic Center Drive, five miles from the project site. The project site is currently undeveloped, requiring only minimal existing police service except in the case of calls for trespassing (e.g., offroad vehicle use).

Thresholds of Significance

Per the City of Rancho Cucamonga General Plan EIR, a project is considered to have a significant impact on police services if the project will result in a substantial need for such services that cannot be adequately met by available Police Department personnel or equipment. The City does not have a policy establishing a specific ratio of officers to citizens but does have an established emergency response time of 5 minutes for emergency calls. Therefore the police service threshold is based on a project's effect on existing police service.

Project Impacts

Police service calls will increase due to the population increase caused by the proposed project. The service calls expected to be created will be typical to suburban areas and are likely to include vandalism, theft, and domestic disputes. The San Bernardino Sheriff's Office currently provides the City of Rancho Cucamonga with approximately 0.63 police officers for every 1,000 residents. The proposed project will increase the population in the project vicinity by 1,238 residents thus creating the need for approximately 0.8 additional police officer if the current officer/resident ratio is maintained. The funds for additional police officers are provided as part of the City's General Fund. Each year, the City's annual budget negotiation with the Sheriff's Department results in additional officers to be added to the City Police force. Response times to the project site for emergency calls are not expected to exceed current calls for emergency service in the vicinity. Therefore, the project will not result in a significant impact on police services.

Cumulative Impacts

Future growth in the project vicinity will include the introduction of new structures, thus increasing the risk of incidences requiring police service in the area. Future growth will result in the development of new streets that would provide improved access within the project vicinity, allowing police service and other emergency response vehicles greater access. Future growth from residential subdivisions proposed in the project vicinity is expected to require a substantial increase in police services, thereby resulting in significant cumulative impacts on existing police services. However, the proposed project would nominally contribute to the significant cumulative impact on police services.

Mitigation Measures

No measures are required.

Level of Significance after Mitigation

Implementation of the project would not result in significant impacts to police services.

5.8.2 Fire Services

Existing Conditions

The Rancho Cucamonga Fire District (RCFD) provides fire protection and emergency medical response services to approximately 50 square miles, which includes the project area. Five fire stations and one temporary station are currently located and operational within City limits. There are 0.18 firefighters provided per 1,000 residents. The goal of RCFD is to provide a 5 minute response time for 90 percent of emergency calls placed within the City. Currently the City is providing 5 minute service for 85 percent of the emergency calls placed. Existing fire stations 173 and 175 will serve the project area. In addition to these two fire stations, another fire station (station 176) is operational from temporary quarters at Etiwanda and Wilson Avenues. The permanent station is under construction at East Avenue and 23rd Street. The permanent facility is expected to be occupied by early 2004. The fire stations that will serve the project site are located within the City limits at the following addresses:

- Fire Station 173: 12158 Baseline Road, equipped with 3 firefighters
- Fire Station 175: 111108 Banyan, equipped with 6 firefighters
- (Proposed) Fire Station 176: East Avenue and 23rd Street, will be staffed by 3 firefighters

The project site is currently within the California Department of Forestry and Fire Protection (CDF) "State Responsibility Area" (SRA) for wildland fires. Additional fire support is provided through a cooperative agreement by the San Bernardino County Fire Department based in the City of Fontana. Land areas north of the City limit and in close proximity to the project site, are dominated by steep foothills and undeveloped chaparral vegetation, the potential exists for a fast moving wildland fire to reach existing and potential structures. The project lies within an area designated by the City as a

high hazard fire zone and is susceptible to wind-driven fire within the Urban Wildland Interface according to the Fire District Strategic Plan. The United States Forest Service and the California Department of Forestry in conjunction with RCFD, currently respond to situations on land immediately north of the City limits. The City is currently constructing Fire Station 176, and it is expected to be completed by early 2004. The completion of this fire station would substantially reduce response times to the project site.

Thresholds of Significance

A project is considered to have a significant impact on fire and emergency services if the project will result in a substantial need for fire and medical emergency assistance that cannot be adequately met by available Fire Department personnel or equipment.

Project Impacts

The project will increase the population in the project vicinity by 1,238 residents thus creating the need for 0.22 additional fire protection persons in order to maintain the current fire person/resident ratio. The additional demand of 0.22 fire protection persons is not considered to be significant because the temporary facilities for the new Fire Station 176 are currently operational adjacent to the project site at Etiwanda Avenue and Wilson Avenue. The permanent fire station is under construction at East Avenue and 23rd Street which is within one mile of the project site. Current and future response times to the project site will be less than 5 minutes which is the minimum response time required for adequate response time for fire services. Furthermore, with the proposed annexation of the project site into the City, the project site would be removed from the CDF SRA for wildland fires. The implementation of the proposed project would result in less than significant impacts on fire services is operational from temporary quarters at Etiwanda and Wilson Avenues and the future station will operate at the East Street and 23rd Street.

The proposed project includes a fuel modification plan which includes long-term vegetation treatment and maintenance along the project perimeter. The fuel modification plan for the project has been reviewed by the RCFD and has determined the plan to be adequate.

Cumulative Impacts

Currently, the staffing and equipment are adequate for the demand on services. However, with the rapid development occurring in the northern region of the City, the RCFP will reach maximum capacity in the near future. Future growth in the vicinity of the project area will include the introduction of new structures, thus increasing the public's risk to fire hazards in the area. Future growth will result in the development of new streets that would provide improved access within the project vicinity, allowing fire service emergency response vehicles greater access throughout the City. Overall, future growth under the proposed General Plan will result in significant cumulative impacts on fire protection. However, the implementation of the proposed project will nominally contribute to

impacts on fire services due to the new temporary fire station that is operational near the project site and eventually a permanent fire station located south of Wilson Avenue at 23rd Street.

Mitigation Measures

Although no significant fire service impacts will occur with project implementation, the following meaure will reduce potential impacts.

F-1 Prior to the issuance building permits, the project applicant shall obtain approval from RCFD of the designs for the fire flow and proposed fire resistant structural materials.

Level of Significance after Mitigation

No significant impacts to fire services would occur with project implementation.

5.8.3 Water Service

Existing Conditions

The Cucamonga County Water District (CCWD) covers approximately 50 square miles, and provides water treatment, storage, and distribution of domestic water to all of Rancho Cucamonga, adjacent unincorporated County areas, and portions of the Cities of Ontario, Fontana, and one tract in Upland. CCWD derives water from three sources comprised of groundwater (43%), surface water (12%) and imported water (45%). Groundwater is derived primarily from the Cucamonga basin. Groundwater may also be pumped from the Chino basin, but must be replenished through purchases of State Water Project (imported)water. Canyon water is derived from surface and subsurface water from Cucamonga, Deer, Day and East Etiwanda Canyons. CCWD also purchases water from northern California via the State Water Project. The current daily water usage in the CCWD service area is approximately 42 million gallons per day.

Residential water use amounts to 60 percent of the total water consumed, followed by landscaping at 20 percent. CCWD's master plan estimates demand needs through the year 2030. Residential water demand is expected to continue to be the greatest source of water demand for CCWD. CCWD expects to anticipate growth by ensuring that adequate facilities are available to meet water demand as it arises. CCWD is also one of seven member agencies that operate under the umbrella of the Inland Empire Utilities Agency (IEUA). The IEUA had adopted a 10-year growth or capital improvement program that is based upon growth projections provided by the member agencies. CCWD is responsible for collecting developer fees for the construction and operation of water facilities.

The City of Rancho Cucamonga, in cooperation with CCWD, has undertaken actions to extend available water supplies. Most notable of these actions is Ordinance No. 42 which establishes a water conservation measure in their General Plan for new development.

There is presently no water demand associated with the vacant project site. Water lines have been installed by CCWD along the southern project boundary, on the Wilson Avenue alignment. CCWD currently supplies water to residential areas immediately west and also south of the project site.

Thresholds of Significance

- A project is considered to have a significant impact on water service if existing or planned facilities and supplies are not adequate to serve proposed land uses or existing water service is significantly disrupted.

Project Impacts

The proposed project would involve the connection of 358 single-family residential units to the CCWD's domestic water system. Single-family residential units have a daily water demand of 640 gallons per day (GPD). Thus, the project will result in an increased water demand on CCWD's domestic water system of 220,760 GPD. This represents a 0. 7 percent increase in water currently demanded from existing development within the City's General Plan Planning Area.. This is not considered a significant increase and is within CCWD's daily and projected capacity.

Cumulative Impacts

The proposed development project will result in the use of additional water resources. CCWD collaborates with the Inland Empire Utilities Agency to estimate and fund projected water and facilities through the preparation of a 10-year capital improvement plan. This plan, in conjunction with the CCWD master plan, has considered the potential needs of future users. However, the potential demand for water will rise as additional developments are constructed and occupied. This increase in demand will result in the need for additional facilities. The proposed project will contribute to the potential significant cumulative impacts on water services.

Mitigation Measures

W-1 Prior to the issuance of building permits, the project applicant will be required to submit a water services development fee to ensure that adequate water supplies and facilities are available to meet the project demand.

W-2 Prior to the issuance of a building permit for each phase, the project applicant shall submit a landscaping and irrigation plan for common areas to the City for approval. Landscaping and irrigation within common areas shall be designed to conserve water through the principles of Xeriscape as defined in Cahapter 19.16 of the Rancho Cucamonga Municipal Code.

Level of Significance after Mitigation

With the implementation of the above mitigation measures, impacts to water services would be less than significant.

5.8.4 Wastewater Service

Existing Conditions

The Inland Empire Utilities Agency (IEUA) currently covers over 240 square miles and operates four (4) wastewater treatment facilities that serve the cities of Rancho Cucamonga, Fontana, Ontario, Upland, Montclair, Chino, Chino Hills, and a portion of the Chino Dairy Preserve. An additional treatment facility is currently planned. Two of these treatment plants, Regional Plants 1 and 4, serve development within the City of Rancho Cucamonga. Cucamonga County Water District provides conveyance facilities to these treatment plants. The project site is within the service area of the regional Plant 4 facility (RP-4). The RP-4 is located at Fourth Street and Etiwanda Avenue in the City of Rancho Cucamonga. RP-1 treats approximately 37.9 million gallons per day (mgd) of wastewater and has a capacity of 44 mgd. The wastewater treatment facilities cleanse the treated water to a tertiary level and is then used for irrigation purposes. Development fees are collected by member agencies for wastewater treatment facilities and passed through to the IEUA to use for new treatment plant construction.

According to the Rancho Cucamonga General Plan Update (2001), wastewater generation within the City's Planning Area (i.e., City limits and Sphere of Influence) is approximately 13 million gallons per day. The project site does not currently contain any uses that generate wastewater.

Thresholds of Significance

A project is considered to have a significant impact on wastewater service if existing or planned facilities and supplies are not adequate to serve proposed land uses or existing wastewater service is significantly disrupted.

Project Impacts

Based on the CCWD Master Plan and IEUA estimates, wastewater generation in the project area is 270 gallons of wastewater per unit per day. Therefore, the 358 residential units proposed will generate approximately 96,930 gallons of wastewater per day. This represents less than one-percent of current wastewater generation in the City's Planning area and will not exceed capacity of the RP-4 facility.

The IEUA will continue to expand their treatment capacity consistent with growth projections and associated increased demand and Agency funding mechanisms. Conservation methods and the increased use of reclaimed water will decrease the need for treatment capacity and provide a beneficial reuse of water resources.

Cumulative Impacts

As future development occurs within the service area of RP-4, additional demand for treatment would occur. The potential future development within the service area could require new facilities, and

therefore, result in significant cumulative impacts on wastewater treatment. The proposed project will contribute to the significant cumulative demand.

Mitigation Measures

WW-1 Prior to the issuance of occupancy permits, the applicant shall provide funding to the Cucamonga County Water District for sewer service.

Level of Significance after Mitigation

Implementation of the above measure will reduce potential impacts to wastewater services to less than significant.

5.8.5 Schools

Existing Conditions

The Etiwanda School District (Kindergarten-8th grade) and the Chaffey Joint Union High School District (grades 9-12) serve the proposed project site. Both of these districts are currently at capacity enrollment at each school facility. The proposed project would increase the enrollment of both school districts by increasing the number of students in the project area vicinity. The proposed project would increase the enrollment at local schools by approximately 238 K-8 level students and 72 students between the 9-12 levels for an overall total of 309 students. Table 5.8-1 lists each school district and corresponding enrollment figures.

SB 50 mandates that complete mitigation of school related impacts are covered by lawful payment of required school impact fees. Necessary mitigation fees have been established and discussed through the General Plan and will be based on square foot measurements.

Table 5.8-1: Current Enrollment and Capacity of School Districts Serving the Project Area

	Chaffey Joint Union High School District	Etiwanda School District
Grades Served	9-12	Kindergarten-8
Total Enrollment	20,738	10,300
Total Design capacity	15,749	12,960
Number of Permanent Classrooms	635	249
Projected Enrollments		
2003	21,650	11,000

Table 5.8-1 (Cont.): Current Enrollment and Capacity of School Districts Serving the Project Area

	Chaffey Joint Union High School District	Etiwanda School District
2004	22,700	12,000
Student Generation Factor	.20 students per unit	K-5 = 0.66 students per unit
Anticipated Student Generation From TT 16072 Development Project	72	238
Anticipated Schools	2 High schools	1 Elementary 1 Intermediate

Thresholds of Significance

A project is considered to have significant impact on the school districts and schools if the capacity of the existing or planned facilities and supplies are exceeded.

Project Impacts

Currently, the school facilities within the Chaffey Joint Union High School District servicing the proposed project area are at or over capacity. This is usually known as a significant impact; however the state mandated developer impact fee will meet full mitigation standards required by CEQA regardless of the enrollment capacity conditions of the affected schools. Per the Chaffey Joint Union High School District, 2 additional school sites are anticipated, thus relieving the projected impact on school facilities.

The proposed project will not have a significant impact on K-8 level students. The available capacity at Etiwanda School District facilities allows for the additional 238 students that would be generated.

Density at buildout is consistent with the City's General Plan and Specific Plan, including projected demand on schools (i.e., a fee mitigation and development fee is appropriate and adequately addresses additional demand on the existing system.)

Cumulative Impacts

Future growth in the vicinity of the project area will result in an increased student population and substantially contribute to a significant cumulative impact on public school facilities.

Mitigation Measures

S-1 Prior to the issuance of building permits, the project applicant shall pay developer impact fees to the Etiwanda School District and Chaffey Joint Union High School District in accordance with Section 65995 of the Government Code for the proposed residences.

Level of Significance after Mitigation

The assessment of development fees to provide a fair-share contribution for expansion of school facilities in compliance with State of California laws and regulations will assure adequate school funding. Impacts to public schools will be less than significant with the implementation of the above mitigation measure.

SECTION 6
SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Section 5 of this EIR provides a description of the potential environmental impacts from the implementation of the proposed residential project, as well as measures proposed to reduce the environmental impacts to the maximum extent feasible. After implementation of the proposed mitigation, the following impacts associated with the proposed project would remain significant: geology and soils (seismic ground shaking), air quality (short-term and long-term emissions), aesthetics/visual (cumulative views).

These significant unavoidable adverse impacts would occur if the development objectives identified in Section 3.4 of this Draft EIR are met.

SECTION 7
OTHER LONG-TERM CONSIDERATIONS

7.1 Growth Inducing Impacts

This section evaluates the potential of the proposed project to affect "economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment" (CEQA Guidelines, 15126.2[d]).

There are two types of growth inducing impacts, direct and indirect. To assess the potential for growth inducing impacts, the project characteristics that may encourage and facilitate activities that may individually or cumulatively affect the environment must be evaluated.

Growth-inducing impacts can occur when the development of a project imposes new burdens on a community by directly inducing population growth, or by leading to the construction of additional developments in the same area of the proposed project. Also included in this category are projects that would remove physical obstacles to population growth (such as a new road into an undeveloped area or a wastewater treatment plant with excess capacity that could allow additional new development in the service area). Construction of these types of infrastructure projects cannot be considered isolated from the development they facilitate and serve. Projects that physically remove obstacles to growth or projects that indirectly induce growth are those which may provide a catalyst for future unrelated development in the area (such as a new residential community that requires additional commercial uses to support residents).

The project will result in direct population growth due to construction of the proposed 359 residential units. However, this will not result in an undue burden to the community or region since the applicant will be required to ensure that no significant and unavoidable adverse impacts to utilities and public services will occur. This will be ensured through the payment of mitigation fees to the various agencies and service providers. The project will also require extension of some utilities and services to the project site from nearby connections. The project does not remove substantial obstacles to population growth by extending facilities and infrastructure into an undeveloped area. It will be an extension of existing residential development to the west. Etiwanda Avenue will be extended only as far as the northern project boundary. Since the project will be consistent with development contemplated in the 2001 General Plan update as well as the Etiwanda North Specific Plan approved in 1991, and for the reasons outlined above, no significant growth inducing impacts would occur as a result from project implementation.

7.2 Irreversible and Irretrievable Commitment of Resources

The environmental effects of the proposed General Plan are discussed in Section 5 of this EIR and summarized in Section 2, Executive Summary. Implementation of the proposed project would require the long-term commitment of natural resources and land.

Approval and implementation of actions related to the proposed project would result in an irretrievable commitment of non-renewable resources such as energy supplies and other construction-related resources. The energy resource demands would be used for construction, heating and cooling of buildings, transportation of people and goods from the project site, heating and refrigeration for food preparation and water, as well as lighting and other associated energy needs.

Nonrenewable resources would be committed primarily in the form of fossil fuels and would include fuel, oil, natural gas, and gasoline used by vehicles and equipment associated with implementation of the proposed project. The consumption of other non-renewable or slowly renewable resources would result from the development of the proposed project. These resources would include, but not be limited to, lumber and other forest products, sand and gravel, asphalt, photochemical construction materials, steel, copper, lead, and water. Because alternative energy sources such as solar or wind energy are not currently in widespread local use, it is unlikely that real savings in non-renewable energy supplies (i.e. oil and gas) could be realized in the immediate future.

SECTION 8
ALTERNATIVES TO THE PROPOSED PROJECT

Section 15126(d)(2) of the state CEQA Guidelines, as amended, mandates that an EIR include a comparative evaluation of the proposed project with alternatives to the project, including the No Project Alternative. As described in Section 3, Project Description, the proposed project is the development of 359 detached single-family housing units on approximately 150.8 acres. This section focuses on alternatives to the proposed project capable of avoiding or substantially lessening any significant adverse impact associated with the proposed project even if these alternatives would impede to some degree the attainment of project objectives or be more costly. Additionally, alternatives are discussed in the terms of achieving the project objectives.

Section 15126.6(a) of the state CEQA Guidelines requires a discussion of reasonable alternatives to the proposed project, or to the location of the project, which would feasibly obtain most of the objectives of the project but would reduce, avoid, or substantially lessen the significant effects of the project, and evaluate the comparative merits of the project. Further, the criteria for selecting the scope and nature of the alternatives is based upon the "rule of reason" and includes site suitability, economic viability, availability of infrastructure, general plan consistency and other regulatory limitations. The No Project/ No Development Alternative was selected to comply with Section 15126 of the State CEQA Guidelines. Retention of the Riversidian Alluvial Fan Sage Scrub was selected to reduce impacts to sensitive plant communities. Finally, the Less Intense Development Alternative was selected to eliminate significant long-term air emission impacts.

The alternatives are as follows:

- No Project/ No Development Alternative
- Retention of Riversidian Alluvial Fan Sage Scrub Alternative
- Less Intense Development Alternative

The following are the objectives of the proposed project.

- To provide single-family housing units consistent with the intent of the City's General Plan and the Etiwanda North Specific Plan.
- To annex the proposed tentative tract into the City of Rancho Cucamonga.
- To create a project that is generally consistent and compatible with other existing and proposed uses in the vicinity of the project and community of Etiwanda in general.

- To provide project infrastructure including streets, water and sewer mains, and flood control consistent with City and regional plans related to these services.
- To phase the development of the proposed project to ensure adequate utilities are provided.
- To design and landscape the proposed project to create an aesthetically pleasing living environment.

The Environmentally Superior Alternative will be selected from among these alternatives and the proposed project. An alternative that is environmentally superior will result in the fewest or least significant environmental impacts. Based on the evaluation of the three alternatives in this section, implementation of the No Project/No Additional Development Alternative would result in no impacts and would be environmentally superior to the proposed project. CEQA states that if the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative from the other alternatives. Since the remaining two alternatives were determined to not be feasible because they did not meet the project objective, the proposed project is considered the environmentally superior alternative.

Following are descriptions of each alternative and a comparative environmental evaluation of potential impacts with those identified in the proposed project.

8.1 No Project/No Development

8.1.1 Description

The No Project/No Development alternative assumes that no new land uses would be constructed on the project site. Therefore, the site would remain vacant and undeveloped.

8.1.2 Impact Evaluation

The No Project/No Development Alternative would result in no additional environmental impacts relative to the proposed project. The significant unavoidable seismic ground shaking, loss of Riversidian alluvial fan sage scrub, short-term construction air emissions, long-term mobile emissions, and cumulative aesthetic/visual impacts associated with the proposed General Plan would not occur under this alternative.

Furthermore, traffic, noise, and cultural impacts associated with the proposed project would also not occur under this alternative.

8.1.3 Conclusions

This alternative is considered environmentally superior to the proposed project. However, this alternative would not meet any of the project objectives set forth in Section 3.4. Furthermore, the elimination of future development within a previously approved Specific Plan is not considered feasible. Therefore, this alternative is rejected.

8.2 Retention of Riversidian Alluvial Fan Sage Scrub Alternative

The Retention of Riversidian Alluvial Fan Sage Scrub (RAFSS) Alternative assumes that all vegetation classified as RAFFS are not affected by development. The project site contains approximately 10.6 acres of disturbed or ornamental woodland. In accordance with this alternative, development would only occur on the 10.6 acres. Based on the same residential density as the proposed project (i.e., 2.4 units per acre), 25 single-family housing units would be constructed. Although this level of development could eliminate the potential significant unavoidable effects associated with RAFFS, this alternative would not meet the objectives of the proposed project and is not considered economically feasible to provide infrastructure for only 25 units.

8.3 Less Intense Development

The intent of this alternative is to avoid all significant, unavoidable, adverse long-term, air emission impacts. The long-term significant and unavoidable adverse impact associated with the proposed project is the potential generation of carbon monoxide (CO), oxides of nitrogen (NOx), and reactive organic compounds (ROC). To reduce long-term air emissions, approximately 104 residential units that are part of the proposed project would need to be eliminated for this alternative to reduce long-term air emissions to less than significant after the implementation of the mitigation measures identified for the proposed project. This would result in the development of approximately 255 residential units on the project site. With the development of approximately 255 residential units the dwelling units per acre would be approximately 1.7 units per acre compared to 2.4 units per acre identified in the proposed project. This alternative would not be consistent with the development level contemplated in the Etiwanda North Specific Plan. This alternative also does not meet many of the objectives of the proposed project. Therefore, this alternative is not considered feasible.

SECTION 9
ORGANIZATIONS AND PERSONS CONSULTED

9.1 Public Agencies

City of Rancho Cucamonga

Planning Department ..... Larry Henderson, AICP
Debra Meier
Public Works Department ..... Betty Miller
Rene Guerrero
Police Department ..... Pete Ortiz
Dan Waters
Fire Department ..... John Thomas
Mike Bell

Special District

Etiwanda School District ..... Douglas Claflin
Chaffey Joint Union High School District ..... Susan Sundell
Metropolitan Water District ..... Laura Simonek

9.2 Private Organizations

MDS Consultants ..... Stan Morse
Burrtec Waste ..... Trevor Scrogins

SECTION 10
REPORT PREPARATION PERSONNEL

Michael Brandman Associates

Project Director ..... Tom McGill, Ph.D.
Project Manager ..... Michael E. Houlihan, AICP
Environmental Analysts ..... Christine Jacobs-Donoghue
David Merriman
Jackie O'Day
Biologist ..... Nina Jimerson
Archaeologists ..... Michael Dice
Marnie Aislin Kay
Dustin Kay
Architectural Historian ..... Christine Taniguchi
Air Quality Specialist ..... Michael Hendrix
Geographic Information Systems ..... Mike Serrano
Graphic Artist ..... Karlee Haggins
Word Processor ..... Angel Penatch
Publications Coordinator ..... Sandra Tomlin
Reprographics ..... Joshua Ballard

Technical Consultants

Noise Study (RK Engineering Group, Inc.) ..... Mike Rosa
Biological Resources Assessment (PCR Services Corporation) ..... Kristen Szabo
Traffic Study (RK Engineering Group, Inc.) ..... Frank Yeh
Geologic and Hydrologic Background Report (Earth Consultants Int'l, Inc.) ..... Tania Gonzalez

SECTION 11
REFERENCES

Bell, Mike. Fire Marshall, City of Rancho Cucamonga Fire Department. Personal communication in August 2002.

Cadre Environmental, October 2002. *Final Report, San Bernardino Kangaroo Rat Trapping Program, Etiwanda Tentative Tract 16072.*

California Air Resources Board, 2002. URBEMIS 2001 for Windows Computer Program and User's Guide, Version 6.2.1.

California Department of Fish and Game (CDFG). 2003 (Jun). *List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base (NDDB).*

California Division of Mines and Geology. 1995. *Report 94-08: Mineral Land Classification of a Part of Southwestern San Bernardino County: The San Bernardino Valley Area, California, 1995.*

California Department of Transportation, 1997. *Highway Capacity Manual.*

California Department of Transportation, 1997. Transportation Project Level Carbon Monoxide Protocol.

California Regional Water Quality Control Board, Santa Ana Region. 1993. *Water Quality Control Plan, Santa Ana River Basin (8).*

Earth Consultants International. November 2002. *Technical Background Report for the Geological and Hydrologic Sections of the Technical Background Report for Tentative Tract 16072.*

Federal Highway Administration, *Federal Highway Noise Prediction Model* (Calveno Version).

Hatcher, John B., Wildfire Aware, Register Professional Forester #681. June 14, 2003. *Fuel Modification Plan for Tract #16072.*

MDS Consulting. September 2002. *Tract 16072 Hydrology & Hydraulics Report.*

PCR Services Corp., July 15, 2002, *Results of Focused Sensitive Plant Surveys for the Etiwanda Project Site, San Bernardino County, California.*

PCR Services Corp., September 20, 2002, *Results of Focused Coastal California Gnatcatcher Surveys for the Etiwanda Project Site, San Bernardino County, California.*

PCR Services Corp., December 2002, *Biological Resources Assessment Etiwanda Subdivision Tentative Tract 16072*

Rancho Cucamonga, City of. 1988. (January). *City of Rancho Cucamonga Master Environmental Assessment and General Plan Environmental Impact Report.*

Rancho Cucamonga, City of. November 2001. *Rancho Cucamonga General Plan.*

Rancho Cucamonga, City of. Revised June 1999. *City of Rancho Cucamonga Development Code.*

Rancho Cucamonga, City of. April 1992. *Etiwanda North Specific Plan Environmental Impact Report.*

Rancho Cucamonga, City of. August 2002. *Final Supplemental Environmental Impact Report,* LSA for City of Rancho Cucamonga.

Rancho Cucamonga, City of. June 2001. Rancho Cucamonga General Plan Update Environmental Report, MBA for City of Rancho Cucamonga.

RK Engineering Group, Inc., October 2002. *Tentative Tract 16072 Preliminary Acoustical Report.*

San Bernardino, County of. Revised August 26, 1999. *County of San Bernardino General Plan.*

San Bernardino, County of. 1999. *County of San Bernardino General Plan Master Environmental Assessment.*

San Bernardino, County of. July 2002. *Recirculated EIR for Tracy Development Project.* TKC for County of San Bernardino.

South Coast Air Quality Management District (SCAQMD), 1997. *Air Quality Management Plan.*

South Coast Air Quality Management District (SCAQMD), 1993. *CEQA Air Quality Handbook.*

South Coast Air Quality Management District (SCAQMD), 2002. *Rules and Regulations.*

Waters, Dan. Crime Analyst. City of Rancho Cucamonga Police Department. Personal Communication in February 2003.

Draft
Environmental Impact Report

City of Rancho Cucamonga
Tentative Tract Map Number 16072
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Volume II
Technical Appendices

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VOLUME II
Technical Appendices
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Environmental Impact Report
Rancho Cucamonga Tentative Tract Map Number 16072

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November 25, 2003

LIST OF APPENDICES

Volume II

Appendix A
Notice of Preparation and Correspondence

Appendix A
Notice of Preparation and Correspondence

CITY OF RANCHO CUCAMONGA
INITIAL STUDY FOR TENTATIVE TRACT MAP NUMBER 16072

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Regional Manager

September 2002

TABLE OF CONTENTS

LIST OF EXHIBITS

LIST OF TABLES

1.0 INTRODUCTION

This form and the descriptive information in the application package constitute the contents of an Initial Study pursuant to Section 15063 of the State of California Environmental Quality Act (CEQA) Guidelines and Appendix G (1998). The environmental checklist is located in Chapter 2, and the evaluation of environmental impacts is located in Chapter 3.

1.	**Project Title:**	Initial Study for Tentative Tract Map Number 16072
2.	**Lead Agency Name and Address:**	City of Rancho Cucamonga P.O. Box 807 Rancho Cucamonga, California 91729 (909) 477-2700 www.ci.rancho-cucamonga.ca.us
3.	**Contact Name and Phone Number:**	Catherine Johnson, AICP Associate Planner City of Rancho Cucamonga P.O. Box 807 Rancho Cucamonga, California 91729 (909) 477-2700 cathy.johnson@ci.rancho-cucamonga.ca.us
4.	**Project Location:**	*Thomas Bros. Map:* 573 Cucamonga Peak, California USGS Quadrangle Map (1996) Sections 21 T1N R6W SBBM
5.	**Project Sponsor:**	Richland Pinehurst, Inc. 3 Imperial Promenade, Suite 150 Santa Ana, California 92707 (714) 708-4740
6.	**Existing General Plan (Specific Plan) Designation:**	L, VL, FZ (Low, Very Low Density Residential and Fault Zone– Etiwanda North Specific Plan)
7.	**Existing Zoning:**	L, VL, FZ (Very Low and Low Density Residential and Fault Zone, Etiwanda North Specific Plan)
8.	**Description of Project:**	See Following
9.	**Surrounding Land Uses and Setting:**	See Following
10.	**Other Public Agencies Whose Approval May Be Required:**	May include, but not be limited to: U.S. Fish and Wildlife Service California Department of Fish and Game California Regional Water Quality Control Board, Santa Ana Region San Bernardino County Local Agency Formation Commission (LAFCO) San Bernardino County Flood Control District

1.1 BACKGROUND

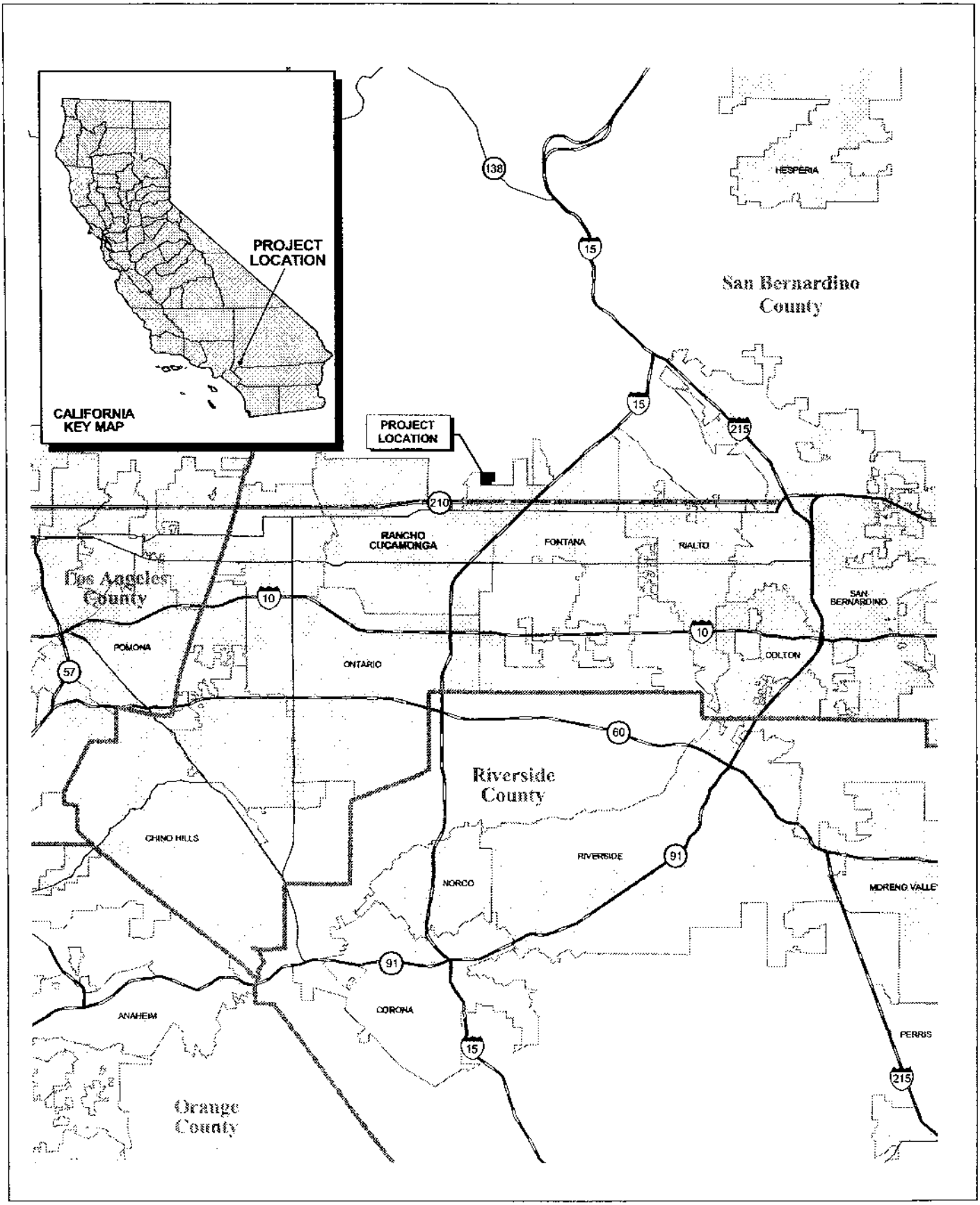
In 1992, the City of Rancho Cucamonga Etiwanda North Specific Plan (Specific Plan) established a master plan for the area that focused on maintaining the community's rural atmosphere by preserving historic ranchos, orchards, and wineries. Many of the features discussed in the Specific Plan are now incorporated in the City's recently updated General Plan.

The Specific Plan is currently the guiding document for planned development within the northern portion of the community of Etiwanda. The Specific Plan focuses on a development plan that preserves the area's qualities through distinctive architectural styling and low density housing to protect the area's rural, small community quality. Key guidelines within the Specific Plan include mixed use and low-density development balanced with recreational and open space areas. The City General Plan adds conservation areas in the North Etiwanda area to protect its unique natural resources and to provide buffer areas between urban communities and the San Bernardino National Forest.

1.2 PROJECT DESCRIPTION

The proposed project site is located on 150.8 acres north of Wilson Avenue and east of Etiwanda Avenue in unincorporated San Bernardino County and within the City's Sphere of Influence (Exhibits 1 and 2). This area is currently identified in the Specific Plan for Low-Density (fewer than two dwelling units to no more than four dwelling units per acre) to Very Low-Density housing (one to two dwelling units per acre). The project, Tentative Tract Map Number 16072, will allow up to 359 detached single-family housing units on minimum lot sizes of 8,400 square feet. The net density of the project is expected to equal 2.38 dwelling units per acre. The proposed project would include annexation of Tentative Tract 16072 to the City of Rancho Cucamonga and inclusion into the City's General Plan.

The project site is currently vacant. It is divided by the Red Hill Fault, which is proposed as a landscaped, open space trail connecting the Etiwanda Avenue Community Trail to East Avenue. Street patterns will be designed following the naturally trending terrain, which slopes at about 6 percent from the northwest to the southeast. In addition, the circulation system would provide for improvements to the existing streets along the perimeter of the project site, thereby serving as a link for the existing and proposed streets in the County and the City. Internal landscaped slopes will be designed at various slope inclinations (2:1 maximum) to provide meandering of the tops and toes of the slopes. Flood protection will be provided by the construction of the 25th Street Diversion Channel (providing flood proofing for downstream parcels including onsite interim detention basins until improvements are complete adjacent to the Interstate 210 freeway). Exhibit 3 depicts the project site plan as proposed.



NORTH

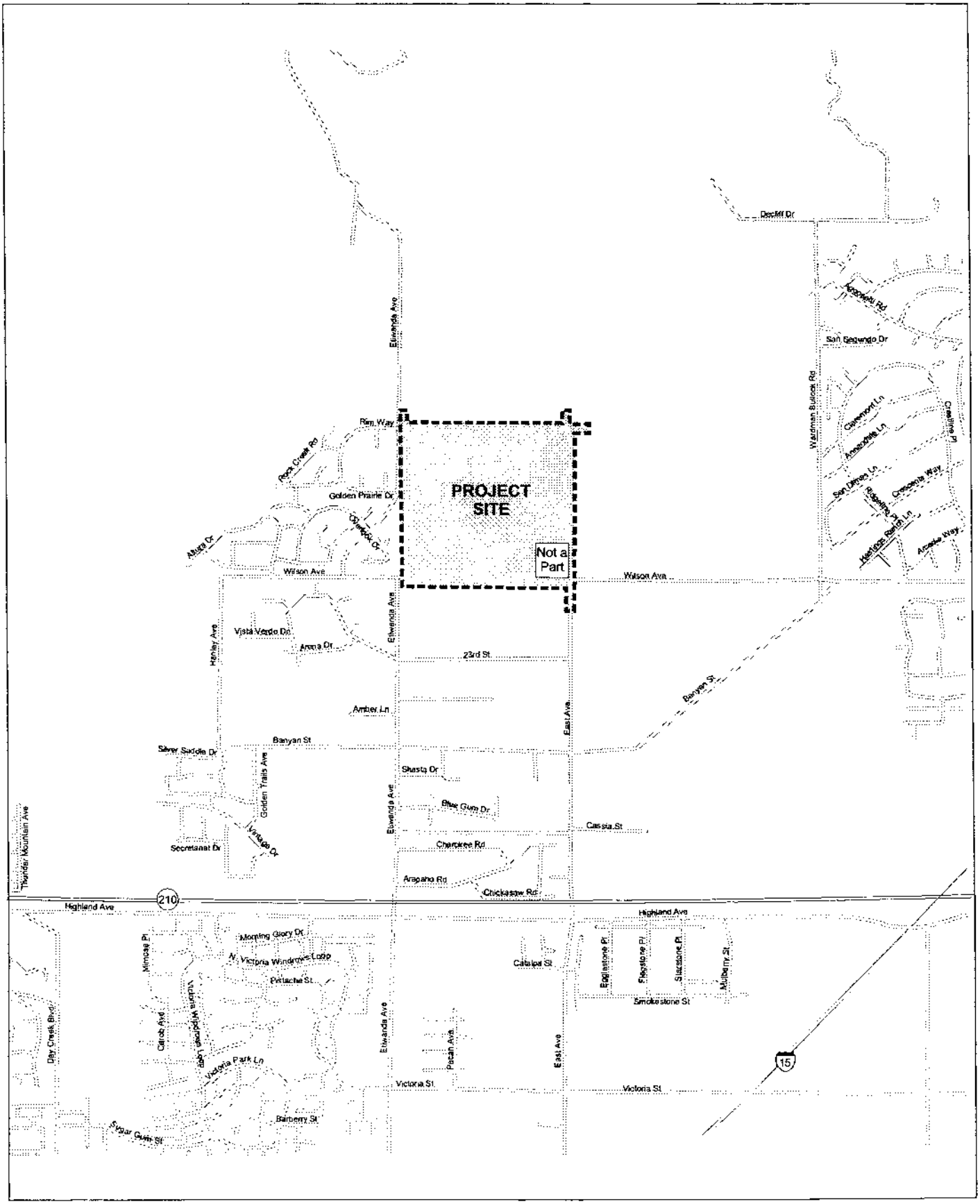
Michael Brandman Associates

00180027 • 09/2002 | 1_ Regional Location Map

Exhibit 1

Regional Location Map

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072



Source:

NORTH

2000 1000 0 2000

SCALE IN FEET

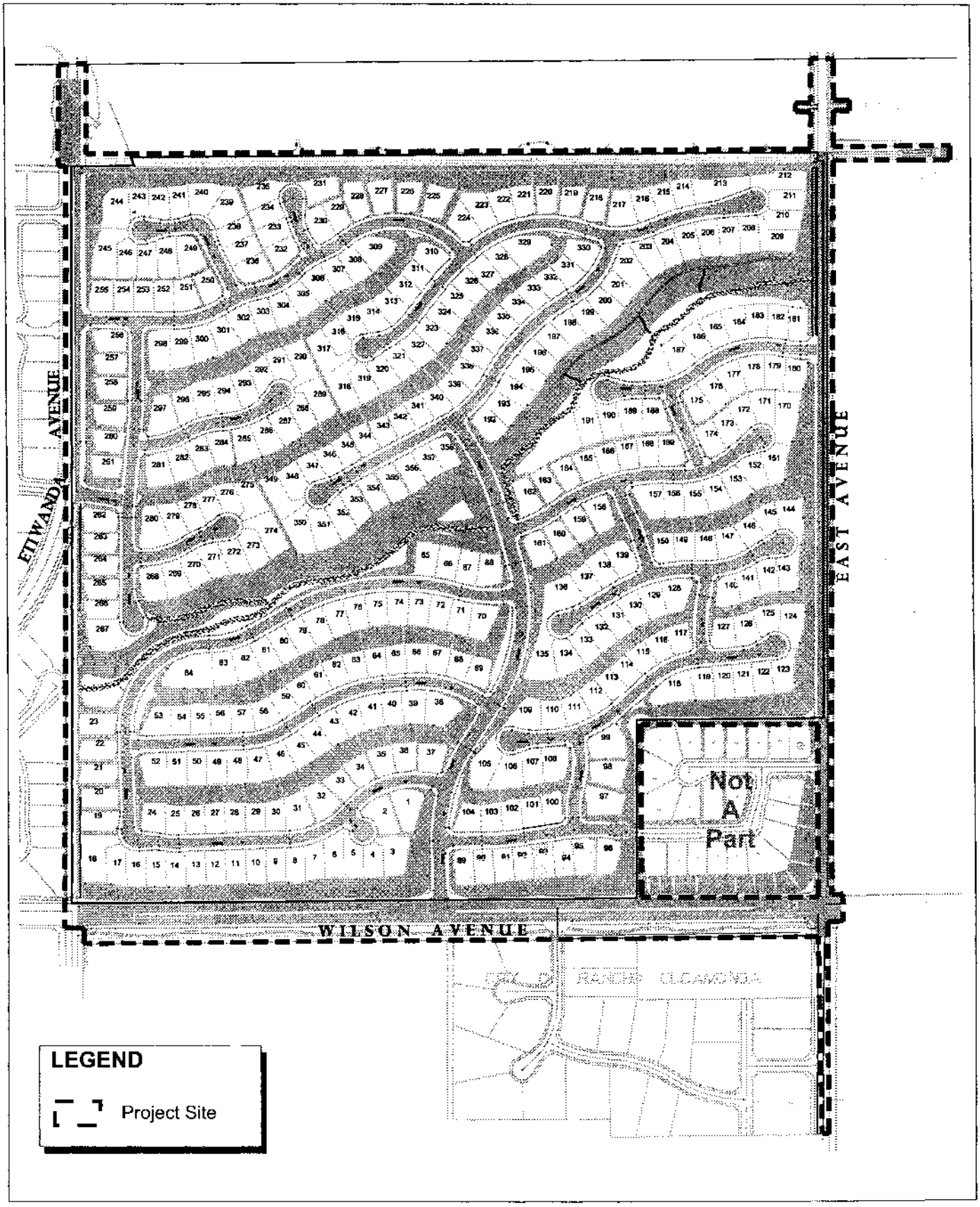
Exhibit 2

Vicinity Location Map

Michael Brandman Associates

00180027 • 09/20025 | 2_Vicinity Location Map.cdr

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072



SOURCE:

NORTH

470 235 0 470

SCALE IN FEET

Michael Brandman Associates

Exhibit 3

Site Plan

00180027 • 09/2002 | 3_Site Plan.cdr

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

Wastewater from the proposed project would be conveyed via the Etiwanda Avenue Trunk Sewer and the future East Avenue Trunk Sewer to the Inland Empire Utilities Agency wastewater treatment facilities. Domestic water would be provided to the project site by the Cucamonga County Water District (CCWD). Solid waste collected from the proposed project would likely be disposed of at the Mid-Valley Landfill in the City of Rialto, the closest landfill to the project site. Table 1 below provides a statistical summary of the proposed project.

Although the proposed project could be developed in one large phase, there is the potential for development to occur in phases. Regardless of whether the proposed project occurs in one or more phases, site preparation and earthwork would occur at one time, with appropriate storm drainage facilities installed to protect the graded areas until construction is completed. Construction grading would follow the general form of the existing topography. Earthwork cut and fill are anticipated to balance onsite, with total raw cut of approximately 1,000,000 cubic yards (cy).

Table 1

Project Statistical Summary

Land Use	Acreage	Percent
Single-family Detached Residential	94.18	62.5
Fault Zone/Open Space Area/Interim Detention Basin	13.24	8.78
Manufactured Open Space (Landscaped)	8.31	5.45
City Flood Channel	3.10	2.06
Public Streets	31.97	21.21
Total	**150.8**	**100**

1.3 SETTING AND SURROUNDING LAND USES

The project site is within the City's Sphere of Influence, within the Specific Plan, adopted in 1992. The most prominent feature of the Etiwanda North area is open space, comprised of about 3,000 acres of gently sloping relatively undisturbed, mature Riversidean alluvial fan sage scrub (RAFSS) dominated by white sage. The lower slopes of the San Gabriel Mountain foothills, approximately 1,700 acres, support primarily chaparral habitat. Drainage courses throughout the Etiwanda North area support a variety of habitats including oak, sycamore, walnut, and other woodlands. A unique feature of the area is an approximately 11-acre freshwater marsh located in the northwesterly portion of the area. Open space is expected to remain a prominent feature of the Etiwanda North area, even after development occurs and is supported by a low-density residential land use pattern.

The 150.8 project site is relatively flat, sloping to the southeast at an approximately six percent grade. Elevations range from approximately 1,800 feet above mean sea level (msl) at the northern boundary to approximately 1,600 feet above msl at the southeastern corner of the project site. There are two ephemeral drainages on the site that convey water flows from the northwest to the southeast and merge with a defined flood control channel offsite to the east (East Etiwanda Creek). There are three other minor drainages on the project site. The site is currently vacant.

Four potential historic resources have been previously identified on the project site. They include a power generation facility, a water system, and an abandoned residence and the remains of low stone walls in the northwest portion of the site. A cultural resources assessment will be conducted to assess their significance. The findings will be included in the EIR.

Primary existing vehicular access to the project site is provided via Etiwanda Avenue, which runs along the western boundary, East Avenue to the east and Wilson Avenue along the southern boundary (Exhibit 2).

Existing surrounding land uses include a residential development and Etiwanda Avenue to the immediate west, the CCWD treatment facility to the south and the Southerly Southern California Edison (SCE) power line corridor to the immediate north. North of SCE power line corridor and proposed project site is the location of a proposed 168.8-acre Tracy residential development site. Vacant land and the East Etiwanda Creek are located to the east.

1.4 PURPOSE OF THE INITIAL STUDY

This Initial Study was prepared as the first step in the environmental documentation process for the proposed project. The purpose of the Initial Study is to identify the appropriate issues that will be addressed in detail in the subsequent project EIR. To accomplish this, the Initial Study evaluates the extent to which the project will produce potentially significant impacts in accordance with the California Environmental Quality Act (CEQA). The objective of the Initial Study is to identify both: 1) those environmental issues that need not be further evaluated; and 2) those key environmental issues for which further analysis in the project EIR is necessary. The subsequent project-specific EIR that will be prepared for this project can be used by the City of Rancho Cucamonga not only for approval of the project but also for the adoption of a development agreement and to support the annexation process with the Local Agency Formation Commission (LAFCO).

1.5 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving impacts that are "Potentially Significant" as indicated by the checklist in Chapter 2.

■ Aesthetics	☐ Agricultural Resources	■ Air Quality
■ Biological Resources	■ Cultural Resources	■ Geology and Soils
☐ Hazards and Hazardous Materials	■ Hydrology and Water Quality	■ Land Use and Planning
☐ Mineral Resources	■ Noise	■ Population and Housing
■ Public Services	☐ Recreation	■ Transportation and Traffic
■ Utilities and Service Systems	■ Mandatory Findings of Significance	

1.6 DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

■ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT will be prepared.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment. But at least one effect (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Catherine Johnson, AICP	City of Rancho Cucamonga
Printed Name	For

2.0 ENVIRONMENTAL CHECKLIST

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS. – Would the project:				
a) Have a substantial adverse effect on a scenic vista?	■	☐	☐	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	■
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	■	☐	☐	☐
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	■	☐	☐	☐
II. AGRICULTURE RESOURCES. – Would the project:				
[In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland].				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	■
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	■
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	■

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
III. AIR QUALITY. -- Would the project:				
[Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations].				
a) Conflict with or obstruct implementation of the applicable air quality plan?	■	☐	☐	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	■	☐	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	■	☐	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	■	☐	☐	☐
e) Create objectionable odors affecting a substantial number of people?	■	☐	☐	☐
IV. BIOLOGICAL RESOURCES. -- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	■	☐	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	■	☐	☐	☐

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	■	☐	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	■	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	■	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	■	☐	☐	☐
V. CULTURAL RESOURCES. – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	■	☐	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	■	☐	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	■	☐	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	■	☐	☐	☐

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS. – Would the proposal:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning map issued by the State Geologist for the area or based on other substantial evidence of a know fault? Refer to Division of Mines and Geology Special Publication 42.	■	☐	☐	☐
ii) Strong seismic ground shaking?	■	☐	☐	☐
iii) Seismic-related ground failure, including liquefaction?	■	☐	☐	☐
iv) Landslides?	■	☐	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	■	☐	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-site or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	■	☐	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	■	☐	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks of alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	■

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VII. HAZARDS AND HAZARDOUS MATERIALS. – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	■	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	■	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	■	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	■	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	■
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	■	☐

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VIII. HYDROLOGY AND WATER QUALITY. – Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	■	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would he a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	■	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on-site or off-site?	☐	☐	■	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in flooding on-site or off-site?	☐	☐	■	☐
e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	■	☐	☐
f) Otherwise substantially degrade water qnality?	☐	■	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	■	☐	☐
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	■

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	■
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	■	☐
IX. LAND USE AND PLANNING. -- Would the project:				
a) Physically divide an established community?	☐	☐	☐	■
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	■	☐	☐	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	■	☐
X. MINERAL RESOURCES. -- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	■	☐
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	■	☐
XI. NOISE. -- Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	■	☐	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	■	☐	☐	☐

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	■	☐	☐	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	■	☐	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■
XII. POPULATION AND HOUSING. -- Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	■	☐	☐	☐
b) Displace substantial numbers of existing housing, uecessitating the construction of replacement housing elsewhere?	☐	☐	☐	■
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XIII. PUBLIC SERVICES. – Would the project:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	■	☐	☐	☐
Police protection?	■	☐	☐	☐
Schools?	■	☐	☐	☐
Parks?	☐	☐	■	☐
Other public facilities?	■	☐	☐	☐
XIV. RECREATION. --				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	■	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	■	☐

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XV. TRANSPORTATION/TRAFFIC. – Would the project:				
a) Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	■	☐	☐	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	■	☐	☐	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	■
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?		☐	■	☐
e) Result in inadequate emergency access?	☐	☐	■	☐
f) Result in inadequate parking capacity?	☐	☐	■	☐
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	■	☐
XVI. UTILITIES AND SERVICE SYSTEMS. – Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	■	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	■	☐

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	■	☐	☐	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resource, or are new and expanded entitlements needed?	☐	☐	■	☐
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	■	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	■	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	■	☐
XVII. MANDATORY FINDINGS OF SIGNIFICANCE. –				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	■	☐	☐	☐

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	■	☐	☐	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	■	☐	☐	☐

3.0 EVALUATION OF ENVIRONMENTAL IMPACTS

An Environmental Checklist Form is used to evaluate the potential environmental impacts associated with a project. A brief explanation is provided for all answers except No Impact answers that are adequately supported by the information sources. A *No Impact* answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A No Impact answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

Once the City of Rancho Cucamonga (lead agency) has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. *Potentially Significant Impact* is appropriate if there is substantial evidence that an effect may be significant. If there are one or more potentially significant impacts, a detailed analysis is required to determine if there are feasible mitigation measures to reduce the potentially significant impact to less than significant. If the impact cannot be reduced to less than significant, an unavoidable significant impact would occur and an environmental impact report (EIR) would be required.

Less Than Significant with Mitigation applies where the incorporation of mitigation measures has reduced an effect from a potentially significant impact to a less than significant impact. The City must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level.

The Environmental Checklist Form has been used to assist in the review of environmental effects of the proposed project with respect to the following resources:

- Aesthetics;
- Agriculture Resources;
- Air Quality;
- Biological Resources;
- Cultural Resources;
- Geology and Soils;
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;
- Land Use and Planning;
- Mineral Resources;
- Noise;
- Population and Housing;
- Public Services;
- Recreation;
- Transportation and Traffic; and
- Utilities and Service Systems.

Responses to the checklist questions are provided in the following sections.

3.1 DISCUSSION OF ENVIRONMENTAL CHECKLIST

I. AESTHETICS

a: **Potentially Significant Impact.** Panoramic views of the San Bernardino National Forest and the San Gabriel Mountains to the north and Etiwanda Creek to the east of the site represent scenic vistas. The San Gabriel Mountains are recognized within the General Plan as the City's most prominent feature and provides a scenic backdrop to the community. Scenic views might be obstructed by the proposed development. This site also provides panoramic views of the City and valley. Effects of visual impacts will be further evaluated in the EIR.

b: **No Impact.** The proposed project site is located approximately 1.5 miles from the Interstate 15 freeway and the new Interstate 210 freeway. Neither one of these roadways is designated as a scenic highway in the area. No significant effects will, therefore, occur to scenic resources within a state scenic highway.

c: **Potentially Significant Impact**. The proposed project is located within the North Etiwanda Open Space and Habitat Preservation Program (NEOSHPP) area. The NEOSHPP area was established by the County of San Bernardino to encourage retention of open space and protect sensitive biological resources. Although the NEOSHPP is a voluntary program that has never been fully implemented, it does establish guidelines to conserve scenic and valuable habitat in a region considered to be one of the nation's fastest growing housing markets.

The visual character of the site is of a gentle slope from the northwest to the southeast at an approximate grade of six percent, on the Etiwanda Alluvial Fan on the southern slope of the San Gabriel Mountains. The site is covered with native vegetation and a blue line stream traverses the site from the northwest corner to the southwest corner. A prominent ridge, known as the Etiwanda Avenue Scarp, traverses the project site in a northeasterly to easterly direction. The proposed project has the potential to alter the visual character of the site by development of residential housing in an otherwise undisturbed area. The EIR will examine the significance of changes to the visual character of the site and surrounding properties as well as consistency with the visual goals of the NEOSHPP, Specific Plan and City General Plan.

d: **Potentially Significant Impact.** The proposed project consists of up to 359 single-family detached houses on 150.8 gross acre site. Street lights will be installed on the new streets. Street lights in combination with residential lighting and lights from nighttime vehicular travel will create a new source of light in the area. Potential significant effects from new sources of light and glare will be further evaluated in the EIR.

II. AGRICULTURE RESOURCES

a, c: **No Impact.** The project site is located within the Low to Very Low Density Residential Districts within the Etiwanda North Specific Plan, which does not permit agricultural uses. The project site has not been identified as, and will not convert prime farmland, unique farmland, or farmland of statewide importance to non-agricultural use. No impact on agriculture resources will occur.

b: **No Impact.** Williamson Act contracts have not been executed for lands surrounding the project; no conflicts with a Williamson Act contract will occur.

III. AIR QUALITY

a-e **Potentially Significant Impact.** According to the General Plan EIR, the City is located in an area where ozone levels exceed state and federal standards, and where PM10 (particulate matter less than 10 microns in size) frequently exceed state standards (54.6 %) and occasionally exceed federal standards (3.3%). An additional 359 single-family residential units will be added as a result of this project. This increased land use intensity will result in additional vehicle trips as well as stationary source emissions. Air quality impacts will be evaluated in the EIR based on significance criteria provided by the South Coast Air Quality Management District. Emissions from construction activities, including dust from grading, and from operational emissions generated by the proposed land use revision will be evaluated in an air quality study conducted for the proposed project. Minor quantities of other emissions associated with the use of natural gas for space and water heating and the production of electricity for onsite use, as well as landscape maintenance emissions and consumer aerosol products will also be included. The air quality analysis included in the EIR will also provide a consistency review against the General Plan as well as the goals of the Air Quality Management Plan.

IV. BIOLOGICAL RESOURCES

a: **Potentially Significant Impact.** The project site is within the known range of the federally-listed threatened coastal California gnatcatcher (CAGN) (*Polioptila californica californica*) and the federally-listed endangered San Bernardino kangaroo rat (SBKR) (*Dipodomys merriami parvus*). Focused surveys were conducted to ascertain the presence or absence of the CAGN by PCR Services Corporation in 2001 and 2002. Both CAGN surveys were negative. Focused surveys for the SBKR will be conducted in Summer 2002. A sensitive plant survey was also conducted by PCR in 2001. The findings of the surveys will be incorporated into the EIR, the technical reports will be included in their entirety in the EIR

Appendices. If any listed species are found to be present onsite, the EIR will identify the appropriate mitigation necessary to satisfy both CEQA and State and Federal Endangered Species Act (ESA) regulations.

Other resources that may suffer a significant impact are birds of prey, which are protected under California Department of Fish and Game (CDFG) codes 3503 and 3503.5. The project site contains several large trees for nesting as well as foraging habitat for several species of raptors, including, but not limited to, red-tailed hawk* (*Buteo jamaicensis*), ferruginous hawk (*Buteo regalis*), Cooper's hawk* (*Accipiter cooperii*), golden eagle (*Aquila chrysaetos*), red-shouldered hawk* (*Buteo lineatus*), northern harrier* (*Circus cyaneus*) and American kestral* (*falco sparverius*). (*Denotes these species were observed onsite.)

CDFG has listed some species as "species of concern" in California. Some of these species were observed on the project site. These include: logger-headed shrike (*Linius ludovicianus*), Cooper's hawk (nesting), northern harrier (nesting), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), Bell's sage sparrow (*Amphispiza belli belli*), Plummer's mariposa lily (*Calochortus plummerae*), and California black walnut (*Juglans californica*). A large population of Plummer's mariposa lily occurs on the project site and development of this site could significantly impact that species.

Potential impacts to biological resources will also be balanced against the Specific Plan Development Framework, City of Rancho Cucamonga's General Plan Conservation Element as well as the goals and policies of the County's General Plan Natural Resources Element, the County's North Etiwanda Preserve and its NEOSHPP conservation/open space program.

b, c : **Potentially Significant Impact.** The project site and vicinity supports relatively undisturbed, mature Riversidean alluvial fan sage scrub (RAFSS) dominated by white sage. This plant community is considered sensitive by the CDFG. The EIR will provide further evaluation of the impacts associated with the direct loss of 100+ acres of RAFSS on the project site, the indirect impacts expected to occur from extending infrastructure onto the project site and the cumulative loss of RAFSS based on the approval of the project as well as other projects in the vicinity (e.g., the Tracy Development, the Rancho Etiwanda Estates Development and the University/Crest Project).

The project site was once an active alluvial fan receiving flow from upstream water sources as well as providing natural watercourses during flood events. Flood control facilities constructed by the County have eliminated most of the previously occurring natural watercourses onsite and in the vicinity. A jurisdictional delineation was conducted on the project site by PCR in September 1998 to determine the U.S. Army Corps of Engineers (USACE) and CDFG

jurisdictional areas. Two jurisdictional drainages were found. The 1998 jurisdictional delineation report will be updated and included in the EIR Appendices. The findings will be incorporated into the EIR's biological resources section.

d: **Less Than Significant Impact.** The project site does not contain watercourses that support fish. Although the vicinity of the project site is adjacent to undeveloped areas to the north, areas east, south and west of the project site are developed. The project site, therefore, does not provide regional movement for wildlife species and does not link large open space areas for wildlife species. No significant impacts to the movement of any fish or wildlife species and wildlife corridors, therefore, would occur. However, localized wildlife movement may be impeded by the development. The project will not impede the use of native wildlife nursery sites.

e: **Less Than Significant with Mitigation.** Trees that have been identified on sit include blue gum Eucalyptus, Peruvian pepper tree, olive tree, silk tree and Southern California black walnut. The City of Rancho Cucamonga has a local tree preservation ordinance that requires a City permit to remove any tree over 15-feet high and 15-inches in circumference. Any trees that meet these specifications will be identified during the biological studies conducted for the proposed project, and mitigated according to City requirements.

Section 89.0510 of the County of San Bernardino Development Code has a native plant protection ordinance, that provides "The removal of any vegetation within two hundred (200) feet of the bank of a stream or in an area indicated as a protected riparian area on an overlay map or Specific Plan, shall be subject to a tree or plant removal permit ..." The ordinance further provides that "... streams include those shown on United States Geological Survey Quadrangle topographic maps as perennial or intermittent, blue or brown lines (solid or dashed), and river wash areas."

The Cucamonga Peak USGS Map identifies the area as having a blue line stream traversing the project site. However, flood control facilities constructed subsequent to the preparation of the USGS map, have changed the area's drainage course and restricted it to the new channels. As a result, the vegetation in the area has been affected due to the removal of the upstream water source and represents a clear exception to the ordinance. In addition, the change in the historic drainage course has modified existing vegetation from riparian to RAFSS dominated by white sage. Therefore, the removal of the existing vegetation is not expected to result in a significant impact to riparian vegetation.

f: **Potentially Significant Impact.** In 1992, the Etiwanda North Specific Plan (Specific Plan) established a master plan for the project area that focused on maintaining the community's rural atmosphere by preserving its historic ranchos, orchards, and wineries. Many of the features discussed in the Specific Plan are now incorporated in the City's recently updated General Plan.

The Specific Plan is currently the guiding document for planned development within the northern portion of the community of Etiwanda. Key guidelines within the Specific Plan include mixed use and low-density development balanced with recreational and open space areas. The City General Plan adds conservation areas in the North Etiwanda area to protect its unique natural resources and to provide buffer areas between urban communities and the San Bernardino National Forest.

The North Etiwanda area is also recognized as a vital resource for the preservation of native plant and animal species through the guiding principles stated in the County of San Bernardino's North Etiwanda Open Space Habitat Preservation Program (NEOSHPP). The NEOSHPP's main focus is on the preservation of rare and endangered species. It also addresses concerns with providing visually pleasing natural open spaces and recreational opportunities to the surrounding community. Although the NEOSHPP is a voluntary program that has never been fully implemented, it does establish guidelines to conserve scenic and valuable habitat in a region considered to be one of the nation's fastest growing housing markets.

The EIR will provide further analysis to assess the project's consistency with the Specific Plan and NEOSHPP in terms of habitat conservation/preservation.

V. CULTURAL RESOURCES

a-c: **Potentially Significant Impact.** Known archaeological sites have been recorded in the vicinity of the project site. The Gabrielino Indians were also known to occupy the Etiwanda area, hence, Native American artifacts could be present onsite. The project is located in Etiwanda, a community formed in the late 1800s when water rights were developed. George and William Chaffey purchased land and water rights and established the "Etiwanda Colony Lands," a planned colony consisting of approximately 1,900 acres of agricultural land. The Colony was subdivided into 10 acres lots and a flume and clay pipe system distributed water to the individual landowners from Day and East canyons. Four potential historic resources have been previously identified on the project site. They include a power generation facility, a water system, and an abandoned residence and the remains of low stone walls in the northwest portion of the site. A thorough record review and site reconnaissance will be conducted to

identify and evaluate the potential for cultural resources to occur. The findings will be included in the EIR. The EIR will provide a complete discussion of the findings of the cultural assessment and the technical report will be included in its entirety in the EIR Appendices.

Should no visible historical, cultural and/or paleontologic resources be observed as a result of site surveys, the EIR will still identify measures to be followed should sub-surface resources be discovered during construction activities. These procedures may include, but not be limited to stopping work and diverting earth-disturbing activities elsewhere, and retaining a qualified archaeologist or paleontologist to assess and recover the resources.

d: **Potentially Significant Impact.** The potential presence of burial sites will be assessed during the cultural assessment. Should the project site contain human remains, the EIR will include the appropriate mitigation to ensure that no impacts occur to these resources. Further, the EIR will identify measures to be taken in the event human remains are encountered during construction. These measures will be consistent with the State Health and Safety Code 7050.5.

VI. GEOLOGY AND SOILS

a-d: **Potentially Significant Impact.** The 150.8-acre site is bisected in a northeasterly to easterly direction by the Red Hill/ Etiwanda Avenue fault, which in this area is known to be active. This portion of the fault corresponds with a prominent scarp in the alluvial fan, known as the Etiwanda Avenue Scarp, which is the result of the displacement of recent alluvial deposits, and is included in an Alquist-Priolo Special Studies Zone. The site is also located near the Cucamonga and San Jacinto faults, both active and capable of generating moderate to large-sized earthquakes that would cause strong ground shaking in the area. Other faults nearby also have the potential to cause strong ground shaking. Given its location at the base of the San Bernardino Mountains, the project site is also susceptible to debris flows and flooding during intense precipitation events. Oversized materials (boulders) will also be exposed during grading which will need to be buried under engineering controls or otherwise disposed of appropriately. Other geologic issues include, but are not limited to, earthquake-induced liquefaction and slope instability, soils, and wind erosion.

A Geologic/Fault Investigation was conducted for the proposed project site by GeoSoils, Inc. in October 1998 and updated in November 2000 and July 2002. A review of other pertinent, readily available reports and maps on the geology and seismicity of the area, including the Technical Background Report to the City's General Plan Safety Element will also be conducted for the preparation of the EIR. An analysis will be included in the EIR of the

estimated magnitude and duration of strong ground shaking that can be expected at the site from the largest earthquake caused by each of the major active and potentially active faults within a 60-mile radius. In addition, data obtained by reviewing stereoscopic aerial photographs for landforms that may be indicative of faulting, and evidence of historic floods that may have previously impacted the site will be discussed. The data obtained from the literature, map and photo review will be compiled onto a baseline map and included in the EIR.

The compiled seismic, geologic and flooding data will be analyzed to assess which portions of the site are at risk from the hazards identified, and to evaluate the potential constraints that these hazards may pose on the proposed project. Where appropriate, remedial measures that could be implemented to mitigate the hazards and constraints will be identified in the EIR. At a minimum, the project proponent will be required to include the direction and setback distance of the building setback line on the site grading plan(s). Final project plans should also be reviewed by GeoSoils, Inc. prior to construction, in order to assure construction is in accordance with the geologic/fault investigation report.

e: **No Impact.** The proposed project does not involve the use of septic tanks or alternative wastewater disposal systems. No impacts associated with these facilities will, therefore, occur.

VII. HAZARDS AND HAZARDOUS MATERIALS

a-b: **Less Than Significant Impact.** There are no existing Superfund sites within the City. There are 24 large quantity (greater than 1,000 kilograms per month) generators within the City including chemical manufacturers, electroplating companies, or petroleum refineries. There are 74 small quantity (between 100 and 1,000 kilograms per month) generators within the City including dry-cleaning, auto repair shops, and photo processing centers. There are two potentially un-remediated leaking underground storage tanks in the City.

The transportation of hazardous wastes/materials on freeways and major arterial roadways poses flash point (fire) and explosive potential. In addition, trucks using these roadways may transport solid, liquid, and/or gaseous material of varying toxicity. Restrictions placed on the transport of hazardous waste/materials include the avoidance (unless no other satisfactory route exists) of heavily populated areas, limitations on access to bridges and tunnels, and a 1-mile-wide zone limitation along freeways for access to fuel and services. The disposal of hazardous waste is also highly regulated. The project does not include uses which are likely to create any health hazards, or result in accidental explosions or release of

hazardous substances. Exposure to people of hazards associated with hazardous materials is therefore less than significant.

Some hazardous materials, such as asphalt and paint, will be used during the residential construction process. However, ordinary quantities of these materials, stored in accordance with City Fire Department requirements, will not pose a significant risk to the public.

c: **Less Than Significant Impact.** The nearest school is located on the northeast corner of Summit Avenue and East Avenue, approximately half a mile from the project site. As explained above, the project does not include uses which are likely to create any health hazards. Therefore, impacts related to schools and hazardous materials are less than significant.

d: **Less Than Significant Impact.** According to the U.S. Environmental Protection Agency, there are no existing Superfund sites within the City. The proposed project is not located on a site that is included on a list of hazardous materials sites pursuant to Government Code Section 65962.5 and therefore would not create a hazard to the public or the environment.

e, f: **No Impact.** The Rialto Municipal Airport is located approximately 7 miles to the east. The Ontario International Airport is located approximately 10 miles to the southwest of the project site. There is a direct correlation between potential hazard and distance to an airport. Given the large distance between the proposed project and the respective airports, the airports do not represent a hazard for construction workers or people residing in the project area.

g: **No Impact.** The City of Rancho Cucamonga General Plan provides that "Primary and secondary routes should be designated for evacuation and access by emergency services. Different routes may need to be identified for different natural disasters". Through the environmental review process, consistency with the City's General Plan will be ensured.

h: **Less Than Significant Impact.** The proposed project is located at the interface of the City of Rancho Cucamonga's designation of Hazardous Areas and Non-hazardous Areas for wildland fires. The General Plan provides that "In areas designated as high fire hazard, the City and County should undertake or continue programs to minimize fuel buildup around residences and other occupied structures." The Plan further specifies programs to reduce hazards, including "Fire buffers along heavily traveled roads should be created by thinning, discing, or controlled burning subject to air quality restrictions."

The project site does not contain a roadway designated as an emergency route. Compliance with emergency access requirements of the County and City Fire Departments and the City's

Police Department will ensure that emergency response to the site will not be affected. Emergency fire response may also be served by the California Department of Forestry Etiwanda Fire Station located approximately 1.5 miles south of the project site. Construction operations may temporarily impede traffic flow during construction activities of the project. Detours and lane closures, if required, will be provided to maintain adequate access during any construction activities, including notification of lane restrictions and detours to adjacent users. Given these factors, no significant impact is anticipated.

VIII. HYDROLOGY AND WATER QUALITY

a, e: **Less than Significant with Mitigation.** The proposed project is located on the foothills of the San Gabriel Mountains, on the Etiwanda alluvial fan which is characterized by a fairly steep 6 percent grade. Etiwanda Creek is less than 1/4 mile to east of the proposed project. Day Creek Channel is over 1 mile to the west. A prominent fault scarp trends northeast across the project site. A blue line stream trends south, southeast across the project site.

The proposed project would result in the alteration of exiting drainage patterns and the amount and quality of surface runoff on the project site due to grading construction of impervious surfaces, irrigation of landscaped areas and the addition of residential and open space uses.

The project includes a proposed storm drain system that will connect to the existing channel west of the project site to the Etiwanda Regional Spreading Grounds located east of the project site. The storm drain system has been designed to accommodate storm flow requirements. A series of interim onsite detention basins is also proposed in the fault zone open space area. These temporary facilities are required until the San Bernardino County Flood Control District completes planning and construction of the San Sevaine Regional Mainline Channel, regional flood control facilities for Etiwanda Creek outlined in the County Master Drainage Plan.

Proposed residential uses would have the potential to create contaminated runoff containing compounds such as landscape chemicals and automotive fluids. Since the area of disturbance is greater than 5 acres, the project will require the preparation of a Storm Water Pollution Protection Plan (SWPPP) and the filing of a Notice of Intent with the Regional Water Quality Control Board (RWQCB). As part of standard construction practices, the City and RWQCB will require compliance with best management practices (BMPs) to ensure potentially harmful chemicals or pollutants are not discharged from the site. Such measures may include sandbags, temporary drainage diversion and temporary containment areas.

b: **Less Than Significant Impact.** The proposed project does not include the injection into or the extraction of groundwater. Domestic water supply will he provided by the Cucamonga Cuunty Water District. Project construction will not require substantial subsurface cuts which may impede groundwater movement.

The amount of impervious features included in the proposed project (e.g., foundations, sidewalks, streets, etc.) construction will not significantly affect groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. Open space areas will continue to allow for onsite recharge and storm flows collected within the storm drain system will be directed to the Etiwanda Spreading Grounds which will also allow for storm flow percolation to occur.

c-d: **Less Than Significant Impact.** The project site contains two ephemeral drainages. The largest drainage begins at the confluence of the concrete flood control channel (located at the northern end of the property, adjacent to the residential development west of the project site), and a natural channel that flows from the northwest. The natural portion of the drainage flows to the southeast and merges with a defined flood control channel that parallels the southern boundary of the project site. The second drainage is located on the east side of the project site. It flows from the northwest to southeast and offsite, eventually merging with the flood control channel on the southern boundary.

The proposed project would result in the alteration of the existing drainage patterns and the amount and rate of surface runoff due to grading, construction of impervious surfaces, irrigation of landscaped areas, and the addition of residential and open space uses. To compensate for the additional runoff from the development area, drainage facilities would be provided as part of the proposed project to direct runoff to storm drainage facilities. The proposed storm water drainage/detention basin system would replace the existing drainages on the project site. These engineered control systems are designed as to reduce any potential of substantial erosion, siltation, or flooding on- or offsite.

f: **Less than Significant with Mitigation.** Implementation of the proposed project would result iu grading of up to approximately 150.8 acres. The proposed project has the potential to cause changes in the quality of surface water. Construction of the proposed development would require grading and excavation activities that may allow eroded soils and other pollutants to enter the storm drain system. Storm water runoff from roadway surfaces may be contaminated by sediment, petroleum products, and commonly utilized construction materials. The mass grading of 150.8 acres could have a significant impact on water quality and result in substantial erosion. Grading activities associated with the implementation of the proposed project could result in sediment being released into area storm drains. Therefore, the project

will require the preparation of a Storm Water Pollution Protection Plan (SWPPP) and the filing of a Notice of Intent with the Regional Water Quality Control Board. As part of standard construction practices, the City of Rancho Cucamonga will require compliance with best management practices (BMPs) to ensure potentially harmful chemicals or pollutants are not discharged from the site. Such measures include sandbags, temporary drainage diversion and temporary containment areas. The project proponent will also have to apply for grading permits and supply an erosion control plan. A construction permit must he obtained from the California Regional Water Quality Control Board, Santa Ana Region, for grading activities.

Once construction is completed, residential uses could have the potential to create contaminated runoff containing constituents such as landscape chemicals and petroleum products. The EIR will provide further analysis of the effects to hydrology and water quality that could potentially occur with project implementation. A hydrological study for the proposed project is currently being prepared. The findings will be included in the project EIR.

g: **No Impact.** The proposed project site lies on an alluvial fan. The upstream watershed of the property is currently undeveloped and supports a series of drainages, several of which continue across the alluvial fan onto the project site. The project site lies within Zone "D" of the Flood Insurance Rate Map, indicating that the flood hazards are currently undetermined. Episodic flooding has occurred as a result of generalized flows from direct rainfall to the area. General flood protection would be provided by the construction of the 25th Street Diversion Channel, when completed. Interim flood control would be provided through on site detention basins until flood control improvements are complete adjacent to the Interstate 210 freeway. A Federal Emergency Management Agency (FEMA) study would be required, along with a letter of map revision through FEMA. The study would identify any necessary mitigation measure, if any portion of the project area is determined to be within Zone "A," which would indicate a serious potential risk from flooding.

h, i: **No Impact.** According to the City General Plan, the project site is not located within the 100-year floodplain. Therefore, implementation of the proposed project would not place housing in a 100-year hazard area or place structures within a 100-year hazard area which would impede or redirect flood flows.

j: **Less Than Significant Impact.** The geographic location and elevation of the project site precludes effects from tsunamis. The proposed project does not include the coustruction of reservoirs or other large water storage facilities that could cause a seiche. The project site lies at the base of the San Gabriel Mountain foothills. Although the site could be impacted by mudflows or landslides caused by extreme environmental conditions and downslope grading activities, the risk of loss due to mudflows will be reduced with the addition of the proposed

storm drainage system and the incorporation of Best Management Practice into the design of the project. The potential of mudflow or landslide impacts will be further addressed in the EIR. Development standards will be imposed on the applicant and other special requirements including a detailed slope analysis, grading plan, geologic report, and a soils erosion control plan. All reports/studies/plans will be reviewed and addressed in the EIR.

IX. LAND USE AND PLANNING

a: **No Impact.** The project site is located in an unincorporated area of the County and within the City's Sphere of Influence. There is currently no established community that will be affected by this project. Land uses in close proximity to the project site include an SCE powerline and vacant land to the north, vacant land and the County flood control channel to the east, a residential development to the west and the Cucamonga County Water District treatment plant to the immediate south. The project site is currently vacant. Implementation of the proposed project will, therefore, not physically divide an established community. This project is consistent with newly constructed and proposed housing projects within the immediate area.

b: **Potentially Significant Impact.** The proposed project is a residential development of up to 359 detached single-family homes with a density of approximately 2.4 dwelling units per acre. The land is currently in the unincorporated area of San Bernardino County but lies within the City of Rancho Cucamonga Sphere of Influence. Annexation into the City is being proposed as part of the project. The City's General Plan currently designates the southern portion of the project site as Low Medium density residential housing (4 to 8 dwelling units per acre) and the northern portion of the site as Low Density (2 to 4 dwelling units per acre). The proposed development will require annexation into the City, but is consistent with the City's current General Plan.

The project is also part of the City's Etiwanda North Specific Plan (Specific Plan). Under the Specific Plan, the current land use designations are Low Density Residential (2 to 4 dwelling units per acre) for the southern portion of the project site and Very Low Density Residential (less than two dwelling units per acre) for the northern portion of the site. Though the southern portion of the project site is consistent with the Specific Plan, an amendment of the City's Specific Plan may be required for the northern portion of the project site.

c: **Less than Significant Impact.** The North Etiwanda area is recognized as a vital resource for the preservation of native plant and animal species through the guiding principles stated in the County of San Bernardino's North Etiwanda Open Space Habitat Preservation Program (NEOSHPP). The NEOSHPP's main focus is on the preservation of rare and endangered species. However, the NEOSHPP is a voluntary program that has never been fully

implemented. Therefore, the proposed project will not conflict with an adopted conservation plan.

X. MINERAL RESOURCES

a, b: **Less Than Significant Impact.** Based on a review of the County of San Bernardino General Plan Mineral Resources Overlay map, the project site is classified MRZ-2. This category describes areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for this presence exists. Mining activities do not presently occur on the site; but active aggregate mining operations presently occur throughout the area. The City General Plan also notes that the extraction of aggregate impacts the surrounding environment and can adversely impact adjacent planned land uses. Consequently, certain land use patterns in proximity to resource extraction areas are generally incompatible. Because the site may contain some mineral resources, a soil study will be conducted to evaluate soil test results to confirm that the potential of incremental loss of any aggregate resources present on the project site will be considered less than significant. The findings of the study will be included in the project EIR.

XI. NOISE

a, d: **Potentially Significant Impact.** The nearest noise sensitive receptors in proximity to the project site include single-family residences located directly to the west and southwest; and Etiwanda Creek Park, a community park located approximately one-third of a mile southeast of the project site. An analysis of the potential noise impacts of the proposed project will be documented in a technical report and included in the project EIR. The noise assessment will analyze construction-related noise levels and future noise levels form vehicle-generated noise both with and without the proposed project. The County and City Noise Ordinance standards will be used in the analysis of construction- and traffic-related noise levels.

b: **No Impact.** The proposed project consists of a residential development that would not require the use of pile drivers or other high vibration generation equipment. Therefore, construction activities are not anticipated to cause excessive groundborne vibration or groundborne noise levels.

c: **Potentially Significant Impact.** The development of new housing and subsequent increases in traffic would increase ambient noise levels above existing levels. The City of Rancho Cucamonga has specified Land Use Noise Standards for residential, commercial/office and industrial land uses. Noise impacts related to this project and their consistency with the City's

Land Use Noise Standards will be assessed in the noise study conducted for the project. The findings of the study and the technical report will he included in the EIR.

e, f: **No Impact.** The project site is not located within an airport land use plan, nor is it located within two miles of a public airport, public use airport or in the vicinity of a private airstrip. The closest airport to the project site is the Rialto Municipal Airport located approximately six miles to the east. No impact associated with airport-related noise would, therefore, occur.

XII. POPULATION AND HOUSING

a: **Potentially Significant Impact.** The proposed project is included in the planning area of the City's General Plan. Future development under the General Plan is expected to result in a population of 156,778 people within the General Plan, planning area. This future population represents an increase of 31,178 people, or a 25% increase from the current population under General Plan estimated baseline conditions in 2000. Future development is expected to result in 55,612 housing units throughout the planning area. This future housing represents an increase of 13,500 new housing units, or a 32% increase from the current population under General Plan estimated baseline conditions in 2000.

According to SCAG, future growth is expected to continue to be concentrated in the southwestern portion of the County, particularly with the stimulation of employment growth resulting from the Ontario Airport expansion and other rapidly developing industry in the area.

The project proposes development of 359 dwelling units, which would provide residence for approximately 1,238 people, based on the average household size of 3.48 people per household. Thus, the proposed project will provide 2.7% of the City's future housing needs, for 4% of the City's future population.

The installation of new roadways and utility lines serving the new residential development could potentially induce the continuation of an urban development trend occurring within the area. The EIR will provide a detailed analysis of projected growth and indirect impacts.

b, c: **No Impact.** The proposed project is located on undeveloped property and would not result in displacement of substantial numbers of existing housing or people.

XIII. PUBLIC SERVICES

a: The City proposes annexation of the site as part of the proposed project. Providing services to a new residential community of approximately 359 single-family homes will result in an

increased demand for various public services, including police, fire, schools, parks, etc. Funding for expanded public services may be fully or partially offset through development fees, however the impacts to existing public services will be assessed in the EIR.

Fire protection. **Potentially Significant Impact.** Fire protection services would be provided the by the Rancho Cucamonga Fire District. Fire Station 173 would be the first due, with a response time of approximately five minutes. Stations 175 and 174 would provide additional fire protection support. A new Fire Station, 176, will open in late 2003 at East Avenue and 23rd Street. The Rancho Cucamonga Fire District has an automatic aid agreement with all surrounding fire agencies. The California Department of Forestry Etiwanda Fire Station, located approximately 1.5 miles south of the project site, would provide added service for those emergencies involving wildland fires. Fire protection services may be particularly significant given the project site's location within a high probability, high consequence fire hazard area. Upon development the project would become part of the Very High Fire Severity Zone subject to specific Health and Safety Code requirements. The project would also be subject to the requirements of the San Bernardino County Fire Safety Overlay District. The project would also be located within Community Facilities District 88-1. The revenue from the CFD is intended to mitigate the impact of development on Fire District services.

Police protection. **Potentially Significant Impact.** The City of Rancho Cucamonga currently contracts with the San Bernardino County Sheriff's Department for police protection services. The City's General Plan identifies the potential for locating a Sheriff's Substation in the North Etiwanda area to provide effective service to the developing community. The impacts for providing police protection services to the proposed project will be analyzed and addressed in the EIR.

Schools. **Potentially Significant Impact.** The City's General Plan identifies a potential shortage of schools within the community due to anticipated growth. The proposed project is located within the Etiwanda School District Extension Area. According to the General Plan, as of early 2001, three of the five school districts serving the City have no additional student capacity.

Of the four elementary school districts, only the Etiwanda School District reports being below capacity, but only as a result of new school construction. In the next five-years, the Etiwanda School District anticipates a significant increase in enrollment and has been building new schools to accommodate that growth. As most of the vacant land available for residential development is located within the Etiwanda area, the Etiwanda School District will be most impacted by future development.

The Chaffey Joint Union High School District extends throughout the city. A new high school was constructed in 1993 to provide for additional capacity during the 1994-95 school year. An additional high school may also be necessary to provide adequate resources for projected growth.

Development fees to support expanded school services are authorized under the California Educational Code. Currently, new development is assessed a fee of $1.93 per square foot for residential development and $0.31 per square foot of commercial/industrial development. The impacts for providing additional classroom capacity will be evaluated in the EIR.

Parks. **Less Than Significant Impact.** The proposed project will increase demand on public parks. The City maintains a park standard of five acres of parkland for every 1,000 residents. The project will provide approximately 13 acres of new recreational land as part of the project. This recreational space will provide the community with hiking and biking opportunities along a multi-purpose trail and open-space paseos which will ultimately connect to the regional trail network along East Avenue.

Other public facilities. **Potentially Significant Impact.** The increased population caused by the addition of 359 new single-family homes will place additional demands on a variety of public services including hospitals, medical offices, public transportation, libraries, etc. the significance of these impacts will be evaluated and discussed in the EIR.

XIV. RECREATION

a, b: **Less Than Significant Impact.** The addition of 359 new single-family residences will likely require additional maintenance of existing recreational facilities and/or the construction of additional facilities due to increased demand. This demand will be offset by the construction of the multi-purpose recreational trail and open-space paseos that will provide an additional source of recreation to the local community. No additional sources of revenue will be necessary to maintain existing facilities other than local assessments and taxes currently in place.

XV. TRANSPORTATION/TRAFFIC

a, b: **Potentially Significant Impact.** The site is currently accessed along unimproved dirt roads. The addition of 359 new single-family homes will require improvements to these existing access roads, including the construction of new paved roadways at Etiwanda and East Avenues north of Wilson Avenue, as well as construction of a paved roadway at Wilson Avenue.

The Congestion Management Plan (CMP) (Government Code §65088 and §65089) and the San Bernardino County Congestion Management Program, 1999 Update require the preparation of a CMP traffic impact analysis report for all projects that meet the local criteria for preparing a traffic impact study in the City of Rancho Cucamonga. A traffic study conducted for the proposed project will be reviewed by an independent traffic consultant to ensure that CMP guidelines have been met. The results of the traffic study results will be incorporated into the EIR along with any mitigation measures required to reduce impacts to less than significant levels.

c: **No Impact.** The closest airport to the project site is the Rialto Municipal Airport located approximately six miles to the east. No change associated with air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks would occur.

d: **Less Than Significant Impact.** Project roadways will need to reflect the designs and standards in full compliance with applicable City of Rancho Cucamonga requirements. No sharp turns or dangerous corners will be allowed. Incompatible uses, such as with farm equipment, will also be prohibited. A complete analysis of roadway improvements will be evaluated in the EIR to determine whether any potential hazards are included in the current project design.

e: **Less Than Significant Impact.** The County General Plan indicates that the Interstate 15 freeway is designated as an emergency evacuation route in the County. The onsite circulation system and the access roads to the project site would be constructed consistent with the City's Development Code and applicable City Fire Department requirements related to emergency access. The proposed project includes the construction of East Avenue south of Wilson Avenue, providing additional emergency access to the area. Proposed streets and improvements will be evaluated in the EIR in terms of their impacts on emergency access and consistency with City regulations.

f: **Less Than Significant Impact.** The proposed project will provide for adequate parking capacity as part of its design. Single-family homes will include garages, driveway and street parking as part of its design features. Consistency with the City's Development Code standards will be evaluated in the EIR.

g: **Less Than Significant Impact.** The consistency of the project with the area's adopted policies, plans or programs supporting alternative transportation will be evaluated in the project EIR. Implementation of the proposed project would provide multi-purpose trails within and adjacent to the development designed consistent with the City's Development Code.

XVI. UTILITIES AND SERVICE SYSTEMS

Natural gas would be provided by Sempra Energy, which has a six-inch gas main in Wilson Avenue, along the southern project boundary. According to Sempra Energy connection of the proposed project to this gas main would not adversely effect the operation of the gas main. Each household is expected to use approximately 2,400 cubic feet per day of natural gas. Total daily consumption of natural gas is expected to be 861,600 cubic feet.

a, b: **Less Than Significant Impact.** The proposed project lies within two sewer drainage areas: the existing Etiwanda Avenue Trunk Sewer: and the proposed East Avenue Trunk Sewer. The two Trunk Sewers connect to the Inland Empire Utilities Agency (IEUA) wastewater treatment facilities.

Wastewater from the proposed project would not be anticipated to exceed current and planned treatment capacity. Construction of new wastewater treatment facilities or expansion of the existing facilities above those already planned would not be anticipated. It is not anticipated that the proposed project would exceed the wastewater treatment requirements of the RWQCB.

c: **Potentially Significant Impact.** Interim storm water retention basins will be installed onsite as part of the project until improvements to the existing storm water drainage system can be completed. New storm drainage facilities for the proposed project would be constructed as an integral part of the proposed project. Interim basins are not consistent with the Etiwanda/San Sevaine Area Drainage policy. A preliminary drainage study would be required to determine the appropriate size of flood protection and identification of appropriate mitigation measures. The project's inconsistency with local drainage policies, and other impacts related to drainage facilities will be further assessed in the EIR.

d: **Potentially Significant Impact.** Domestic water will be supplied by the Cucamonga County Water District. Existing entitlements and resources will be reviewed to determine whether the existing project will impact current resources. Both short-term (construction) and long-term impacts of increased water demand will be assessed in the EIR.

e: **Potentially Significant Impact.** Wastewater treatment services are provided by the Inland Empire Utilities Agency. The agency currently owns and operates four wastewater treatment facilities with a fifth facility under construction. Existing capacity and the ability to meet projected demands will be evaluated in the EIR to determine whether this project may have a significant impact on wastewater treatment capacity.

f, g: **Less Than Significant Impact.** Solid waste disposal is provided by Burrtec Waste Industrices, Inc. (Burrtec) through a contract with the City. Refuse from the proposed project would be taken to the West Valley Material Recovery Facility (MRF), a fully permitted transfer station and material recovery facility. The West Valley MRF is permitted to accept 5,000 tons per day of municipal solid waste and mixed recyclables. Non-recyclable solid waste would be transferred to a County landfill served by the County of San Bernardino Solid Waste Management Division. The closest landfill to the project area is the Mid-Valley landfill located in the City of Rialto. The facility currently receives approximately 1,000 tons per day and is permitted for up to 7,500 tons per day. The site has sufficient remaining capacity for the region through 2033. Burrtec has indicated that they do not expect any long-term unpacts associated with solid waste disposal at the MRF or in the County. The project will comply with federal, state and local statutes and regulations related to solid waste.

XVII MANDATORY FINDINGS OF SIGNIFICANCE

a. **Potentially Significant Impact.** Based on possible habitat on the project site, the project could have the potential to affect sensitive wildlife species. Jurisdictional drainages also occur on the site. The EIR will provide a comprehensive analysis of the potential effects to biological resources, as well as, mitigation measures necessary to reduce impacts to below the threshold of significance. Historical resources could also potentially exist onsite, however, no known prehistoric resources have been recorded. Subsurface cultural and paleontologic resources could exist therefore, mitigation measures will be recommended in the EIR to reduce potential impacts to subsurface cultural and paleontologic resources to less than significant.

b,c: **Potentially Significant.** Several of the potential impacts identified iu this Initial Study could degrade the quality of the environment if they were not avoided or sufficicntly mitigated. The proposed Tentative Tract Map Number 16072 and annexation project could affect **aesthetics, air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, land use and planning, noise, population and housing, public services, transportation/traffic, and utilities and service systems.** At this point, a final determination cannot be made. Additional studies or information is required for the above listed resource arcas. The cumulative effects of these changes may be significant if not mitigated. Several of

the potential impacts identified in this Initial Study could have substantial adverse effects on humans if not mitigated. An EIR will, therefore, be prepared for the proposed project. The EIR will provide analysis of potential impacts and consider direct and indirect effects, and short-term and long-term effects and cumulative effects.

4.0 REFERENCES

California Department of Conservation
San Bernardino County Important Farmland 1996, Western Sheet.

City of Rancho Cucamonga
Etiwanda North Specific Plan, adopted April 1, 1992.

General Plan, adopted October 17, 2001.

City of Rancho Cucamonga Web Site, www.ci.rancho-cucamonga.ca.us

Federal Emergency Management Agency
Flood Rate Insurance Map, Map Number 06071C7895 F, effective March 18, 1996.

GeoSoils, Inc.
Addendum to Preliminary Geotechnical Investigation, Tentative Tract No. 16072, Rancho Cucamonga, San Bernardino County, California. July 26, 2002. Prepared for Hill Country.

Preliminary Geotechnical Investigation 132± Acre Parcel, Northeast Corner of Wilson and Etiwanda Avenues, Rancho Cucamonga San Bernardino County, California. November 11, 1998. Prepared for Richland Ventures.

Supplemental Geologic/Fault Investigation Tentative Tract Map No. 16072 Rancho Cucamonga San Bernardino County, California. November 30, 2000. Prepared for Richland Ventures.

PCR Services Corporation
Focused Coastal California Gnatcatcher Survey Report for the Etiwanda Project Site, San Bernardino County, California, August 9, 2001.

Focused Coastal California Gnatcatcher Survey Report for the Etiwanda Project Site, San Bernardino County, California, July 15, 2002.

Focused Sensitive Plant Survey Report for the Etiwanda Project Site, San Bernardino County, California. September 20, 2001

Initial Study Etiwanda Subdivison, March 2001. Prepared for Hill Country, S.A., Ltd.

RK Engineering Group, Inc.
Etiwanda Properties (Revised) Traffic Impact Analysis, San Bernardino County, California. January 10, 2002. Prepared for Richland Communities.

San Bernardino County
General Plan, Revised August 1991.

Flood Control District General Information. N.d.

Flood Plain Safety (FP) Overlay District, San Bernardino County Development Code.

Floodway (FW) District Land Use, San Bernardino Development Code.

South Coast Air Quality Management District
SCAQMD CEQA Air Quality Handbook. 1993

The Keith Companies
Tracey Development North Etiwanda Area Tentative Tract Map 14749 Project Environmental Impact Report, September 10, 2001. Prepared for County of San Bernardino.

US Geological Survey
Cucamonga Peak, California quadrangle map, revised 1996

COMMENT LETTERS RECEIVED ON NOTICE OF PREPARATION

Shawn Judson
Superintendent
Douglas M. Claflin
Assistant Superintendent of Business Services
Rebecca M. Lawrence
Assistant Superintendent of Instruction/Pupil Services
Heidi M. Soehnel
Assistant Superintendent of Personnel
Sylvia Kordich
Administrator of Special Programs

School District Etiwanda 1883

Board of Trustees
Brynna R. Cadman
David W. Long
Mark H. Murphy
Cecilia L. Solorio
Mondi M. Taylor

6061 East Avenue, Etiwanda, California 91739
(909) 899-2451 FAX (909) 899-9463

October 11, 2002

Thomas J. McGill, Ph.D.
Michael Brandman Associates
621 East Carnegie Drive, Suite 100
San Bernardino, CA 92408

Re: MBA TT16072 Richland Wilson

Dear Thomas J. McGill,

The following is in response to your letter dated August 15, 2002.

1. John L. Golden Elementary (K-5)
   12400 Banyan St.
   Etiwanda, CA 91739
   Is approximately 1.0 mile from the project area.

   Summit Intermediate (6-8)
   5959 East Ave.
   Etiwanda, CA 91739
   Is approximately 1.0 mile from the project area.

2. There are no known special service requirements for the project area.

3. 359 dwellings will generate approximately 162 elementary and 76 intermediate students. Current populations at the serving schools will be impacted by this project in conjunction with other projects in the same service area.

4. The proposed project will require the addition of both elementary and intermediate classroom spaces. This will include the classroom facilities and the staffing associated with the classroom. The project impact will also result in support staff and auxiliary support facilities such as buses / drivers, maintenance staff, clerical staff and more facilities for the new staff.

5. Problems with service could be related to the schedule of development. Access to the development, improvement of surrounding support structure and availability of funds for the new service requirements.

6. We recommend funds and facilities to fulfill the need of the school district. This can be through mitigation funds per household, land for schools and/or other contributions.

7. K-5 0.45 / per household
   6-8 0.21 / per household

8. School fees: $2.66 per sq. ft. plus a voter approved special tax of $2,358.94 per unit.

9. Students in K-8 will attend the Etiwanda School District and 9-12 will attend Chaffey Joint Union High School District.

10. The contact name is
    Douglas M. Claflin
    Etiwanda School District
    6061 East Ave.
    Etiwanda, CA 91739
    (909) 899-2451 ext. 124
    doug_claflin@etiwanda.k12.ca.us

Sincerely,

Douglas M. Claflin
Assistant Superintendent of Business Services

DMC/fm

STATE OF CALIFORNIA- BUSINESS, TRANSPORTATION AND HOUSING AGENCY GRAY DAVIS, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 8
464 W Fourth Street, 6th Floor MS 726
San Bernardino, CA 92401-1400
PHONE (909) 383-6327
FAX (909) 383-6890

October 9, 2002

OCT 10 2002

08-SBd-15-9.665
SCH# 2002091053

Ms. Catherine Johnson
City of Rancho Cucamonga
P.O. Box 807
Rancho Cucamonga, CA 91729

Dear Ms. Johnson:

Notice of Preparation-Draft Environmental Impact Report,
Tentative Tract Map 16072, Michael Brandman Associates, Applicant

We have received the above notification relevant to Tentative Tract 16072, proposing development of 359 single-family lots on 150.8 acres of property located north of Wilson Avenue between Etiwanda Avenue and East Avenue in the city of Rancho Cucamonga. Because this project is located some distance from Interstate 15 and State Route 210, we are concerned with future "cumulative" impacts to State facilities resulting from continued growth in this area.

With this in mind, we recommend that the project EIR include discussion of policies outlined in the Congestion Management Plan of the San Bernardino County Transportation Commission, and pertinence thereof to TTM 16072. EIR discussion should also include a method for determining cumulative project impacts to area transportation facilities as well as a formula for calculating "fair-share" contributions to a local fund designated for use in building or upgrading area transportation infrastructure.

Thank you for providing us this opportunity to review the Environmental Initial Study for Tentative Tract Map 16072. If you have any questions regarding this letter, please contact Mr. Kee T. Ooi at (909) 383-4149 for assistance.

Sincerely,

Linda Grimes

LINDA GRIMES, Chief
Office of Forecasting/IGR-CEQA Review
Transportation Planning Division

cc: B. Frank - State Clearinghouse

California Regional Water Quality Control Board
Santa Ana Region

Winston H. Hickox
Secretary for Environmental Protection

Internet Address: http://www.swrcb.ca.gov/rwqcb8
3737 Main Street, Suite 500, Riverside, California 92501-3348
Phone (909) 782-4130 - FAX (909) 781-6288

Gray Davis
Governor

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at www.swrcb.ca.gov/rwqcb8.

October 2, 2002

OCT 07 2002

Ms. Catherine Johnson
City of Rancho Cucamonga
P.O. Box 807
Rancho Cucamonga, CA 91729

DRAFT ENVIRONMENTAL IMPACT REPORT (DEIR) FOR TENTATIVE TRACT MAP 16072/ STATE CLEARING HOUSE NUMBER 2002091053

Dear Ms. Johnson:

Staff of the Regional Water Quality Control Board, Santa Ana Region (RWQCB), has reviewed the Draft Environmental Impact Report for the above referenced project. The proposed project is a Residential Development that includes the development of up to 359 single-family residential units, on a total of 150.8 acres. The project is located in southwestern San Bernardino County, in the City of Rancho Cucamonga.

There is widespread experience that urban development activity impacts water quality. There is the potential that the development of this area will substantially impact the water quality and the associated beneficial uses. Therefore, to lessen impacts to water quality standards and protect beneficial uses, the following principals and policies should be considered for the project:

1. Avoid disturbance to any natural water bodies and drainage systems; protect slopes and conserve natural areas. Natural drainage systems and water bodies reduce impacts to water quality standards and will improve impacted waters. In addition, they support beneficial uses for wildlife and recreation. Encourage riparian vegetation in drainage systems, if feasible. Provide adequate vegetated buffer areas to capture storm flows, to lessen erosion, and protect water quality. All disturbances to natural waters and drainages require mitigation.

2. Please be advised that any impacts to Waters of the United States/State require a Section 401 Water Quality Standards Certification from the Regional Board. Impacts to these waters should first and foremost be avoided. Where that is not practicable, impacts to these waters should be minimized. Mitigation of unavoidable impacts must replace the full function and value of the impacted waterbody. Information concerning Section 401 certification can be found at the Regional Board's website, www.swrcb.ca.gov/rwqcb8/html/401.html. Impacts to the waters of the United States also require a Clean Water Act Section 404 permit from the United States Army Corps of Engineers and a Streambed Alteration Agreement from the California Department of Fish and Game.

3. Development in this area will increase the amount of area covered with pavement or structures. This will alter the rate and volumes of groundwater recharge and surface water runoff. We encourage the use of pervious materials to retain absorption and allow more

percolation of storm water into the ground within the site. The use of pervious materials, such as vegetated basins, permeable/porous pavement, etc., for all development is strongly encouraged. Any increase in runoff due to development should be mitigated to prevent damage to water quality and beneficial uses downstream.

Biological/vegetated treatment basins reduce the concentration of pollutants in storm or urban water runoff by filtering the runoff through the vegetation and the soil matrix and/or allowing infiltration into the underlying soils. Studies have shown that these wetlands and biofilters remove many of the harmful pollutants found in urban runoff, and also help mitigate the increased volume of runoff.

Porous pavement is an alternative to standard impervious pavement and should be considered for use in parking areas of the project. One type of porous pavement contains an underlying stone reservoir to temporarily store surface runoff allowing it to infiltrate into the subsoil.

4. Construction of detention basins or holding ponds and/ or constructed wetlands within a project site to capture and treat dry weather urban runoff and the first flush of rainfall runoff should be utilized. These basins should be designed to detain runoff for a minimum time (e.g., 24 hours) to allow particles and associated pollutants to settle and to provide for natural treatment.

5. Consider retaining areas of open space to aid in the recharge and retention of runoff. Native plant materials should be used in replanting and hydroseeding operations. Native plants provide effective slope soil retention, help filter and clean runoff, maintain habitat for native animal species, and have other water quality benefits.

6. Post-development storm water runoff flow rates (Q) should not differ from the pre-development Q. Changes in Q, either in a positive or negative manner can lead to erosion or sedimentation. Such a change in Q may create potential downstream impacts affecting 303 (d) listed water bodies, as well as flood control facilities.

7. This project should be designed and constructed to protect, and if possible, improve the quality of underlying groundwater. Incorporating the principals and policies mentioned above will help protect the underlying groundwater basin.

8. No waste material may be discharged to any drainage areas, channels, streambeds, or streams. Spoil sites must not be located within any streams or areas where spoil material could be washed into a water body.

9. As a result of the proposed construction activity occurring in an area over five acres, a General Construction Activity Storm Water Runoff Permit must be obtained by the project proponent. A Notice of Intent (NOI) with the appropriate fees for coverage of the project under the General Construction Activity Storm Water Runoff Permit must be submitted to the State Water Resources Control Board at least 30-days prior to the initiation of construction

California Environmental Protection Agency
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LOCAL AGENCY FORMATION COMMISSION

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Established by the State of California to serve the Citizens, Cities, Special Districts and the County of San Bernardino

October 8, 2002

OCT 10 2002

PLANNING

Ms. Catherine Johnson, AICP
City of Rancho Cucamonga
Post Office Box 807
Rancho Cucamonga, CA 91729

Dear Ms. Johnson:

RE: NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR TENTATIVE TRACT MAP NUMBER 16072

The Local Agency Formation Commission received the Notice of Preparation for the Draft EIR, as outlined above, on September 26, 2002. A copy of this information has also been forwarded to the Commission's Environmental Consultant, Tom Dodson & Associates, who will also respond by separate correspondence. The following are our comments, concerns, or questions regarding the project identified:

1. Project description (page 1-2): The description, as listed on the Notice of Preparation, does not clearly identify all the actions to be undertaken. The description relates to the tentative tract while the actions that are contemplated by this document would need to include the pre-zoning of the area and the annexation to the City, and would appear to need to include an amendment to North Etiwanda Specific Plan.

   The pre-zoning of the area proposed for annexation is now a requirement of LAFCO law (Government Code Section 56375(e). Therefore, we believe these actions need to be clearly described at the outset of the review and addressed in the various elements within the document.

2. Item 1.4 Purpose of the Initial Study (page 1-7) – The narrative indicates that the subsequent project-specific EIR can be used by the City for approval of the project, and also the adoption of development agreement. The project description should identify that an additional element of the project, as contemplated, is a Development Agreement.

3. Item IV – Biological Resources Item (f) (page 3-6): In the third paragraph a discussion of the North Etiwanda Open Space Habitat Preservation Program (NEOSHPP) guided by the County of San Bernardino is provided. It should be noted that the annexation of this area to the City will detach the area from County Service Area 70 improvement Zone OS-1 which is the overseer of the NEOSHPP. The removal of this regional agency should be addressed.

4. Item VII – Hazards and Hazardous Materials –Item (h) (page 3-9) there is no discussion of the removal of the State Responsibility Area (SRA) designation for wildland fire protection included in the document. A map of SRA designated land is attached. Removal of this designation occurs upon annexation to the City as outlined in State law.

5. IX – Land Use and Planning Item (b) (page 3-13) – as outlined in point #1, the second paragraph indicates that "an amendment of the City's Specific Plan may be required for the northern portion of the project site". If it is determined necessary, it should be included in the project description and the changes anticipated defined and addressed in the EIR document.

6. Item XIII Public Services Fire Protection (page 3-16) The narrative indicates that the California Department of Forestry Etiwanda Fire Station is located 1.5 miles south of the project and would provide added service for those emergencies involving wildland fires. With the removal of the SRA designation from these lands, the financial responsibility for State support in a wildland fire situation is transferred to the City. The study should indicate whether or not the City contracts with the State Department of Forestry for retention of their services in a wildland fire situation, or if other financial arrangement is made.

7. Item XVI – Utilities and Service Systems Item (a & b) (page 3-19) The narrative should clarify that the wastewater collection system is provided by the Cucamonga County Water District and treatment is provided by Inland Empire Utilities Agency facilities.

8. Item XVI – Utilities and Service Systems, Item (c) (page 3-19) Will the use of interim storm water retention basins require the creation of an operation and maintenance entity (such as assessment district)? If such is required, it too should be outlined in the project description.

Should you need additional information regarding the comments, concerns, or questions outlined above, please do not hesitate to contact me at (909) 387-5869. We look forward to working with the City on its future processing of this project.

Sincerely,

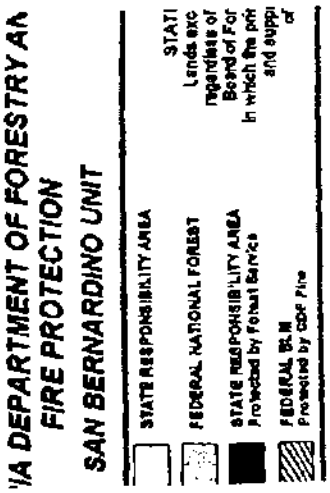
KATHLEEN ROLLINGS-McDONALD
Deputy Executive Officer

/krm

Attachment (1)

cc: Tom Dodson, Tom Dodson & Associates
Brad Butler, City Planner

3



STATE OF CALIFORNIA - THE RESOURCES AGENCY GRAY DAVIS, Governor

DEPARTMENT OF FISH AND GAME
Eastern Sierra - Inland Deserts Region
4775 Bird Farm Road
Chino Hills, California 91709
(909) 597-5043

October 17, 2002

Ms. Catherine Johnson, AICP
City of Rancho Cucamonga
P.O. Box 807
Rancho Cucamonga, CA 91729
Phone: (909) 477-2700
Fax: (909) 477-2847

Re: Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR)
Tentative Tract Map No. 16072
SCH # 2002091053

Dear Ms. Johnson:

The Department of Fish and Game (Department) appreciates this opportunity to comment on the above-referenced project with regards to impacts to biological resources. The project proposes development of 359 detached single-family housing units on minimum lot sizes of 6,400 square feet. The net density of the net project is expected to equal 2.38 dwelling units per acre. The proposed project would include annexation of Tentative Tract Map No. 16072 to the City of Rancho Cucamonga. The project also includes interim flood control features pending the completion of permanent flood control facilities. The proposed project site is located north of Wilson Avenue between Etiwanda Avenue and East Avenue, within the City of Rancho Cucamonga's Sphere of Influence, in the northern Etiwanda Area of unincorporated San Bernardino County, California.

The Department is responding as a Trustee Agency for fish and wildlife resources [Fish and Game Code sections 711.7 and 1802 and the California Environmental Quality Act Guidelines (CEQA) section 15386] and as a Responsible Agency regarding any discretionary actions (CEQA Guidelines section 15381).

A review of records from the California Natural Diversity Database and other area resources indicate that the following sensitive species and habitat types occur in the project vicinity and may be affected by the proposed project: coastal California gnatcatcher (*Polioptila californica californica*), California mastiff bat (*Eumops perotis californicus*), Nelson's bighorn sheep (*Ovis canadensis nelsoni*), San Bernardino kangaroo rat (*Dipodomys merriami parvus*, SBKR), mountain yellow-legged frog (*Rana muscosa*), San Diego horned lizard (*Phrynosoma coronatum blainvillei*), San Gabriel slender salamander (*Batrachoseps gabrieli*), Johnston's buckwheat (*Eriogonum microthecum* var. *johnstonii*), Parish's desert-thorn (*Lycium parishii*), Plummer's mariposa lily (*Calochortus plummerae*), San Gabriel linanthus (*Linanthus concinnus*), California Walnut Woodland, Coastal and Valley Freshwater Marsh, Riversidean Alluvial Fan Sage Scrub, and Southern Sycamore Alder Riparian Woodland habitats. The Department recommends that the potential direct and indirect impacts to the above-mentioned species be analyzed in the DEIR.

This particular project has the potential to have significant environmental impacts on sensitive fauna resources, including State and/or Federally listed threatened or endangered species. Therefore, critical aspects of the DEIR should include an alternatives analysis which focuses on environmental resources and measures to avoid, minimize, and compensate for impacts identified as significant. To enable Department staff to adequately review and comment on the proposed project, we suggest that updated biological studies be conducted prior to any environmental or discretionary approvals. The following information should be included in any focused biological report or supplemental environmental report:

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts.

   a. CEQA Guidelines, 15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.

   b. Project impacts should be analyzed relative to their effects on off-site habitats. Specifically, this should include nearby river, streams, or lakes located downstream of the project, public lands, open space, adjacent natural habitats, and riparian ecosystems. Impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitat in adjacent areas, should be fully evaluated and provided.

   c. The zoning of areas for development projects or other uses that are nearby or adjacent to natural areas may inadvertently contribute to wildlife-human interactions. A discussion of possible conflicts and mitigation measures to reduce these conflicts should be included in the environmental document.

   d. A cumulative effects analysis should be developed as described under CEQA Guidelines, 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

   e. The DEIR should include an analysis of the effect that the project may have on completion and implementation of regional and/or subregional conservation programs. Under 2800-2840 of the Fish and Game Code, the Department, through the Natural Communities Conservation Planning (NCCP) program is coordinating with local jurisdictions, landowners, and the Federal Government to preserve local and regional biological diversity. Coastal sage scrub is the first natural community to be planned for under the NCCP program. The Department recommends that the lead agency ensure that the development of this and other proposed projects does not preclude long-term preserve planning options and that projects conform with other requirements of the NCCP program. Jurisdictions participating in the NCCP should assess specific projects for consistency with the NCCP Conservation Guidelines.

3. A range of alternatives should be analyzed to ensure that alternatives to the proposed project are fully considered and evaluated. A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resources should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

   a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts. Off-site compensation for unavoidable impacts through acquisition and protection of high-quality habitat elsewhere should be addressed.

   b. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts.

c. The Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.

4. A California Endangered Species Act (CESA) Incidental Take Permit must be obtained, if the project has the potential to result in "take" of species of plants or animals listed under CESA, either during construction or over the life of the project. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to the proposed project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, require that the Department issue a separate CEQA document for the issuance of a CESA permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit. For these reasons, the Department recommends including the following information:

a. Biological mitigation monitoring and reporting proposals should be of sufficient detail and resolution to satisfy the requirements for a CESA Permit.

b. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act.

5. The Department opposes the elimination of watercourses and/or their channelization or conversion to subsurface drains. All wetlands and watercourses, whether intermittent or perennial, should be retained and provided with substantial setbacks which preserve the riparian and aquatic values and maintain their value to on-site and off-site wildlife populations.

a. Under Section 1600 *et seq* of the Fish and Game Code, the Department requires the project applicant to notify the Department of any activity that will divert, obstruct or change the natural flow or the bed, channel, or bank (which includes associated riparian resources) of a river, stream or lake, or use material from a streambed prior to the applicant's commencement of the activity. Streams include, but are not limited to, intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams, and watercourses with subsurface flow. The Department's issuance of a Lake and Streambed Alteration Agreement for a project that is subject to CEQA will require CEQA compliance actions by the Department as a responsible agency. The Department, as a responsible agency under CEQA, may consider the local jurisdiction's (lead agency) Negative Declaration or EIR for the project. However, if the CEQA document does not fully identify potential impacts to lakes, streams, and associated resources (including, but not limited to, riparian and alluvial fan sage scrub habitat) and provide adequate avoidance, mitigation, monitoring and reporting commitments, additional CEQA documentation will be required prior to execution (signing) of the Streambed Alteration Agreement. In order to avoid delays or repetition of the CEQA process, potential impacts to a lake or stream, as well as avoidance and mitigation measures need to be discussed within this CEQA document. The Department recommends the following measures to avoid subsequent CEQA documentation and project delays:

(1) Incorporate all information regarding impacts to lakes, streams and associated habitat within the DEIR. Information that needs to be included within this document includes: (a) a delineation of lakes, streams, and associated habitat that will be directly or indirectly impacted by the proposed project; (b) details on the biological resources (flora and fauna) associated with the lakes and/or streams; (c) identification of the presence or absence of sensitive plants, animals, or natural communities; (d) a discussion of environmental alternatives; (e) a discussion of avoidance measures to reduce project impacts; and (f) a discussion of potential mitigation measures required to reduce the project impacts to a level of insignificance. The applicant and lead agency should keep in mind that the State also has a policy of no net loss of wetlands.

(2) Include in the DEIR a discussion of potential adverse impacts from any increased runoff, sedimentation, soil erosion, and/or urban pollutants on streams and watercourses on or near the project site, with mitigation measures proposed to alleviate such impacts must be included.

(3) The Department recommends that the project applicant and/or lead agency consult with the Department to discuss potential project impacts and avoidance and mitigation measures. Early consultation with the Department is recommended, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources. Pre-project meetings are held every week at the Department's Chino Hills office. To schedule a pre-project meeting or to obtain a Streambed Alteration Agreement Notification package, please call (562) 590-5660.

Thank you for this opportunity to comment. Questions regarding this letter and further coordination on these issues should be directed to Ms. Leslie MacNair, Staff Environmental Scientist, at (949) 458-1754.

Sincerely,

Leslie MacNair
for

Jeff Drongesen
Staff Environmental Scientist – Supervisor
Habitat Conservation - Southwest
Region 6

cc: Jeff Newman, USFWS, Carlsbad
State Clearinghouse, Sacramento

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

OCT 15 2002
PLANNING

September 30, 2002

Ms. Catherine Johnson
City of Rancho Cucamonga
P.O. Box 807
Rancho Cucamonga, CA 91729

Dear Ms. Johnson:

Notice of Preparation and Initial Study for the
Draft Environmental Impact Report for Tentative Tract Map Number 16072

The Metropolitan Water District of Southern California (Metropolitan) has received a copy of the Notice of Preparation and Initial Study (NOP/IS) for the Draft Environmental Impact Report for Tentative Tract Map Number 16072 in an unincorporated area of San Bernardino County within the sphere of influence of the city of Rancho Cucamonga (City). The proposed project site consists of a vacant lot located north of Wilson Avenue and east of Etiwanda Avenue. The City proposes to develop 359 detached single-family housing units with a minimum lot size of 8,400 square feet per unit. The proposed project would also include annexation of Tentative Tract 16072 to the City and inclusion into the City's General Plan. This letter contains Metropolitan's response to the NOP/IS as a potentially affected agency.

Our review of the proposed project indicates that Metropolitan owns and operates a facility adjacent to the south boundary of the project site. Metropolitan's Foothill Feeder-Rialto Pipeline, which is a 98-inch diameter pipeline extending in a generally east-west direction in the vicinity of the project site, is located within the southern half of Wilson Avenue within a strip of fee property of varying width.

Based on review of the NOP/IS, the Foothill Feeder-Rialto Pipeline is not specifically identified within the document. Metropolitan is concerned with potential impacts to this facility associated with future excavation and new construction that may occur a result of the proposed project. Metropolitan requests that the City consider the Foothill Feeder-Rialto Pipeline in its project planning and identify potential impacts to the facility that may occur as a result of project implementation. The City should also identify whether protection or relocation of the pipeline would be required as a result of the proposed project.

700 N. Alameda Street, Los Angeles, California 90012 • Mailing Address: Box 54153, Los Angeles, California 90054-0153 • Telephone (213) 217-6000

In order to avoid potential conflicts with Metropolitan's rights-of-way, we require that any design plans for any activity in the area of Metropolitan's pipelines or facilities be submitted for our review and written approval.

Metropolitan must also be allowed to maintain its right-of-way and access to the Foothill Feeder-Rialto Pipeline at all times in order to repair and maintain the current condition of those facilities.

The applicant may obtain detailed prints of drawings of Metropolitan's pipelines and rights-of-way by calling Metropolitan's Substructures Information Line at (213) 217-6564. To assist the applicant in preparing plans that are compatible with Metropolitan's facilities and easements, we have enclosed a copy of the "Guidelines for Developments in the Area of Facilities, Fee Properties, and/or Easements of The Metropolitan Water District of Southern California." Please note that all submitted designs or plans must clearly identify Metropolitan's facilities and rights-of-way.

Additionally, Metropolitan encourages projects within its service area to include water conservation measures. Water conservation, reclaimed water use, and groundwater recharge programs are integral components to regional water supply planning. Metropolitan supports mitigation measures such as using water efficient fixtures, drought-tolerant landscaping, and reclaimed water to offset any increase in water use associated with the proposed project.

We appreciate the opportunity to provide input to your planning process and we look forward to receiving future environmental documentation on this project. If we can be of further assistance, please contact William Fong of the Environmental Planning Team at (213) 217-6899.

Very truly yours,

Laura J. Simonek

Laura J. Simonek
Manager, Asset Management
and Facilities Planning Unit

JAH/rdl
(Public Folders/EPU/Letters/30-SHP-02E.doc – Catherine Johnson)
Enclosure:
Planning Guidelines

Guidelines for Developments in the Area of Facilities, Fee Properties, and/or Easements of The Metropolitan Water District of Southern California

1. Introduction

a. The following general guidelines should be followed for the design of proposed facilities and developments in the area of Metropolitan's facilities, fee properties, and/or easements.

b. We require that 3 copies of your tentative and final record maps, grading, paving, street improvement, landscape, storm drain, and utility plans be submitted for our review and written approval as they pertain to Metropolitan's facilities, fee properties and/or easements, prior to the commencement of any construction work.

2. Plans, Parcel and Tract Maps

The following are Metropolitan's requirements for the identification of its facilities, fee properties, and/or easements on your plans, parcel maps and tract maps:

a. Metropolitan's fee properties and/or easements and its pipelines and other facilities must be fully shown and identified as Metropolitan's on all applicable plans.

b. Metropolitan's fee properties and/or easements must be shown and identified as Metropolitan's with the official recording data on all applicable parcel and tract maps.

c. Metropolitan's fee properties and/or easements and existing survey monuments must be dimensionally tied to the parcel or tract boundaries.

d. Metropolitan's records of surveys must be referenced on the parcel and tract maps.

e. Metropolitan's pipelines and other facilities, e.g. structures, manholes, equipment, survey monuments, etc. within its fee properties and/or easements must be protected from damage by the easement holder on Metropolitan's property or the property owner where Metropolitan has an easement, at no expense to Metropolitan. If the facility is a cathodic protection station it shall be located prior to any grading or excavation. The exact location, description and way of protection shall be shown on the related plans for the easement area.

4. Easements on Metropolitan's Property

a. We encourage the use of Metropolitan's fee rights-of-way by governmental agencies for public street and utility purposes, provided that such use does not interfere with Metropolitan's use of the property, the entire width of the property is accepted into the agency's public street system and fair market value is paid for such use of the right-of-way.

b. Please contact the Director of Metropolitan's Right of Way and Land Division, telephone (213) 250-6302, concerning easements for landscaping, street, storm drain, sewer, water or other public facilities proposed within Metropolitan's fee properties. A map and legal description of the requested easements must be submitted. Also, written evidence must be submitted that shows the city or county will accept the easement for the specific purposes into its public system. The grant of the easement will be subject to Metropolitan's rights to use its land for water pipelines and related purposes to the same extent as if such grant had not been made. There will be a charge for the easement. Please note that, if entry is required on the property prior to issuance of the easement, an entry permit must be obtained. There will also be a charge for the entry permit.

5. Landscaping

Metropolitan's landscape guidelines for its fee properties and/or easements are as follows:

a. A green belt may be allowed within Metropolitan's fee property or easement.

b. All landscape plans shall show the location and size of Metropolitan's fee property and/or easement and the location and size of Metropolitan's pipeline or other facilities therein.

j. Potholing of Metropolitan's pipeline is required if the vertical clearance between a utility and Metropolitan's pipeline is indicated on the plan to be one foot or less. If the indicated clearance is between one and two feet, potholing is suggested. Metropolitan will provide a representative to assists others in locating and identifying its pipeline. Two-working days notice is requested.

k. Adequate shoring and bracing is required for the full depth of the trench when the excavation encroaches within the zone shown on Figure 4.

l. The location of utilities within Metropolitan's fee property and/or easement shall be plainly marked to help prevent damage during maintenance or other work done in the area. Detectable tape over buried utilities should be placed a minimum of 12 inches above the utility and shall conform to the following requirements:

1) Water pipeline: A two-inch blue warning tape shall be imprinted with:

"CAUTION BURIED WATER PIPELINE"

2) Gas, oil, or chemical pipeline: A two-inch yellow warning tape shall be imprinted with:

"CAUTION BURIED _____ PIPELINE"

3) Sewer or storm drain pipeline: A two-inch green warning tape shall be imprinted with:

"CAUTION BURIED _____ PIPELINE"

4) Electric, street lighting, or traffic signals conduit: A two-inch red warning tape shall be imprinted with:

"CAUTION BURIED _____ CONDUIT"

5) Telephone, or television conduit: A two-inch orange warning tape shall be imprinted with:

"CAUTION BURIED _____ CONDUIT"

o. Control cables connected with the operation of Metropolitan's system are buried within streets, its fee properties and/or easements. The locations and elevations of these cables shall be shown on the drawings. The drawings shall note that prior to any excavation in the area, the control cables shall be located and measures shall be taken by the contractor to protect the cables in place.

p. Metropolitan is a member of Underground Service Alert (USA). The contractor (excavator) shall contact USA at 1-800-422-4133 (Southern California) at least 48 hours prior to starting any excavation work. The contractor will be liable for any damage to Metropolitan's facilities as a result of the construction.

8. Paramount Right

Facilities constructed within Metropolitan's fee properties and/or easements shall be subject to the paramount right of Metropolitan to use its fee properties and/or easements for the purpose for which they were acquired. If at any time Metropolitan or its assigns should, in the exercise of their rights, find it necessary to remove any of the facilities from the fee properties and/or easements, such removal and replacement shall be at the expense of the owner of the facility.

9. Modification of Metropolitan's Facilities

When a manhole or other of Metropolitan's facilities must be modified to accommodate your construction or reconstruction, Metropolitan will modify the facilities with its forces. This should be noted on the construction plans. The estimated cost to perform this modification will be given to you and we will require a deposit for this amount before the work is performed. Once the deposit is received, we will schedule the work. Our forces will coordinate the work with your contractor. Our final billing will be based on actual cost incurred, and will include materials, construction, engineering plan review, inspection, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount.

imposes loads no greater than AASHTO H-10. If the cover is between two and three feet, equipment must be restricted to that of a Caterpillar D-4 tract-type tractor. If the cover is less than two feet, only hand equipment may be used. Also, if the contractor plans to use any equipment over Metropolitan's pipeline which will impose loads greater than AASHTO H-20, it will be necessary to submit the specifications of such equipment for our review and approval at least one week prior to its use. More restrictive requirements may apply to the loading guideline over the San Diego Pipelines 1 and 2, portions of the Orange County Feeder, and the Colorado River Aqueduct. Please contact us for loading restrictions on all of Metropolitan's pipelines and conduits.

b. The existing cover over the pipeline shall be maintained unless Metropolitan determines that proposed changes do not pose a hazard to the integrity of the pipeline or an impediment to its maintenance.

13. Blasting

a. At least 20 days prior to the start of any drilling for rock excavation blasting, or any blasting, in the vicinity of Metropolitan's facilities, a two-part preliminary conceptual plan shall be submitted to Metropolitan as follows:

b. Part 1 of the conceptual plan shall include a complete summary of proposed transportation, handling, storage, and use of explosions.

c. Part 2 shall include the proposed general concept for blasting, including controlled blasting techniques and controls of noise, fly rock, airblast, and ground vibration.

14. CEQA Requirements

a. When Environmental Documents Have Not Been Prepared

1) Regulations implementing the California Environmental Quality Act (CEQA) require that Metropolitan have an opportunity to consult with the agency or consultants preparing any environmental documentation. We are required to review and consider the environmental effects of the project as shown in the Negative Declaration or Environmental Impact Report (EIR) prepared for your project before committing Metropolitan to approve your request.

giving Metropolitan's comments, requirements and/or approval that will require 8 man-hours or less of effort is typically performed at no cost to the developer, unless a facility must be modified where Metropolitan has superior rights. If an engineering review and letter response requires more than 8 man-hours of effort by Metropolitan to determine if the proposed facility or development is compatible with its facilities, or if modifications to Metropolitan's manhole(s) or other facilities will be required, then all of Metropolitan's costs associated with the project must be paid by the developer, unless the developer has superior rights.

b. A deposit of funds will be required from the developer before Metropolitan can begin its detailed engineering plan review that will exceed 8 hours. The amount of the required deposit will be determined after a cursory review of the plans for the proposed development.

c. Metropolitan's final billing will be based on actual cost incurred, and will include engineering plan review, inspection, materials, construction, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount. Additional deposits may be required if the cost of Metropolitan's review exceeds the amount of the initial deposit.

16. Caution

We advise you that Metropolitan's plan reviews and responses are based upon information available to Metropolitan which was prepared by or on behalf of Metropolitan for general record purposes only. Such information may not be sufficiently detailed or accurate for your purposes. No warranty of any kind, either express or implied, is attached to the information therein conveyed as to its accuracy, and no inference should be drawn from Metropolitan's failure to comment on any aspect of your project. You are therefore cautioned to make such surveys and other field investigations as you may deem prudent to assure yourself that any plans for your project are correct.

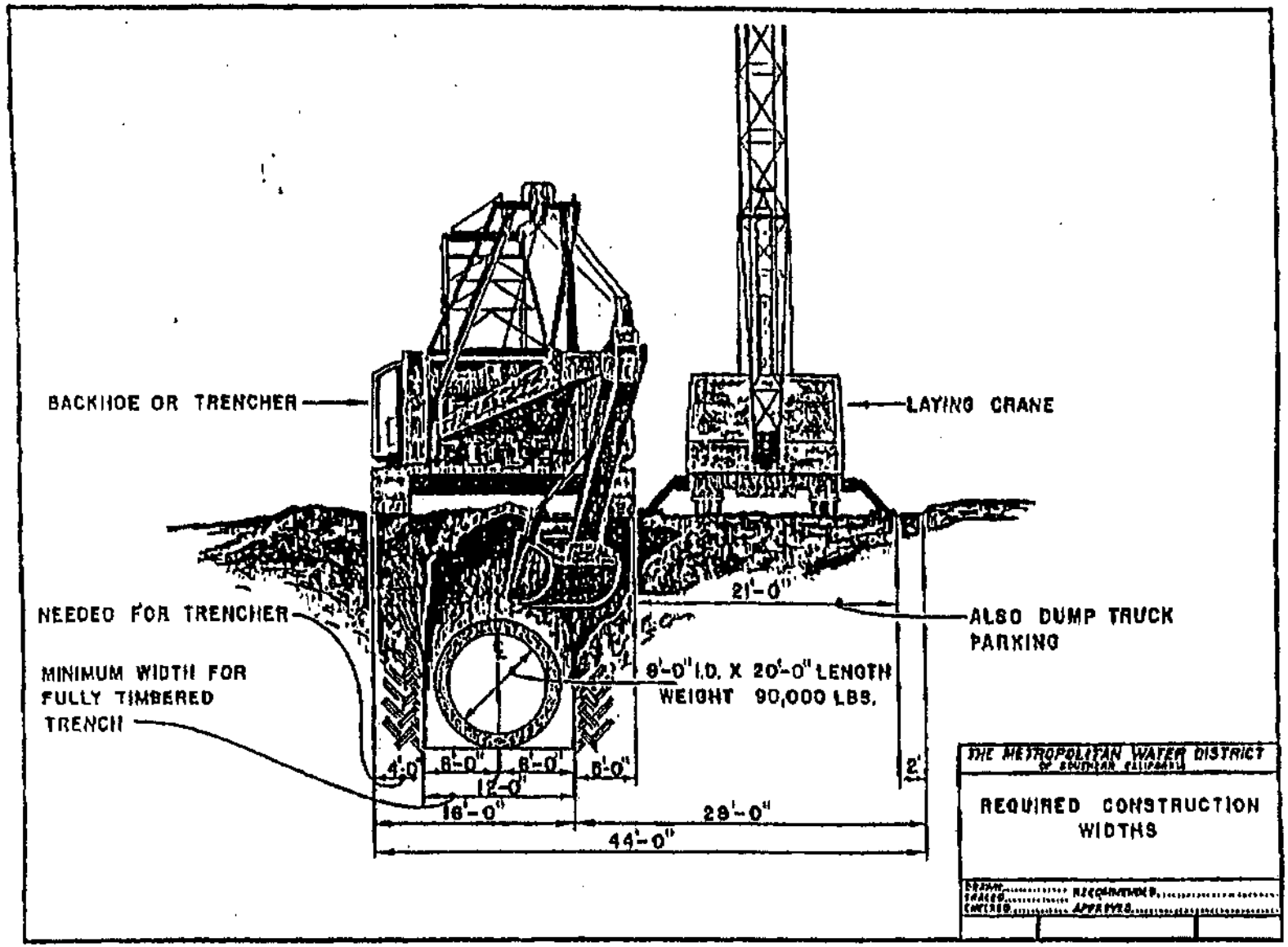


FIGURE 1

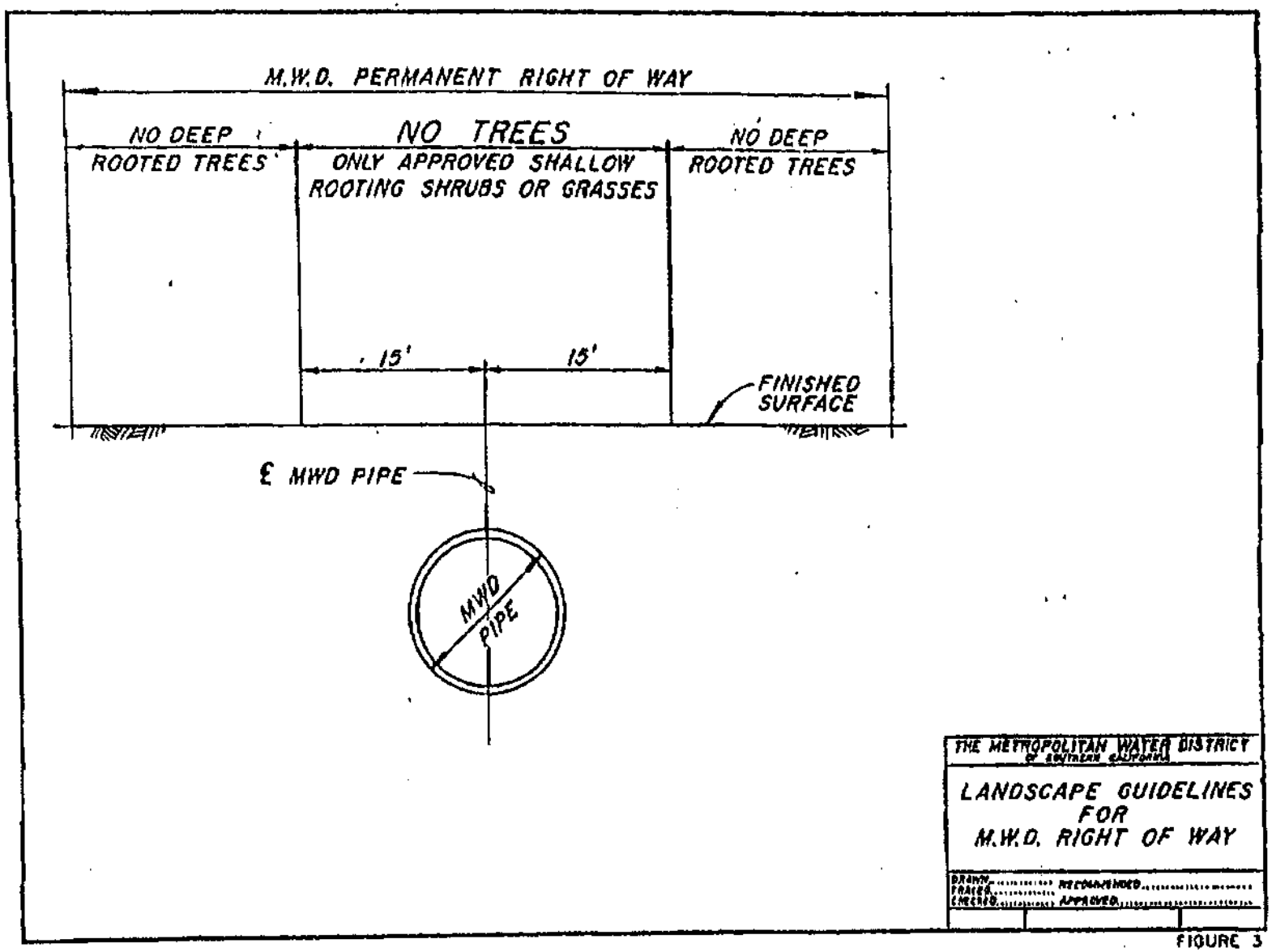

M.W.D. PERMANENT RIGHT OF WAY
NO DEEP ROOTED TREES
NO TREES
ONLY APPROVED SHALLOW ROOTING SHRUBS OR GRASSES
NO DEEP ROOTED TREES
15'
15'
FINISHED SURFACE
℄ MWD PIPE
MWD PIPE
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
LANDSCAPE GUIDELINES FOR M.W.D. RIGHT OF WAY
DRAWN
TRACED
CHECKED
RECOMMENDED
APPROVED

FIGURE 3

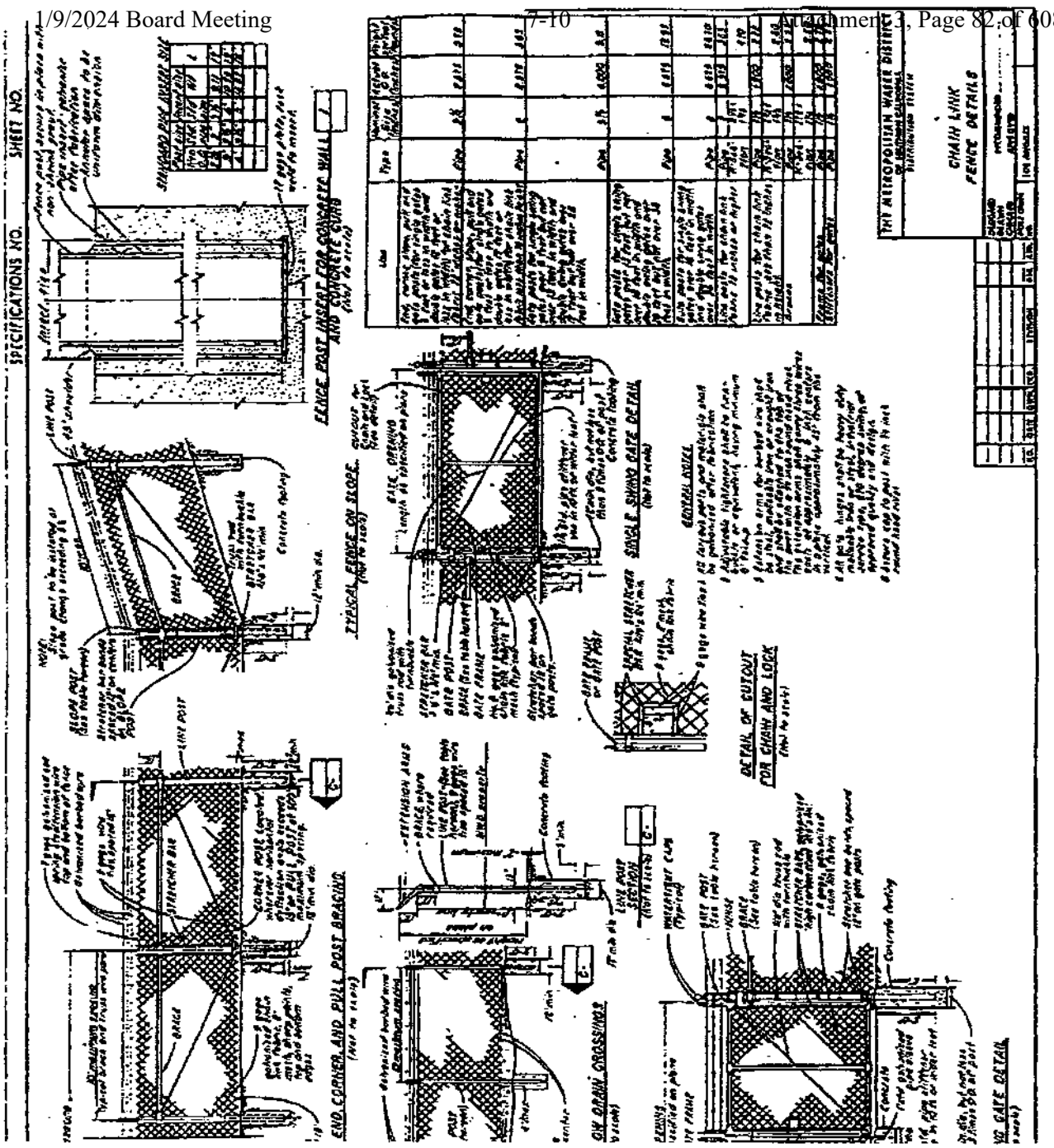

SPECIFICATIONS NO.
SHEET NO.
THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA
CHAIN LINK
FENCE DETAILS
FENCE POST INSERT FOR CONCRETE WALL
AND CONCRETE CURB
TYPICAL FENCE ON SLOPE
SINGLE SWING GATE DETAIL
DETAIL OF CUTOUT
FOR CHAIN AND LOCK
END CORNER AND PULL POST BRACING
ON DRAIN CROSSINGS
NO. GATE DETAIL

FIGURE 5

Appendix B
Geologic and Hydrologic Technical Background Reports

Appendix B
Geologic and Hydrologic Technical Background Reports

Earth Consultants International

TRANSMITTAL

Date: November 12, 2002

To: **Michael Brandman Associates**
621 E. Carnegie Drive, Suite 260
San Bernardino, California 92408

Attention: **Ms. Christine Jacobs-Donaghue**

Subject: **Report Submittal, Geologic and Hydrologic Sections of Technical Background Report for Environmental Impact Report for Tentative Tract 16072, City of Rancho Cucamonga, San Bernardino County, California**

From: Tania Gonzalez
Project Consultant
Earth Consultants International

Comments: Enclosed, please find two (2) copies of the above-mentioned report for your use. The text was previously forwarded to you via e-mail. If you have any questions please call Tania Gonzalez at (714) 282-6123.

2522 North Santiago, Suite B Orange, California 92867 USA
Telephone: (714) 282-6123 Fax (714) 998-0971
tgonzalez@earthconsultants.com www.earthconsultants.com

Earth Consultants International

Geologic and Hydrologic Sections of the Technical Background Report of the Environmental Impact Report for TENTATIVE TRACT 16072, Northeast of Etiwanda and Wilson Avenues, City of Rancho Cucamonga, San Bernardino County, California

November 12, 2002
Project No. 2122-01

Prepared for:

Michael Brandman & Associates
621 E. Carnegie Drive, Suite 260
San Bernardino, California 92408

Prepared by:

Earth Consultants International, Inc.
2522 North Santiago Boulevard, Suite B
Orange, California 92867

Project No. 2122.01
November 12, 2002

Earth Consultants International

To: **Michael Brandman & Associates**
621 E. Carnegie Drive, Suite 260
San Bernardino, California 92408

Attention: **Ms. Christine Jacobs-Donoghue**

Subject: **Geologic and Hydrologic Sections of the Technical Background Report for the Environmental Impact Report for Tentative Tract 16072, Northeast of the Etiwanda and Wilson Avenues Intersection, City of Rancho Cucamonga, San Bernardino County, California**

Dear Ms. Jacobs-Donoghue,

In accordance with your request and authorization, Earth Consultants International (ECI) has completed the accompanying report summarizing the geologic and hydrologic conditions in the Tentative Tract 16072 area. The project site is located in the northeastern part of the City of Rancho Cucamonga, approximately 2 miles west of the Interstate 15 Freeway in San Bernardino County, California. Proposed development of the site includes 359 single-family residential lots, as well as open space, interim detention basins, and future streets. Our study was based on the 100-scale Site Plan prepared by MDS Consulting for the 150.8-acre site.

This report was prepared to assist you in preparing the Environmental Impact Report for the proposed project. To that end, we describe the potential geotechnical and hydrologic impacts specific to the site and the proposed development, and provide alternative mitigation measures for the potentially adverse impacts identified.

The results of our study indicate the following:

- An active fault, known as the Etiwanda Avenue Scarp, crosses the site. The fault has been zoned by the State as an Alquist-Priolo Earthquake Fault Zone, thereby requiring detailed geological studies. Several fault trenching investigations have been performed on the site, resulting in the delineation of the active fault traces and recommended building setback zones. These setback zones have been incorporated into the project design by MDS Consulting.
- Portions of the site may experience potentially significant to significant impacts from earthquake-induced ground shaking, seismically induced settlement, ground lurching, slope instability (in the designed slopes), compressible and collapsible soils, oversize rock, erosion, and flooding. With the exception of ground shaking, all of these impacts can be mitigated to a less-than-significant level by project design and geotechnical engineering measures. Design and construction of structures to current building standards is expected to reduce the effects of ground shaking to an acceptable level.

2522 North Santiago Boulevard, Suite B ⊕ Orange ⊕ California ⊕ 92867
Telephone: (714) 282-6123 ⊕ Facsimile: (714) 998-0971

- During construction, short-term impacts associated with slope instability, trench-wall instability, and erosion of surficial soils, are expected to be potentially significant to significant.
- Hazards associated with ground water, liquefaction, subsidence, expansive soils, rippability, tsunami, seiche, dam inundation, and volcanism are considered less-than-significant at the site.

Each one of the above issues is described in detail in the following report.

We have evaluated the potential constraints to development of the Site Plan for Tract 16072 by means of a desktop study that relied on a review the available geological and geotechnical studies performed on the property as well as a review of geological data that in many cases is not site-specific. We used experience and professional judgement when applying regional data to anticipate the geotechnical conditions at the site. This is generally adequate for most EIR studies, unless feasibility-threatening issues, such as active faults that have to be considered in the design, impact the site. In this case, geological studies are necessary to guide the design of the project, such as those performed for Tract 16072.

We appreciate the opportunity to work on this project. If you have any questions regarding this report, please do not hesitate to call us.

Respectfully submitted,

EARTH CONSULTANTS INTERNATIONAL, Inc.

Tania González, CEG 1859
Project Geologist/Project Manager

Distribution: (3) Addressee

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

Figures and Tables

Appendices

1.0 INTRODUCTION

1.1 Purpose and Scope of Work

The purpose of this study was to provide an assessment of the potential geologic, seismic, and hydrological impacts or constraints that may affect the development proposed for Tract 16072. The Site Plan for Tentative Tract No. 16072 (scale 1' = 100'), prepared by MDS Consulting, was used as a basis for the analysis.

The scope of work performed included the following tasks:

Task 1, Data Compilation – Information summarized in the following sections was acquired largely from the geological, geotechnical, and hydrological reports prepared specifically for this property by Geosoils, Inc. and MDS Consulting. These, as well as other references utilized, are listed in Appendix A.

Task 2, Data Analysis and Report Preparation – The collected data was analyzed, potential impacts or constraints to development were identified, and possible mitigation measures were developed to reduce hazards to a non-significant level. The results of this work is summarized in the following report and accompanying illustrations.

1.2 Site Location and Description

Tract 16072 encompasses 150.8 acres in the northeastern part of the City of Rancho Cucamonga, San Bernardino County, California. Located northeast of the intersection of Etiwanda Avenue and Wilson Aveune (24th Street), the project is situated in an area that is not yet highly developed. Residential tracts are present along the west boundary, but mostly vacant land lies to the north, south and east.

Geographically, the site is located in the upper part of the Santa Ana River Valley, slightly more than one mile south of the steeply rising range front of the eastern San Gabriel Mountains. Several major streams, as well as smaller tributary streams, emanate from the mountains and flow southward through this portion of the valley. North of the site, East Etiwanda Creek emerges from the mountains and continues southward along the eastern side of the property, where it enters the East Etiwanda Spreading Grounds. West of the project, levees and flood control channels contain most of the Day Canyon Wash tributaries. Except for the Santa Ana River, most of the streams in the valley have significant flow only during the wet winter months, when they carry large amounts of runoff, usually for short periods of time. Drainage across the project site is generally by sheet flow to the southeast, and within a small, unnamed stream channel that flows southward across the western part of the site.

Terrain at the site is subdued in relief. Elevations vary from about 1,855 feet above mean sea level at the northwest corner of the site to slightly less than 1,635 feet above mean sea level at the southeast corner. Most of the site slopes to the southeast at a gentle gradient of about 5 to 7 percent. This gently sloping surface is disrupted by a 10-foot (maximum) high topographic break in slope that trends across the central part of the property in a southwest to northeast direction. Named the Etiwanda Avenue Scarp, this feature is related to active faulting in the area (see Section 2.4).

1.3 Proposed Development

The site is to be developed as a residential community. The Site Plan reviewed indicates the property will be divided into 401 lots, 359 of which will be residential homesites. The remainder of the lots will be developed as open space, interim detention basins, new flood control channel, and future streets. The plan will require 1 million cubic yards of cut and fill grading (excluding remedial grading) to create terraced building pads. Graded slopes up to approximately 40 feet high are planned. Slopes will have variable gradients ranging up to 2:1 (horizontal:vertical). The proposed cuts and fills are generally less than 30 feet thick, although remedial grading may result in deeper cuts and fills locally. Entry points to the project will be located on the west, south, and east boundaries.

2.0 GEOLOGIC CONDITIONS

2.1 Regional Geologic Setting

The region surrounding the project straddles the junction between two major southern California geologic provinces, the Transverse Ranges to the north, and the Peninsular Ranges to the south, with the base of the San Gabriel Mountains and the Sierra Madre-Cucamonga fault system marking the boundary. The San Gabriel Mountains are part of the Transverse Ranges, a province defined by a series of predominantly east-west trending mountain ranges and their intervening valleys. The ranges stretch across the northern part of San Bernardino County, as well as parts of Riverside, Los Angeles, Ventura, and Santa Barbara counties. The Santa Ana River Valley is considered to be part of the Peninsular Ranges, a province characterized by a northwest-trending geologic and structural grain aligned with the San Andreas fault system, and represented by northwest-trending mountains and valleys extending all the way to the Mexican border.

The eastern San Gabriel Mountains are located in the central part of the Transverse Ranges, where they abruptly rise to heights of more than 6,000 feet above the valley floor. Bounded by the San Andreas fault zone on the northeast and the Cucamonga fault zone on the south, the mountains are essentially a large block of the earth's crust that has been squeezed up and thrust over the valley floor by north-south compression along the San Andreas tectonic plate boundary. Along the mountain front, the Santa Ana River Valley is shaped by coalescing alluvial fans that have a range of ages coincident with the rise of the San Gabriel Mountains. The project site is situated on geologically young alluvium that blankets fans emanating from Day and East Etiwanda Canyons to the north. These young sediments are underlain by older alluvial fan deposits, and at great depth, by crystalline bedrock similar to that exposed in the nearby mountains.

2.2 Geologic Units

The site is underlain by alluvial fan sediments estimated to be several hundred feet thick. Locally, these sediments are covered by surficial deposits, including uncompacted artificial fill and colluvium. These are described in more detail below.

2.2.1 Artificial Fill

Minor deposits of uncompacted artificial fill occur locally throughout the site, usually associated with dirt roads. However, larger deposits consisting of backfilled test pits and exploratory fault trenches are present. These trenches were as much as approximately 1,130 feet in length, and ranged in depth from about 6 to almost 30 feet (GeoSoils, 1998a, 2000). The locations of these trenches are illustrated in the November 11, 1998 GeoSoils report (Geotechnical Map – Plate 1) and additional fault trenches are shown on Plate 1 of the November 30, 2000 GeoSoils report. The trench backfill is composed of native soils in a dry and loose condition; consequently the sites of these excavations are not currently suitable for support of fill embankments or building foundations.

2.2.2 Colluvium

GeoSoils (1998a, 1998b) reports that colluvium mantles the alluvial fan deposits described in the following section. Colluvium typically consists of silty, fine- to coarse-grained sand with scattered cobbles, and locally abundant cobbles. These materials are dry to damp, of low density, and are porous, especially near the surface. Because of these characteristics, colluvium is also unsuitable for the support of foundations and fill embankments.

2.2.3 Alluvial Fan Deposits

The site is underlain by a thick section of Quaternary-age (deposited in the last two million years) alluvial fan deposits. The near-surface deposits, as observed in exploratory trenches, consist predominantly of silty sand or sand with pebbles, gravel, and cobbles, to sandy gravel/gravelly sand with cobbles and boulders. These materials are typically yellowish brown and brownish gray, dry to damp, and medium dense. The stratigraphic sequence is medium- to thick-bedded, with bedding gently inclined to the south (GeoSoils, 1998b). Because the fan surfaces in this area are moderately dissected by streams and have moderate (Stage S5) soil development, Morton and Matti (1987) classified these deposits as latest Pleistocene (between 11,000 and 2 million years old) and Holocene (less than 11,000 years old).

2.3 Regional Faulting and Seismicity

The project site it located in an area of large-scale seismic activity, as the Transverse Ranges province collides with terrain of the Peninsular Ranges province to the south. As mentioned above, the Sierra Madre-Cucamonga fault system delineates the boundary of these two provinces. This fault system was responsible for the destructive M6.4 San Fernando earthquake in 1971 and for the M5.8 Sierra Madre earthquake in 1991. In addition, evidence for prehistoric earthquakes along this fault system has been uncovered in numerous exploratory excavations in recent years. Consequently, most of this fault system has been assigned to an Alquist-Priolo Earthquake Fault Zone by the California Division of Mines and Geology (now called the California Geological Survey). Displacements on faults within this system are mainly of the thrust or thrust-oblique type, causing older geologic units to be pushed up along a series of faults that dip northward beneath the San Gabriel Mountains. In the Rancho Cucamonga area, this activity is represented by the Cucamonga fault zone, which has thrust ancient crystalline rocks over younger sediments filling the valley.

Major active strike-slip faults are also present in the region, where they have deformed the landscape and altered drainage patterns. Examples of this type of faulting in the Rancho Cucamonga area are the San Andreas fault and the San Jacinto fault, two of the most active fault systems in California. These structures are predominantly right-lateral faults and are responsible for creating linear valleys and ridges, as well as offset stream channels.

The faults mentioned above have the potential to generate strong ground motions at the project site. Other regional faults that could also produce significant ground shaking at the site include the San Jose fault and the Chino-Elsinore system (see Figure 1 - Regional Fault Map). These faults are described in the following paragraphs, and are summarized in Table 1. Other

faults within approximately 60 miles (100 km) of the site are listed in Appendix B. The anticipated ground accelerations at the site were calculated using the EQFAULT computer program developed by Blake (2000), and the most recent fault parameters issued by the California Division of Mines and Geology in 1996.

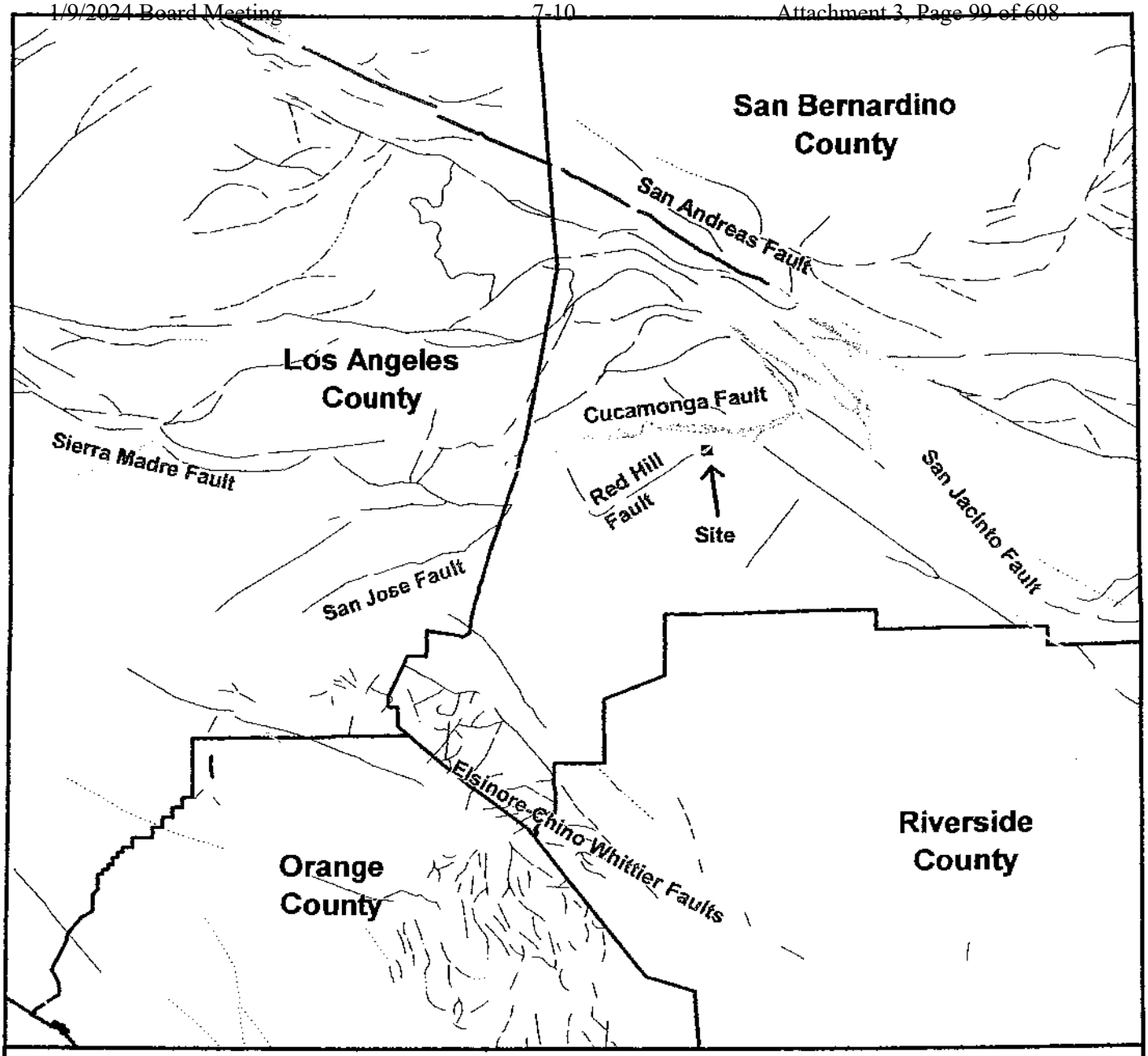
The intensity of ground shaking at a given location depends primarily on the earthquake magnitude, the distance from the epicenter to the site of interest, the type of fault that causes the earthquake, and the response characteristics of the soils or bedrock units underlying the site. Given its proximity to the site, the Cucamonga fault zone is potentially capable of producing intense ground accelerations at the site. A maximum magnitude earthquake on this fault could produce seismic shaking at the site with peak horizontal ground accelerations estimated at between 0.72g and 0.97g, depending on the attenuation relation used (g is the acceleration of gravity, equal to 32 feet per second squared). Earthquakes on other faults and fault segments farther away from the site could be expected to produce lower peak horizontal ground accelerations at the site (see Table 1 and Appendix B). The site is located within Seismic Zone 4 of the 1997 Uniform Building Code (UBC).

2.3.1 *San Andreas Fault*

As the principal boundary between the Pacific and North American tectonic plates, the San Andreas is considered the "master fault" that controls seismic activity in southern California. The fault extends over 750 miles (1,200 km) from near Cape Mendocino in northern California to the Salton Sea region in southern California. Its activity is known from historic earthquakes (some of which have caused rupture of the ground surface), and from many fault studies that have shown that the San Andreas fault offsets or displaces recently deposited sediments.

Large faults, such as the San Andreas fault, are often divided into segments in order to evaluate their future earthquake potential. The segmentation is based on physical characteristics along the fault, particularly discontinuities that may affect the rupture length. In central and southern California, the San Andreas fault system is divided into several segments and each segment is assumed to have a characteristic slip rate (rate of movement averaged over time), recurrence interval (time between moderate to large earthquakes), and displacement (amount of offset during an earthquake). While this methodology has some value in predicting earthquakes, historical records and studies of prehistoric earthquakes show it is possible for more than one segment to rupture during a large quake or for ruptures to overlap into adjacent segments.

The last major earthquake on the southern portion of the San Andreas fault was the 1857 Fort Tejon (Mw 7.8) event. This is the largest earthquake ever reported in California. The 1857 surface rupture has been identified in the Cholame, Carrizo, and Mojave segments, and displacement along the rupture has been measured as high as 9 meters. The recurrence intervals calculated for these segments of the fault range from 104 to 296 years.



Source: Jennings, 1994

Map Explanation

Fault Showing Evidence of Historic Rupture.

Fault Showing Evidence of Holocene Rupture.

Fault Showing Evidence of Pre-Holocene Rupture.

Earth Consultants International

Project Number: 2122
Date: November, 2002

Regional Fault Map

Showing Active and Potentially Active Faults

Tract 16072

Rancho Cucamonga, California

Figure 1

The closest segments of the San Andreas fault to the project site are the San Bernardino Mountains and Coachella Valley segments, which are located at their closest approach, about 9 miles (15 km) to the northeast. The Coachella Valley segment is thought capable of producing a maximum magnitude earthquake of magnitude 7.4. Such an event would generate peak horizontal ground accelerations at the site of about 0.43g to 0.54g. A maximum magnitude earthquake of magnitude 7.3 on the San Bernardino Mountains segment would generate very similar peak horizontal ground accelerations at the site. The San Andreas is classified as a Type A fault under the 1997 UBC.

2.3.2 *Cucamonga Fault*

At a distance of little more than a mile, the Cucamonga fault zone is the closest known active fault to the project site capable of producing an earthquake (the Etiwanda Avenue scarp that extends through the site is an active fault, but it is not thought capable of generating an earthquake on its own). Extending from the Lytle Creek area to San Antonio Canyon, the Cucamonga fault zone consists of several discontinuous fault strands in the eastern part, merging in the central part, and forming a single strand to the west. The Red Hill fault and the Etiwanda Avenue Scarp are secondary faults that are thought to represent the southernmost of these fault strands.

The relationships between faulted geologic units, alluvial stratigraphy, soil ages, and fault scarp morphology have been studied in an attempt to estimate how large an earthquake the Cucamonga fault zone is capable of generating, the slip rate, and how often a large earthquake will occur (Matti, et al, 1982; Morton and Matti, 1987; Morton and Matti, 1991). Researchers found that where the fault zone consists of multiple strands, the oldest faulting occurs in the crystalline rock at the base of the mountains, with fault strands becoming increasingly younger as they step out onto the alluvial plain. Repeated ground rupturing events have occurred throughout the latest Pleistocene and into the Holocene, with the earliest recognizable event occurring about 13,000 years ago and the youngest event occurring about 1,000 to 1,750 years ago. Based on the cumulative surface displacement in scarps across the fault zone, Morton and Matti (1987) calculated a slip rate of about 4.5 to 5.5 mm/yr. From scarp profiles, they estimated that a typical ground-rupturing earthquake creates a surface displacement of about 2 meters (6 feet) and the average recurrence interval for moderate to large earthquakes is about 625 years. Considering uncertainties inherent in dating methods, the Working Group on California Earthquake Probabilities (WGCEP, 1995) lowered the estimated a slip rate to 4.0±2.0 mm/yr. Thus, if the Cucamonga fault were to break along its entire length, it is thought capable of a magnitude 7.0 earthquake. Such an event could produce peak horizontal ground accelerations estimated at 0.72g to 0.97g at the site.

2.3.3 *San Jacinto Fault*

The San Jacinto fault system has been a significant source of moderate- to large-magnitude earthquakes in southern California, having generated about ten earthquakes greater than magnitude 6.0 in the last century (WGCEP, 1995). The San Jacinto fault is divided into five segments. The two closest segments of the San Jacinto fault to the site

include the San Bernardino segment, located about 5 miles (8 km) away, and the San Jacinto Valley segment, located 19 miles (30 km) away.

Of these, the San Bernardino segment is potentially capable of producing the most intense ground accelerations at the site as a result of an earthquake on the San Jacinto fault. This segment is estimated to have slip rate of about 12±6 mm/yr (4.7±2.3 inches/yr), and is thought capable of producing displacements of 1.2±0.3 meters (4±1 feet) during a characteristic earthquake. A magnitude 6.7 earthquake would generate estimated peak horizontal ground accelerations at the site of about 0.51g to 0.55g. The San Jacinto fault classified as a Type A fault under the 1997 UBC.

2.3.4 *San Jose Fault*

The San Jose fault is an 11-mile (18-km) long fault splay that branches southwestward from the Cucamonga-Sierra Madre fault system in the Upland area. The two Upland earthquakes of 1988 and 1990 have been attributed to this fault (Hauksson and Jones, 1991). A worst-case scenario earthquake on this fault, rupturing the entire length of the fault, would result in a magnitude 6.5 earthquake that could cause peak horizontal ground accelerations at the site of about 0.34g to 0.38g. The San Jose fault is located at its closest point about 10 miles from the subject site.

2.3.5 *Sierra Madre Fault*

The Sierra Madre fault is the continuation of the Cucamonga fault to the west. This fault zone includes several fault segments that flank the southern margin of the western San Gabriel Mountains, and are responsible for uplifting the mountains as a result of north-south compression. Portions of this fault system are known to be active. For example, the San Fernando segment of the Sierra Madre fault caused the 1971 San Fernando earthquake of magnitude 6.4. The closest segment of the Sierra Madre fault to the site is located about 13 miles (20 km) from the site. This fault segment is thought capable of producing an earthquake of up to magnitude 7.0, which would generate peak horizontal ground accelerations at the site of about 0.32g to 0.39g.

2.3.6 *Chino Fault*

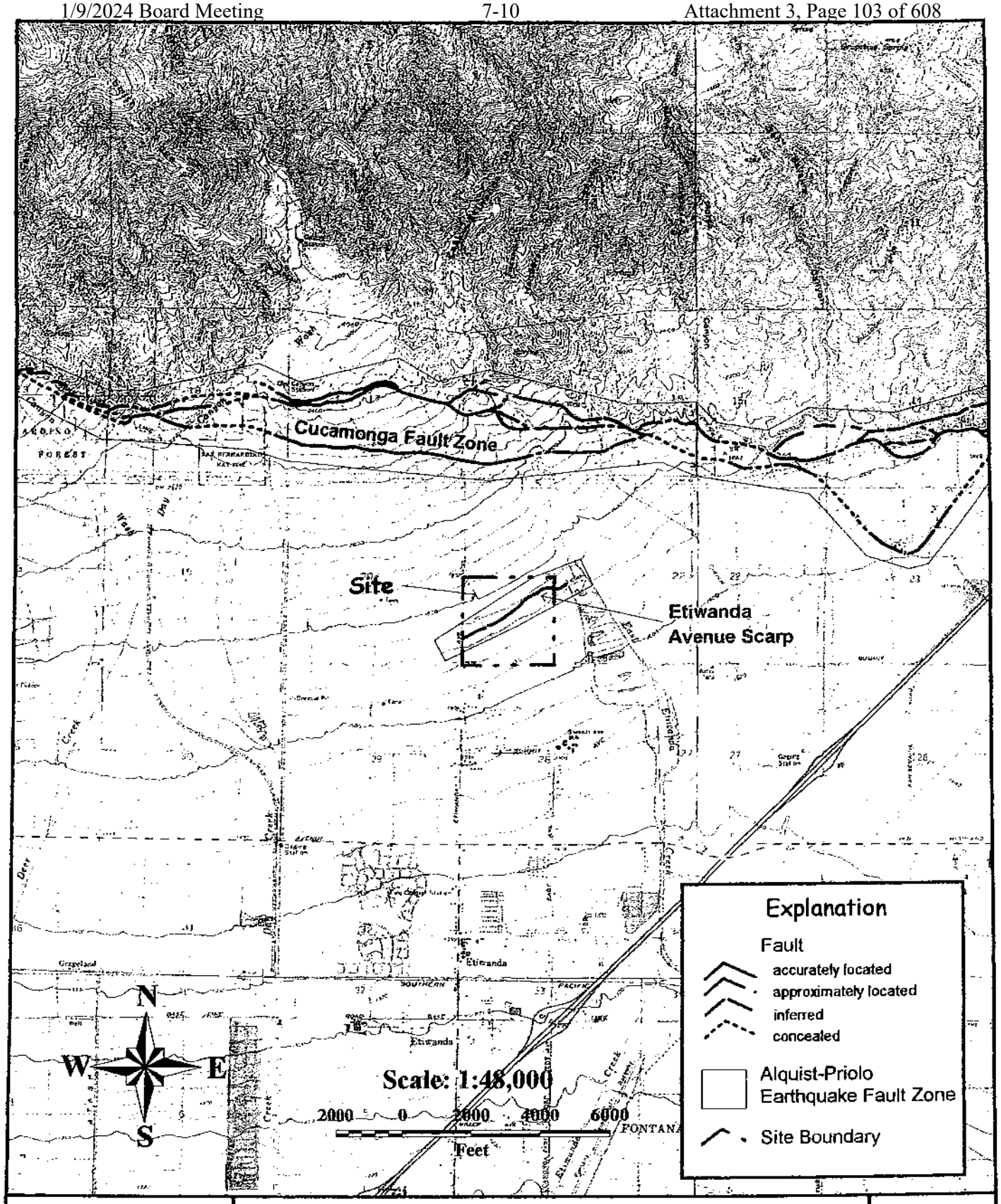
The Chino fault is the northward extension of the Elsinore fault zone north of the Puente Hills (the Whittier fault is the continuation of the Elsinore fault zone south of the Puente Hills). The Chino and Whittier faults serve as major sources of slip transfer from predominantly strike-slip rigid block tectonics on the Elsinore fault in the south to folding and oblique-slip in the Los Angeles basin to the north. Based on geomorphic evidence, the Chino fault is buried along most of its length and is presumed to have less seismic activity than the Whittier fault. However, right-deflected stream channels and apparent offsets of older alluvium and relict soils suggest that the Chino fault has had relatively recent movement, probably in the last 11,000 years (Gray, 1961; Weber, 1977). Based on its length, the Chino fault is thought capable of generating a maximum magnitude earthquake of magnitude 6.7. Such an earthquake could cause peak horizontal ground accelerations at the site of about 0.25g to 0.28g. The Chino fault is located at its closest about 15 miles (24 km) from the subject site.

Table 1:
Summary of the Major Known Active Faults
with the Potential to Cause Severe Seismic Shaking at the Site
(also see Appendix B)

Seismic Source (Name of fault or *fault segment)*	**Magnitude** of the **Maximum Magnitude Event**	**Peak Ground Accelerations** from Maximum Magnitude Event (g)	**Approx. Distance to Site** (miles)
Cucamonga	7.0	0.72-0.97	<2
San Andreas			
San Bernardino	7.3	0.42-0.51	9
Coachella Valley	7.4	0.43-0.54	9
Mojave	7.1	0.35-0.41	11
1857 Rupture	7.8	0.44-0.57	11
San Jacinto			
San Bernardino	6.7	0.51-0.55	5
San Jose	6.5	0.34-0.38	10
Sierra Madre	7.0	0.32-0.39	13
Chino	6.7	0.25-0.28	15

2.4 Faulting Onsite

Active faulting has been identified within the project boundaries, and it has deformed the gently sloping fan surface as represented by the low escarpment trending northeasterly across the site. This feature was named the Etiwanda Avenue Scarp by Morton and Matti (1987), and is thought by many researchers to be an extension of the Red Hill fault, a groundwater barrier that extends to the southwest across the City of Rancho Cucamonga. Because the deformation was thought to be fault-related, the State assigned the scarp to an Alquist-Priolo Earthquake Fault Zone in 1981 (see Figure 2). Exploratory fault trenching was performed at the site in 1986, and the presence of active faulting was confirmed (Richard Mills Associates, 1986). Subsurface studies (fault trenches) were conducted again at the site by GeoSoils in 1998 and 2000. They reported that the fault is of the reverse/thrust type, and has offset young alluvium and colluvium. Thus, in accordance with the requirements of the Alquist-Priolo Act, these investigations provided further confirmation that the fault is active, delineated the traces of the fault, and provided recommendations for structural setbacks. Further, GeoSoils indicates that based on their background review, trenching, and observations of soil stratigraphy, active faulting is not likely to occur within the remainder of the site (1998a). The Red Hill fault and the Etiwanda Avenue Scarp are thought to be structurally related to the Cucamonga fault zone, moving co-seismically with an earthquake on the main Cucamonga fault. The height of the scarp suggests that the Etiwanda Avenue Scarp has ruptured repeatedly and is therefore capable of moving again in the future.



Earth Consultants International

Project Number: 2122
Date: November, 2002

Alquist-Priolo Earthquake Fault Zones

Tract 16072
Rancho Cucamonga, California

Figure 2

2.5 Slope Stability

Slope instability is a rare occurrence on gently sloping sites like the project area, and is usually limited to the banks of incised stream channels. Evidence for existing slope instability was not found during analysis of stereoscopic aerial photographs, or during site investigations (GeoSoils, 1998b). Seismic hazards maps issued by the State in accordance with the Seismic Hazards Mapping Act have not yet been prepared for this area. However, because of the nearly flat gradient, in its existing condition the site would not likely be susceptible to seismically induced landsliding.

2.6 Ground Water

Ground water in this area typically occurs in excess of 100 feet below the ground surface. Because of the nature of the alluvial fan deposits, it is possible for localized lenses of shallow perched water to occur; however, springs, seeps, and other indicators of shallow, perched ground water were not observed during geologic investigations of the site (GeoSoils, 1998b).

2.7 Surface Water

Natural surface drainage in the area is toward the south and southeast. There is one shallow, unnamed drainage course in the western part of the property. This stream contains water intermittently and flows to the south. Sporadic flow was noted in this channel during geologic investigations (GeoSoils, 1998b).

2.8 Engineering Characteristics

2.8.1 Soil Engineering Conditions

The upper 2 to 4 feet of native soils at the site are in a relatively dry, loose and porous condition, and therefore are considered to be highly compressible. In addition, in its upper few feet, the soil at the site typically contains roots and other organic matter. Scattered artificial fills, present as a result of previous land uses or as backfill of exploratory excavations, are also highly compressible. Beneath the upper few feet, the underlying alluvial fan materials, while having a low moisture content, are reportedly in a moderately dense condition (GeoSoils, 1998b). Permeability of the onsite materials is generally high.

Because of the granular nature of the onsite materials, expansion characteristics will generally be in the low range. Preliminary results of laboratory testing by GeoSoils (1998b) indicates that soil in the low expansion range is present, and that sulfate attack on concrete, or corrosion of ferrous metals in contact with the soil is not likely.

The granular, non-cohesive nature of the native soils indicates they will have poor sidewall stability for steep-sided temporary excavations (such as utility trenches). Finished slopes constructed with non-cohesive soils may vulnerable to surficial instability.

2.8.2 *Suitability as Fill Material*

The geologic units onsite, including existing fills, colluvium, and older alluvium, are suitable as compacted fill material, provided that they are first mixed, moisture-treated as necessary, and organics and other deleterious materials are removed. Natural moisture content of the native materials onsite is typically below the optimum amount needed for proper compaction (GeoSoils, 1998b); consequently, most of these soils will require the addition of water during compaction operations. Oversize materials are present, and will require special handling during grading. Oversize materials are commonly described as rocks larger than 12 inches in diameter, but the actual size limit should conform to the grading standards set by the City or reviewing agency, and to recommendations of the project's soil engineer.

2.8.3 *Rippability*

Hard bedrock is not present in the shallow subsurface in this area. The older fills, colluvium, and alluvium at the site can be easily excavated (ripped) with conventional grading equipment in good working order.

2.9 Mineral Resources

Construction aggregate is the principal type of mineral resource obtained from alluvial sites. For many years, aggregate has been mined in the Lytle Creek area to the east, and in the San Antonio and Cucamonga Creek areas to the west. The alluvial fan materials in these areas reportedly yield construction materials consisting of high quality, durable rocks that are relatively free of reactive and weak fragments, and in a wide variety of particle sizes (Evans et al., 1979). Although the geology at the site is similar, this type of mining operation has not occurred at the project site.

2.10 Volcanic Events

No volcanic flows or ash-fall deposits have been mapped in the site vicinity. The closest volcanic dome, of Quaternary or possibly Pliocene age, is located approximately 50 miles to the southeast, in the Temecula area of southern California.

3.0 POTENTIAL HAZARDS, SIGNIFICANCE, AND POSSIBLE MITIGATION MEASURES

This section summarizes the principal geologic conditions that occur in the study area. The potential impact that each of the conditions identified may have on the site is rated using a qualitative scale as **less-than-significant, potentially significant** or **significant**. This assessment was conducted by comparing the severity of a given impact at the site with the range of hazard severity generally representative of southern California.

3.1 Seismic Hazards

The two principal seismic hazards to properties in southern California are damage to structures and foundations due to strong ground motions generated during earthquakes, and surface rupturing of earth materials along fault traces.

3.1.1 Seismic Ground Shaking

An earthquake occurs when the elastic strain energy that has accumulated in the bedrock adjacent to a fault is suddenly released. The released energy propagates in the form of seismic waves that radiate great distances in all directions from the earthquake epicenter. The strong ground motion or shaking produced by these seismic waves is the primary cause of earthquake damage. How much the ground shakes at any one point depends primarily on the earthquake magnitude, distance from the earthquake source, and the local geologic conditions, which can either amplify or attenuate the earthquake waves.

The severity of potential seismic ground shaking at the site can range from low to high, depending primarily on three conditions - magnitude, distance and geology. The most severe shaking would be caused by an earthquake on the Cucamonga, San Andreas, or San Jacinto faults, all three of which have the potential of generating peak horizontal ground accelerations at the site greater than about 0.5g. In fact, an earthquake on the Cucamonga fault has the potential of generating strong ground motions of nearly 1.0g. Rupture of other, more distant faults could also result in ground shaking at the site, albeit of lower intensity. Estimated ground motion intensities at the site from selected earthquakes are presented in the Seismic Parameters Tables (EQFAULT results - Appendix B), and in Section 2.3 above. Given the potentially high accelerations that could occur at this site, the impact of strong ground motion is considered a **significant impact**.

Mitigation Measures:

Designing and building structures in accordance with the Uniform Building Code (ICBO, 1997) is the minimum standard used to mitigate the effects of seismic shaking. The intent behind the code is to reduce major structural failure and loss of life – not to prevent damage to property. Seismic performance goals generally expect that some property damage will be incurred in a moderate to large earthquake, but the damage

should be repairable and not life threatening. For residential development, structures should be able to:

- Resist minor earthquakes with no damage.
- Resist moderate earthquakes with some non-structural damage.
- Resist major earthquakes with some structural damage, but without collapse.

Damage from a local, strong earthquake is likely to be widespread throughout the region. While it is unrealistic to try to build homes and other structures to resist strong ground motions without sustaining damage, the design of a building and the strengthening of its structural elements can help to reduce the effects of a moderate to large earthquake. For instance, single-family, wood-frame structures generally perform well during an earthquake. However, asymmetrical floor plans should be avoided because these kinds of buildings tend to twist in addition to shake laterally. Wings on a building tend to act independently during an earthquake, resulting in differential movements and cracking. Split-level foundations are also not likely to perform well during a near-source earthquake. As an added safety measure, homes should be equipped with automatic seismic shut-off valves for gas lines.

3.1.2 *Lifelines*

Lifelines are those services that are critical to the health, safety and functioning of the community, such as distribution lines for water, gas, sewers, communications, and storm drains. They are particularly essential for emergency response and recovery after an earthquake. These structures are vulnerable to the effects of seismic shaking, and some, out of necessity, will cross the active fault that trends northeasterly across the site. Therefore, loss of lifeline services in the event of a moderate to large earthquake at or near the site is considered to be a **significant** impact.

Mitigation Measures:

New lifelines, particularly those that cross the Etiwanda Avenue Scarp, should be designed to remain operational after the anticipated ground deformation, and/or be fitted with emergency shut off valves. Locations at risk should also be designed for easy access and repair. Other mitigation measures for pipelines and related facilities include built-in redundancy in the systems, flexible joints and connections, strengthening of support structures, securing and/or anchoring pipes and valves, and bracing pipelines.

3.1.3 *Secondary Ground Effects of Seismic Shaking*

Several secondary phenomena are generally associated with strong seismic shaking, especially in areas characterized by a relatively shallow ground water table, and underlain by loose, cohesionless deposits. These phenomena are discussed below:

Liquefaction: Liquefaction occurs when loose, cohesionless, water-saturated soils (generally fine-grained sands) are subjected to strong seismic ground motion of significant duration. These soils essentially behave like liquids, losing all bearing strength. Structures built on these soils tilt or sink when the soils liquefy. Liquefaction more often occurs in earthquake-prone areas underlain by young alluvium where the ground water table is less than 50 feet below the ground surface.

In general, the likelihood of liquefaction occurring in most of the Rancho Cucamonga area is low to non-existent (ECI, 2000). In their preliminary investigation, GeoSoils (1998b) reviewed the potential for liquefaction at the subject property. They reported that liquefaction is unlikely since the sediments that underlie the area are coarse grained, ground water is in excess of 50 feet below the surface, and the sediments become dense with depth. Loose surficial soils will be removed and replaced with compacted fill as part of normal grading activities, and this will further reduce the potential for liquefaction occurring at this site. Because of the relatively high permeability of the alluvial fan sediments, in addition to the required drainage control for the developed site, the probability of the water table at the site rising in the future to within 50 feet of the ground surface is low. The hazard of liquefaction is therefore considered **less-than-significant.**

Mitigation Measures:

None required.

Seismically Induced Slope Instability: Strong ground motions can worsen unstable conditions in natural and man-made slopes. Factors controlling the stability of slopes include 1) slope height and inclination, 2) engineering characteristics of the earth materials comprising the slope, and 3) the intensity of ground shaking. There are no natural slopes that pose a hazard to the proposed development. There will be, however, graded slopes ranging up to about 40 feet in height at gradients of 2:1 or flatter. Consequently, seismically induced slope instability is considered a **potentially significant** impact.

Mitigation Measures:

Engineered slopes should be designed to resist seismically induced failures. Slope design for the project should be based on pseudo-static stability analyses using soil-engineering parameters established for the site, based on subsurface soil sampling and laboratory testing. When slopes are designed and constructed in accordance with current UBC and soil engineering standards, the potential for seismically induced slope failure can be greatly reduced.

Seismically Induced Settlement: Strong ground shaking can cause settlement by allowing sediment particles to become more tightly packed, thereby reducing pore space. Unconsolidated, poorly packed surficial deposits are especially susceptible to this phenomenon. Artificial fills, if not adequately compacted, may also experience seismically induced settlement. Given that there are loose surficial soils and several

areas of uncontrolled artificial fill, seismically induced settlement at the site is considered a **potentially significant** impact.

Mitigation Measures: Native surficial soils and artificial fills currently at the site are of low density and are therefore susceptible to settlement. These areas have been identified, and the low density materials should be removed and recompacted (the soil fraction), or exported offsite (the plant debris and trash). Although not likely to occur at the site, if deeper alluvial deposits prone to settlement are identified, potential mitigation alternatives could include deeper overexcavation and recompaction, foundations on piles or caissons driven into deeper subsurface materials that are not settlement-prone, or in-situ densification of the near-surface soil materials to decrease their susceptibility to settlement.

Ground Lurching: Certain soils have been observed to move in a wave-like manner in response to intense seismic ground shaking, forming ridges or cracks on the ground surface. At present, the potential for ground lurching to occur at a given site can be predicted only generally. Areas underlain by thick accumulations of colluvium appear to be more susceptible to ground lurching than bedrock. Under strong seismic ground motion conditions, lurching can be expected within loose, cohesionless soils, or in clay-rich soils with a high moisture content. Generally, only lightly loaded structures such as pavement, fences, pipelines and walkways are damaged by ground lurching; more heavily loaded structures appear to resist such deformation. Colluvial soils, and loose conhesionless soils are present at the surface of the site. Therefore, ground lurching due to seismic shaking is considered to pose a **potentially significant** impact at the site in its present condition.

Mitigation Measures:

Loose, cohesionless soils that may be susceptible to ground lurching will require removal and recompaction as part of the normal grading operations. This is expected to reduce the hazard of ground lurching to a less-than-significant impact for the graded site.

Earthquake-induced Dam/Reservoir Failure: Historically, dam failures have been caused by severe floods that overtopped the reservoirs, and geotechnical flaws not recognized in the feasibility studies, design or construction phases of the project. In southern California, four dam failures have occurred: two by seismic shaking, and two by geotechnical flaws not recognized in the design (Proctor, 1992).

No large-capacity reservoirs or water tanks that could fail during an earthquake are located upgradient from the site, and none are planned as part of the project. Therefore, at present, the hazard of earthquake-induced inundation at the site is considered **less-than-significant.**

Mitigation Measures:

None required.

Tsunami: A tsunami, or seismically generated sea wave, is generally created by a large earthquake occurring near a deep ocean trough. Damage from tsunamis is confined to near-shore, low-lying areas. Tract 16072 is located at a minimum elevation of 1,635 feet above mean sea level, and more than 45 miles inland. The risk of inundation from a tsunami at this inland site is considered nil. This is a **less-than--significant** impact.

Mitigation Measures:

None required.

Seiche: A seiche is an earthquake-induced wave in a confined or partially confined body of water, such as a lake, reservoir, river, or harbor. The Site Plan indicates no large bodies of water are planned for the development. This impact is therefore considered **less-than-significant.**

Mitigation Measures:

None required.

3.1.4 *Fault-Induced Ground Rupture*

Surface slip along a fault plane can severely damage structures built across a fault. To protect structures from the hazard of surface ground rupturing, the California Division of Mines and Geology, under the State-mandated Alquist-Priolo Act of 1972, has delineated special study zones along active or potentially active faults (Hart and Bryant, 1999). The Alquist-Priolo Act prohibits the siting of structures designed for human occupancy (defined as an occupancy of more than 2,000 man-hours per year) on top of an active fault. An active fault, as defined by State law, is a fault which has been proven by direct geologic evidence (such as trenching) to have offset sediments that are 11,000 years or younger.

As discussed in section 2.4, an Alquist-Priolo Earthquake Fault Zone has been delineated across the project site to encompass the Etiwanda Avenue Scarp. A common misconception about the zoning is that it represents the area of faulting and potential damage. The actual purpose of the zone is to delineate the portion of the property that must undergo the required geologic studies needed to evaluate the faulting prior to approval of the project by the local agency. Several subsurface fault studies have been conducted within the project boundaries and active fault traces have been mapped. Therefore, the potential for fault-induced ground rupture at the site is considered a **significant** impact.

Mitigation Measures:

Because it is impractical to reduce the damage potential from fault rupture to acceptable levels by engineering design, the most appropriate mitigation measure is to simply avoid placing structures on or very near active fault traces. To this end, and in accordance with the requirements and intent of the Alquist-Priolo Earthquake Fault Zoning Act, a building setback has been established for the active traces of the

Etiwanda Avenue Scarp thrust fault. The fault setback zone is shown on the Site Plan for the project, and it corresponds to that recommended by GeoSoils (2000). According to GeoSoils, the boundaries of the setback zone have been conservatively placed, with a wider setback placed north of the faulted zone (100 feet) and a smaller setback (50 feet) to the south. This is because the hanging wall (overthrust block) of the fault is more likely to have a wider spread of ground deformation than the footwall (block below the thrust). Most of the setback zone will be occupied by a 30- to 40-foot high 3:1 slope, along with open space and interim detention basins. The remainder of the setback zone will encroach onto the rear yard of approximately 47 residential lots.

Setback zones are frequently used for non-habitable structures and other types of uses, including trails, parks, recreational facilities such as golf courses, and roads. For homesites, common backyard amenities can legally be placed in the setback zone, such as pools, patios, gazebos, etc. However, these structures may be damaged if the fault were to rupture.

3.2 Slope Stability

There are no existing landslides on or near the site that would threaten the stability of the proposed development. In addition, there are no natural slopes nearby that pose a hazard to the project.

Graded slopes are proposed for the project, and gradients for the slopes will be variable in order to the give the project a more natural appearance. According to the Site Plan, cut and fill slopes up to approximately 40 feet high will be constructed. The highest proposed slope that will be constructed at a 2:1 gradient will be about 30 feet high. Slopes higher than 30 feet, as well as many smaller slopes, will be constructed at a 3:1 gradient. However, slope design recommendations in the preliminary geotechnical investigation (GeoSoils, 1998b) indicate that graded slopes should not exceed 15± feet in height. This is due primarily to the granular, non-cohesive nature of the onsite soils. Further, they indicate that due to these conditions, remedial slope measures may be needed for cut slopes. Consequently, instability of graded slopes is considered a **significant** impact.

During grading, unstable slope conditions can also occur in exploratory excavations, utility trench walls, and in temporary cut slopes made for removals or slope backcuts. The short-term impact of temporary slope instability at the site is considered **significant**.

Mitigation Measures:

The proposed slope designs should be analyzed by the engineering geologist and soil engineer for the project. This should include additional soil sampling and laboratory testing to develop strength parameters for slope stability calculations. If the proposed slopes are found to be grossly or surficially unstable as designed, the soil engineer should provide recommendations for redesign of the unstable slopes (such as laying back to a flatter gradient) or for the addition of stabilization measures. Such measures may include buttressing cut slopes with compacted fill, adding geogrid reinforcement to fill slopes, using a higher compaction standard, and/or using retaining walls.

Exploratory trenches excavated as part of the geotechnical investigations, and temporary excavations, such as utility trenches excavated during grading, should be evaluated, cut, benched and/or shored in accordance with requirements set by Cal-OSHA. The soil engineer for the project should provide recommendations for slope stabilization backcuts, if such temporary cuts are needed.

3.3 Shallow Ground Water

The presence of localized shallow perched groundwater that could impact the site is unlikely due to the granular, highly permeable nature of the alluvium underlying the site. Consequently, the impact of shallow ground water is considered **less-than-significant.**

Mitigation Measures:

None required.

3.4 Foundation Stability

3.4.1 Compressible Soils

The native soil onsite, in its upper few feet, is potentially compressible. In addition, uncontrolled fills, present as old road fills and as backfill in exploratory trenches, are also compressible. These materials are of low density and will settle under the weight of the proposed fills and structures. This is considered a **significant** impact.

Mitigation Measures:

Where compressible soils are removed by design grading cuts, no further mitigation is needed. However, where fills or shallow cuts are planned, removal and recompaction of these deposits will be required during grading operations in accordance with standard grading procedures and the recommendations provided by the project's soil engineer. According to GeoSoils (1998b), removal of compressible soils could extend down 30 feet deep in localized areas, however removals over most of the site should be in the range of 2 to 4 feet.

3.4.2 Collapsible Soils

Soil collapse (also called hydroconsolidation) most often occurs in young sediments deposited in an arid or semi-arid environment. The soils are typically dry in their natural state and contain minute pores and voids. The granular particles may be partially supported by weak bonds of clay, silt, or carbonate. When saturated, collapsible soils undergo a rearrangement of their grains and a loss of cementation, resulting in rapid settlement under relatively light loads. Saturation is usually due to an increase in surface infiltration of landscape water.

Although low in moisture content, the alluvium that underlies this area is generally not susceptible to collapse due to the lack of clay that is needed to form the dry strength bonds between grains. However, variation is grain size is common in alluvial fan

deposits; consequently, localized areas could support the conditions needed for collapse to occur. Collapse is considered a **potentially significant** impact.

Mitigation Measures:

The potential for soils to collapse should be evaluated by the project's soil engineer. If the soils are determined to be collapsible, the hazard can be mitigated by several different measures or combination of measures, including excavation and recompaction, or presaturation and pre-loading of the susceptible soils in-place to induce collapse prior to construction. After construction, infiltration of water into the subsurface soils can be minimized by proper surface drainage design, which directs excess runoff to catch basins and storm drains.

3.4.3 *Expansive Soils*

Expansive soils, if left untreated, can cause damage to structures, including cracking, heaving and buckling of foundations. Because the soil onsite is granular in nature, the expansion characteristics are in the low range. Thus, the potential for native soils to cause structural damage from expansion is considered a **less-than-significant** impact.

Mitigation Measures:

Soils with very low to low expansion potential typically do not require mitigation.

If fill soils are imported to the site, these should be evaluated for their expansion qualities. Moderately expansive soils are generally treated by presaturation of the building pad prior to construction of the foundation, and by strengthening the design of the foundation. Highly expansive fill soils should be placed, at a minimum, in fills several feet deeper than the bottom of the foundation footings. If this is not feasible, the buildings pads may be presaturated to a moisture content and depth specified by the soil engineer for the project, and the foundations strengthened to resist the deformation. Walls, pools, pavements and concrete flatwork will require similar ground preparation and design, based on parameters supplied by the soil engineer.

3.4.4 *Ground Subsidence*

Regional ground subsidence is the gradual sinking of the ground surface with little or no horizontal movement. Surface effects can include earth fissures, depressions, and disruption of surface and subsurface drainage systems. Most ground subsidence is man-induced and can cause extensive damage to buildings, streets, subsurface utility lines, and other man-made structures. In southern California, subsidence and fissures related to man's activities have been mainly attributed to withdrawal of subsurface fluids (ground water or oil) in valleys underlain by unconsolidated sediments. However, good management of local oil reserves and water supplies has largely brought subsidence under control in affected areas.

The project straddles the eastern parts of the Cucamonga and Chino Groundwater Basins (the Red Hill fault/Etiwanda Avenue Scarp marks the boundary, with the

Cucamonga Basin on the north, and the Chino Basin on the south). Subsidence and ground fissuring have occurred in the western part of the Chino Basin (in the City of Chino), however no damaging regional subsidence as a result of groundwater pumping has been reported in the project area. In the year 2000, a program was adopted for the Chino Groundwater Basin (Optimum Basin Management Program), with the goal of insuring a low-cost, sustainable supply of quality water for the future (the smaller Cucamonga Basin is generally operated as part of the Chino Basin). The program includes recommendations for technical studies and monitoring of ground water levels in the basin, as well as monitoring of ground elevations for subsidence. There are no oil extraction operations near the Rancho Cucamonga area. Consequently, the hazard posed by land subsidence is considered a **less-than-significant** impact at the site.

Mitigation Measures: None required.

3.4.5 *Rippability and Oversize Rock*

If not properly addressed, rippability of bedrock units and improper rock disposal during grading can create construction delays, increase construction costs, and cause foundation problems. Given that there is no bedrock at or below the site to hundreds of feet, rippability is a **less-than-significant** impact at this site.

Because large cobbles and boulders are present in the alluvium underlying the site, special handling of oversize rock will be required during grading. In addition, the presence of boulders in cut lots and in utility alignments can make excavation for footings and trenches difficult. Removal of substantial amounts of oversize rock from the site can create a deficiency of fill materials in a balanced cut and fill grading design. Consequently, oversize rock is considered a **potentially significant** impact.

Mitigation Measures:

None required for rippability.

Oversize rock will need to be placed according to recommendations by the soil engineer or removed from the site. Oversize rocks are typically placed in deeper portions of the fills according to accepted methods of windrowing. Based on observations during grading, the soil engineer should provide recommendations regarding overexcavation of lots and utility alignments if it appears boulders may substantially hinder footing and trench excavation.

3.5 Erosion and Flooding

3.5.1 *Erosion*

The erosion potential of the underlying alluvial deposits is considered moderate to high. However, these materials will be exposed and most prone to erosion during the construction phases of the development, and especially during periods of heavy rains. After construction, these deposits will be covered by impervious surfaces, such as concrete or asphalt, or with landscaping that provides protection from erosion. Therefore, the potential hazard due to erosion is considered low for the developed site.

Given the above, the **short-term** impact of erosion is considered **significant**, and the **long-term** impact of erosion is considered **less-than-significant**.

Mitigation Measures:

Temporary erosion control measures should be provided during the construction phase, as required by current City of Rancho Cucamonga grading codes. In addition, a permanent erosion control program should be implemented for the development. This program should include proper care of drainage control devices, proper irrigation, rodent control, and landscaping. Erosion control devices should be field-checked following heavy rainfall periods to confirm that they are performing as designed.

3.5.2 *Flooding*

The project site is located on the outwash plain for Day and East Etiwanda Canyons, two of the larger drainages emanating from the mountains in this area. Young alluvial sediments that represent deposition in active and intermediately active washes, stream channels, and sheet flow from these canyons over the last few thousand years blanket the area, including the project site. In recent years, however, flood control structures have greatly reduced the areas of the plain that receive significant amounts of water and sedimentation. In fact, flood control projects have been so effective in removing storm water run-off from the area, that the natural recharge of the groundwater basin that formerly took place has been substantially reduced (Tom Dodson and Associates, 2001). The problem was so severe that it is now necessary to implement groundwater recharge through management programs that utilize the existing flood control facilities to capture and direct storm water to spreading grounds and conservation ponds in the area.

Run-off from East Etiwanda Canyon flows to the East Etiwanda Spreading Grounds, located a few hundred feet east of the project. Outwash from Day Canyon is largely captured by levees and a flood control channel (Day Creek Channel) located about one mile to the west and southwest of the project. The small tributary stream channel that crosses the western part of the site originates on the eastern side of Day Canyon, at the edge of the mountains. This channel also receives flow from an offsite interceptor channel at the northwest corner of the project. Other existing flood control structures include a large (84-inch diameter) storm drain under Wilson Avenue, and a smaller storm drain (24-inch diameter) below Etiwanda Avenue (MDS Consulting, 2002b). The Flood Insurance Rate Map for this area indicates the project lies within Zone D, a region in which FEMA has not yet determined the flood hazards (Federal Emergency Management Agency, 1996).

Nevertheless, every few years the region is subjected to major storms having intense rainfall that results in flooding. Due to the rapid ascent of the mountains and the impervious nature of the bedrock forming the mountains, floods that impact properties near the range front are typically of the flash flood type, with high peak volumes, short duration, and high velocity. In addition to the potential for flooding of the site during infrequent intense and prolonged winter storms, development will create an increase in

impervious surfaces, resulting in an increase in runoff to downstream areas. The hazard of flooding is therefore considered a **significant** impact.

Mitigation Measures:

It is essential that hydrologic impacts, including flooding from offsite areas, increased runoff to downstream regions as a result of site development, and alterations to natural stream channels, be analyzed and mitigated in the design of a project. A hydrology study prepared for Tract 16072 analyzed upstream stormflow for the undeveloped condition, as well as the need for storm water detention basins within the developed site (MDS Consulting, 2002b). Based on their hydrology calculations, MDS Consulting concluded that several flood control facilities will need to be constructed as part of the project. An open channel is proposed along the northern edge of the property, extending through the tract the interceptor channel currently present at the northwest corner, and continuing it eastward to the Etiwanda Spreading Grounds. In addition, the onsite storm drain system designed to capture runoff within the project will require the inclusion of two interim detention basins. These basins will temporarily detain water during storms so that the existing storm drain system downstream will not be overburdened. Once the offsite downstream system has been upgraded, the onsite detention basins can be permanently converted to usable open space (MDS Consulting, 2002b). Storm water mitigation measures should be reviewed by the local agency (City of Rancho Cucamonga), and the San Bernardino County Flood Control District in order to assure compatibility with the local and regional flood control network.

3.6 Potential Loss of Mineral Resources

Mining operations have occurred on alluvial fans in the region, therefore, it is possible that construction quality aggregate is present at the project site. Because of the rapid urbanization in this area however, it is unlikely this resource would be developed on a commercial scale even if laboratory tests showed good quality aggregate were available in sufficient quantities. Consequently, the loss of mineral resources as a result of the proposed development is considered a **less-than-significant** impact.

Mitigation Measures:

None required.

3.7 Volcanic Hazards

No volcanic deposits or events have been documented in the site vicinity in at least the last one million years. Therefore, the potential for volcanic flows or ash deposits to impact the proposed development is considered low to nil. This is a **less-than-significant** impact.

Mitigation Measures:

None required.

4.0 SUMMARY OF GEOLOGIC AND HYDROLOGICAL HAZARDS AND POTENTIAL MITIGATION MEASURES

Portions of the site may experience potentially significant to significant impacts from seismically induced ground shaking, surface fault rupture, seismically induced settlement, slope instability, compressible and collapsible soils, oversize rock, and erosion and flooding. The most significant of these hazards affecting the proposed development is seismic shaking.

The Cucamonga fault zone is located slightly more than one mile to the north of the site. Mean horizontal peak ground accelerations of 0.72g to 0.97g have been estimated for the site if this fault were to rupture along its entire length. Peak ground accelerations in excess of 1.0g could occur as a result of local site conditions, and proximity to the fault. The site is also near the San Andreas and San Jacinto faults, which could also produce strong ground shaking at the site. These ground motions are not typical of all of southern California, and are therefore considered significant at the site. To minimize the hazard of structural damage, and reduce the threat to life, limb and property, structures should be designed following at least the most current building and grading codes considering near-source effects.

An active fault, the Etiwanda Avenue Scarp, crosses the central part of the site in a northeasterly direction. Site-specific studies have delineated the active fault traces and recommended building setbacks from the faults. These setbacks have been incorporated into the design of the project.

The existing artificial fills and near-surface native soils are moderately to highly compressible if subjected to structural loads. Removal and recompaction of compressible soils will be required in the development areas.

Because of the dry, granular nature of the alluvium onsite, there is a potential for slope instability in temporary and permanent graded slopes. Additional soil sampling, laboratory testing and geotechnical analysis (slope stability calculations) are needed to assure this impact is reduced to non-significant levels.

The site has a potential for flooding from infrequent but intense and prolonged winter storms. In addition, development of the site will create impervious surfaces that will lead to additional runoff to properties located down-gradient. These conditions have been analyzed by the civil engineer, MDS Consulting. As a result, several flood control measures will need to be constructed within the project.

Oversize rock (large cobbles and boulders) will impact grading operations, as they require special handling and burial. Oversize rock, if left at the graded surface, can hamper trenching operations for foundations and utility lines.

Impacts associated with liquefaction, tsunami, seiche, flooding (due to dam, water reservoir or levee failure), rippability, subsidence and differential settlement, loss of mineral resources, and volcanism are considered less-than-significant at the site.

Table 2 summarizes the geotechnical impacts discussed in this report, and shows at a glance, which impacts are considered less-than-significant, potentially significant, or significant to the project.

Table 2
Checklist of Geotechnical Impacts and Potential Mitigation Measures
(Modified from CDMG Note 46)

	DEGREE OF HAZARD PRIOR TO OR DURING DEVELOPMENT			POTENTIAL MITIGATION MEASURES			DEGREE OF HAZARD AFTER DEVELOPMENT		
GEOTECHNICAL HAZARDS	Less-Than-Significant Impact	Potentially Significant Impact	Significant Impact	Code Conformance	Code Conformance and Special Work	Do Nothing, Advanced Planning, Avoidance, or Restrictions	Less-than Significant Impact	Potentially Significant Impact	Significant Impact
Seismic Hazards									
Seismic Ground Shaking			X	X				X	
Liquefaction	X			NA			X		
Seismically Induced Settlement		X		X			X		
Seismically Induced Slope Instability		X		X			X		
Ground Lurching		X		X			X		
Flooding (Due to dam or levee failure)	X			NA			X		
Surface Fault Rupture			X	X		X	X		
Tsunami	X			NA			X		
Seiches	X			NA			X		
Slope Stability									
Landslides and Slope Instability			X	X			X		
Trench-Wall Stability			X	X			X		
Shallow Ground Water									
Change in Ground Water Level	X			NA			X		
Foundation Stability									
Compressible Soils			X	X			X		
Collapsible Soils		X		X			X		
Expansive Soils	X	X		X			X		
Oversize Rock		X		X			X		
Rippability	X			NA			X		
Subsidence and Differential Settlement	X			NA			X		
Erosion	X	X		X			X		
Flooding			X	X			X		
Loss of Mineral Resources	X			NA			X		
Volcanic Hazards									
Lava Flow	X			NA			X		
Ash Fall	X			NA			X		

NA = Not Applicable because it is a less-than-significant impact

APPENDIX A:
REFERENCES REVIEWED

APPENDIX A
References Reviewed

Blake, T.F., 2000, EQFAULT, A Computer Program for the Estimation of Peak Horizontal Acceleration from 3-D Fault Sources, User's Manual.

Bray, J.D., 2001, Developing Mitigation Measures for the Hazards Associated with Earthquake Surface Fault Rupture; *in* Seismic Fault-Induced Failures Workshop, Japan Society for the Promotion of Science, University of Tokyo, Japan, pp. 55-79, January 11-12, 2001.

California Division of Mines and Geology, 1982, Guidelines for Geologic/Seismic Considerations in Environmental Impact Reports: CDMG Note 46, 2p.

California Division of Mines and Geology, 1995, Revised Official Alquist-Priolo Earthquake Fault Zone Map for the Cucamonga Peak, California 7.5 Minute Quadrangle, 1:24,000 Scale.

California Division of Mines and Geology, 1996, California Fault Parameters: California Division of Mines and Geology Open File Report 96-08.

California Geological Survey, 2002, Guidelines for Evaluating the Hazard of Surface Fault Rupture, DMG Note 49.

Earth Consultants International, Inc. (ECI), 2000, Technical Background Report for the Safety Element of the General Plan, City of Rancho Cucamonga, dated September 24, 2000.

Evans, J.R., Anderson, T.P., Manson, M.W., Maud, R.L., Clark, W.B., and Fife, D.L., 1979, Aggregates in the Greater Los Angeles Area, California: California Division of Mines and Geology Special Report 139, 96p.

Federal Emergency Management Agency (FEMA), 1996, Flood Insurance Rate Map, San Bernardino County, California and Incorporated Areas, Panel 7895 of 9400, Map No. 06071C7895 F, effective March 18, 1996.

Fife, D.L., Rodgers, D.L., Chase, D.W., Chapman, R.H., and Sprotte, E.C., 1976, Geologic Hazards in Southwestern San Bernardino County, California: California Division of Mines and Geology Special Report 113, 40p.

Gath, E.M., Gonzalez, T., and Rockwell, T.K., 1992, Evaluation of the late Quaternary rate of slip, Whittier Fault, southern California: U.S. Geological Survey Final Technical Report, 24p.

GeoSoils, Inc., 1998a, Geologic/Fault Investigation, 132± Acre Parcel, Northeast Corner of Wilson and Etiwanda Avenues, Rancho Cucamonga, San Bernardino County, California, W.O. 2381-A-SC, dated October 23, 1998.

GeoSoils, Inc., 1998b, Preliminary Geotechnical investigation, 132± Acre parcel, northeast Corner of Wilson and Etiwanda Avenues, Rancho Cucamonga, San Bernardino County, California, W.O. 2381-A1-SC, November 11, 1998.

GeoSoils, Inc., 2000, Supplemental Geologic/Fault investigation, Tentative Tract Map No. 16072, Rancho Cucamonga, San Bernardino County, California, W.O. 2381-A3-SC, dated November 30, 2000.

Gray, C.H., Jr., 1961, Geology of the Corona South Quadrangle and the Santa Ana Narrows Area, Riverside, Orange, and San Bernardino Counties, California: California Division of Mines and Geology Bulletin No. 178, 120p., 1:24,000 scale.

Hart, E. W., and Bryant, W.A., 1997 revision, Fault-Rupture Hazard Zones in California-Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Maps: California Division of Mines and Geology Special Publication 42, 38p.

Hauksson, E., and Jones, L.M., 1991, The 1988 and 1990 Upland Earthquakes: Left-Lateral Faulting Adjacent to the Central Transverse Ranges: Journal of Geophysical Research, Vol. 96, No. B5, pp. 8,143-8,165.

International Conference of Building Officials (ICBO), 1997, Uniform Building Code.

Jennings, C.W., (compiler), 1994, Fault Activity Map of California and Adjacent Areas: California Division of Mines and Geology, Geologic Map No. 6.

MDS Consulting, 2002a, Tentative Tract No. 16072 Site Plan, City of Rancho Cucamonga, County of San Bernardino, California, dated January, 2002.

MDS Consulting, 2002b, Tract 16072 Hydrology and Hydraulics Report, JN 405-10, dated September 24, 2002.

Matti, J.C., McFadden, L.D., and Tinsley, J.C., 1982, Holocene Faulting History as Recorded by Alluvial History within the Cucamonga Fault Zone: a Preliminary View; *in* Tinsley, J.C., Matti, J.C., and McFadden, L.C. (eds.), Late Quaternary Pedogenesis and Alluvial Chronologies of the Los Angeles and San Gabriel Mountains Areas, Southern California: Field Trip No. 12, 78th Annual Meeting, Geological Society of America Cordilleran Section, pp. 29-42.

Morton, D.M., 1976, Cucamonga Fault Zone Between San Antonio Canyon and Cajon Creek, San Gabriel Mountains, Southern California: Open-File Report OF-76-726, Scale 1:24,000.

Morton, D.M., and Matti, J.C., 1987, The Cucamonga Fault Zone: Geologic Setting and Quaternary History, in Recent Reverse Faulting in the Transverse Ranges, California, U.S. Geological Survey Professional Paper 1339, pp. 179-203.

Morton, D.M., and Matti, J.C., 1991, Geologic Map of the Cucamonga Peak Quadrangle, San Bernardino County, California: U.S. Geological Survey Open-File Report 90-694, scale 1:24,000.

Patterson, A.C., and Rockwell, T.K., 1993, Paleoseismology of the Whittier fault based on 3-dimenstional trenching at the Olinda Oil Field, Orange County, southern California: Geological Society of America, Abstracts with Programs, Vol. 25, No. 5, pp. 131.

Proctor, R.J., 1992, Overview of major dams in Southern California; in Pipkin, B.W., and Proctor, R.J., (editors), Engineering Geology Practice in Southern California: Association of Engineering Geologists Special Publication No. 4, pp. 631-638.

Seitz, G.J., and Weldon, R.J., 1994, The paleoseismology of the southern San Andreas fault at Pitman Canyon, San Bernardino, California: Guidebook, Annual Meeting of the Cordilleran Section of the Geological Society of America, Vol. 27, pp. 152-156.

Tom Dodson & Associates, 2001, Initial Study for the Implementation of Storm Water and Imported Water Recharge at 20 Recharge Basins in Chino Basin.

U.S. Geological Survey, 1966 (Photorevised 1988), Topographic Map of the Cucamonga Peak, California 7.5 Minute Quadrangle; 1:24,000 Scale.

Weber, F.H., 1977, Seismic hazards related to geologic factors, Elsinore and Chino fault zones, northwest Riverside County, California: California Division of Mines and Geology Open-File Report 77-4, 96p.

Wildermuth Environmental, Inc., 2002, Final Initial State of the Basin Report for the Chino Basin Optimum Basin Management Program.

Working Group on California Earthquake Probabilities (WGCEP), 1995, Seismic Hazards in Southern California: Probable Earthquakes, 1994 to 2024: Bulletin of the Seismological Society of America, Vol. 85, No. 2, pp. 379-439.

Ziony, J.I., and Yerkes, R.F., 1985, Evaluating Earthquake and Surface-Faulting Potential; in Ziony, J.I., (editor), Evaluating Earthquake Hazards in the Los Angeles Region – An Earth Science Perspective: U.S. Geological Survey Professional Paper 1360, pp. 43-92.

APPENDIX B:
SEISMIC ANALYSES

* E Q F A U L T Ver. 2.20 *
(Estimation of Peak Horizontal Acceleration
From Digitized California Faults)

SEARCH PERFORMED FOR: Michael Brandman Associates
JOB NUMBER: 2122
JOB NAME: Rancho Cucamonga Etiwanda -Wilson
SITE COORDINATES: LATITUDE: 34.1503N LONGITUDE: 117.522SW
SEARCH RADIUS: 62 mi
ATTENUATION RELATION: 5) Campbell (1991R) Horiz. - Deep Soil & Soft Rock
UNCERTAINTY (M=Mean, S=MeanSigma): S
FAULT-DATA FILE USED: CDMGSCE.DAT

DETERMINISTIC SITE PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROX. DISTANCE mi (km)	MAX. CREDIBLE EVENT MAX. CRED. MAG.	MAX. CREDIBLE EVENT PEAK SITE ACC. g	MAX. CREDIBLE EVENT SITE INTENS MM	MAX. PROBABLE EVENT MAX. PROB. MAG.	MAX. PROBABLE EVENT PEAK SITE ACC. g	MAX. PROBABLE EVENT SITE INTENS MM
SAN ANDREAS - San Bernardi	9 (15)	7.30	0.443	X	7.30	0.443	X
SAN ANDREAS - Coachella	9 (15)	7.40	0.463	X	7.30	0.443	X
SAN ANDREAS - Mojave	11 (18)	7.10	0.349	IX	7.10	0.349	IX
SAN ANDREAS - 1857 Rupture	11 (18)	7.80	0.486	X	7.50	0.427	X
SAN JACINTO-ANZA	45 (72)	7.20	0.069	VI	6.90	0.056	VI
SAN JACINTO-SAN JACINTO VA	19 (30)	6.90	0.180	VIII	6.80	0.168	VIII
SAN JACINTO-SAN BERNARDINO	5 (8)	6.70	0.508	X	6.70	0.508	X
ELSINORE-JULIAN	61 (98)	7.10	0.039	V	6.40	0.023	IV
ELSINORE-TEMECULA	36 (58)	6.80	0.071	VI	6.30	0.049	VI
ELSINORE-GLEN IVY	21 (34)	6.80	0.143	VIII	6.30	0.101	VII
WHITTIER	21 (34)	6.80	0.144	VIII	5.90	0.087	VII
CHINO-CENTRAL AVE. (Elsino	15 (24)	6.70	0.248	IX	5.50	0.122	VII
NEWPORT-INGLEWOOD (Offshor	45 (72)	6.90	0.056	VI	5.80	0.028	V
CLAMSHELL-SAWPIT	19 (31)	6.50	0.161	VIII	5.00	0.062	VI
CUCAMONGA	2 (3)	7.00	0.911	XI	6.10	0.884	XI
HOLLYWOOD	41 (65)	6.40	0.055	VI	5.30	0.027	V
HOLSER	61 (99)	6.50	0.030	V	4.90	0.010	III
MALIBU COAST	58 (94)	6.70	0.038	V	4.90	0.011	III
NEWPORT-INGLEWOOD (L.A.Bas	43 (69)	6.90	0.060	VI	5.60	0.026	V
PALOS VERDES	51 (82)	7.10	0.052	VI	6.20	0.026	V
RAYMOND	28 (44)	6.50	0.103	VII	5.00	0.039	V

DETERMINISTIC SITE PARAMETERS

Page 2

ABBREVIATED FAULT NAME	APPROX. DISTANCE mi (km)	MAX. CREDIBLE EVENT: MAX. CRED. MAG.	MAX. CREDIBLE EVENT: PEAK SITE ACC. g	MAX. CREDIBLE EVENT: SITE INTENS MM	MAX. PROBABLE EVENT: MAX. PROB. MAG.	MAX. PROBABLE EVENT: PEAK SITE ACC. g	MAX. PROBABLE EVENT: SITE INTENS MM
SAN GABRIEL	45 (72)	7.00	0.060	VI	5.60	0.024	IV
SAN JOSE	10 (16)	6.50	0.338	IX	5.00	0.131	VIII
SANTA MONICA	51 (82)	6.60	0.044	VI	5.50	0.022	IV
SANTA SUSANA	57 (91)	6.60	0.037	V	6.30	0.029	V
SIERRA MADRE (San Fernando	45 (72)	6.70	0.059	VI	5.60	0.029	V
SIERRA MADRE	13 (20)	7.00	0.361	IX	6.20	0.219	IX
VERDUGO	36 (58)	6.70	0.082	VII	5.20	0.030	V
COMPTON THRUST	44 (71)	6.80	0.097	VII	5.80	0.052	VI
ELYSIAN PARK THRUST	31 (50)	6.70	0.154	VIII	5.80	0.091	VII
NORTHRIDGE (E. Oak Ridge)	51 (83)	6.90	0.082	VII	5.80	0.040	V
CLEGHORN	12 (19)	6.50	0.236	IX	6.00	0.193	VIII
GRAVEL HILLS - HARPER LAKE	60 (97)	6.90	0.034	V	5.40	0.012	III
HELENDALE - S. LOCKHARDT	37 (60)	7.10	0.084	VII	5.40	0.027	V
JOHNSON VALLEY (Northern)	55 (88)	6.70	0.034	V	5.20	0.012	III
LANDERS	58 (94)	7.30	0.049	VI	5.20	0.011	III
LENWOOD-LOCKHART-OLD WOMAN	51 (83)	7.30	0.060	VI	5.50	0.017	IV
NORTH FRONTAL FAULT ZONE (	43 (70)	6.70	0.062	VI	5.20	0.023	IV
NORTH FRONTAL FAULT ZONE (	18 (28)	7.00	0.255	IX	5.60	0.110	VII
PINTO MOUNTAIN	46 (74)	7.00	0.057	VI	6.10	0.033	V

-END OF SEARCH- 40 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE CUCAMONGA FAULT IS CLOSEST TO THE SITE. IT IS ABOUT 1.6 MILES AWAY.

LARGEST MAXIMUM-CREDIBLE SITE ACCELERATION: 0.911 g
LARGEST MAXIMUM-PROBABLE SITE ACCELERATION: 0.884 g

* E Q F A U L T Ver. 2.20 *
(Estimation of Peak Horizontal Acceleration
From Digitized California Faults)

SEARCH PERFORMED FOR: Michael Brandman Associates
JOB NUMBER: 2122
JOB NAME: Rancho Cucamonga Etiwanda -Wilson
SITE COORDINATES: LATITUDE: 34.1503N LONGITUDE: 117.5225W
SEARCH RADIUS: 62 mi
ATTENUATION RELATION: 18) Idriss (1994) Horiz. - Deep Soil
UNCERTAINTY (M=Mean, S=MeanSigma): S
FAULT-DATA FILE USED: CDMGSCE.DAT

DETERMINISTIC SITE PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROX. DISTANCE mi (km)	MAX. CREDIBLE EVENT: MAX. CRED. MAG.	MAX. CREDIBLE EVENT: PEAK SITE ACC. g	MAX. CREDIBLE EVENT: SITE INTENS MM	MAX. PROBABLE EVENT: MAX. PROB. MAG.	MAX. PROBABLE EVENT: PEAK SITE ACC. g	MAX. PROBABLE EVENT: SITE INTENS MM
SAN ANDREAS - San Bernardi	9 (15)	7.30	0.419	X	7.30	0.419	X
SAN ANDREAS - Coachella	9 (15)	7.40	0.431	X	7.30	0.419	X
SAN ANDREAS - Mojave	11 (18)	7.10	0.362	IX	7.10	0.362	IX
SAN ANDREAS - 1857 Rupture	11 (18)	7.80	0.442	X	7.50	0.404	X
SAN JACINTO-ANZA	45 (72)	7.20	0.115	VII	6.90	0.097	VII
SAN JACINTO-SAN JACINTO VA	19 (30)	6.90	0.231	IX	6.80	0.223	IX
SAN JACINTO-SAN BERNARDINO	5 (8)	6.70	0.513	X	6.70	0.513	X
ELSINORE-JULIAN	61 (98)	7.10	0.078	VII	6.40	0.047	VI
ELSINORE-TEMECULA	36 (58)	6.80	0.116	VII	6.30	0.087	VII
ELSINORE-GLEN IVY	21 (34)	6.80	0.198	VIII	6.30	0.160	VIII
WHITTIER	21 (34)	6.80	0.198	VIII	5.90	0.126	VIII
CHINO-CENTRAL AVE. (Elsino	15 (24)	6.70	0.260	IX	5.50	0.179	VIII
NEWPORT-INGLEWOOD (Offshor	45 (72)	6.90	0.098	VII	5.80	0.046	VI
CLAMSHELL-SAWPIT	19 (31)	6.50	0.192	VIII	5.00	0.103	VII
CUCAMONGA	2 (3)	7.00	0.720	XI	6.10	0.703	XI
HOLLYWOOD	41 (65)	6.40	0.080	VII	5.30	0.046	VI
HOLSER	61 (99)	6.50	0.050	VI	4.90	0.017	IV
MALIBU COAST	58 (94)	6.70	0.062	VI	4.90	0.018	IV
NEWPORT-INGLEWOOD (L.A.Bas	43 (69)	6.90	0.103	VII	5.60	0.043	VI
PALOS VERDES	51 (82)	7.10	0.095	VII	6.20	0.051	VI
RAYMOND	28 (44)	6.50	0.134	VIII	5.00	0.065	VI

DETERMINISTIC SITE PARAMETERS

Page 2

ABBREVIATED FAULT NAME	APPROX. DISTANCE mi (km)	MAX. CREDIBLE EVENT: MAX. CRED. MAG.	MAX. CREDIBLE EVENT: PEAK SITE ACC. g	MAX. CREDIBLE EVENT: SITE INTENS MM	MAX. PROBABLE EVENT: MAX. PROB. MAG.	MAX. PROBABLE EVENT: PEAK SITE ACC. g	MAX. PROBABLE EVENT: SITE INTENS MM
SAN GABRIEL	45 (72)	7.00	0.103	VII	5.60	0.040	V
SAN JOSE	10 (16)	6.50	0.339	IX	5.00	0.197	VIII
SANTA MONICA	51 (82)	6.60	0.069	VI	5.50	0.038	V
SANTA SUSANA	57 (91)	6.60	0.060	VI	6.30	0.048	VI
SIERRA MADRE (San Fernando	45 (72)	6.70	0.086	VII	5.60	0.049	VI
SIERRA MADRE	13 (20)	7.00	0.324	IX	6.20	0.259	IX
VERDUGO	36 (58)	6.70	0.110	VII	5.20	0.051	VI
COMPTON THRUST	44 (71)	6.80	0.093	VII	5.80	0.086	VII
ELYSIAN PARK THRUST	31 (50)	6.70	0.132	VIII	5.80	0.141	VIII
NORTHRIDGE (E. Oak Ridge)	51 (83)	6.90	0.083	VII	5.80	0.069	VI
CLEGHORN	12 (19)	6.50	0.304	IX	6.00	0.231	IX
GRAVEL HILLS - HARPER LAKE	60 (97)	6.90	0.070	VI	5.40	0.022	IV
HELENDALE - S. LOCKHARDT	37 (60)	7.10	0.132	VIII	5.40	0.046	VI
JOHNSON VALLEY (Northern)	55 (88)	6.70	0.068	VI	5.20	0.022	IV
LANDERS	58 (94)	7.30	0.093	VII	5.20	0.020	IV
LENWOOD-LOCKHART-OLD WOMAN	51 (83)	7.30	0.107	VII	5.50	0.030	V
NORTH FRONTAL FAULT ZONE (	43 (70)	6.70	0.090	VII	5.20	0.039	V
NORTH FRONTAL FAULT ZONE (	18 (28)	7.00	0.253	IX	5.60	0.162	VIII
PINTO MOUNTAIN	46 (74)	7.00	0.100	VII	6.10	0.055	VI

-END OF SEARCH- 40 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE CUCAMONGA FAULT IS CLOSEST TO THE SITE. IT IS ABOUT 1.6 MILES AWAY.

LARGEST MAXIMUM-CREDIBLE SITE ACCELERATION: 0.720 g
LARGEST MAXIMUM-PROBABLE SITE ACCELERATION: 0.703 g

* E Q F A U L T Ver. 2.20 *
(Estimation of Peak Horizontal Acceleration
From Digitized California Faults)

SEARCH PERFORMED FOR: Michael Brandman Associates
JOB NUMBER: 2122
JOB NAME: Rancho Cucamonga Etiwanda -Wilson
SITE COORDINATES: LATITUDE: 34.1503N LONGITUDE: 117.5225W
SEARCH RADIUS: 62 mi
ATTENUATION RELATION: 1) Campbell & Bozorgnia (1994) Horiz. - Alluvium
UNCERTAINTY (M=Mean, S=MeanSigma): S
FAULT-DATA FILE USED: CDMGSCE.DAT

DETERMINISTIC SITE PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROX. DISTANCE mi (km)	MAX. CREDIBLE EVENT: MAX. CRED. MAG.	PEAK SITE ACC. g	SITE INTENS MM	MAX. PROBABLE EVENT: MAX. PROB. MAG.	PEAK SITE ACC. g	SITE INTENS MM
SAN ANDREAS - San Bernardi	9 (15)	7.30	0.513	X	7.30	0.513	X
SAN ANDREAS - Coachella	9 (15)	7.40	0.535	X	7.30	0.513	X
SAN ANDREAS - Mojave	11 (18)	7.10	0.414	X	7.10	0.414	X
SAN ANDREAS - 1857 Rupture	11 (18)	7.80	0.572	X	7.50	0.506	X
SAN JACINTO-ANZA	45 (72)	7.20	0.115	VII	6.90	0.088	VII
SAN JACINTO-SAN JACINTO VA	19 (30)	6.90	0.229	IX	6.80	0.214	VIII
SAN JACINTO-SAN BERNARDINO	5 (8)	6.70	0.549	X	6.70	0.549	X
ELSINORE-JULIAN	61 (98)	7.10	0.071	VI	6.40	0.038	V
ELSINORE-TEMECULA	36 (58)	6.80	0.106	VII	6.30	0.068	VI
ELSINORE-GLEN IVY	21 (34)	6.80	0.187	VIII	6.30	0.131	VIII
WHITTIER	21 (34)	6.80	0.188	VIII	5.90	0.095	VII
CHINO-CENTRAL AVE. (Elsino	15 (24)	6.70	0.275	IX	5.50	0.127	VIII
NEWPORT-INGLEWOOD (Offshor	45 (72)	6.90	0.089	VII	5.80	0.033	V
CLAMSHELL-SAWPIT	19 (31)	6.50	0.185	VIII	5.00	0.061	VI
CUCAMONGA	2 (3)	7.00	0.969	XI	6.10	0.919	XI
HOLLYWOOD	41 (65)	6.40	0.068	VI	5.30	0.028	V
HOLSER	61 (99)	6.50	0.041	V	4.90	0.011	III
MALIBU COAST	58 (94)	6.70	0.051	VI	4.90	0.012	III
NEWPORT-INGLEWOOD (L.A.Bas	43 (69)	6.90	0.094	VII	5.60	0.030	V
PALOS VERDES	51 (82)	7.10	0.089	VII	6.20	0.040	V
RAYMOND	28 (44)	6.50	0.124	VII	5.00	0.037	V
SAN GABRIEL	45 (72)	7.00	0.096	VII	5.60	0.028	V

DETERMINISTIC SITE PARAMETERS

Page 2

ABBREVIATED FAULT NAME	APPROX. DISTANCE mi (km)	MAX. CREDIBLE EVENT: MAX. CRED. MAG.	PEAK SITE ACC. g	SITE INTENS MM	MAX. PROBABLE EVENT: MAX. PROB. MAG.	PEAK SITE ACC. g	SITE INTENS MM
SAN JOSE	10 (16)	6.50	0.379	X	5.00	0.138	VIII
SANTA MONICA	51 (82)	6.60	0.057	VI	5.50	0.024	IV
SANTA SUSANA	57 (91)	6.60	0.049	VI	6.30	0.039	V
SIERRA MADRE (San Fernando	45 (72)	6.70	0.074	VII	5.60	0.031	V
SIERRA MADRE	13 (20)	7.00	0.393	X	6.20	0.248	IX
VERDUGO	36 (58)	6.70	0.100	VII	5.20	0.030	V
COMPTON THRUST	44 (71)	6.80	0.122	VII	5.80	0.056	VI
ELYSIAN PARK THRUST	31 (50)	6.70	0.176	VIII	5.80	0.093	VII
NORTHRIDGE (E. Oak Ridge)	51 (83)	6.90	0.108	VII	5.80	0.045	VI
CLEGHORN	12 (19)	6.50	0.277	IX	6.00	0.199	VIII
GRAVEL HILLS - HARPER LAKE	60 (97)	6.90	0.060	VI	5.40	0.016	IV
HELENDALE - S. LOCKHARDT	37 (60)	7.10	0.130	VIII	5.40	0.029	V
JOHNSON VALLEY (Northern)	55 (88)	6.70	0.057	VI	5.20	0.015	IV
LANDERS	58 (94)	7.30	0.089	VII	5.20	0.014	III
LENWOOD-LOCKHART-OLD WOMAN	51 (83)	7.30	0.105	VII	5.50	0.021	IV
NORTH FRONTAL FAULT ZONE (	43 (70)	6.70	0.078	VII	5.20	0.023	IV
NORTH FRONTAL FAULT ZONE (	18 (28)	7.00	0.279	IX	5.60	0.114	VII
PINTO MOUNTAIN	46 (74)	7.00	0.093	VII	6.10	0.042	VI

-END OF SEARCH- 40 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE CUCAMONGA FAULT IS CLOSEST TO THE SITE. IT IS ABOUT 1.6 MILES AWAY.

LARGEST MAXIMUM-CREDIBLE SITE ACCELERATION: 0.969 g
LARGEST MAXIMUM-PROBABLE SITE ACCELERATION: 0.919 g

PLANNERS ENGINEERS SURVEYORS

Offices located in Irvine and in Galena

March 7, 2003

Mr. Paul McCloy
GeoSoils, Inc.
26590 Madison Avenue
Murrieta, CA 92562

Tract 16072
Richland Etiwanda
City Comments

Dear Paul:

We received comments from the City recently and were going to have the City's EIR consultants respond, but after some thought, decided that the project geotechnical consultant would be better able to address the comments and have the EIR geotechnical consultant review. The three areas of concern are as follows:

1. Will the water percolating into the detention basin in the fault zone lubricate or adversely affect the fault? The maximum period of water detention in a one hundred-year storm is less than twenty-four hours, which includes the entire rainfall period.

2. Are the 3:1 slopes that come down into the north side of the fault zone stable in earthquake events?

3. When the detention basin in the fault zone has been full of water, is the adjacent 3:1 slope on the north side of the basin stable in an earthquake event?

We have enclosed a hydrology plate of the detention basin that reflects the location as well as the maximum depth of water.

Please call me to discuss this further.

Sincerely,

Stan Morse /jr

Stanley C. Morse
Principal

SCM:jr

cc: Tom Sanhamel
John Schafer

G:\405\jr\CORRCITYCOMM.DOC

Stanley C. Morse | 17320 Redhill Avenue | VOICE: 949-251-8821
Gary W. Bobich | Suite 330 | FAX: 949-251-8816
J.R. "Skip" Schultz | Irvine, CA 92614 | www.mbcconsultinginc.com

RESPONSE TO THIRD PARTY REVIEW
TENTATIVE TRACT NO. 16072, RICHLAND ETIWANDA
CHO CUCAMONGA, SAN BERNARDINO COUNTY, CALIF

FOR

RICHLAND PROPERTIES
3 IMPERIAL PROMENADE, SUITE 150
SANTA ANA, CALIFORNIA 92707

W.O. 2381-A4-SC APRIL 10, 2003

GeoSoils, Inc.

Geotechnical • Geologic • Environmental

RESPONSE TO THIRD PARTY REVIEW
TENTATIVE TRACT NO. 16072, RICHLAND ETIWANDA
RANCHO CUCAMONGA, SAN BERNARDINO COUNTY, CALIFORNIA

FOR

RICHLAND PROPERTIES
3 IMPERIAL PROMENADE, SUITE 150
SANTA ANA, CALIFORNIA 92707

W.O. 2381-A4-SC APRIL 10, 2003

GeoSoils, Inc.

Geotechnical · Geologic · Environmental

26590 Madison Avenue · Murrieta, California 92562 · (909) 677-9651 · FAX (909) 677-9301

April 10, 2003

W.O. 2381-A4-SC

Richland Properties
3 Imperial Promenade, Suite 150
Santa Ana, California 92707

Attention: Mr. John Schafer

Subject: Response to Third Party Review, Tentative Tract No. 16072, Richland Etiwanda, Rancho Cucamonga, San Bernardino County, California.

Dear Mr. Schafer:

In accordance with the request of MDS Consulting, and your authorization, GeoSoils, Inc. (GSI), is providing this response to the City's third party review of our reports for the subject site (see Appendix A). The scope of our services has included a review of the referenced plans and letter by MDS Consulting, project design civil engineers, a review of the referenced technical data and previous reports by GSI, preparation of geologic cross sections and slope stability analyses, analysis of data, and preparation of this summary response. Unless specifically superceded herein, the conclusions and recommendations contained in the referenced GSI reports remain pertinent and applicable, and should be appropriately implemented during planning, design, and construction.

REVIEW RESPONSE

For ease of review, the comments indicated by the City's reviewer are repeated below in bold, followed by GSI's response.

Review Comment No. 1

Will the water percolating into the detention basin in the fault zone lubricate or adversely affect the fault? The maximum period of water detention in a one hundred-year storm is less than twenty-four hours, which includes the entire rainfall period.

Response No. 1

In most cases of reservoir-induced seismicity, seismicity follows the impoundment, large lake-level changes, or filling at a later time above the highest water level achieved until then (Talwani, 1997). The location of seismicity is governed by the nature of faulting below and near the reservoir. Reservoir-induced seismicity is considered to have occurred at only four sites in California (Allen, 1982). GSI would like to point out that the proposed detention basin is not a reservoir, and will only hold water (up to about 8 feet deep, or an average of 4½ feet) for less than 24 hours.

The seismic response of a reservoir is classified into two temporal categories: initial seismicity, which is associated with the initial impoundment or large lake-level changes, and; protracted seismicity, rarely observed, and which is believed to occur because of pore pressure changes. Since the detention basin would be emptied relatively quickly, protracted seismicity because of impoundment within the "reservoir" is of no concern, from a geologic and geotechnial viewpoint.

Under the first category, the "poroelastic" response of the reservoir is a coupled response. Initially and occurring simultaneously with the impoundment, is the undrained response. This occurs because of an increase in pore pressure in the closed pores (by fault gouge and clay). As the increased pore pressure is diffused to the surrounding regions, there is a decrease in pore pressure (drained response). With the arrival of a diffusive pore pressure front, the pore pressure increases and causes seismicity. For shallow reservoirs, the response may take a few weeks to a few months. The initial seismicity is characterized by a general lack of seismicity beneath the deepest part of the reservoir and activity on the periphery of the reservoir. The seismicity increases after the impoundment is completed, and the largest earthquake usually occurs after that. Then there is a decay in seismicity (over 5-10 years) to pre-impoundment levels (Talwani, 1997).

Based on the available data, there was no fault gouge nor clay associated with the onsite fault, and thus no significant preferential path for water infiltration into the fault zone or country sediments. Further, the proposed detention basin is very small compared to reservoirs which have exhibited initial seismicity. Thirdly, the average depth of water during impoundment is minor in nature, and equivalent to adding about 2 to 4 feet of surcharge fill. Fourthly, the impoundment would be of a limited transient nature. Based on all of the above, there is no data to indicate that the proposed detention basin, and any water emanating or percolating from it, would lubricate or adversely affect the fault, from a geologic or geotechnial viewpoint.

Review Comment No. 2.

Are the 3:1 slopes that come down into the north side of the fault zone stable in earthquake events?

Response No. 2.

GeoSoils, Inc. performed a slope stability analysis (static, seismic, and rapid drawdown) on the detention/retention basin 3:1 slope presented on Section C-C' (see the attached Figure 1). The location of this cross section is presented on Plates 1 and 2.

Fill and Cut Slope Stability Analysis

Analyses were performed utilizing the two dimensional slope stability computer program "GSTAB7." The program calculates the factor of safety for specified circles or searches for a circular, block, or irregular slip surface having the minimum factor of safety using the modified Bishop Method, Janbu or general limit equilibrium (Spencer). Additional information regarding the methodology utilized in these programs are included in Appendix B. Our slope stability analysis was performed with respect to static conditions, and when subject to seismic shaking (pseudo-static or seismic) conditions, and under rapid drawdown conditions.

Gross Stability

Based on the available data, the constraints outlined above, and our stability calculations shown in Appendix B, a calculated factor-of-safety greater than 1.5 (static) and 1.15 (pseudo-static or seismic) has been obtained for the proposed detention/retention basin, and proposed fill (see the attached Figure 2 and Plate 3) and cut (see the attached Figure 3 and Plate 3) slopes. Factors of safety of 1.5 (static case) and 1.15 (seismic case) are the currently accepted minimum safety factors applied to slope stability analysis for the construction industry and used by local governing agencies. Our analysis assumes that the slopes are designed and constructed in accordance with guidelines provided by the City of Rancho Cucamonga, the Uniform Building Code and recommendations provided by this office. While cut slopes appear to be stable based on our current analysis, the inability to obtain site specific structural data in some areas may not preclude the need for stabilization/buttress fills during site construction due to unforseen adverse conditions exposed during site grading. Although unlikely, if significant undocumented fill is encountered during cut slope excavation, stabilization fills or retaining walls may be necessary.

Surficial Stability

An analysis of surficial stability was performed for graded slopes constructed of compacted fills and/or bedrock material. Our analysis indicates that slopes exhibit an adequate factor of safety against surficial failure (i.e., > 1.5), provided that the slopes are properly constructed and maintained.

As can be seen by the extremely high factors-of-safety, the proposed detention/retention basin and other cut and fill slopes should be stable. Accordingly, it is GSI's opinion that the detention/retention basin and project, as proposed, are satisfactory from a geotechnical viewpoint.

Review Comment No. 3.

When the detention basin in the fault zone has been full of water, is the adjacent 3:1 slope on the north side of the basin stable in an earthquake event?

Response No. 3.

See Response No. 2 above. Accordingly, it is GSI's opinion that the detention/retention basin and 3:1 slope, as proposed, are satisfactory from a geotechnical viewpoint.

The opportunity to be of service is sincerely appreciated. If you should have any questions, please do not hesitate to contact our office.

Respectfully submitted,

GeoSoils, Inc.

REGISTERED GEOLOGIST JOHN P. FRANKLIN NO. 1340 Certified Engineering Geologist STATE OF CALIFORNIA

John P. Franklin
Engineering Geologist, CEG 1340

Reviewed by:

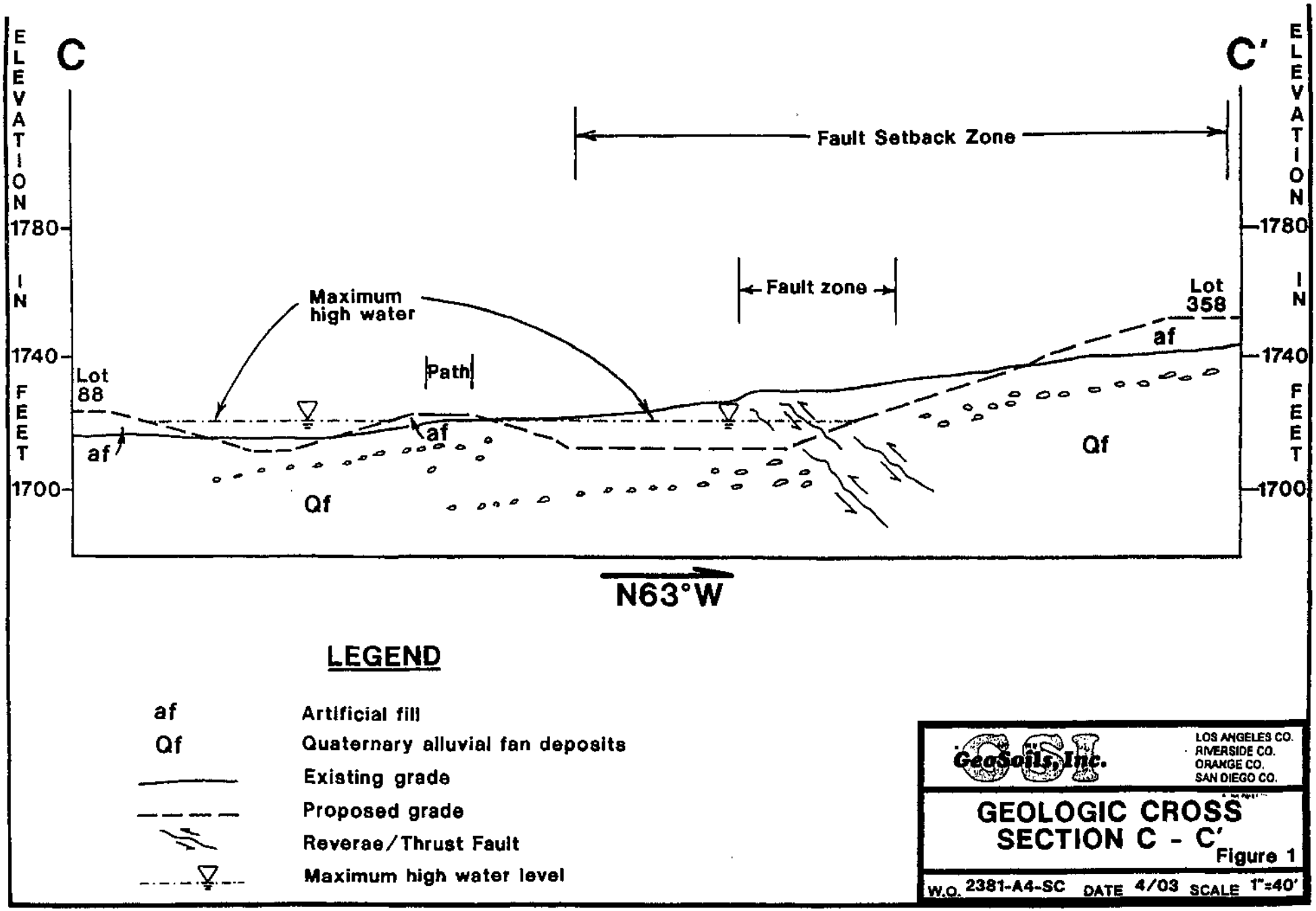
REGISTERED PROFESSIONAL ENGINEER DAVID W. SKELLY No. RCE 47857 Exp. 12/31/03 CIVIL STATE OF CALIFORNIA

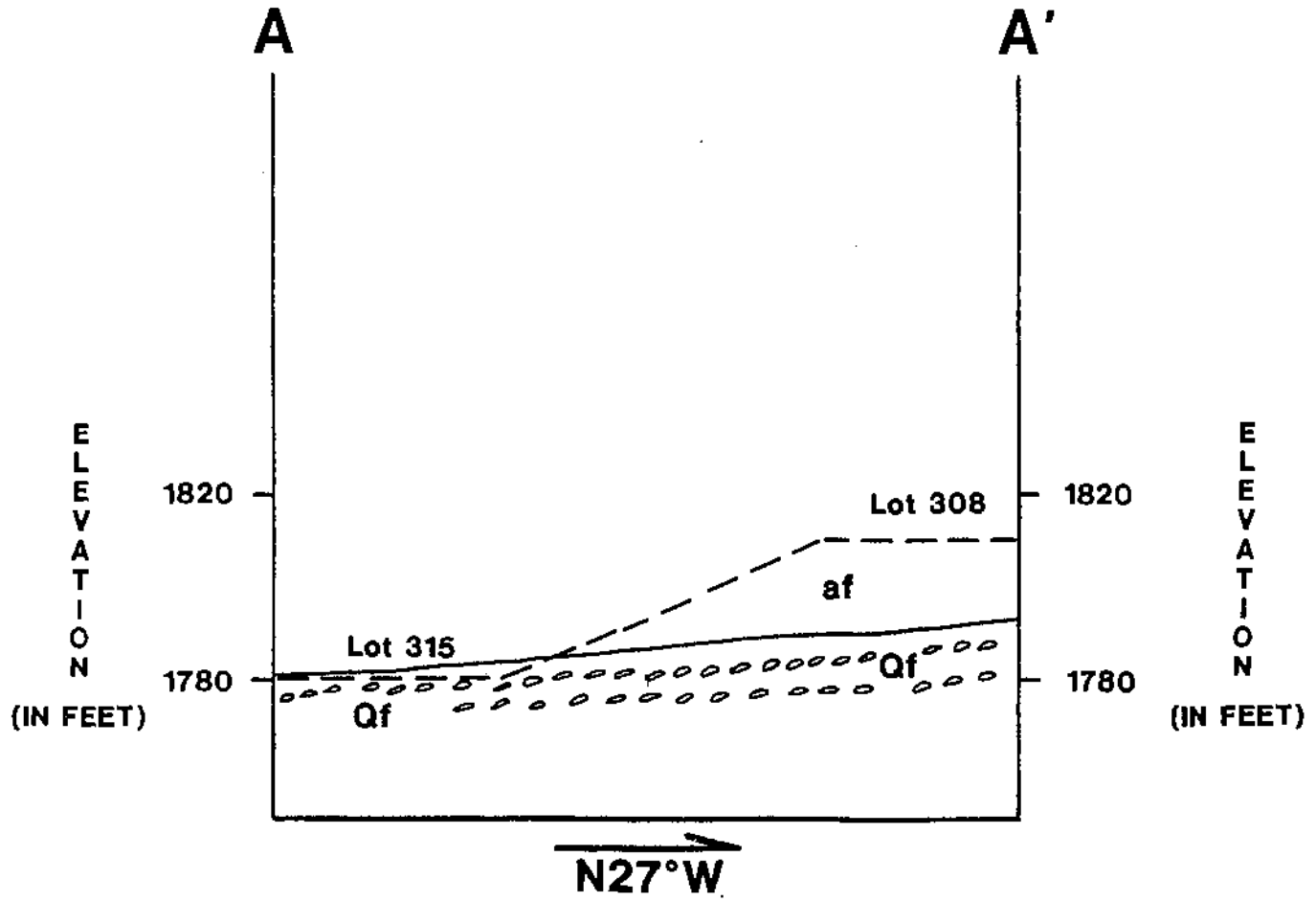
David W. Skelly
Civil Engineer, RCE 47857

JPF/DWS/jh

Attachments:
Figure 1 - Geologic Cross Section C-C'
Figure 2 - Geologic Cross Section A-A'
Figure 3 - Geologic Cross Section B-B'
Appendix A - References
Appendix B - Slope Stability Analyses
Plate 1 through 3 - Geologic Cross Section Location Maps

Distribution:
(3) Addressee
(3) MDS Consulting, Attention: Mr. Stan Morse


C
C'
ELEVATION IN FEET
1780
1740
1700
Fault Setback Zone
Fault zone
Maximum high water
Path
Lot 88
Lot 358
af
Qf
N63°W
LEGEND
af Artificial fill
Qf Quaternary alluvial fan deposits
Existing grade
Proposed grade
Reverae/Thrust Fault
Maximum high water level
GeoSoils, Inc.
LOS ANGELES CO.
RIVERSIDE CO.
ORANGE CO.
SAN DIEGO CO.
GEOLOGIC CROSS SECTION C - C'
Figure 1
W.O. 2381-A4-SC DATE 4/03 SCALE 1"=40'



LEGEND

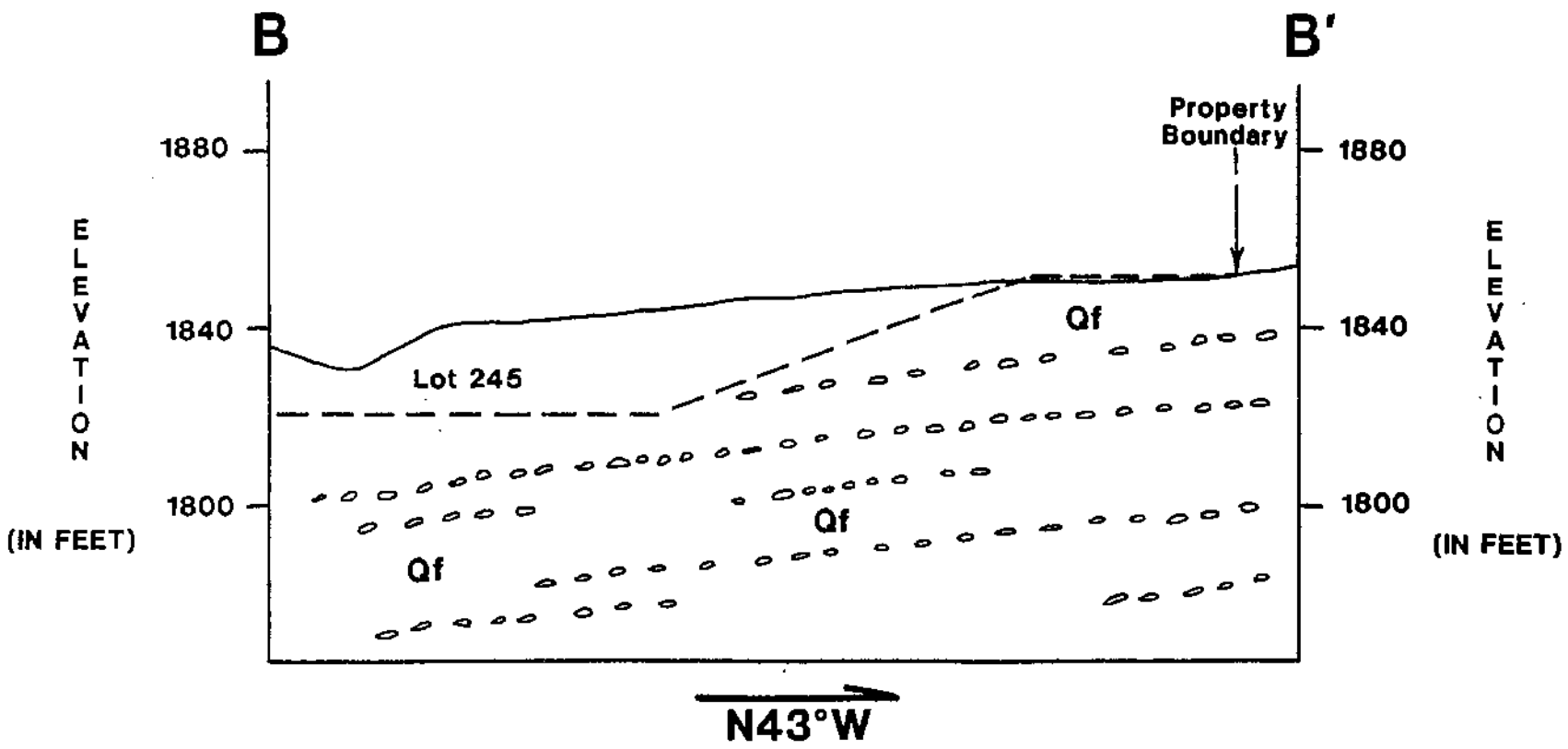
af	Artificial fill
Qf	Quaternary alluvial fan deposits
———	Existing grade
— — —	Proposed grade

GeoSoils, Inc.
LOS ANGELES CO.
RIVERSIDE CO.
ORANGE CO.
SAN DIEGO CO.

GEOLOGIC CROSS SECTION A - A'

Figure 2

W.O. 2381-A4-SC DATE 4/03 SCALE 1"=40'



LEGEND

Qf	Quaternary alluvial fan deposits
———	Existing grade
– – – –	Proposed grade

GeoSoils Inc. RIVERSIDE CO. ORANGE CO. SAN DIEGO CO.

GEOLOGIC CROSS SECTION B - B'

Figure 3

W.O. 2381-A4-SC DATE 4/03 SCALE 1"=40'

Appendix C
Biological Resources Assessment and Focused Surveys

Appendix C
Biological Resources Assessment and Focused Surveys

PCR

September 3, 2003

Mr. Mike Hoolihan
MICHAEL BRANDMAN ASSOCIATES
220 Commerce, Suite 200
Irvine, CA 92602

Re: Etiwanda Subdivision, Tentative Tract 16072, San Bernardino County, California

Dear Mr. Hoolihan:

This letter is being provided as an addendum to **PCR Services Corporation's** (PCR) Biological Resources Assessment for the Etiwanda Subdivision Tentative Tract 16072 located in San Bernardino County, California dated December 20, 2002. Specifically, this addendum addresses potential impacts to off-site areas resulting from the following project features:

- Etiwanda Avenue extension to the north
- Drainage outlet extension under Etiwanda Avenue
- East Avenue extension to the north
- East Avenue extension (south of Wilson Avenue)
- Wilson Avenue improvements
- Trapezoidal channel and energy dissipator

The revised study area, which includes the areas to be impacted by the above off-site features, is shown in the attached figure. Potential impacts to sensitive biological resources in these off-site areas are addressed in detail below.

- **Coastal California Gnatcatcher:** Focused surveys for the coastal California gnatcatchet (CAGN) were conducted on-site in 1998, 2001 and 2002 with negative results. The methodology used for the surveys included broadcasting taped CAGN vocalizations outward from the property boundary. Since the tape is audible for at least 300 feet and potentially farther due to the flat topography, the revised and expanded study area is considered to have been surveyed during each of the three previous survey efforts. Due to the multiple years of negative survey results the CAGN is not expected to occur within the study area and our conclusions remain the same as identified in the December 20, 2002 Biological Resources Assessment.

- **San Bernardino Kangaroo Rat:** Focused trapping surveys were conducted for the San Bernardino kangaroo rat (SBKR) in 2001 within the Etiwanda property. In 2002, SBKR focused surveys were conducted within the Etiwanda property and within the off-site areas

comprising the revised study area (with the exception of the Etiwanda Spreading Grounds). No SBKR were detected during either trapping bout. A small portion of the Etiwanda Spreading Grounds will be impacted by the construction of a trapezoidal channel and energy dissipator. According to Dr. Michael O'Farrell (personal communication September 2, 2003), SBKR are unlikely to occur there due to the negative results of trapping west of the spreading grounds and the increased disturbance within the spreading grounds. Additionally, Dr. O'Farrell has conducted SBKR trapping studies elsewhere on the Etiwanda Fan, including the nearby Day Creek alluvial wash, and he did not find the species in the area. It is his opinion that the species is likely to have been extirpated from most of the fan area. Therefore, our conclusions remain the same as written in the December 20, 2002 Biological Resources Assessment.

- **Sensitive Plants:** Although focused surveys for sensitive plants were not conducted in portions of the larger study area, there is a high likelihood of Plummer's mariposa lily (*Calochortus plummerae*) to occur based upon the similarity and contiguity of the habitat. Impacts to this species have been determined to be potentially significant and the potential presence of additional individuals within the larger study area would not change the findings of the December 20, 2002 Biological Resources Assessement.

- Trees: All jurisdictional trees within the study area were addressed in the December 20, 2002 tree report.

- **Jurisdictional Delineation:** All jurisdictional areas within the study area were addressed in the delineation report dated December 20, 2002. The placement of the energy dissipator structure within the spreading grounds does not appear to impact an area that would be regulated by the U.S. Army Corps of Engineers (ACOE). Nevertheless, all temporary and permanent impacts related to the placement of this structure will be addressed during the regulatory permit process with the ACOE and Regional Water Quality Control Board under Sections 404 and 401 of the Clean Water Act, respectively.

If you have any questions regarding the contents or findings in this letter, please do not hesitate to contact Kristin Szabo at (949) 753-7001.

Sincerely,
PCR SERVICES CORPORATION

Kristin Szabo
Senior Biologist

cc: Tom Sanhamel

Attachment

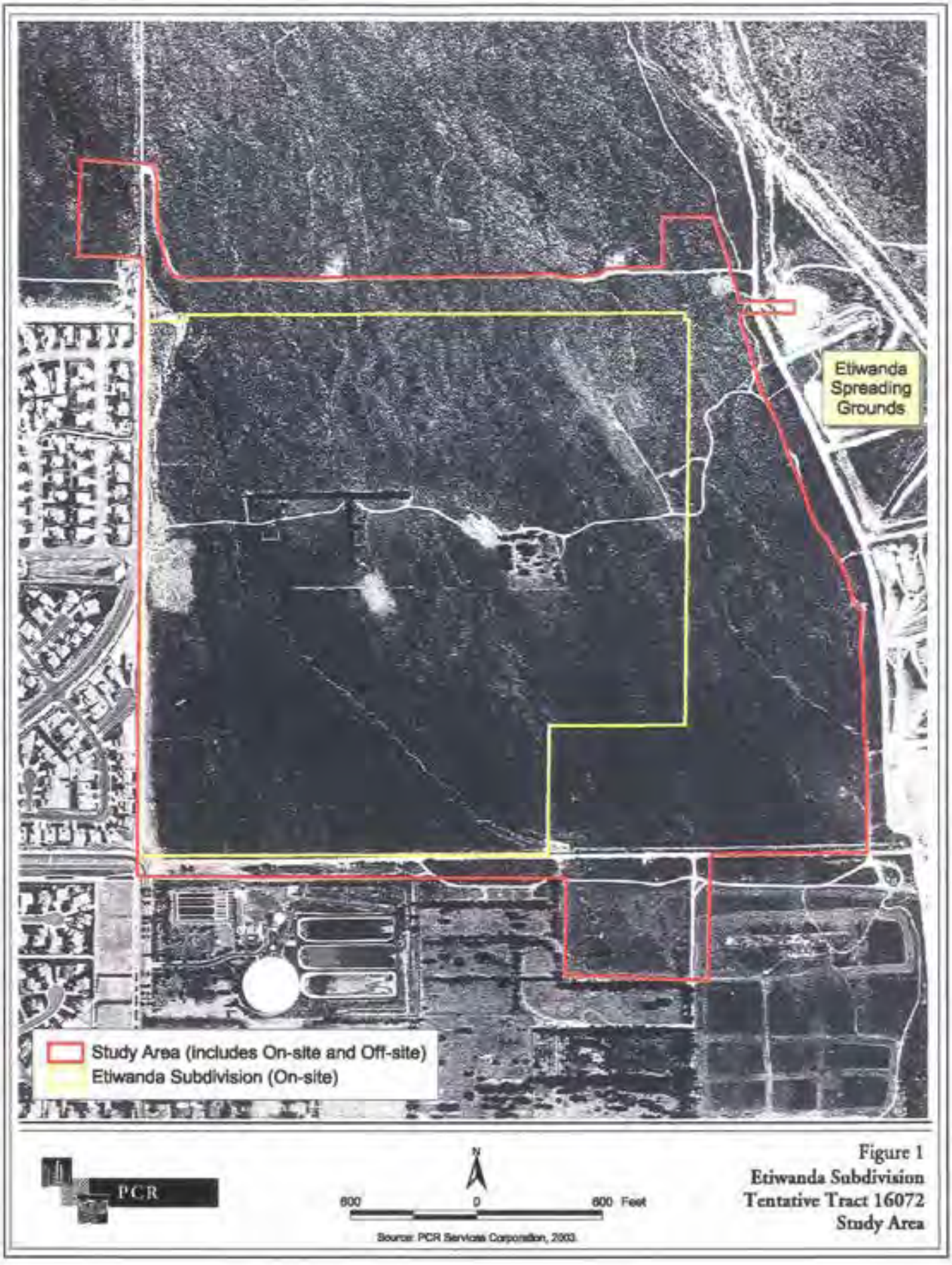
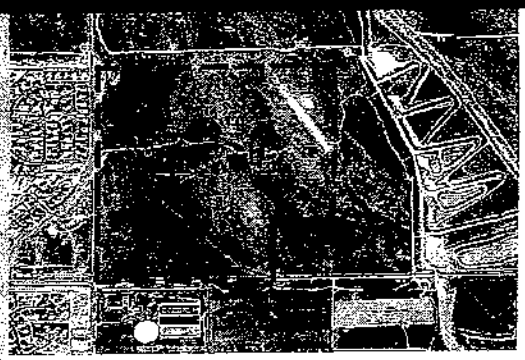


Figure 1
Etiwanda Subdivision
Tentative Tract 16072
Study Area

Biological Resources Assessment
Etiwanda Subdivision
Tentative Tract 16072

December 2002

Biological Resources Assessment
Etiwanda Subdivision
Tentative Tract 16072



Prepared For:

Richland Pinehurst, Inc.
3 Imperial Promenade, Suite 150
Santa Ana, California 92707
Contact: Mr. John Schafer

Prepared By:

PCR Services Corporation
One Venture, Suite 150
Irvine, California 92618
Contacts: Steven G. Nelson, Director of Biological Services
Kristin Szabo, Senior Biologist

San Bernardino County, California

December 2002

Biological Resources Assessment

Etiwanda Subdivision Tentative Tract 16072
San Bernardino County, California

The Undersigned Certify That this Report Is a Complete and Accurate Account of the Findings and Conclusions of a Biological Assessment for the Above-referenced Project.

PCR Services Corporation

for Steve Nelson, Director of Biological Services

Kristin Szabo, Project Manager

December 20, 2002

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF FIGURES

LIST OF TABLES

Page

EXECUTIVE SUMMARY

BACKGROUND

Richland Pinehurst, Inc. is requesting administrative and discretionary action approval for the implementation of the Etiwanda Subdivision, Tentative Tract 16072, a proposed residential development in southwestern San Bernardino County, California. The site is currently undeveloped and covers approximately 150 acres on the Etiwanda alluvial fan in the foothills of the San Gabriel Mountains. The property is located northeast of the intersection of Wilson Avenue and Etiwanda Avenue. As proposed, 150 acres would be converted into residential use consisting of 359 single-family homes.

SCOPE AND METHODOLOGY

The scope of this assessment includes a description of all methods employed, survey results, and documentation of existing biological resources on the property, and the determination of potential impacts associated with the proposed land use plan for the purpose of complying with the California Environmental Quality Act. Methods of study include a review of relevant literature, field surveys, and an impact analysis. This report is consistent with accepted scientific and technical standards and the requirements of the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). While general biological resources are discussed in summary manner, the focus of this assessment is those resources considered to be sensitive.

EXISTING CONDITIONS

The project site consists of approximately 150 acres within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. Topographically, the project site is characterized by an alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. Surrounding land uses include vacant land to the north, a County flood control channel to the east, sparse residential development to the southeast, a water treatment plant to the south, and residential development to the west. A utility corridor with overhead power lines is adjacent to the northern property boundary.

Scrub communities cover most of the site and there are various levels of disturbance on-site from a previous residence, historical fires, and current recreational activities (paintball, OHV

use). Dominant scrub communities include California buckwheat-white sage scrub, white sage scrub, and scalebroom scrub. Remnant ornamental landscaping occurs in the form of eucalyptus windrows in the center of the property and planted trees in association with the previous residence. The property supports U.S. Army Corps of Engineers (ACOE) and CDFG jurisdictional "Waters of the U.S." and a substantial population of Plummer's mariposa lily. The property also lies within critical habitat designated for the coastal California gnatcatcher and San Bernardino kangaroo rat.

IMPACTS

Project implementation will cause the loss of 137.8 acres of scrub communities including 44.1 acres of California buckwheat-white sage scrub, 82.5 acres of white sage scrub, and 11.2 acres scalebroom scrub. These communities are considered high-priority inventory communities by the CDFG because they are experiencing a decline throughout their range.

The removal of the scrub communities above will contribute to the loss of a substantial population of Plummer's mariposa lily on-site.

Although no coastal California gnatcatchers or San Bernardino kangaroo rats were observed on-site during focused surveys, the proposed project is within designated critical habitat for these species.

During the course of field surveys on the project site, active bird nests were observed. Disturbing or destroying active nests is a violation of the Migratory Bird Treaty Act. In addition, nests and eggs are protected under Fish and Game Code Section 3503.

Approximately 1.13 acres of ACOE and CDFG jurisdictional waters on-site and 0.98 acre off-site will be impacted by the proposed project.

A total of 213 eucalyptus, pepper, sycamore, and walnut trees under the jurisdiction of the City of Rancho Cucamonga will be impacted by the proposed project.

MITIGATION

Measures to mitigate impacts to nesting birds will be accomplished by removing vegetation outside of the breeding season or having all habitat removal monitored by qualified biologists if during the breeding season.

Measures to mitigate impacts to ACOE and CDFG jurisdictional areas will occur in accordance with the permitting process and will consist of on- or off-site creation, restoration, or enhancement of ACOE jurisdictional waters of the U.S. and/or wetlands at a ratio no less than 2:1; on- or off-site creation, restoration, or enhancement of CDFG jurisdictional waters of the State at a ratio no less than 2:1; and, the incorporation of design features into the proposed project that will avoid or minimize impacts to drainages on-site.

Impacts to trees will be mitigated in one of two ways: (1) in accordance with the City of Rancho Cucamonga Tree Preservation Guidelines a total of 213 spotted gum or other City approved tree species will be planted; or, (2) 213 trees such as coast live oak, interior live oak, southern California black walnut, and western sycamore will be planted within the greenbelt area bisecting the development.

Impacts to 44.1 acres of California buckwheat-white sage scrub and 82.5 acres of white sage scrub will be mitigated at a 1:1 ratio. The scalebroom scrub on-site is floristically the most similar to alluvial fan sage scrub (which is the focus of many conservation efforts. Therefore, mitigation for 11.2 acres of scalebroom scrub will be at a ratio of at least 2:1. Under this strategy, 149.0 acres of habitat of similar floristics and value to those impacted will be acquired and preserved.

Prior to issuance of a grading permit, focused surveys for Plummer's mariposa lily shall be conducted by a qualified biologist. Surveys shall be conducted within the flowering period (May to July) in all portions of the project site which provide potentially suitable habitat. If present, the number and location(s) will be documented and the resource agencies will be notified for consultation and possible collection and relocation.

Impacts within the coastal California gnatcatcher and SBKR critical habitat units are not expected to compromise the long-term survival of the species; therefore, no mitigation for impacts to critical habitat are proposed. However, due to inherent fact that impacts would occur within designated critical habitat the ACOE will consult with the USFWS under Section 7 of the FESA.

UNAVOIDABLE SIGNIFICANT ADVERSE IMPACTS

The proposed project, inclusive of all proposed mitigation measures will reduce all potentially significant impacts to nesting birds, ACOE and CDFG jurisdictional areas, jurisdictional trees, sensitive plant communities, sensitive plants, and sensitive wildlife to less than significant.

1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

This report presents the findings of a general biological resources assessment for the Richland Communities Etiwanda Subdivision, Tentative Tract 16072, San Bernardino County, California. The purpose of this study, conducted by **PCR Services Corporation (PCR)**, is to document the existing biological resources, and assess the potential biological and regulatory impacts associated with development of the project site. The submittal of this report is intended to satisfy documentation required by the California Environmental Quality Act (CEQA) implementation process.

The project site consists of approximately 150 acres and is located in an unincorporated portion of southwestern San Bernardino County (County) (Figure 1-1, *Regional Map*, on page 2) north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue north of the City of Rancho Cucamonga (City). The project site is contained on the United States Geological Survey (USGS) 7.5' Cucamonga Peak Quadrangle, in Section 21, T. 1 N., R. 6 W., as shown in Figure 1-2, *Vicinity Map*, on page 3. The project site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. The elevation of the project site is approximately 1,600 to 1,800 feet above mean sea level (msl).

1.2 SCOPE OF STUDY

The scope of this assessment encompasses the methods, survey results, and comprehensive documentation of existing biological resources on the project site. In addition, this assessment incorporates the findings of an extensive literature review, a general biological survey, a detailed investigation of jurisdictional "Waters of the U.S." and wetlands, a habitat assessment and subsequent focused coastal California gnatcatcher (gnatcatcher) surveys, and focused sensitive plant surveys. This documentation is consistent with accepted scientific and professional standards pursuant to CEQA and, as appropriate, is congruent with technical requirements of the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). While general biological resources are discussed in a comprehensive manner, the focus of this assessment is on those biological resources considered to be sensitive by the County and State and/or Federal agencies.

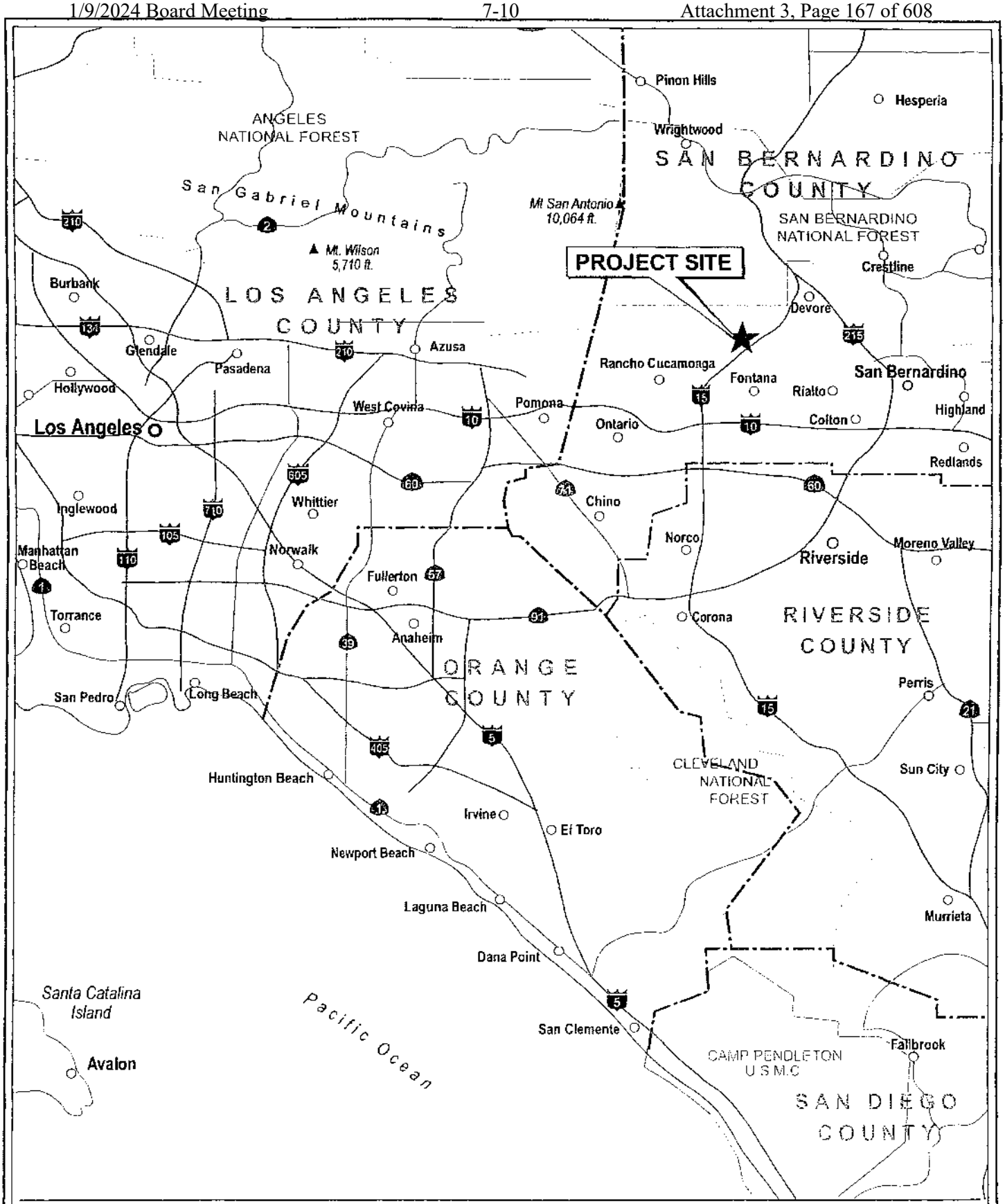
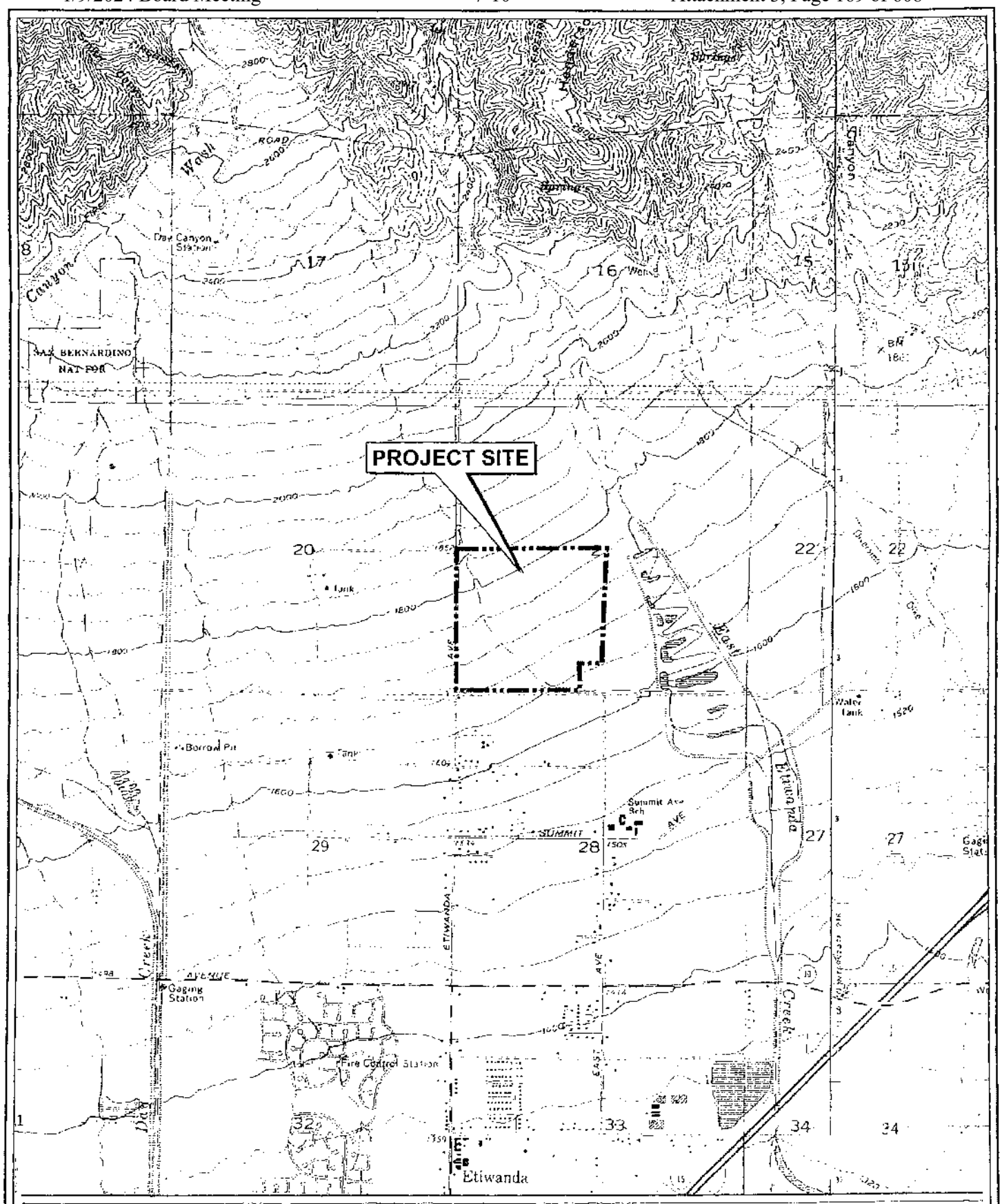


Figure 1-1
Etiwanda Subdivision
Tentative Tract 16072
Regional Map



PCR

Figure 1-2
Etiwanda Subdivision
Tentative Tract 16072
Vicinity Map

2.0 METHODS OF STUDY

2.1 APPROACH

This assessment of biological resources is based on information compiled through field reconnaissance, focused surveys, previous documentation, and appropriate reference materials. The project site was first visited by PCR biologists in 1998 to conduct a biological and jurisdictional constraints analysis. As a result, focused surveys for the coastal California gnatcatcher (*Polioptila californica californica*) and a jurisdictional delineation were conducted. In 2000, PCR revisited the project site to conduct a general biological study and constraints analysis for the purposes of an Initial Study. As a result, focused surveys were conducted in 2001 and 2002 for the gnatcatcher, San Bernardino kangaroo rat (*Dipodomys merriami parvus*) (SBKR), and sensitive plants. In addition an inventory of the trees on-site was conducted in 2002. All work was performed by PCR, Cadre Environmental (Cadre), and Natural Resources Assessment, Inc (NRA).

2.2 LITERATURE REVIEW

The assessment was initiated with a review of relevant literature on the biological resources on the project site and in the vicinity. Federal register listings, protocols, and species data provided by the USFWS were reviewed in conjunction with anticipated Federally-listed species potentially occurring in the vicinity of the project site. The California Natural Diversity Database (CNDDB), a CDFG (Natural Heritage Division) species account database, was reviewed for all pertinent information regarding the locations of known occurrences of sensitive species in the vicinity of the project site. Other CDFG reports and publications which were consulted include the following:

- State and Federally Listed Endangered and Threatened Animals of California, October 2002;
- Special Animals, July 2002;
- Endangered, Threatened, and Rare Plants of California, October 2002; and
- Special Plants, July 2002.

Numerous regional floral and faunal field guides were utilized in the identification of species and suitable habitats known to exist in the vicinity of the project site. These and other references are listed in Section 7.0, References, of this document. Combined, the sources reviewed provided a baseline from which to inventory the biological resources potentially occurring on the project site and in the surrounding area.

2.3 FIELD INVESTIGATIONS

Field surveys were conducted from February to September 1998, December 2000, March to August 2001, and March to October 2002. Surveys were conducted by PCR, Cadre, and NRA. The PCR survey team included Steve Nelson, Mark Sudol, Jenni Snibbe, Ken Halama, Jason Berkeley, Kristin Szabo, Marc Blain, Stephanie Seapin, Susan Erickson, and Ryan Roberts. Karen Kirtland of NRA conducted focused SBKR surveys in 2001. Ruben Ramirez, Jr. of Cadre conducted surveys for the SBKR in 2002. Survey coverage of the project site, with special attention to aquatic resources and sensitive habitats including those areas potentially supporting sensitive flora or fauna, was ensured using a color aerial photograph (1"=400') and topographic maps (1"=100'). Resumes of PCR team members are included in Appendix A, *Resumes*.

2.3.1 Plant Community/Habitat Classification and Mapping

Plant communities were mapped with the aid of a 1"=400' scale color aerial photograph and a 7.5-minute USGS topographic map. The topographic map was used as a guide to delineate the project site boundaries onto the aerial photograph. Plant community boundaries were delineated directly onto the aerial photograph while in the field. Sensitive or unusual biological resources observed in the field were noted on the aerial photograph. Plant community names and hierarchical structure follows the CDFG *List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base* (CDFG 2002). Scientific names are employed upon initial mention of each species; common names are employed thereafter.

2.3.2 Regional Connectivity/Wildlife Corridor Assessment

The analysis of wildlife movement corridors associated with the project site and its immediate vicinity was based on information compiled from the literature, input from wildlife agency personnel, analysis of the aerial photograph and topographic map, and direct observations made in the field during survey work. The relationship of the study area to large open space areas in the immediate vicinity was also evaluated in terms of connectivity and habitat linkages. The discussions in this report of corridor issues are intended to focus on wildlife movement associated with the project site and immediate vicinity.

2.3.3 General Plant Inventory

All plants observed during surveys were either identified in the field or collected and later identified using taxonomic keys. General plant surveys were completed in combination with other surveys. All plant species observed on the project site were recorded in field notes and included in the Plant and Wildlife Species Compendia provided in Appendix B to this document. Plant taxonomy follows Hickman (1993). Common plant names, when not available from Hickman, were taken from Munz (1974) and McAuley (1996). Scientific names are included only during the first mention of a species. Thereafter, common names alone are used.

2.3.4 Tree Study

An inventory of all trees on the project site was conducted in accordance with guidelines set forth by the City of Rancho Cucamonga Tree Preservation Guidelines (Municipal Code Chapter 19.08). The guidelines require that all woody plants in excess of fifteen feet in height and having a single trunk circumference of fifteen inches or more and/or any multi-trunk tree(s) having a total circumference of thirty inches or more, as measured twenty-four inches from ground level be surveyed by a "qualified" arborist. In accordance with these guidelines, a survey of all trees within the proposed development envelope was conducted. Trees meeting the criteria outlined in the Tree Preservation Guidelines were located, mapped using a Trimble Global Positioning System, measured, and assessed by a certified arborist. For additional details regarding the tree inventory, refer to the Tree Survey and Report in Appendix C, *Tree Survey Report*, (PCR 2002).

2.3.5 General Wildlife Inventory

Animals identified during the field surveys by sight, call, tracks, scat, or other sign were recorded. In addition to species actually detected, expected use of the project site by other wildlife was derived from the analysis of potential habitats combined with known habitat preferences of regionally-occurring wildlife species. Survey methods for sensitive faunal species are discussed in the Sensitive Wildlife Surveys subsection below.

Vertebrate taxonomy followed in this assessment is according to Stebbins (1985) for amphibians and reptiles, the American Ornithologists' Union (1983 and supplemental) for birds, and Jameson and Peeters (1988) for mammals. Scientific names are used during the first mention of a species; common names only are used in the remainder of the text. A complete list of all species observed on the project site are included in the Plant and Wildlife Species Compendia provided in Appendix B to this document.

2.3.6 Sensitive Plant Surveys

The Etiwanda property was thoroughly searched for sensitive plant species during the spring and summer of 2001 and 2002. Survey dates encompass the flowering periods of all sensitive plants potentially occurring in the vicinity. Methods used included slowly walking over all portions of the site. These methods were intensified within suitable habitat areas. If detected, the locations of sensitive plants were mapped on a 1"=400' scale aerial photograph. These surveys were conducted in accordance with survey guidelines published in the *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2001). Sensitive plants include those listed by the USFWS, the CDFG, and the California Native Plant Society (CNPS), particularly lists 1A, 1B, and 2. Close attention was paid to those sensitive plant species reported in the CNDDB from the vicinity such as Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*), many-stemmed dudleya (*Dudleya multicaulis*), Southern California black walnut (*Juglans californica* var. *californica*), Hall's monardella (*Monaredella macrantha* ssp. *hallii*), Pringle's monardella (*Monardella pringlei*), pygmy poppy (*Canbya candida*), Santa Ana River woollystar (*Eriastrum densifolium* ssp. *sanctorum*), Parry's spineflower (*Chorizanthe parryi* var. *parryi*), sleuder-horned spineflower (*Dodecahema leptoceras*), Plummer's mariposa lily (*Calochortus plummerae*), intermediate mariposa lily (*Calochortus weedii* var. *intermedius*), thread-leaved brodiaea (*Brodiaea filifolia*), and California muhly (*Muhlenbergia californica*). Additional plant species which typically occur at elevations above 4,500 feet were reported in the CNDDB within the Cucamonga Peak quad. These species are not expected to occur on-site due to their elevational range: Laguna mountains jewel-flower, (*Streptianthus bernardinus*) San Gabriel linanthus (*Linanthus concinnus*), Johnston's buckwheat (*Eriogonum microthecum* var. *johnstonii*), and Peirson's spring beauty (*Claytonia lanceolata* var. *peirsonii*).

Surveys for sensitive plants in 2001 were conducted by PCR biologists Jenni Snibbe, Kristin Szabo, and Marc Blain on April 12, 17, 24, May 7, 30, June 1, 13, 20, and 27, 2001. Surveys in 2002 were conducted by PCR biologists Kristin Szabo, Marc Blain, and Betty Fetscher, Ph.D. on May 23, 30, June 6 and 25, 2002. All plant species observed were recorded in field notes or collected and later identified using taxonomic keys. All sensitive plant species observed are provided in Appendix B, *Plant and Wildlife Species Compendia*.

It should be noted that the species accounts presented in this document reflect available information and the findings of focused plant surveys contributing to this report. It is acknowledged that plant population numbers (particularly among annual species) do vary from year to year depending on environmental factors (e.g., rainfall, temperatures), other natural phenomena (e.g., wild fires) and physical features (e.g., elevational ranges, aspect). Therefore, some sensitive plant populations may vary in their detectability from season to season. From a purely scientific standpoint this potential for variation may seem problematic. From a practical standpoint and pursuant to CEQA, however, biological assessments are based on the best available information including reasonable field study efforts. In the case of this assessment,

every effort was made to conduct surveys for sensitive plants during the peak flowering periods and varying habitat associations for these species.

2.3.7 Sensitive Wildlife Surveys

The assessment of habitat on the project site indicated that there is potential habitat for the Federally-threatened and CDFG Species of Special Concern gnatcatcher and the Federally-endangered and CDFG Species of Special Concern SBKR. These species are discussed below.

Coastal California Gnatcatcher

The project site is located within the boundary of critical habitat designated by the USFWS for the gnatcatcher (USFWS October 24, 2000). Due to the presence of suitable habitat on-site, focused surveys were performed. Surveys were conducted in accordance with USFWS *Coastal California Gnatcatcher Presence/Absence Survey Guidelines*, revised July 28, 1997. Accordingly, six surveys were performed no less than seven days apart, between the hours of 6:00 A.M. and 12:00 P.M., within all portions of the project site containing potentially suitable habitat.

The permitted investigators walked transects, stopping at approximately 200-foot intervals, uttering pishing sounds, and playing a tape of recorded gnatcatcher vocalizations. The tape was played for several seconds at each interval, followed by a brief pause to listen for a response. Surveys in 1998 were conducted by Steve Nelson (Permit No. 782272) on March 24, April 3, 10, 17, 24, May 7, 30, June 1, 13, 20, 27, and July 4, 1998. Surveys in 2001 were conducted by Steve Nelson, Kristin Szabo (Permit No. TE016487-0) and Marc Blain (Permit No. TE001075-0) on March 28, April 12, 25, May 24, June 12, and 28, 2001. Surveys in 2002 were conducted by Kristin Szabo, Marc Blain, Jenni Snibbe (Permit No. TE044520-0) and James Mazza (Permit No. TE032728-0) on March 26, April 11, May 1, 23, 30, and June 6, 2002.

San Bernardino Kangaroo Rat

In February 1998, PCR biologists conducted a habitat evaluation for the SBKR on the project site. The results of the evaluation concluded that the project site does not support suitable SBKR habitat. Recent studies related to the proposed and final designation of critical habitat for the SBKR have indicated that SBKR occupies a wider range of soil and vegetation types than previously thought. Consequently, the Etiwanda Alluvial Fan and Wash, which includes the project site, were included in the critical habitat designation (USFWS April 23, 2002).

Focused surveys for SBKR were conducted in 2001 by NRA. The surveys consisted of a literature review, habitat evaluation to determine trap placement, one trapping session. The trapping session consisted of five nights and was conducted from July 30 to August 4, 2001. Six trap lines/grids of thirty traps each were placed for a total of 900 trap nights for this session. Each trap was baited with a seed/oatmeal mix, set at dusk, checked once during the night, and at dawn. All animals captured were identified and released at the point of capture.

Focused surveys in 2002 were conducted by Cadre biologist Ruben Ramirez (Permit No. 780566). To determine presence/absence of the SBKR within and adjacent to those areas potentially impacted by the proposed project, two separate trapping bouts were conducted, August 27 to 31 and September 24 to 28, 2002. Seven trap lines of 60 traps each, one trap line of 40 traps and one trap line of 20 traps were placed within and adjacent to the property for a total of 2,400 trap nights. Traps were baited with an oatmeal/seed mix, set at dusk and check at dawn. All animals captured were identified and released.

2.3.8 Jurisdictional Wetlands, Waters, and Streambeds

An assessment of jurisdictional wetlands and "Waters of the U.S." on the project site was conducted by PCR Senior Ecologist Mark Sudol and Wildlife Biologist Ken Halama on September 2, 1998 to determine whether or not on-site drainages are subject to the jurisdiction of the U.S. Army Corps of Engineers (ACOE) and/or the CDFG. Subseqnent field assessments were conducted in 2002 by PCR biologists Kristin Szabo and Ryan Roberts to address new parcels added to the study area and any off-site areas that would be potentially impacted by the proposed project.

Prior to visiting the project site, a review of historic and current aerial photographs, a USGS topographic map, and the San Bernardino County soil survey map was conducted. The purpose of this review was to identify current drainage features in the vicinity of the project site and make preliminary determinations on their jurisdictional status based on historic, natural drainage patterns. Drainage features were then "ground-truthed" during field observations to obtain characteristic measurements and detailed descriptions. The entire project site was evaluated and all areas which fall under the jurisdiction of the ACOE and/or the CDFG were identified. Each area was examined for evidence of an "ordinary high water mark" (OHWM) and for wetland vegetation. ACOE jurisdictional wetlands were delineated using a routine determinatiou according to the methods outlined in the Corps of Engineers *Wetland Delineation Manual* (1987) based on hydrologic and edaphic features, and on the vegetation composition of the project site.

3.0 EXISTING CONDITIONS

3.1 CHARACTERISTICS OF THE PROJECT SITE AND SURROUNDING AREA

The project site consists of approximately 150 acres of undeveloped land in an unincorporated area of the County located north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue just north of the City of Rancho Cucamonga. The project site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. The project site is contained on the USGS 7.5' Cucamonga Peak Quadrangle, in Section 21, T. 1 N., R. 6 W.

Topographically, the project site is characterized by an alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. There are two primary drainages found on the project site that convey flows from the northwest to the southeast and merge with a defined flood control channel. Channelization of Etiwanda and Day Creeks has resulted in the cessation of flooding in most of this area. Flood flows from these drainages are now collected behind debris basins and levees and diverted into concrete diversion channels. These alterations were completed in 1969 and have eliminated sheet and debris flows on-site (Safford and Quinn 1998).

Scrub communities cover most of the site and are discussed in detail in Section 3.2. Elevation on the project site ranges between 1,600 and 1,800 feet above msl. Surrounding land uses include vacant land to the north, a County flood control channel to the east, sparse residential development to the southeast, a water treatment plant to the south, and residential development to the west. A utility corridor with overhead power lines is adjacent to the northern property boundary.

3.2 PLANT COMMUNITIES/HABITATS

The classification of plant communities follows the CNPS *Manual of California Vegetation* (Sawyer and Keeler-Wolfe 1995), the CDFG's *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986), and the CNDDB *List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base* (CDFG 2002). The CNPS classification provides the most precise system for labeling scrub

dominated communities on-site. Greater precision results from the consistent use of floristics[1] in distinguishing between homogenous plant communities. The CNPS classification contrasts with the more commonly used Holland classification, which defines plant communities based on location, structure, or floristics. Descriptions of Holland plant communities indicate dominant and characteristic species; however, these accounts are general and tend to overlap (Sawyer and Keeler-Wolf 1995). This floristic overlap combined with the use of factors other than floristics (e.g., location and structure) results in a lack of clarity when distinguishing between vegetation types. Therefore, for the purposes of this assessment, the Holland classification was used only for the non-native grassland community.

Table 3-1, *Plant Communities*, on page 12 provides a summary of the plant communities on-site and their respective acreages. Descriptions of plant communities and are provided below along with their respective CNDDB codes and on-site acreage.

The majority of the Etiwanda property supports a low-growing scrub community. Previous classifications and mappings on or near the Etiwanda property use the category alluvial scrub or Riversidean alluvial fan sage scrub (RAFSS) (Hanes et al., 1989, Safford and Quinn 1998) due to the site's location within an alluvial fan. Alluvial scrub has been further refined to include several subtypes including the Etiwanda group, the prickly group, and the riparian group (Safford and Quinn 1998). As stated above, this assessment has mapped the scrub communities according to CNPS and CDFG classifications.

3.2.1 California Buckwheat-White Sage Scrub (32.100.00) (44.1 acres)

California buckwheat - white sage scrub covers 44.1 acres on-site as shown in Figure 3-1, *Plant Communities*, on page 13. Species that characterize this plant community are white sage (*Salvia apiana*), California buckwheat (*Eriogonum fasciculatum*) and pinebush (*Ericameria pinifolia*). Sub-dominant species include deerweed (*Lotus scoparius*).

The category California buckwheat – white sage scrub is the most precise option for classifying much of the vegetation on-site. In contrast the categories RAFSS intermediate alluvial fan scrub-prickly group (prickly group) or Riversidean upland sage scrub (RUSS) exhibit a great degree of floristic overlap and are consequently imprecise. Representative species that would differentiate much of this plant community as prickly group are either absent or not significant in terms of abundance. Typical prickly group species that are absent from this community include scalebroom (*Lepidospartum squamatium*), prickly pear or cholla cactus (*Opuntia* spp.) and California juniper (*Juniperus californicus*). Typical prickly group species

[1] *The study of the number, distribution, and relationships of plant species in one or more areas.*

Table 3-1

Plant Communities

Plant Community	Total Acres
Scrub Communities	
California Buckwheat-White Sage Scrub	44.1
White Sage Scrub	82.5
Scalebroom Scrub	11.2
Non-native Grassland	2.1
Disturbed	6.0
Ornamental Landscaping	4.1
TOTAL	**150.0**

Source: PCR Services Corporation, 2002.

present on-site but that are not significant include our Lord's candle (*Yucca whipplei*), California croton (*Croton californica*), green bark (*Ceanothus spinosus*), and hoaryleaf ceanothus (*Ceanothus crassifolius*).

A cluster of approximately seven green bark ceanothus individuals occurs adjacent to the ephemeral wash and scalebroom scrub near the northwest corner of the site. In addition a few individuals of green bark ceanothus and hoaryleaf ceanothus were observed at disparate locations within this vegetation type. Approximately eleven individuals of our Lord's candle were observed just north of the easternmost disturbed area. California croton occurs in low abundance throughout this vegetation type.

3.2.2 White Sage Scrub (32.030.00) (82.5acres)

White sage scrub covers 82.5 acres on-site. Species that characterize this vegetation type include white sage, California sagebrush (*Artemisia californica*), California buckwheat, and deerweed. White sage scrub on the eastern half of the site is dominated by white sage and deerweed with California buckwheat as a sub-dominant in some areas. Dominants on the western half of the site include California sagebrush and white sage.

Other species observed include California croton, pinebush, bush mallow (*Malacothamnus fasciculatus*), green bark ceanothus, yerba santa (*Eriodycton trichocalyx* ssp. *trichocalyx*), rabbitbrush (*Chrysothamnus naseosus* ssp. *hololeucus*), California everlasting (*Gnaphalium californica*), southern California black walnut (*Juglans californica* var. *californica*), our Lord's candle, and holly-leafed cherry (*Prunus ilicifolia*). One southern

Source: PCR Services Corporation, 2002.

Figure 3-1
Etiwanda Subdivision
Tentative Tract 16072
Plant Communities Map

California black walnut individual occurs within this vegetation type near the center of the site. Our Lord's candle occurs occasionally in the northern and eastern portions of the site. Yerba santa grows in coarser substrates near the banks of the large ephemeral wash and is absent from the rest of this vegetation type. Two rabbitbrush individuals were observed at disparate locations. California croton is found occasionally throughout the white sage scrub on-site. Three green bark ceanothus clusters ranging from approximately 5-10 individuals are considered inclusions within the white sage scrub. These clusters are included because they occupy relatively small areas and are interspersed with white sage scrub dominants. An inclusion of approximately 13 clustered holly-leafed cherry individuals occupying 0.4 acre occurs near the center of the site. This cluster is interspersed with white sage scrub dominants. Two additional holly-leafed cherry individuals occur within this vegetation type at disparate locations.

White sage scrub on-site has been termed by previous mapping efforts in the Etiwanda-Day Canyon drainage system as RAFSS intermediate alluvial scrub-Etiwanda alluvial fan group (Etiwanda group) (Safford and Quinn 1998).

3.2.3 Scalebroom Scrub (32.070.00) (11.2 acres)

Scalebroom scrub occupies approximately 11.2 acres on-site within the major ephemeral drainage that bisects the project site flowing northwest to southeast (referred to as Drainage 1 in Section 3.7 Jurisdictional Waters, Wetlands, and Streambeds). Species that characterize this vegetation type are scalebroom, green bark ceanothus, California sagebrush, California buckwheat, yerba santa, white sage, and deerweed. Other species observed include mule fat (*Baccharis salicifolia*), needlegrass (*Achnatherum coronatum*), California sycamore (*Platanus racemosa*), mugwort (*Artemisia douglasiana*), California aster (*Lessingia filaginifolia*), hoaryleaf ceanothus, California croton, our Lord's candle, black sage (*Salvia apiana*), and bush mallow.

Scalebroom scrub on-site is analogous to RAFSS intermediate alluvial fan scrub–riparian group.

3.2.4 Non-native Grassland (42.000.00) (2.1 acres)

Non-native grassland covers approximately 2.1 acres near the center of the site in previously disturbed or developed areas. Non-native grassland on-site is dominated by wild oats (*Avena* sp.).

3.2.5 Disturbed (N/A) (6.0 acres)

Disturbed areas on the project site include cleared land, geotechnical trenching areas, and dirt access roads covering 6.0 acres. Vegetation has re-established in some previously disturbed areas and these areas have been included in the aforementioned vegetation types. Disturbed areas on the project site may be devoid of vegetation or may include grasses and forbs typical of ruderal and non-native grassland communities. Species observed on-site include castor bean (*Ricinus communis*), filaree (*Eriodium* spp.), telegraph weed (*Heterotheca grandiflora*), black mustard (*Brassica nigra*), red brome (*Bromus madritensis*) and wild oats (*Avena* spp.). There are also eight Southern California black walnut trees among castor bean and Oleander (*Nerium* spp.) in the vicinity of the abandoned residence.

3.2.6 Ornamental Landscaping (99.900.06) (4.1 acres)

Ornamental species cover approximately 4.1 acres on-site. Eucalyptus (*Eucalyptus globulus*) windrows occur in the center of the site and several ornamental species occur scattered throughout the site and in association with the remnant foundation including pepper tree (*Schinus molle*), olive tree (*Olea europaea*), oleander, and an unidentifiable ornamental tree near the southern property boundary.

3.3 PLANT POPULATIONS

The plant communities discussed above are composed of numerous plant species. Plant species observed on the project site during all field visits are indicated in the Plant and Wildlife Species Compendia in Appendix B of this document. Sensitive plant species potentially occurring on the project site are discussed in the Sensitive Resources subsection of this document.

3.4 WILDLIFE POPULATIONS

While a few wildlife species are entirely dependent on a single vegetation community, the mosaic of the vegetation communities that exist on the project site and within adjoining areas constitutes a functional ecosystem for a variety of wildlife species. However, the plant communities found on the project site only provide for some local foraging and wildlife habitat. The following discusses the wildlife populations, segregated by taxonomic group, either observed or expected to occur on the project site. Wildlife species expected to occur in the vicinity of the project site are indicated in the Plant and Wildlife Species Compendia provided in Appendix B of this document. Sensitive wildlife species potentially occurring within the project

site are discussed in the Seusitive Resources subsection of this documeut. It should be noted that no sensitive wildlife species were observed on the project site during the field surveys.

3.4.1 Invertebrates

No directed surveys for common invertebrates were performed.

3.4.2 Amphibians

The potential presence of amphibians varies greatly between habitats within the project site. Terrestrial species may or may not require standing water for reproduction. Terrestrial species avoid desiccation by burrowing underground; within crevices in trees, rocks, and logs; and under stones and surface litter during the day and during dry seasons. Due to their secretive nature, terrestrial amphibians are rarely observed, but may be quite abundant if conditions are favorable. Aquatic amphibians are depeudent on standing or flowing water for reproduction. Such habitats include fresh water marshes and opeu water (reservoirs, permanent and temporary pools and ponds, and perennial streams). Focused amphibian surveys were not conducted, however brief searches were conducted during other surveys. As a result, no amphibians were observed duriug project site visits. Common amphibian species potentially present on-site are included in the Plant and Wildlife Species Compendia in Appendix B of this document.

3.4.3 Reptiles

Reptilian diversity and abundance typically varies with habitat type and character. Although some species prefer only one or two plant communities, most will forage in a variety of communities. A number of reptile species prefer open habitats that allow free movement and high visibility. Most species occurring in open habitats rely on the presence of small mammal burrows for cover and escape from predators and extreme weather.

Reptiles observed on-site include the sagebrush lizard (*Sceloporus graciosus*), western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), western rattlesnake (*Crotalus viridus*), and red coachwhip (*Masticophis flagellum piceus*). Additional reptile species potentially occurring on the project site are included in the Plant and Wildlife Species Compendia in Appendix B to this document.

3.4.4 Birds

Upland Birds: The ornamental landscaping and scrub habitats provide foraging and cover habitat for year-rouud residents, seasonal residents, and migrating song birds. The overall condition of these communities on-site is generally good. The combination of these resources

provides for a high diversity of bird species. Representative, common upland species observed on-site include western scrub jay (*Aphelocoma californica*), wrentit (*Chamaea fasciata*), California towhee (*Pipilo crissalis*), spotted towhee (*P. maculatus*), mourning dove (*Zenaida macroura*), house finch (*Carpodacus mexicanus*), lesser goldfinch (*Carduelis psaltria*), yellow-rumped warbler (*Dendroica cornata*), and Anna's hummingbird (*Calypte anna*). Upland avian species observed or expected to occur on the project site are included in the Plant and Wildlife Species Compendia in Appendix B to this document.

Raptors: Trees within the project site could have the potential to provide foraging opportunities and breeding areas for raptors. Trees found near the perimeter of the project site and in the approximate center of the project site have the potential to provide suitable perches for foraging over the scrub communities. These areas provide habitat for small birds and mammals resulting in a potentially large prey population on the project site. Representative raptor species observed on-site included the American kestrel *(Falco sparverius)*, turkey vulture (*Cathartes avra*), and red-tailed hawk (*Buteo jamaicensis*). Additional raptor species potentially occurring on the project site are included in the Plant and Wildlife Species Compendia in Appendix B of this document.

3.4.5 Mammals

The diversity of habitat observed on-site is anticipated to support a wide variety of mammal species. During field surveys, mammal species were either directly observed or their presence was deduced by diagnostic signs (track, scat, burrows, etc.). Representative mammals observed on-site include Dulzura kangaroo rat (*Dipodomys simulans*), cactus mouse (*Peromyscus eremicus*), California mouse (*P. californicus*), deer mouse (*P. maniculatus*), coyote (*Canis latrans*), and mule deer (*Odocoileus hemionus*). All mammals observed as well as those potentially occurring on the project site are included in the Plant and Wildlife Species Compendia in Appendix B to this document.

3.5 WILDLIFE MOVEMENT

3.5.1 Overview

Wildlife corridors link together areas of suitable habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, studies have concluded that some wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new individuals and

genetic material (Soulé 1987). Corridors effectively act as links between different populations of a species. A group of smaller populations (termed "demes") linked together via a system of corridors is termed a "metapopulation." The long-term health of each deme within the metapopulation is dependent upon its size and the frequency of interchange of individuals (immigration/emigration). The smaller the deme, the more important immigration becomes, because prolonged inbreeding with the same individuals can reduce genetic variability. Immigrant individuals that move into the deme from adjoining demes mate with individuals and supply that deme with new genes and gene combinations that increases overall genetic diversity. An increase in a population's genetic variability is generally associated with an increase in a population's health.

Corridors mitigate the effects of habitat fragmentation by: (1) allowing animals to move between remaining habitats, which allows depleted populations to be replenished and promotes genetic diversity; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (such as fires or disease) will result in populatiou or local species extinction; and (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs (Noss 1983, Fahrig and Merriam 1987, Simberloff and Cox 1987).

Wildlife movement activities usually fall into oue of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas, individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover). A number of terms have been used in various wildlife movement studies, such as "wildlife corridor," "travel route," "and "wildlife crossing" to refer to areas in which wildlife move from one area to another. To clarify the meaning of these terms and facilitate the discussion on wildlife movement in this study, these terms are defined as follows:

Travel Route: A landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another; it contains adequate food, water, and/or cover while moving between habitat areas; and/or provides a relatively direct link between target habitat areas.

Wildlife Corridor: A piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by urban land areas or other areas uusuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species.

Wildlife Crossing: A small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are engineered and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These are often "choke points" along a movement corridor.

3.5.2 Wildlife Movement Within the Project

The Etiwanda project site is likely to be utilized by a variety of species. The location of the site allows easy access for many species. There are no physical barriers preventing access to the site by wildlife traveling from the north or the east. Development along the western and southern edges of the site; however, prevent wildlife movement to continue through the site. Adjacent properties to the east and north are mostly undeveloped and part of the much larger natural open space for flood control and within the San Bernardino National Forest and North Etiwanda Preserve. This expanse of undisturbed open space surrounding much of the site harbors an abundance of wildlife which may, in turn, facilitate a substantial amount of wildlife movement onto and off of the study area. Therefore, the project site is considered to be in an area of potentially moderate value with regards to local wildlife movement and is likely to be used by a number of wildlife species as part of a travel route. The project site is relatively undisturbed state and has the potential to yield food and breeding resources. Limited vestige of human impact remain on the property outside of the abandoned residence, dirt roads, and geotechnical trenching areas. The extant habitat is in a natural state and still part of a larger functioning ecosystem. Species most likely to be using the project site include local residents such as opossum, raccoon, skunk, coyote, cottontail rabbit, black-tailed jackrabbit, mule deer, and gray fox.

Due to its location at the edge of urban areas, however, the site does not function within larger, regionally important corridors. That is, the site is not a critical connection between larger habitat blocks.

3.6 REGIONAL BIOLOGICAL VALUE OF THE SITE

As previously described, the project site is adjacent to an open space area designated for flood control purposes. This open space is contiguous with the San Gabriel Mountains, contains habitat for a variety of species, and is protected from development. Due to the intact habitat on the project site, the project site contributes incrementally to region wide foraging habitat and other resources.

PCR conducted an assessment of the impacts to raptor foraging habitat within the southwestern San Bernardino county region (PCR Services, letter report, October 5, 2000). The assessment concluded that approximately 43,100 acres of suitable raptor foraging habitat occurs within the region. The approximate 150-acre project site represents 0.3 percent of the total raptor foraging habitat mapped within the region.

3.7 JURISDICTIONAL WATERS, WETLANDS, AND STREAMBEDS

As shown in Figure 3-2, *ACOE and CDFG Jurisdictional Drainages*, on page 21 the project site contains three jurisdictional drainages, labeled Drainage 1, 2, and 3. The drainages total 6,335 linear feet and support 1.13 acres of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State." None of the drainages meet the criteria of a jurisdictional wetland. All drainages are ephemeral in nature and support scrub vegetation. The site investigation also identified other very minor drainages which exhibited indications of water flow. However, after consultation with the ACOE, these minor drainages were not considered jurisdictional because their width was less than one foot, the OHWM was not distinctive over the entire length, and there was no riparian or wetland vegetation present in or around the area.

Jurisdictional determinations were also made for off-site portions of these drainages to the extent they may be impacted by activities associated with the Etiwanda Subdivision (Tentative Tract 16072) development project. Drainages measured adjacent to the site include approximately 4,342 linear feet and 0.98 acre of ACOE and CDFG jurisdictional streambed. None of the areas meet the ACOE definition of a jurisdictional wetland due to the lack of hydrophytic vegetation and hydric soils. Table 3-2, *Etiwanda Subdivision Summary of Jurisdictional Area*, on page 22 summarizes the jurisdictional drainages. A copy of the delineation report is included in Appendix D, *Jurisdictional Delineation Report.*

3.8 TREE SURVEY

A total of 213 trees have been surveyed and evaluated as meeting the City's "heritage tree" criteria. In general, trees within the project boundary were found to be in fair to poor condition physiologically, structurally, and aesthetically. Approximately 175 eucalyptus trees, 11 unidentifiable ornamental trees, 14 pepper trees, 9 walnut trees, and 4 sycamore trees occur on-site as shown in (Figure 3-3, *Tree Locations*, on page 23). The details of the tree survey can be found in Appendix C, *Tree Survey Report.*

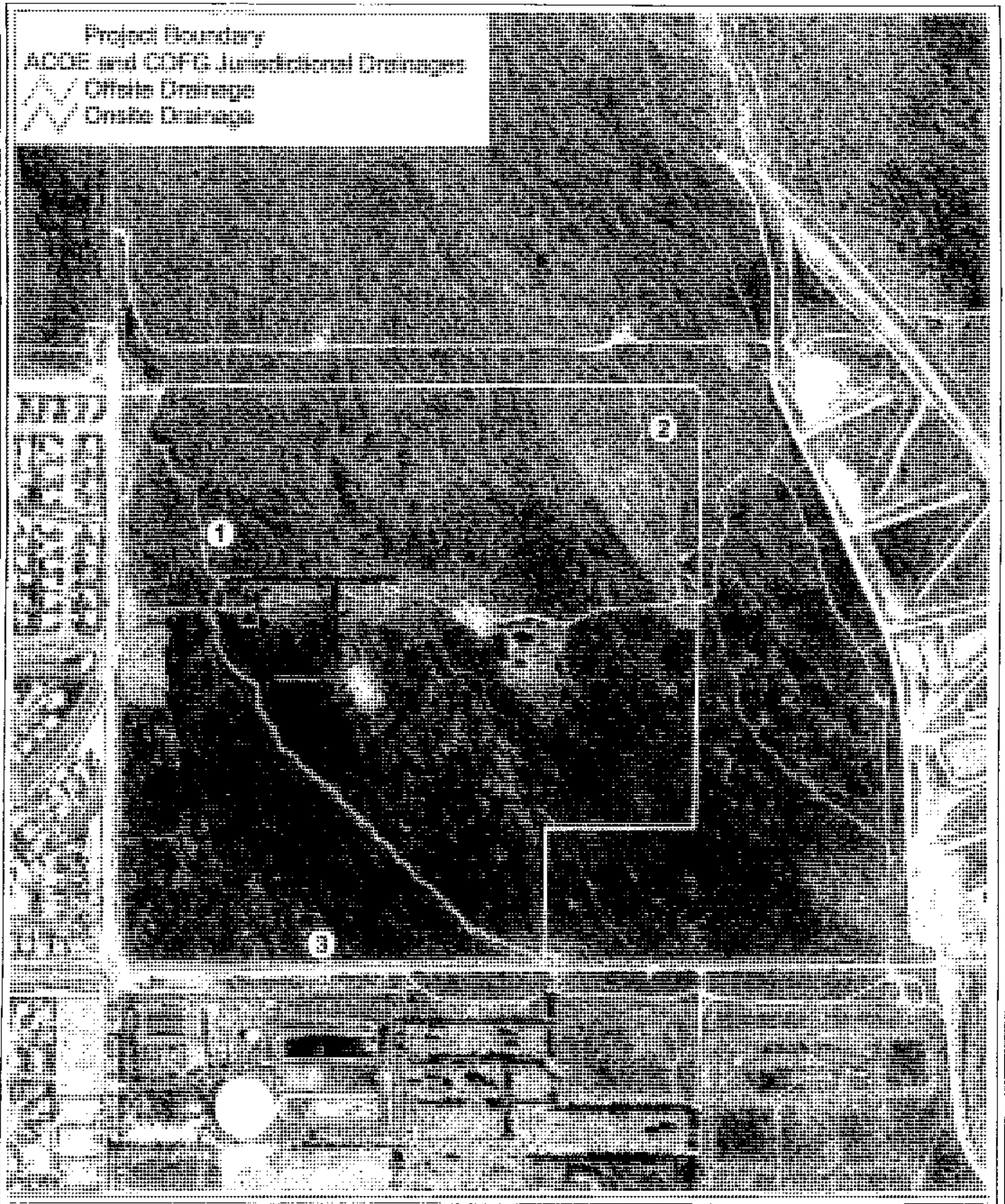


Figure 3-2
Etiwanda Subdivision
Tentative Tract 16072
ACOE and CDFG
Jurisdictional Drainages

Table 3-2

Etiwanda Subdivision
Summary of Jurisdictional Area

	On-site Length (ft.)	Off-site Length (ft.)	On-site ACOE (acres)	Off-site ACOE (acres)	On-site CDFG (acres)	Off-site CDFG (acres)	Nature
Drainage 1	3,300	865	0.72	0.28	0.72	0.28	Ephemeral
Drainage 2	1,310	1,747	0.09	0.41	0.09	0.41	Ephemeral
Drainage 3	1,725	1,731	0.32	0.29	0.32	0.29	Ephemeral
Total	**6,335**	**4,343**	**1.13**	**0.98**	**1.13**	**0.98**	

Source: PCR Services Corporation 1998 and 2002

All eucalyptus windrow trees are in extremely poor condition. Ninety-nine percent of the eucalyptus trees are multi-trunked and have mass sprouting due to fire damage from two fires that burned the site in 1988 and 1989. In addition to fire damage, all the eucalyptus trees show signs of beetle and/or redgum lerp psyllid damage to the leaves, trunks, and limbs of the trees. The pepper trees, sycamores, walnuts, and other unknown trees are all in fair health or aesthetics with poor structure. The pepper and walnut trees in particular, as well as some of the eucalyptus trees, have severe injury due to paintball activities on the property.

3.9 SENSITIVE BIOLOGICAL RESOURCES

The following discussion describes the plant and wildlife species present or potentially present within the project site and vicinity, that have been afforded special recognition by local, State, or Federal resource conservation agencies and organizations, principally due to the species' declining or limited population sizes usually resulting from habitat loss. Also discussed are habitats that are unique, of relatively limited distribution, or of particular value to wildlife.

Protected sensitive species are classified by either State or Federal resource management agencies, or both, as threatened or endangered, under provisions of the State and Federal Endangered Species Acts (FESA) described below. The USFWS, CDFG, and special groups like CNPS, maintain watch lists of such resources. Vulnerable or "at-risk" species which are proposed for listing as threatened or endangered (and thereby for protected status) are categorized administratively as "candidates" by the USFWS. The CDFG uses various terminology and classifications to describe vulnerable species. There are additional sensitive species classifications applicable in California which are described below.

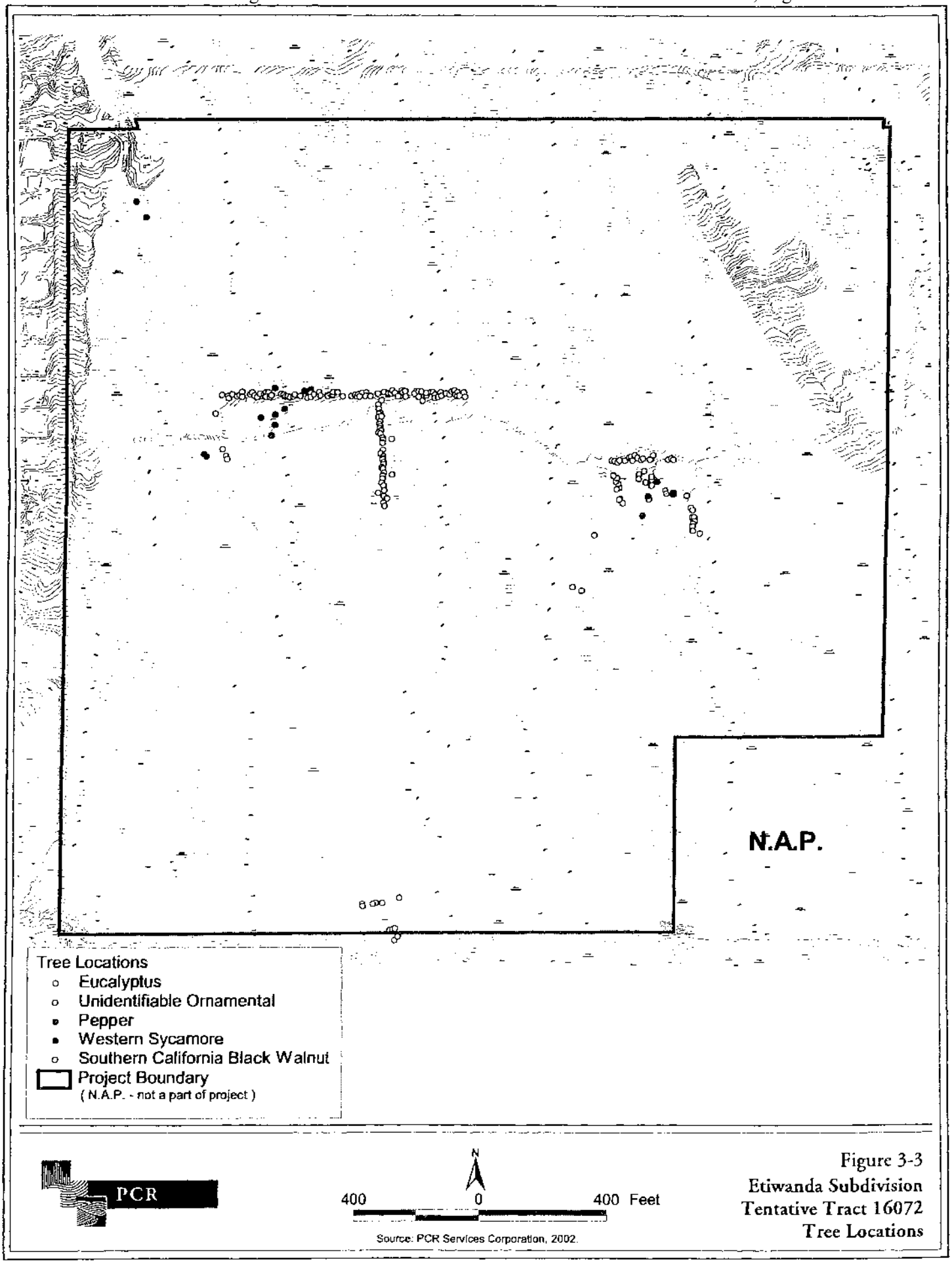


Figure 3-3
Etiwanda Subdivision
Tentative Tract 16072
Tree Locations

3.8.1 Explanation of Sensitive Resource Classification

Federal Protection and Classifications

The Federal Endangered Species Act of 1973 defines an "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range." "Threatened species" are defined as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of FESA it is unlawful to "take" any listed species, where "take" is defined as "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (FESA Section 3(18)). Further, the USFWS, through regulation, has included certain types of habitat modification in their interpretation of the terms "harm" and "harass" as a form of take. This interpretation, however, is generally considered and applied on a case-by-case basis and often varies from species to species. In a case where a property owner seeks permission from a Federal agency for an action which could affect a Federally-listed plant or animal species, the property owner and agency are required to consult with USFWS. Section 9(a)(2)(b) of FESA addresses the protections afforded to listed plants.

Within the last few years, the USFWS instituted changes in the listing status of former candidate species. Former C1 (candidate) species are now referred to simply as candidate species and represent the only candidates for listing. Former C2 species (for which the USFWS had insufficient evidence to warrant listing at this time) and C3 species (either extinct, no longer a valid taxon, or more abundant than was formerly believed) are no longer considered as candidate species. Therefore, Former C2 and C3 species are no longer maintained in list form by the USFWS, nor are they formally protected. However, former C2 species have been designated, for informational purposes only, as *Federal Species of Concern*. This term is employed in this document, but carries no official protections. All references to Federally protected species in this report (whether listed, proposed for listing, or candidate) include the most current published status or candidate category to which each species has been assigned by USFWS.

For purposes of this assessment, the following acronyms are used for Federal status species:

FE – Federal Endangered
FT – Federal Threatened
FPE – Federal Proposed Endangered
FPT – Federal Proposed Threatened
FC – Federal Candidate for Listing
FSC – Federal Species Concern (former C2 or C3 species)

State of California Protection and Classifications

California's Endangered Species Act (CESA) defines an "endangered species" as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change iu habitat, overexploitation, predation, competition, or disease." The State defines a "threatened species" as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the [Fish and Game] commission as rare on or before January 1, 1985 is a threatened species." "Candidate species" are defined as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the [Fish and Game] commission has published a notice of proposed regulation to add the species to either list." Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike FESA, CESA does not include listing provisions for invertebrate species.

Article 3, Sections 2080 through 2085, of CESA addresses the taking of threatened or endangered species by stating "no person shall import into this state, export ont of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided." Under CESA, "take" is defined as "...hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Exceptions authorized by the state to allow take require "...permits or memorandums of understanding..." and can be authorized for "...endangered species, threatened species, or candidate species for scientific, educational, or management purposes." Sections 1901 and 1913 of the California Fish and Game Code provide that notification is required prior to disturbance.

Additionally, some sensitive mammals and birds are protected by the State as Fully Protected Mammals or Fully Protected Birds, as described in the California Fish and Game Code, Sections 4700 and 3511, respectively. California Species of Special Concern ("special" animals and plants) listings include special status species, including all State and Federal protected and candidate taxa, Bureau of Land Management and U.S. Forest Service sensitive species, species considered to be declining or rare by the CNPS or National Audubon Society, and a selection of species which are considered to be under population stress bnt are not formally proposed for listing. This list is primarily a working document for the CDFG's CNDDB. Informally listed taxa are not protected, but warrant consideration in the preparation of

assessments. For some species, the CNDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nest sites.

For the purposes of this assessment, the following acronyms are used for State status species:

SE – State Endangered
ST – State Threatened
SCE – State Candidate Endangered
SCT – State Candidate Threatened
SFP – State Fully Protected
SP – State Protected
SR – State Rare
CSC – California Species of Special Concern

California Native Plant Society

The CNPS is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in the state. This organization has compiled an inventory containing information focusing on geographic distribution and qualitative characterization of rare, threatened, or endangered vascular plant species of California (Skinner and Pavlik, 1994). The list serves as the candidate list for listing as threatened and endangered by CDFG. The CNPS has developed five categories of rarity:

List 1A: Presumed extinct in California.
List 1B: Rare, threatened, or endangered throughout their range.
List 2: Rare, threatened, or endangered in California, but more common in other states.
List 3: Plant species for which additional information is needed before rarity can be determined.
List 4: Species of limited distribution in California (i.e., naturally rare in the wild), but whose existence does not appear to be susceptible to threat.

Determinations of sensitive species that could potentially occur on the project site are based on a record reported in the CNDDB, and/or the project site is located within the known distribution of a species and contains suitable habitat.

Multi-Species Habitat Conservation Plan

The project site falls within the boundary of the San Bernardino Valley-wide Multi-species Habitat Conservation Plan (MSHCP), an established subregional planning area under the State Natural Community Conservation Planning Act (NCCP). The NCCP is a voluntary approach to protect wildlife before it becomes fragmented or degraded by development or other

land uses to the degree that listing is required under the Federal and State ESAs. The County is currently in the process of preparing the San Bernardino Valley MSHCP.

3.8.2 Sensitive Plant Communities/Habitats

The project site supports 137.8 acres of plant communities considered sensitive by the CDFG, including 44.1 acres of California buckwheat-white sage scrub, 82.5 acres of white sage scrub, and 11.2 acres of scalebroom scrub. These communities are considered highest priority inventory communities by the CDFG, indicating that they are experiencing decline throughout their range.

3.8.3 Sensitive Plant Species

Sensitive plants include those listed or candidates for listing by USFWS, CDFG, and CNPS (particularly list 1A, 1B, and 2). Two sensitive plants, Plummer's mariposa lily and southern California black walnut, were observed on-site. These and several additional sensitive plant species reported in the CNDDB are discussed in more detail in Table 3-3, *Sensitive Plant Species*, on page 28. As discussed previously in Section 2.3.6, plant species reported in the CNDDB which typically occur at elevations above 4,500 are not expected to occur on-site due to their elevational range and are not address further in this document. These species include the Laguna mountains jewel-flower, San Gabriel linanthus Johnston's buckwheat, and Peirson's spring beauty.

3.8.4 Sensitive Wildlife Species

Sensitive wildlife includes those species listed as endangered or threatened under FESA or CESA, candidates for listing by USFWS or CDFG, and species of special concern to USFWS or CDFG. Several sensitive wildlife species that have the potential to occur in the vicinity of the project site were reported in the CNDDB. A discussion of each sensitive species potentially present on the project site is provided in Table 3-4, *Sensitive Wildlife Species*, on page 32.

Table 3-3

Sensitive Plant Species

VASCULAR PLANTS								
Scientific Name	Common Name	Flowering Period	Federal	State	CNPS List	Preferred Habitat	Distribution	Occurrence On-site
ANGIOSPERMS (DICOTYLEDONS)								
Brassicaceae	**Mustard Family**							
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	Jan-Jul	NONE	NONE	1B	Chaparral, coastal sage scrub. This species typically occurs at elevations above 1,500 feet.	Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties, Santa Cruz Island, Baja California.	FN, PT
Juglandaceae	**Walnut Family**							
Juglans californica var. *californica*	Southern California black walnut	Mar-May	NONE	NONE	4	Sage scrub, chaparral, cismontane woodland; often in association with oaks/oak woodland; frequently found on steep hillsides with northern exposures; deep alluvial soils.	Ventura, LA, Orange, Riverside, San Bernardino, San Diego Counties -- foothills. Especially abundant in Santa Monica Mountains (center of dispersal for species).	OB
Comments: The tree survey determined that 9 walnut trees occur on-site in a disturbed area in the eastern portion of the site.								
Lamiaceae	**Mint Family**							
Monardella macrantha ssp. *hallii*	Hall's monardella	Jun-Aug	NONE	NONE	1B	Lower montane coniferous forest, valleys and foothill grassland; broadleaf upland forest, chaparral, cismontane woodland. This species typically occurs at elevations between 1,800 and 6,200 feet.	Orange, Riverside, San Bernardino, and San Diego Counties.	FN, PT

OB = Observed; FN = Focused surveys performed, species not observed; NE = Species not expected to occur on-site due to the lack of suitable habitat; PT = Due to: (1) the inherent difficulty in observing 100 percent of the property at close range, (2) the population fluctuation of the species from year to year, and/or (3) the small stature of the species, there remains a low potential for this species to occur on-site.

Table 3-3 (Continued)

Sensitive Plant Species

VASCULAR PLANTS								
Scientific Name	**Common Name**	**Flowering Period**	**Federal**	**State**	**CNPS List**	**Preferred Habitat**	**Distribution**	**Occurrence On-site**
Monardella pringlei	Pringle's monardella	May-Jun	NONE	NONE	1A	Coastal sage scrub. This species typically occurs at elevations between 900 and 1,500 feet.	Riverside, San Bernardino Counties.	FN, PT
Papaveraceae	**Poppy Family**							
Canbya candida	pygmy poppy	Mar-Jun	NONE	NONE	4	Joshua tree woodland, Mojavean desert scrub. Sandy places. This species typically occurs at elevations between 1,800 and 4,000 feet.	Kern, Los Angeles, San Bernardino Counties.	FN, PT
Polemoniaceae	**Phlox Family**							
Eriastrum densifolium ssp. *sanctorum*	Santa Ana River woollystar	Jul-Aug	FE	SE	1B	Chaparral, sage scrub on alluvial fans.	San Bernardino County (formerly Orange County; presumed extirpated).	FN, NE
Polygonaceae	**Buckwheat Family**							
Chorizanthe parryi var. *parryi*	Parry's spineflower	Apr-Jun	NONE	NONE	3	Occurs in alluvial chaparral, openings in coastal or desert scrub, chaparral, dry slopes or flat ground. Often in sandy soils.	Known from San Bernardino and Riverside Counties. May be extripated from Los Angeles County.	FN, PT

OB = Observed; FN = Focused surveys performed, species not observed; NE = Species not expected to occur on-site due to the lack of suitable habitat; PT = Due to: (1) the inherent difficulty in observing 100 percent of the property at close range, (2) the population fluctuation of the species from year to year, and/or (3) the small stature of the species, there remains a low potential for this species to occur on-site.

Table 3-3 (Continued)

Sensitive Plant Species

VASCULAR PLANTS								
Scientific Name	**Common Name**	**Flowering Period**	**Federal**	**State**	**CNPS List**	**Preferred Habitat**	**Distribution**	**Occurrence On-site**
Dodecahema leptoceras	slender-horned spineflower	Apr-Jun	FE	SE	1B	Scrub vegetation on sandy flood-deposited rivers and washes.	Los Angeles, Riverside and San Bernardino counties: San Gabriel, San Bernardino and San Jacinto Mountains; reported from Lake Elsinore and Hemet.	FN, NE
Solanaeceae	**Nightshade Family**							
Lycium parishii	Parish's desert-thorn	Mar-Apr	NONE	NONE	2	Coastal scrub, Sonoran desert scrub. Sandy to rocky slopes; canyons. From 1,000 to 3,280 feet.	San Diego, Imperial, San Bernardino, and Riverside Counties.	FN, NE
ANGIOSPERMS (MONOCOTYLEDONS)								
Liliaceae	**Lily Family**							
Calochortus plummerae	Plummer's mariposa lily	May-Jul	NONE	NONE	1B	Variety of southern California plant communities, including sage scrub, valley and foothill grassland, yellow pine forest; dry, rocky or sandy sites, granitic or alluvial soil; to 4,800 feet.	Ventura, Los Angeles, Riverside and San Bernardino Counties.	OB
Comments: Plummer's mariposa lily was found on-site in abundance. Surveys conducted in 2001 estimated that the site supports a population numbering in the thousands. Due to drought conditions, 2002 surveys found approximately 1,200 individuals on-site.								

OB = Observed; FN = Focused surveys performed, species not observed; NE = Species not expected to occur on-site due to the lack of suitable habitat; PT = Due to: (1) the inherent difficulty in observing 100 percent of the property at close range, (2) the population fluctuation of the species from year to year, and/or (3) the small stature of the species, there remains a low potential for this species to occur on-site.

Table 3-3 (Continued)

Sensitive Plant Species

VASCULAR PLANTS

Scientific Name	Common Name	Flowering Period	Federal	State	CNPS List	Preferred Habitat	Distribution	Occurrence On-site
Brodiaea filifolia	thread-leaved brodiaea	Mar-Jun	FT	SE	1B	Occurs on gentle hillsides, valleys, floodplains, semi-alkaline mudflats, vernal pools, and grasslands. Grows in clay, loamy sand and alkaline soils.	Known from Los Angeles, San Bernardino, Orange, Western Riverside and San Diego Counties.	FN, NE
Poaceae	**Grass Family**							
Muhlenbergia californica	California muhly	Jul-Sep	NONE	NONE	4	Coastal sage, chaparral, meadows, lower montane coniferous forest. Usually found near streams or seeps. From 1,300 to 6,500 feet.	From San Bernardino vicinity to the edge of deserts.	FN, PT

Key to Species Listing Status Codes

FE	*Federally Listed as Endangered*	SE	*State Listed as Endangered*	SFP	*State Fully Protected*
FT	*Federally Listed as Threatened*	ST	*State Listed as Threatened*	CSC	*California Special Concern Species*
FSC	*Federal Special Concern Species*	SCE	*State Candidate for Endangered*		
FPE	*Federally Proposed as Endangered*	SCT	*State Candidate for Threatened*		
FPT	*Federally Proposed as Threatened*	SP	*State Protected*		

California Native Plant Society (CNPS)

List 1A: Presumed extinct in California.
List 1B: Rare, threatened, or endangered throughout their range.
List 2: Rare, threatened, or endangered in California, but more common in other states.
List 3: Plant species for which additional information is needed before rarity can be determined.
List 4: Species of limited distribution in California (i.e., naturally rare in the wild), but whose existence does not appear to be susceptible to threat.

OB = Observed; FN = Focused surveys performed, species not observed; NE = Species not expected to occur on-site due to the lack of suitable habitat; PT = Due to: (1) the inherent difficulty in observing 100 percent of the property at close range, (2) the population fluctuation of the species from year to year, and/or (3) the small stature of the species, there remains a low potential for this species to occur on-site.

Table 3-4

Sensitive Wildlife Species

VERTEBRATES						
Scientific Name	**Common Name**	**Federal**	**State**	**Preferred Habitat**	**Distribution**	**Occurrence On-site**
REPTILES						
Iguanidae	**Iguanid Lizards**					
Phrynosoma coronatum blainvillei	San Diego horned lizard	NONE	CSC	Valley-foothill hardwood, conifer, and riparian habitats, pine-cypress, juniper and annual grassland habitats below 6,000 feet, open country, especially sandy areas, washes, flood plains, and windblown deposits.	Coastal ranges from south Ventura, Los Angeles, San Bernardino counties, Orange, western Riverside and western San Diego counties.	PT
Teiidae	**Whiptail lizards**					
Cnemidophorus hyperythrus beldingi	orange-throated whiptail	NONE	CSC	Found in chaparral, non-native grassland, Riversidian sage scrub, and juniper and oak woodlands. Associated with riparian areas and alluvial fan scrub habitats.	Southwestern California and Baja California. Mainly in western Riverside County.	PT
Cnemidophorus tigris multiscutatus	coastal western whiptail	NONE	NONE	Arid and semi-arid desert to open woodlands, where vegetation is sparse.	Baja California; California to eastern Oregon and southern Idaho. South to west Texas and Mexico.	OB
Colubridae	**Colubrid Snakes**					
Diadophis punctatus modestus	San Bernardino ringneck snake	NONE	NONE	Open, relatively rocky areas within valley-foothill, mixed chaparral, and annual grass habitats.	San Bernardino, Riverside and Orange counties.	PT

FO = Focused surveys performed – species observed on-site; FN = Focused surveys performed – species not observed on-site; EX = Focused surveys not performed – species expected to occur on-site; PT = Focused surveys not performed – species has potential to occur on-site; NE = Focused surveys not performed – species not expected to occur on-site; B = Raptors: if present, would utilize the site for both foraging and nesting; F = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for nesting only.

Table 3-4 (Continued)

Sensitive Wildlife Species

VERTEBRATES						
Scientific Name	**Common Name**	**Federal**	**State**	**Preferred Habitat**	**Distribution**	**Occurrence On-site**
BIRDS						
Accipitridae	**Hawks**					
Elanus leucurus	white-tailed kite	FSC	SFP	(Nesting) Grasslands with scattered trees, near marshes, along highways.	Length of state; breeding in lowlands from Sacramento to San Diego Cos.	PT, B
Cirus cyaneus	northern harrier	NONE	CSC	(Nesting) Coastal salt marshes, freshwater marshes, grasslands, and agricultural fields; occasionally forages over open desert and brushlands.	Alaska, Canada, south U.S.	OB, B
Accipiter cooperii	Cooper's hawk	NONE	CSC	(Nesting) Open woodlands, especially riparian woodlands.	Entire state.	OB, B
Accipiter striatus	sharp-shinned hawk	NONE	CSC	(Nesting) Woodlands; forages over chaparral and other scrublands; prefers riparian habitats and north-facing slopes, with plucking perch sites.	Entire state, although only winters in most of So. Cal.	PT, B
Buteo swainsoni	Swainson's hawk	FSC	ST	(Nesting) Open desert, scrub, grassland, cropland and other agricultural areas with sparse trees.	Uncommon migrant and resident but may occur in west-central Riverside County during migration.	PT, F
Aquila chrysaetos	golden eagle	NONE	CSC, SFP	(Nesting and wintering) Mountains, deserts, and open country; prefer to forage over grasslands, deserts, savannahs and early successional stages of forest and shrub habitats.	Throughout Cal. with the exception of the center of the central valley.	PT, F

FO = Focused surveys performed – species observed on-site; FN = Focused surveys performed – species not observed on-site; EX = Focused surveys not performed – species expected to occur on-site; PT = Focused surveys not performed – species has potential to occur on-site; NE = Focused surveys not performed – species not expected to occur on-site; B = Raptors: if present, would utilize the site for both foraging and nesting; F = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for nesting only.

Table 3-4 (Continued)

Sensitive Wildlife Species

VERTEBRATES						
Scientific Name	**Common Name**	**Federal**	**State**	**Preferred Habitat**	**Distribution**	**Occurrence On-site**
Falconidae	**Falcons**					
Falco mexicanus	prairie falcon	NONE	CSC	(Nesting) Grasslands, savannahs, rangeland, agricultural fields, and desert scrub; often uses sheltered cliff ledges for cover.	Southeastern deserts northwest along the inner Coast Ranges and Sierra Nevada.	PT, F
Trochilidae	**Hummingbirds**					
Calypte costae	Costa's hummingbird	FSC	NONE	(Nesting) Occurs in desert and scrub habitats that are more arid than what most CA hummingbirds inhabit.	Summer resident of So. California. Uncommon in winter.	OB
Tyrannidae	**Tyrant Flycatchers**					
Contopus cooperi	olive-sided flycatcher	FSC	NONE	(Nesting) A variety of forest and woodland habitats below 9,000 feet. Prefers conifer forest for nesting habitat.	Throughout California except deserts and central valley.	OB
Empidonax difficilis	Pacific-slope flycatcher	FSC	NONE	(Nesting) Cismontane California in woodlands and foothills.	West of California deserts. Sierra Nevada, Cascades, and other interior mountain ranges	PT
Alaudidae	**Larks**					
Eremophila alpestris actia	California horned lark	NONE	CSC	Open habitats, grasslands along the coast, deserts near sea level to alpine dwarf shrub habitat, uncommonly in coniferous and chaparral habitats.	Throughout the state, less common in mountain regions.	PT

FO = Focused surveys performed – species observed on-site; FN = Focused surveys performed – species not observed on-site; EX = Focused surveys not performed – species expected to occur on-site; PT = Focused surveys not performed – species has potential to occur on-site; NE = Focused surveys not performed – species not expected to occur on-site; B = Raptors: if present, would utilize the site for both foraging and nesting; F = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for nesting only.

Table 3-4 (Continued)

Sensitive Wildlife Species

VERTEBRATES						
Scientific Name	**Common Name**	**Federal**	**State**	**Preferred Habitat**	**Distribution**	**Occurrence On-site**
Sylviidae	**Old World Warblers, Gnatcatchers**					
Polioptila californica californica	coastal California gnatcatcher	FT	CSC	Coastal sage scrub vegetation below 2,500 feet elevation in Riverside County and generally below 1,000 feet elevation along the coastal slope; generally avoids steep slopes and dense vegetation for nesting.	Southern Ventura County, southward through Los Angeles, Orange, Riverside, San Bernardino counties, and south through the coastal foothills of San Diego county.	FN
Comments: Focused surveys were conducted in 1998, 2001, and 2002. This species was not observed on-site.						
Mimidae	**Thrashers**					
Toxostoma redivium	California thrasher	FSC	NONE	Common resident in cismontane California in moderate to dense cover. Montane chaparral in So. California.	Coastal California and the central valley.	OB
Laniidae	**Shrikes**					
Lanius ludovicianus	loggerhead shrike	FSC	CSC	(Nesting) Open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	Common resident and winter visitor in lowlands and foothills throughout CA.	OB
Emberizidae	**Emberizids**					
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	NONE	CSC	Grassy hillsides, coastal sage scrub and chaparral; often near steep, rocky slopes.	Cismontane So. California.	OB
Chondestes grammacus	lark sparrow	FSC	NONE	(Nesting) Frequents hardwoods, chaparral, and grasslands with scattered trees.	Resident of lowlands and foothills of CA.	OB

FO = Focused surveys performed – species observed on-site; FN = Focused surveys performed – species not observed on-site; EX = Focused surveys not performed – species expected to occur on-site; PT = Focused surveys not performed – species has potential to occur on-site; NE = Focused surveys not performed – species not expected to occur on-site; B = Raptors: if present, would utilize the site for both foraging and nesting; F = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for nesting only.

Table 3-4 (Continued)

Sensitive Wildlife Species

Scientific Name	Common Name	Federal	State	Preferred Habitat	Distribution	Occurrence On-site
VERTEBRATES						
Amphisipiza belli belli	Bell's sage sparrow	FSC	CSC	(Nesting) Chaparral and coastal sage scrub in lowlands and foothills.	Western Riverside County.	OB
Spizella atrogularis	black-chinned sparrow	FSC	NONE	(Nesting) Found on slopes in chaparral, sagebrush and other brushy habitats, including conifer habitats.	In California foothills around the central valley and on mountain slopes in southern California.	OB
Carduelis lawrencei	Lawrence's goldfinch	FSC	NONE	(Nesting) Oak, woodland, and chaparral near water.	Coastal slopes south from Monterey, Co., CA.	PT
MAMMALS						
Vespertilionidae	**Evening Bats**					
Antrozous pallidus	pallid bat	NONE	CSC	Wide variety of habitats but most common in open, dry habitats with rocky areas for roosting.	Throughout Cal. except the high Sierra and NW corner of the state.	PT
Molossidae	**Free-tailed Bats**					
Eumops perotis californicus	California mastiff bat	FSC	CSC	Primarily arid lowlands, especially deserts. Open, semiarid to arid habitats including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban.	Uncommon resident of lower elevations in southeastern San Joaquin Valley and Coastal Ranges from Monterey County southward through southern California from the coast eastward to the Colorado desert.	PT
Leporidae	**Hares and Rabbits**					
Lepus californicus bennettii	San Diego black-tailed jackrabbit	NONE	CSC	Open brushlands and scrub habitats between sea level and 4,000 feet elevation.	Coastal southern California from Ventura County into northern Baja California.	PT

FO = Focused surveys performed – species observed on-site; FN = Focused surveys performed – species not observed on-site; EX = Focused surveys not performed – species expected to occur on-site; PT = Focused surveys not performed – species has potential to occur on-site; NE = Focused surveys not performed – species not expected to occur on-site; B = Raptors: if present, would utilize the site for both foraging and nesting; F = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for nesting only.

Table 3-4 (Continued)

Sensitive Wildlife Species

VERTEBRATES						
Scientific Name	**Common Name**	**Federal**	**State**	**Preferred Habitat**	**Distribution**	**Occurrence On-site**
Heteromyidae	**Pocket Mice and Kangaroo Rats**					
Perognathus longimembris brevinasus	Los Angeles pocket mouse	NONE	CSC	Coastal sage scrub, and grass-lands, desert cactus, creosote bush and sagebrush habitats.	Common to year-long resident of the Los Angeles Basin.	OB
Chaetodipus fallax fallax	Northwestern San Diego pocket mouse	NONE	CSC	Sandy herbaceous areas, usually in association with rocks or coarse gravel, sagebrush, scrub, annual grassland, chaparral and desert scrubs.	Common resident in southwestern California; arid coastal areas of Orange, San Bernardino, and Riverside counties extending south into Baja California.	OB
Dipodomys merriami parvus	San Bernardino kangaroo rat	FE	CSC	Alluvial fan scrub.	Throughout arid regions of the western United States and northwestern Mexico.	FN
Comments: Focused surveys were conducted in 1998, 2001, and 2002. This species was not observed on-site.						
Muridae	**Mice, Rats, and Voles**					
Neotoma lepida intermedia	San Diego desert woodrat	NONE	CSC	Chaparral, coastal sage scrub, and pinyon - juniper woodland.	Southern California.	OB

Key to Species Listing Status Codes

FE	*Federally Listed as Endangered*	ST	*State Listed as Threatened*
FT	*Federally Listed as Threatened*	SCE	*State Candidate for Endangered*
FSC	*Federal Special Concern Species*	SCT	*State Candidate for Threatened*
FPE	*Federally Proposed as Endangered*	SP	*State Protected*
FPT	*Federally Proposed as Threatened*	SFP	*State Fully Protected*
FPD	*Federally Proposed for Delisting*	CSC	*California Special Concern Species*
SE	*State Listed as Endangered*		

FO = Focused surveys performed – species observed on-site; FN = Focused surveys performed – species not observed on-site; EX = Focused surveys not performed – species expected to occur on-site; PT = Focused surveys not performed – species has potential to occur on-site; NE = Focused surveys not performed – species not expected to occur on-site; B = Raptors: if present, would utilize the site for both foraging and nesting; F = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for nesting only.

4.0 PROJECT IMPACTS

4.1 APPROACH

The following discussion examines the potential impacts to plant and wildlife resources that may occur as a result of implementation of the proposed project. For the purpose of this assessment project-related impacts take two forms, direct and indirect. Direct impacts are considered to be those that involve the loss, modification or disturbance of natural habitats (i.e., vegetation or plant communities), which in turn, directly affect plant and wildlife species dependent on that habitat. Direct impacts also include the destruction of individual plants or wildlife, which is typically the case in species of low mobility (i.e., plants, amphibians, reptiles, and small mammals). The collective loss of individuals in these manners may also directly affect regional population numbers of a species or result in the physical isolation of populations thereby reducing genetic diversity and, hence, population stability.

Indirect impacts are considered to be those that involve the effects of increases in ambient levels of sensory stimuli (e.g., noise, light), unnatural predators (e.g., domestic cats and other non-native animals), and competitors (e.g., exotic plants, non-native animals). Indirect impacts may be associated with the construction and/or eventual habitation/operation of a project; therefore, these impacts may be both short-term and long-term in their duration. These impacts are commonly referred to as "edge effects" and may result in changes in the behavioral patterns of wildlife and reduced wildlife diversity and abundance in habitats adjacent to project sites.

The determination of impacts in this analysis is based on both the features of the proposed project and the biological values of the habitat and/or sensitivity of plant and wildlife species to be affected. Relevant project features (e.g., limits of grading) were supplied by the project engineer. Much of this information was supplied in digital format and impacts were calculated using GIS technology in order to maximize the accuracy of the assessment. Project design features that avoid, preserve, or restore biological resources are taken into consideration and specifically described below prior to the assessment of potential adverse impacts.

The biological values of resources within, adjacent to, and outside the area to be affected by the project were determined by consideration of several factors. These included the overall size of habitats to be affected, the site's previous land uses and disturbance history, the site's surrounding environment and regional context, the on-site biological diversity and abundance, the presence of sensitive and special-status plant and wildlife species, the site's importance to regional populations of these species, and the degree to which on-site habitats are limited or restricted in distribution on a regional basis and, therefore, are considered sensitive in

themselves. Whereas this assessment is comprehensive, the focus is on sensitive plant communities/habitats, resources that play an important role in the regional biological systems, and special-status species.

4.2 THRESHOLDS OF SIGNIFICANCE

The environmental impacts relative to biological resources are assessed using impact significance threshold criteria which mirror the policy statement contained in CEQA, Section 21001(c) of the California Public Resources Code. Accordingly, the State Legislature has established it to be the policy of the State to:

> *"Prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities..."*

Determining whether a project may have a significant effect, or impact, plays a critical role in the CEQA process. According to CEQA, Section 15064.7, Thresholds of Significance, each public agency is encouraged to develop and adopt (by ordinance, resolution, rule, or regulation) thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant. In the development of thresholds of significance for impacts to biological resources CEQA provides guidance primarily in Section 15065, Mandatory Findings of Significance, and the CEQA Guidelines, Appendix G, Environmental Checklist Form. Section 15065(a) states that a project may have a significant effect where:

> *"The project has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or wildlife community, reduce the number or restrict the range of an endangered, rare, or threatened species,..."*

Appendix G of the CEQA Guidelines is more specific in addressing biological resources and encompasses a broader range of resources to be considered, including: candidate, sensitive, or special status species; riparian habitat or other sensitive natural communities; Federally protected wetlands; fish and wildlife movement corridors; local policies or ordinances protecting biological resources; and, adopted habitat conservation plans. This is done in the form of a

checklist of questions to be answered during the Initial Study leading to the preparation of the appropriate environmental documentation for a project (i.e., Negative Declaration, Mitigated Negative Declaration, or EIR). Because these questions are derived from standards in other laws, regulations, and other commonly used thresholds, it is reasonable to use these standards as a basis for defining significance thresholds in an EIR. Therefore, for the purpose of this analysis, impacts to biological resources are considered potentially significant (before considering offsetting mitigation measures) if one or more of the following conditions would result from implementation of the proposed project.

1. A direct loss of any individuals or any habitat occupied by a State or Federal-listed threatened or endangered plant or animal species.

2. A substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate for listing, sensitive, rare, or otherwise special status plant or animal species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.

3. Conflict with any adopted local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

4. A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS.

5. A substantial adverse effect on State or Federal-protected wetlands as defined by Section 1600 of the California Fish and Game Code or Section 404 of the Clean Water Act (CWA) through direct removal, filling, hydrological interruption, or other means.

6. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or on linkages/connectivity between populations of plants and animals, or impede the use of native wildlife nursery sites.

7. Conflict with the provisions of an adopted Habitat Conservation Plan, NCCP, or other approved local, regional, State, or Federal habitat conservation plan.

For the purposes of this impact analysis the following definitions apply:

- "Substantial adverse effect" means loss or harm of a magnitude which, based on current scientific data and knowledge would: (1) substantially reduce population numbers of a species; (2) substantially reduce the distribution of a natural

community/habitat type; or (3) eliminate the functions and values of a biological resource (e.g., streams, wetlands, or woodlands) in a geographical area defined by interrelated biological components and systems. In the case of this analysis the prescribed geographical area is considered to be the region including the San Gabriel River to the west, the foothills of the San Gabriel Mountains to the north, Cajon Wash to the west and the Jurupa Hills to the south.

- "Conflict" means contradiction of a magnitude which, based on foreseeable circumstances would preclude or prevent substantial compliance.
- "Rare" means that the species exists in such small numbers throughout all, or a significant portion of, its range that it may become endangered if its environment worsens.

4.3 PROJECT DESCRIPTION

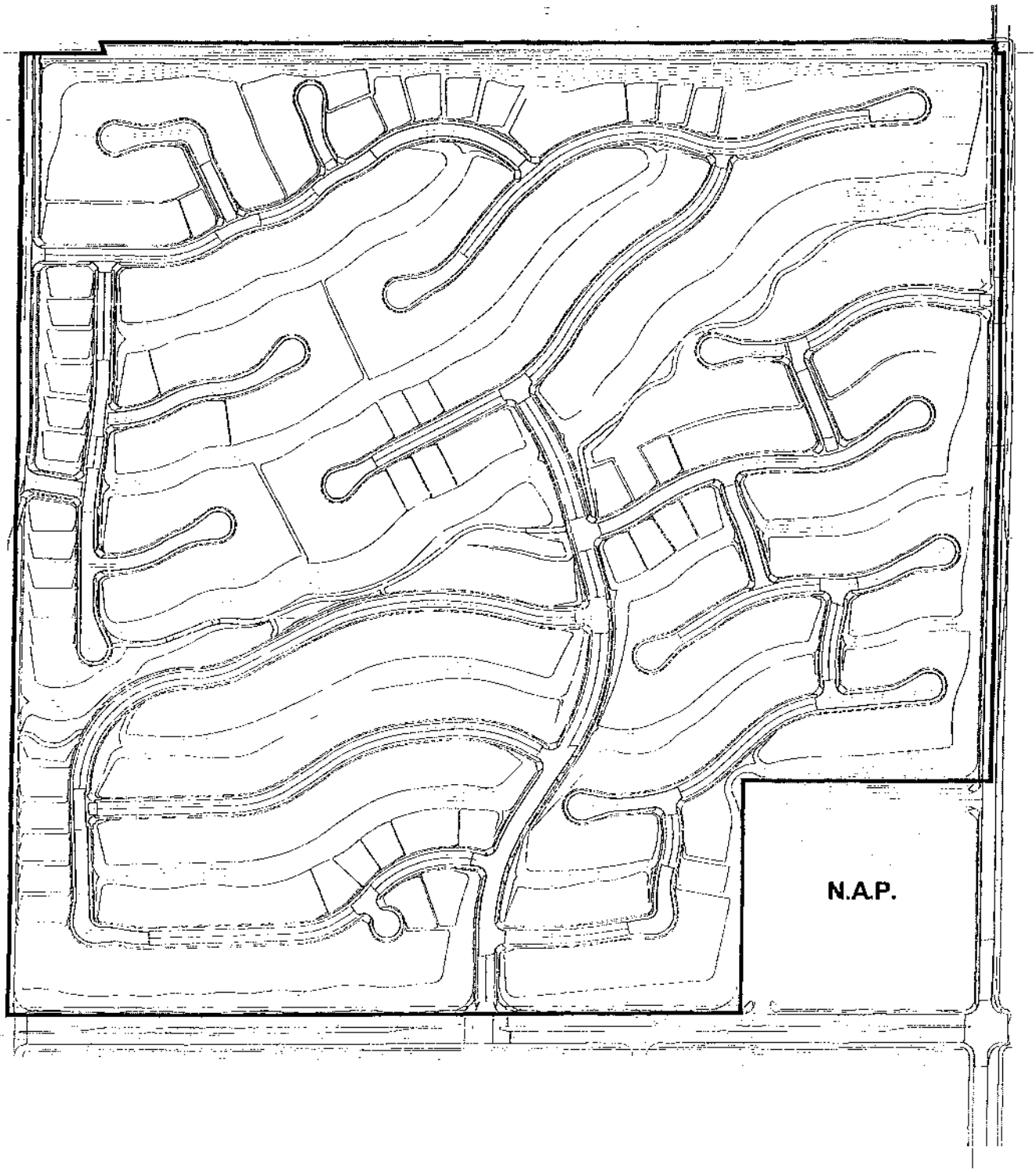
The Etiwanda Subdivision, Tentative Tract 16072, proposes a total of 359 single-family homes on the entire 150-acre property as shown in Figure 4-1, *Proposed Project*, on page 42. This residential development will include a combination of estate residential, low-density residential, and very low-density residential areas. A greenbelt area will bisect the development in a southwest-northeast direction.

4.4 STANDARD CONDITIONS

As part of the proposed project's review and approval, there are a number of performance criteria and standard conditions that must be met. These include compliance with applicable laws that relate to Federal, State, and local regulating agencies regarding potential impacts to sensitive plant and wildlife species, trees, and stream courses.

4.4.1 Federal Clean Water Action, Section 404

Section 404 of the CWA regulates the discharge of dredged material, placement of fill material, or excavation within "Waters of the U.S." and authorizes the Secretary of the Army, through the Chief of Engineers, to issue permits for such actions. "Waters of the U.S." are defined by the CWA as "rivers, creeks, streams, and lakes extending to their headwaters and any associated wetlands". Wetlands are defined by the CWA as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions." The permit



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Source: PCR Services Corporation, 2002.

Figure 4-1
Etiwanda Subdivision
Tentative Tract 16072
Proposed Project

review process entails an assessment of potential adverse impacts to ACOE jurisdictional "Waters of the U.S." and wetlands. In response to the permit application, the ACOE will also require conditions amounting to mitigation measures. Where a Federally-listed species may be affected, they will also require Section 7 consultation with the USFWS under the FESA. Through this process, potentially significant adverse impacts within the Federal jurisdictional limits could be mitigated to a level that is less than significant.

4.4.2 Federal Clean Water Act, Section 401

The mission of the California Regional Water Quality Control Board (RWQCB) is to develop and enforce water quality objectives and implement plans which will best protect the beneficial uses of the State's waters, recognizing local differences in climate, topography, geology, and hydrology. Section 401 of the CWA requires that:

> *"any applicant for a Federal permit for activities that involve a discharge to waters of the State, shall provide the Federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the Federal Clean Water Act."*

Therefore, before the ACOE will issue a Section 404 permit, applicants must apply for and receive a Section 401 water quality certification from the RWQCB. A complete application for 401 Certification will include a detailed Water Quality Management Plan that will address the key water quality features of the project to ensure the integrity of water quality in the area during and post-construction.

Under separate authorities granted by State law (i.e., the Porter-Cologne Water Quality Control Act), a RWQCB may choose to regulate discharges of dredge or fill materials by issuing or waiving (with or without conditions) Waste Discharge Requirements (WDRs), a type of State discharge permit, instead of taking a water quality certification action. Processing of a WDR is similar to that of a Section 401 certification; however, the RWQCB has slightly more discretion to add conditions to a project under the Porter-Cologne Act than under the Federal CWA.

4.4.3 State of California Fish and Game Code, Section 1603

Section 1603 of the California Fish and Game Code requires any person who proposes a project that will substantially divert or obstruct the natural flow; or substantially change the bed, channel, or bank of any river, stream, or lake; or use materials from a streambed, to notify the CDFG before beginning the project. Similarly, under Section 1601 of the Fish and Game Code, before any State or local governmental agency or public utility begins a construction project that will: (1) divert, obstruct, or change the natural flow of the bed, channel, or bank of any river,

stream, or lake; (2) use materials from a streambed; or (3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake, it must first notify the CDFG of the proposed project. In the course of this notification process, the CDFG will review the proposed project as it affects streambed habitats within the project area. The CDFG may then place conditions on the Section 1603 clearance to address the potentially significant adverse impacts within CDFG jurisdictional limits.

4.4.4 City of Rancho Cucamonga Tree Preservation Guidelines

The City of Rancho Cucamonga Tree Preservation Guidelines (Municipal Code Chapter 19.08) require that all woody plants in excess of fifteen feet in height and having a single trunk circumference of fifteen inches or more and/or any multi-trunk tree(s) having a total circumference of thirty inches or more, as measured twenty-four inches from ground level be surveyed by a qualified arborist. If existing eucalyptus windrows, individual heritage trees, or any dead, diseased, or dying trees are impacted by a proposed project they shall be replaced at a 1:1 ratio with spotted gum (*Eucalyptus maculata*) along the established grid pattern in fifteen-gallon size minimum spaced at eight feet on center and properly staked, unless otherwise specified by a specific plan or community plan. In addition, the City Planner requires a tree removal permit application to be submitted with any application for tentative subdivision maps or other proposals for urban development.

4.5 IMPACTS FOUND TO BE INSIGNIFICANT

Those impacts determined to be less than significant include impacts to biological resources that are relatively common or exist in a degraded or disturbed state, rendering them less valuable as habitat, or impacts which do not meet or exceed the significance thresholds defined above. The potential impacts of the proposed project that were found to be insignificant are summarized below.

4.5.1 Insignificant Impact to Plant Communities

Implementation of the proposed project would result in the direct removal of non-sensitive plant communities including 2.1 acres of non-native grassland, 6.0 acres of disturbed areas, and 4.1 acres of disturbed area containing ornamental tree species (see Table 4-1, *Impacts to Plant Communities*, on page 45). Due to the existing disturbed condition of these portions of the project site, the removal of the non-sensitive plant communities within these areas on the project site would be considered less than significant.

Table 4-1

Impacts to Plant Communities

Plant Community	Total Acres On-site	Proposed Impacts
Scrub Communities		
California Buckwheat-White Sage Scrub	44.1	44.1
White Sage Scrub	82.5	82.5
Scalebroom Scrub	11.2	11.2
Non-native Grassland	2.1	2.1
Disturbed	6.0	6.0
Ornamental Landscaping	4.1	4.1
TOTAL	**150.0**	**150.0**

Source: PCR Services Corporation, 2002.

4.5.2 Insignificant Impact to Plant Species

Implementation of the proposed project would result in the direct removal of non-native common plant species on the project site. Common plant species present on the project site occur in large numbers throughout the region. As these plant species are not sensitive, their removal would not be considered significant. Therefore, with implementation of the proposed project, no significant impact to common plant species would occur.

4.5.3 Insignificant Impact to Wildlife

The determination of the effect on wildlife is generally associated with the degree of habitat loss from the standpoint of physical character, quality, diversity, and abundance of vegetation. Implementation of the proposed project would result in the direct removal of existing wildlife habitat and the potential mortality of common wildlife species existing on the project site. Additionally, indirect effects would include increased human activity, increased ambient noise, higher nighttime light levels, and increased threat of road kill by traffic.

Elimination or disruption of habitat for the common wildlife species on the project site would not represent a significant effect either locally or regionally. Therefore, with implementation of the proposed project, no significant impact on common wildlife species would occur.

4.5.4 Insignificant Impacts to Regional Wildlife Movement Corridors

The project site does not currently function as a regional wildlife corridor as it is bordered by existing residential development to the south and west. This acts an impasse for animals coming from open space areas. The open space to the north has been approved for planned residential development. The open space designated as a flood control area located to the south and east would remain undisturbed and serve as a local wildlife corridor. Therefore, the implementation of the proposed project will not interfere substantially with the movement of wildlife species or a migratory wildlife corridor. Therefore, no significant impact would occur.

4.5.5 Insignificant Impacts to Sensitive Biological Resources

Sensitive Plant Species

Several sensitive plant species mentioned in the Sensitive Plant Species section of this document may occur within the region but are not expected to occur within the proposed development envelope of the Etiwanda Subdivision project. These include **Santa Ana River woollystar, slender-horned spineflower, Parish's desert-thorn,** and **thread-leaved brodiaea**. As such, no impacts are expected to occur to these species.

Other sensitive plant species not detected on the site but retaining a low potential to occur include **Robinson's peppergrass, Hall's monardella, Pringle's monardella, pygmy poppy, Parry's spineflower** and **California muhly**. As these species are not protected by Federal or State listings as threatened or endangered, and any loss of individuals would not threaten the regional population, removal of their habitat represents an adverse, but less than significant impact to regional populations of these species.

Nine **southern California black walnut** trees were mapped on-site during the tree survey. All nine trees were located within the disturbed area in the eastern portion of the site and are assumed to have been planted as landscaping trees. Because these trees were planted and the species is a CNPS List 4 (watch list) species, their removal is not considered significant. Nonetheless, the removal of these trees will be mitigated through the City of Rancho Cucamonga Tree Preservation Guidelines as discussed in the Mitigation Measures section of this document.

Sensitive Wildlife Species

Several sensitive wildlife species (detailed by taxonomic group below) were observed or have at least a low potential to occur on the site, as previously mentioned in the Sensitive Wildlife Species Table in Section 3. These species will potentially be impacted by the proposed project. These species are not protected by Federal or State listings as threatened or endangered,

and any loss of individuals would not exceed significance threshold number 1. In addition, potential impacts would not threaten the regional populations of these species and would not exceed significance threshold number 2; therefore, removal of their habitat represents an adverse, but less than significant impact.

One sensitive reptile was observed on-site: the **coastal western whiptail**. Several others have at least a low likelihood of occurring on-site including the **San Diego horned lizard, orange-throated whiptail**, and **San Bernardino ring-neck snake**. As stated above, these species are not protected by Federal or State listings as threatened or endangered, and loss of individuals would not threaten the regional populations; therefore, removal of their habitat represents an adverse but less than significant impact to regional populations of these species.

Ten sensitive bird species were observed on-site: the **Cooper's hawk, northern harrier, Costa's hummingbird, olive-sided flycatcher, California thrasher, loggerhead shrike, southern California rufous-crowned sparrow, lark sparrow, Bell's sage sparrow**, and **black-chinned sparrow**. Several other sensitive avian species not observed on-site but which have at least a low likelihood of occurrence include the **white-tailed kite, sharp-shinned hawk, Swainson's hawk, golden eagle, prairie falcon, Pacific slope flycatcher, California horned lark**, and **Lawrence's goldfinch**. As stated above, these species are not protected by Federal or State listings as threatened or endangered, and loss of individuals would not threaten the regional populations; therefore, removal of their habitat represents an adverse but less than significant impact to regional populations of these species.

Three sensitive mammal species were observed on-site: the **Los Angeles pocket mouse, northwestern San Diego pocket mouse**, and **San Diego desert woodrat**. Several others potentially occurring on-site but not observed include the **pallid bat, California mastiff bat**, and **San Diego black-tailed jackrabbit**. As stated above, these species are not protected by Federal or State listings as threatened or endangered, and loss of individuals would not threaten the regional populations; therefore, removal of their habitat represents an adverse but less than significant impact to regional populations of these species.

4.6 IMPACTS FOUND TO BE POTENTIALLY SIGNIFICANT

The following is a discussion of impacts to biological resources which meet the significance thresholds defined above.

4.6.1 Potentially Significant Impact to Nesting Birds

Implementation of the proposed project would result in the removal of trees and ornamental landscape vegetation within the center of the project site and near the abandoned residence. Several mature eucalyptus, sycamore, walnut, and pepper trees are located throughout the project site. Although most of the trees on-site are exotic and not regulated by resource agencies, they could harbor raptor nests. As such, impacts may occur to nesting birds as a result of project implementation. This is considered a potentially significant impact as disturbing or destroying active nests is a violation of the Migratory Bird Treaty Act. In addition, nests and eggs are protected under Fish and Game Code Section 3503. The removal of mature trees has the potential to result in a significant impact during the breeding season.

4.6.2 Potentially Significant Impacts to ACOE and CDFG Jurisdictional Waters

Project implementation would impact approximately 1.13 acres of ACOE and CDFG jurisdictional areas within Drainages 1, 2, and 3 on the property and potentially impact 0.98 acre of ACOE and CDFG jurisdictional areas within off-site reaches of these drainages. As outlined in the Standard Conditions section of the document, the ACOE and CDFG have a "no net loss" policy requiring that all jurisdictional areas impacted be created, enhanced, or restored elsewhere. The loss of jurisdictional drainages on-site exceeds significance threshold number 5 and is considered potentially significant.

4.6.3 Potentially Significant Impacts to Jurisdictional Trees

Project implementation would result in the loss of 213 eucalyptus, pepper, walnut, and sycamore trees, including eucalyptus windrows. The removal of the trees would exceed significance threshold number 3 by conflicting with the City of Rancho Cucamonga's Tree Preservation Guidelines. Therefore, impacts to trees are considered potentially significant. In accordance with the Standard Conditions outlined in this document, impacts to trees will require a tree removal permit from the City.

4.6.4 Potentially Significant Impacts to Sensitive Biological Resources

4.6.4.1 Sensitive Plant Communities

Project implementation would remove three plant communities considered sensitive by the CDFG including 44.1 acres of California buckwheat-white sage scrub, 82.5 acres of white sage scrub, and 11.2 acres of scalebroom scrub. Due to the sensitivity of these communities, impacts would exceed significance threshold number 4 and are considered potentially significant.

4.6.4.2 Sensitive Plant Species

Several thousand Plummer's mariposa lily individuals were observed on-site in 2001 and approximately 1,200 were estimated to be blooming in 2002. Due to year-to-year population fluctuations, it is difficult to determine precisely how many individuals would be impacted; however, it can be stated that approximately 126.6 acres of habitat (44.1 acres of California buckwheat-white sage scrub and 82.5 acres of white sage scrub) potentially supporting this species would be impacted. Although not listed as threatened or endangered, this species is considered rare throughout its range. Project implementation would be removing a substantial population of this species exceeding threshold number 2 and is considered potentially significant.

4.6.4.3 Sensitive Wildlife Species

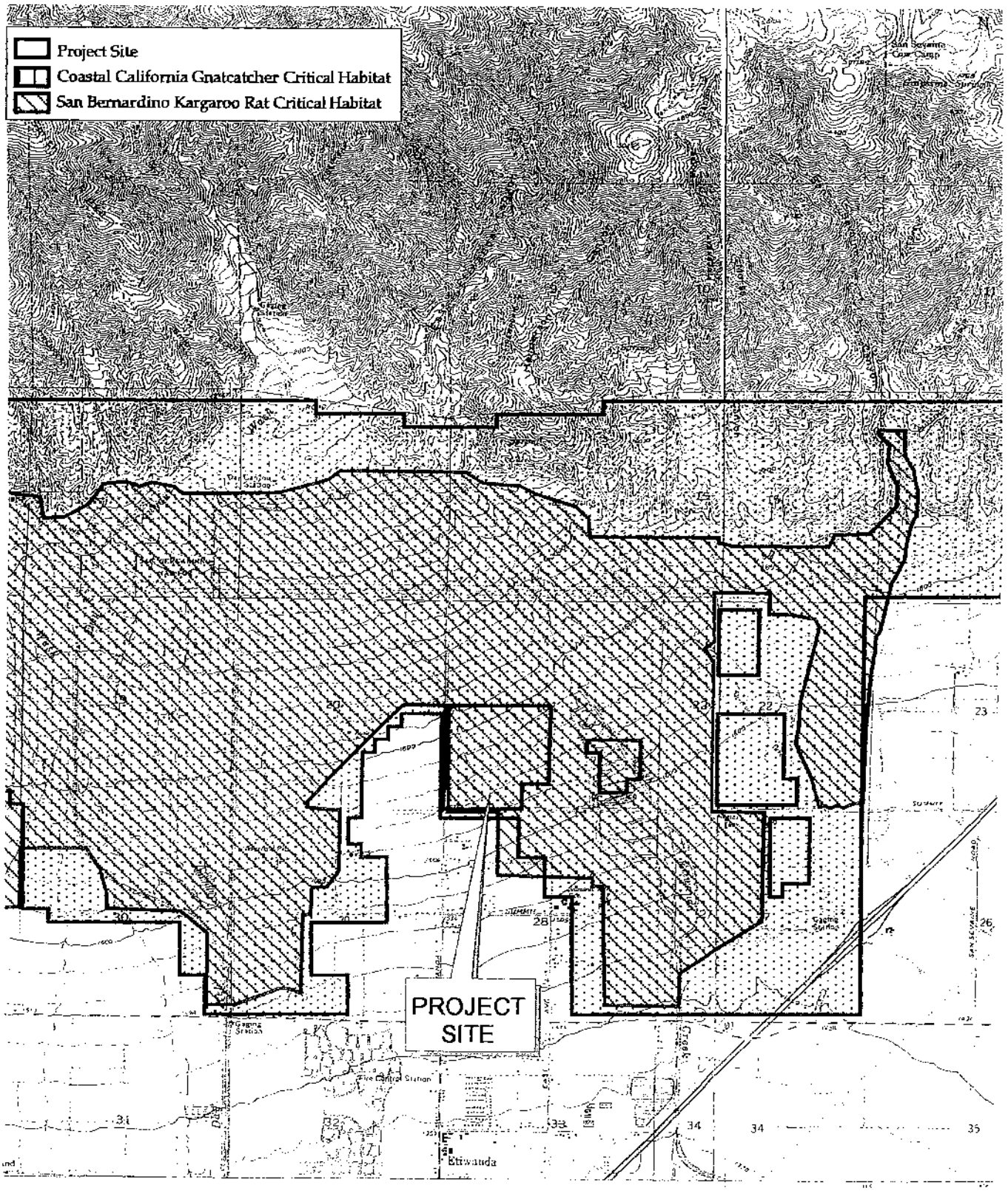
Coastal California Gnatcatcher

The USFWS has designed critical habitat for the gnatcatcher including over 513,000 acres in five southern California counties (U.S. Department of the Interior, October 24, 2000). The project site is within the area designated as critical habitat (Unit 11: San Bernardino Valley MSHCP) as shown in Figure 4-2, *Critical Habitat Designations*, on page 50.

The USFWS has adopted a "landscape approach" to its designation of critical habitat for the gnatcatcher which is not intended to highlight individual parcels of private property (65 Federal Register 63682). Furthermore, the USFWS recognizes that "not all parcels of land within the areas designated will contain the habitat components essential to gnatcatcher conservation" (65 Federal Register 63692); and, the USFWS has noted that some gnatcatcher habitat loss within designated critical habitat is not likely to adversely modify or destroy critical habitat or appreciably reduce its value for the survival and recovery of the species (65 Federal Register 63697).

"Critical hahitat" is a designation used by the USFWS in its administration of the FESA and applies only to the actions of Federal agencies. Specifically, Federal agencies, if conducting activities on lands designated as critical habitat, are to consult with the USFWS to ensure that their Federal actions do not "adversely modify" critical habitat. According to the USFWS, a critical habitat designation is not to have any impact on private property included within the designation, absent Federal activity on that property.

As the proposed project anticipates requiring a Federal CWA Section 404 permit from the ACOE, the ACOE can be expected to conduct any necessary Section 7 consultation with the USFWS under the FESA concerning the project site's location within an area designated as



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Source: USGS Cucamonga Peak and Devore Quadrangles, CA;
USFW Critical CAGN Habitat (10/00) and USFW Potential SBKR Critical Habitat (12/00).

Figure 4-2
Etiwanda Subdivision
Tentative Tract 16072
Critical Habitat

gnatcatcher critical habitat when the ACOE processes the Section 404 permit. The ACOE will be required to ensure that its actions would not adversely modify any gnatcatcher "critical habitat" designated on the project site should any such habitat ultimately be determined to exist by the USFWS.

Focused surveys in 1998, 2001, and 2002 did not detect the presence of the gnatcatcher on-site. However, the critical habitat designation for Unit 11 identifies the critical habitat unit as providing a critical linkage between western Riverside County and eastern Los Angeles County. Although the Etiwanda Subdivision property is within this linkage area, and could potentially support dispersing gnatcatchers at some point, proposed development to the north of the property will isolate the Etiwanda property from open space areas to the north. This will compromise the continuation of the Etiwanda property to possibly function as a meaningful part of this linkage. In summary, although the proposed project will occur within designated critical habitat, it is not expected to provide the function necessary to contribute to the long-term survival of the gnatcatcher due to the future presence of surrounding development.

San Bernardino Kangaroo Rat

The project site also lies within designated critical habitat for the SBKR (USFWS April 23, 2002). The total critical habitat area for the SBKR covers approximately 33,000 acres in San Bernardino and Riverside Counties. The Etiwanda Subdivision property is within Critical Habitat Unit 4: Etiwanda Alluvial Fan and Wash, which encompasses approximately 4,800 acres in western San Bernardino County. This critical habitat unit contains the westernmost known population of SBKR and supports upland refugia from catastrophic flooding. Refugia is defined as occupied or potentially occupiable habitat which could support a founder population that could survive and reproduce after a flood event.

Focused trapping surveys in 2001 and 2002 did uot detect the presence of SBKR on-site, in fact suitable habitat on-site is limited to a few areas of less-dense vegetative cover. Due to the absence of a founder population, the habitat on-site is uot considered refugia or a critical habitat constituent element and impacts to the property are not expected to compromise the long-term survival of the SBKR or adversely modify critical habitat.

5.0 MITIGATION MEASURES

5.1 APPROACH

Mitigation measures are recommended for those impacts determined to be significant to sensitive natural resources. Mitigation measures for impacts considered to be "significant" were developed in an effort to reduce such impacts to a level of "insignificance," while at the same time allowing the project proponent an opportunity to realize development goals. As stated in CEQA Section 15370:

"Mitigation" includes:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action.

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

(c) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.

The following mitigation measures address potential significant impacts on the Lake Mathews Golf and Country Club project.

5.2 MEASURE TO MITIGATE POTENTIALLY SIGNIFICANT IMPACTS

5.2.1 Measures to Mitigate Potentially Significant Impacts to Nesting Birds

Mitigation for impacts to nesting birds may be accomplished in two ways. First, efforts will be made to schedule all vegetation removal activities outside the nesting season. This would ensure that no active nests would be disturbed and that removal could proceed rapidly. Secondly, during the nesting season, all suitable habitat will be thoroughly surveyed for the presence of nesting birds by a qualified biologist prior to removal. If any active nests are detected, the area will be flagged, along with a 100-foot buffer (300 feet for raptors), and will be avoided until the nesting cycle is complete or it is determined that the nest has failed. In addition, a biologist will be present on the site to monitor the vegetation removal to ensure that nests not detected during the initial survey are not disturbed.

5.2.2 Measures to Mitigate Potentially Significant Impacts to Jurisdictional Waters

The proposed impacts will be subject to the regulations set forth by the agencies as outlined in the Standard Conditions section of this document. The ACOE and CDFG will require the project proponent to explore alternatives to avoid or reduce impacts and will also require mitigation for all unavoidable impacts. The ACOE has a "no net loss" policy which requires that any unavoidable impacts to stream values and functions be replaced. In addition, the RWQCB will add restrictions to control runoff from the site, require on the site treatment of runoff to improve water quality, and impose Best Management Practices on the construction. All of the features of the project that will address water quality issues will be explained within the Water Quality Management Plan and Stormwater Pollution Prevention Plan.

The following measures, if implemented, would reduce impacts to ACOE and CDFG jurisdictional areas:

- On- or off-site creation, restoratiou, or enhancement of ACOE jurisdictional waters of the U.S. and/or wetlands at a ratio no less than 2:1,
- Ou- or off-site creation, restoration, or enhancement of CDFG jurisdictional waters of the State at a ratio no less than 2:1,
- Incorporation of design features into the proposed project that will avoid or minimize impacts to drainages ou-site.

5.2.3 Measures to Mitigate Potentially Significant Impacts to Jurisdictional Trees

The City of Rancho Cucamonga requires that all trees meeting the City's "heritage tree" criteria and that are to be removed shall be replaced with spotted gum (*Eucalyptus maculata*) or a City approved tree species along the established City grid pattern or the boundaries of the project property. The replacement trees shall be fifteen-gallon size, mimimum spaced at eight feet on center, and properly staked, unless otherwise specified by a specific plan or community plan. All removals shall be mitigated for at a 1:1 ratio.

PCR recommends that the 213 "heritage trees" be removed and replaced with native trees. We recommend replacing the 200 non-native/ornamental trees and 13 native trees with coast live oak, interior live oak, southern California black walnut and/or western sycamorc at a 1:1 ratio. We believe sufficient mitigation can be successfully completed on-site through the plantiug of oaks and sycamores within the greenbelt of the residential development (see Appendix C, *Tree Survey Report*). According to the conceptual landscape plan an approximate 200 oaks and sycamores are planned withiu the greenbelt area of the development (Rainville Bye July 12, 2002).

The incorporation of either mitigation strategy would reduce impacts to trees below a level of significance by complying with the City's Tree Preservation Guidelines.

5.2.4 Measures to Mitigate Potentially Significant Impacts to Sensitive Biological Resources

5.2.4.1 Sensitive Plant Communities

Mitigation for impacts to 137.8 acres of scrub communities will be accomplished by the off-site acquisition and preservation of similar habitat at a ratio of at least 1:1. None of the scrub communities on-site support the gnatcatcher, SBKR, or other listed species. Therefore, impacts to 44.1 acres of California buckwheat-white sage scrub and 82.5 acres of white sage scrub will be mitigated at a 1:1 ratio. The scalebroom scrub on-site is floristically the most similar to alluvial fan sage scrub (which is the focus of many conservation efforts). Therefore, mitigation for 11.2 acres of scalebroom scrub will be at a ratio of at least 2:1. Under this strategy, 149.0 acres of habitat of similar floristics and value will be preserved and will mitigate this impact to a level less than significant.

5.2.4.2 Sensitive Plant Species

Prior to issuance of a grading permit, focused surveys for Plummer's mariposa lily and shall be conducted by a qualified biologist. Surveys shall be conducted within the flowering period (May to July) in all portions of the project site which provide potentially suitable habitat. If present, the number and location(s) will be documented and the resource agencies will be notified for consultation and possible collection and relocation.

5.2.4.3 Sensitive Wildlife Species

As stated in Section 4.5.4.3, impacts within the gnatcatcher and SBKR critical habitat units are not expected to compromise the long-term survival of the species; therefore, no mitigation for impacts to critical habitat are proposed. However, due to inherent fact that impacts would occur within designated critical habitat the ACOE will consult with the USFWS under Section 7 of the FESA as outlined in the Standard Conditions section of this document.

6.0 IMPACTS AFTER MITIGATION

6.1 UNAVOIDABLE SIGNIFICANT ADVERSE IMPACTS

Proposed project, inclusive of all mitigation measures provided in Section 5.0 will reduce all potentially significant impacts to nesting birds, ACOE and CDFG jurisdictional areas, jurisdictional trees, sensitive plant communities, sensitive plants, and sensitive wildlife to a less than significant impact.

6.2 CUMULATIVE IMPACTS

Cumulative impacts are defined as the direct and indirect effects of a proposed project which, when considered alone, would not be deemed a substantial impact, but when considered in addition to the impacts of related projects in the area, would be considered significant. "Related projects" refers to past, present, and reasonably foreseeable probable future projects which would have similar impacts to the proposed project. CEQA deems a cumulative impact analysis to be adequate if a list of "related projects" is included in the EIR or the proposed project is consistent with an adopted general, specific, master, or comparable programmatic plan [Section 15130(b)(1)(B)]. CEQA also states that no further cumulative impact analysis is necessary for impacts of a proposed project consistent with an adopted general, specific, master, or comparable programmatic plan [Section 15130(d)].

Cumulative impacts for biological resources were analyzed in the context of the region defined by the foothills of the San Gabriel Mountains from the San Gabriel River east to the Cajon Wash/Lytle Creek area. The majority of the land south of the property is already densely urbanized. Several projects, including Lytle Creek North east of the property and several smaller Tentative Tracts both north and northeast of the property are considered in this cumulative impact analysis (TT14606 through 14612). Together with these projects, the Etiwanda Subdivision project will contribute to the loss of approximately 1,000 acres scrub habitat which supports raptor foraging, substantial numbers of individuals of Plummer's mariposa lily, and sensitive reptile, bird, and small mammal species. Due to the regionally restricted distribution of scrub communities and; therefore, the sensitive species within them, impacts to scrub are considered cumulatively significant.

7.0 REFERENCES

American Ornithologists' Union. 1983. *The American Ornithologists' Union Checklist of North American Birds*. 6th Edition. Washington, D.C.: American Ornithologists' Union.

American Ornithologists' Union. 1989. *Thirty-seventh Supplement to the American Ornithologists' Union Checklist of North American Birds*. Auk 106: 532-538.

American Ornithologists' Union. 1993 *Thirty-ninth Supplement to the American Ornithologists' Union Checklist of North American Birds*. Auk 110 (3): 675-682.

Atwood, J. L. 1992. *A Maximum Estimate of the California Gnatcatcher's Population Size in the United States*. *Western Birds* 23(1): 1-9.

Atwood, J. L. 1980. *United States Distribution of the California Black-tailed Gnatcatcher*. *Western Birds* 11(2): 65-78.

Atwood, J. L., and J. S. Bolsinger. 1992 *Elevational Distribution of California Gnatcatchers in the United States*. *Journal of Field Ornithology* 63(2): 159-168.

Bennett, A. F. 1990. *Habitat Corridors and the Conservation of Small Mammals in a Fragmented Forest Environment*. *Landscape Ecology* 4: 109-122.

Cadre Environmental. October 2002. *San Bernardino Kangaroo Rat (Dipodomys merriami parvus) Trapping Program-Etiwanda Tentative Tract 16072, San Bernardino County*. Prepared for PCR Services Corporation.

California Department of Fish and Game, Natural Diversity Database. 2002. *Special Vascular Plants, Bryophytes, and Lichens List*. Biannual publication, Mimeo. July. 141 pp.

California Department of Fish and Game. Wildlife and Habitat Data Analysis Branch. California Natural Diversity Database. 2002. *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database*.

CNPS. 2001. *Inventory of Rare and Endangered Plants of California* (sixth edition). Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. California Native Plant Society. Sacramento, California. x +388pp.

Dale, N. 1986. *Flowering Plants of the Santa Monica Mountains, Coastal and Chaparral Regions of Southern California*. Capra Press.

Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station. 1987. *Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1.* Vicksburg, Mississippi.

Fahrig, L. and G. Merriam. 1987. *Habitat Patch Connectivity and Population Survival. Ecology* 66: 1762-1768.

Hanes, Ted L., Richard D. Friesen and Kathy Keane. 1989. *Alluvial Scrub Vegetation in Coastal Southern California.* USDA Forest Service General Technical Report PSW-110. Washington, D.C.

Harris, L. D. and P. B. Gallagher. 1989. *New Initiatives for Wildlife Conservation: The Need for Movement Corridors. Preserving Communities and Corridors*. G. Mackintosh, ed., Washington D.C.: Defenders of Wildlife. 11-34.

Hickman, J. C. 1993. *The Jepson Manual: Higher Plants of California.* Berkeley: University of California Press.

Holland, R. F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California.* Sacramento, California: State of California Resources Agency, Department of Fish and Game, Non-Game Heritage Program.

Jameson, Jr., E. W., and H. J. Peeters. 1988. *California Mammals.* Berkeley: University of California Press.

MacArthur, R. M. and E. O. Wilson. 1967. *The Theory of Island Biogeography.* Princeton, New Jersey: Princeton University Press.

McCauley, M. 1996. *Wildflowers of the Santa Monica Mountains.* Canoga Park: Canyon Publishing.

Munz, P. A. 1974. *A Flora of Southern California.* Berkeley: University of California Press.

Natural Resources Assessment, Inc. September 20, 2001. *Presence/Absence Trapping Studies for the San Bernardino Kangaroo Rat Etiwanda Fan 130 Acre Development Project, Rancho Cucamonga, California.* Prepared for PCR Services Corporation.

Noss, R. F. 1983. *A Regional Landscape Approach to Maintain Diversity.* BioScience 33: 700-706.

PCR Services Corporation. March 2001. *Initial Study-Etiwanda Subdivision, San Bernardino County, California.* Prepared for Hill Country S.A., Ltd.

PCR Services Corporation. October 5, 2000. *Input to Lytle Creek North EIR Biological Assessment.* Letter report.

Rainville Bye. July 12, 2002. *Conceptual Hardscape and Landscape Plan-Etiwanda Tentative Tract 16072.* Prepared by Gary Bye, Landscape Architect. Prepared for Richland Pinehurst, Inc.

Reed, P. B., Jr. 1988. Nation*al List of Plant Species that Occur in Wetlands: 1988 National Summary. Biological Report.* 88(24). Washington, D.C.: U.S. Fish and Wildlife Service.

Safford, J. M. and Quinn, R. 1998. *Conservation Plan for the Etiwanda-Day Canyon Drainage System Supporting the Rare Natural Community of Alluvial Fan Sage Scrub.*

Sawyer, John O. and T. Keeler-Wolf. 1995. *A Manual of California Vegetation.* Sacramento: California Native Plant Society.

Simberloff, D. and J. Cox. 1987. *Consequences and Costs of Conservation Corridors.* Conservation Biology 1: 63-71.

Smith, Robin Lee. July 1980. *Alluvial Scrub Vegetation of the San Gabriel River Floodplain, California.* Madroño. 27(3): 126-138.

Soulé, M.E. 1987. *Viable Populations for Conservation.* Sunderland, Massachusetts: Sinaur Associates Inc.

State of California. The Resources Agency. Department of Fish and Game (CDFG). 1988. *California's Wildlife: Volume I: Amphibians and Reptiles.* Sacramento.

State of California. The Resources Agency. Department of Fish and Game. 1990. *California's Wildlife: Volume II: Birds.* Sacramento.

State of California. The Resources Agency. Department of Fish and Game. 1990. *California's Wildlife: Volume III: Mammals.* Sacramento.

State of California. The Resources Agency. Department of Fish and Game. Natural Heritage Division. Natural Diversity Data Base. CNDDB. 2002. *RareFind: Database Record Search for Information on Threatened, Endangered, Rare, or Otherwise Sensitive Species and Communities.* Sacramento.

State of California. The Resources Agency. Department of Fish and Game. Habitat Conservation Division. Wildlife & Habitat Data Analysis Branch. California Natural Diversity Database. October 2002. *State and Federally Listed Endangered and Threatened Animals of California.* 10 pp.

State of California. The Resources Agency. Department of Fish and Game. Habitat Conservation Division. Wildlife & Habitat Data Analysis Branch. California Natural Diversity Database. October 2002. *State and Federally Listed Endangered, Threatened, and Rare Plants of California.* 16 pp.

State of California. The Resources Agency. Department of Fish and Game. Wildlife and Habitat Data Analysis Branch. California Natural Diversity Database. July 2002. *Special Animals List.* Sacramento. 42 pp.

Stebbins, R. C. 1985. *A Field Guide to Western Reptiles and Amphibians.* Boston, Massachusetts: Houghton-Mifflin.

United States Department of Agriculture Natural Resources Conservation Service. *Report and General Soil Map, San Bernardino County, California.*

United States Department of the Interior, Fish and Wildlife Service (USFWS). Revised July 28, 1997. *Coastal California Gnatcatcher Presence/Absence Survey Guidelines.* Unpublished paper.

United States Department of the Interior, Fish and Wildlife Service. April 23, 2002. *Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the San Bernardino Kangaroo Rat; Final Rule* 50 CFR Part 17. Federal Register Vol. 67, No. 78: 19812-19845.

United States Department of the Interior, Fish and Wildlife Service. October 24, 2000. *Endangered and Threatened Wildlife and Plants; Final Determination of Critical Habitat for the Coastal California Gnatcatcher; Final Rule.* 50 CFR Part 17. Federal Register Vol. 65, No 206: 63680-63743.

University of California, Berkeley, Division of Agriculture and Natural Resources. *The Grower's Weed Identification Handbook. Publication 4030.* Berkeley, California: Communication Services Publications, University of California.

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APPENDIX A: RESUMES

PCR Biography

Steven G. Nelson, PRINCIPAL, DIRECTOR OF BIOLOGICAL SERVICES

Professional History

- M.B.A., California State Polytechnic University, Pomona, California, 1993
- M.A., Biology, University of California, Riverside, California, 1975
- B.S., Biology, University of California, Riverside, California, 1973
- Director of Resources Management, Michael Brandman Associates, Irvine, California, 1994 - 1996
- Vice President, CB Commercial Real Estate Group, City of Industry, California, 1983 - 1994
- Principal, EDAW, Inc., Irvine, California, 1979 - 1983
- Project Manager, PBR, Newport Beach, California, 1976 - 1979
- Principal, England & Nelson, Environmental Consultants, Riverside, California, 1974 - 1976

Expertise

Steve Nelson is a biologist with expertise in the areas of wildlife biology, botany, and freshwater ecology. He has been a professional consultant for more than 28 years. During that time, he has been responsible for a wide variety of biological studies, ranging from technical wildlife and vegetation assessments to regionwide conservation planning. His broad education and professional experience in biology and business administration have given him a unique insight into resource identification, evaluation, planning, and management. As a result of his problem-solving orientation and approach to assignments, Steve is commonly sought out by public agencies, landowners/developers, attorneys, engineers and planners alike.

Experience

Regional Conservation Planning: Steve was one of the authors and principal investigators of the 1976 and 2000 Los Angeles County Significant Ecological Area Study for the County's General Plan Update and has since been involved in several other regional resource planning efforts throughout southern California.

Biological Assessments: Steve was the Senior Biological Manager for technical studies within the 10,000-acre study area for the Foothill Transportation Corridor-South Natural Environment Study in southern Orange County, which included the oversight of 29 biologists investigating 84 sensitive species and jurisdictional wetlands. He has also been responsible for the completion of over 700 biological assessments throughout the state of California.

Threatened And Endangered Species: Steve has served as the Senior Biological Manager for numerous informal and formal consultations with the U.S. Fish and Wildlife Service on 27 listed species as part of Endangered Species Act Sections 7 and 10(a) compliance. In the course of these consultations he has become very familiar with the Habitat Conservation Plan and Natural Community Conservation Program processes, including the application of Special Rule 4(d).

Regulatory Compliance/Habitat Restoration: Steve has been the director for U.S. Clean Water Act Section 404 and California Fish and Game Code Sections 1600-3 wetlands regulatory compliance for multiple projects throughout Southern California, and the director for oak woodland, riparian, vernal pool and coastal sage scrub restoration plans.

Construction/Mitigation Monitoring: Steve has overseen and participated in numerous construction and mitigation monitoring programs for projects ranging from community parks to residential development and road construction to utility installation.

PCR Biography

Kristin Szabo, SENIOR BIOLOGIST

Professional History

- B.S., Ecology/Environmental Biology, California State University, Long Beach, California, 1997
- Biologist, PCR, Irvine, California, 1998

Expertise

Kristin Szabo is an environmental biologist with expertise in the areas ornithology, botany, and ecology. She has extensive knowledge in the identification and classification of the flora, fauna, and habitat communities of southern California, including sensitive species. Kristin has experience with regulatory compliance and permitting procedures, including field delineations, under Sections 401 and 404 of the Clean Water Act, Section 1603 of the State Fish and Game Code, and Sections 7 and 10 of the Endangered Species Act.

Experience

Biological Resource Assessment: Kristin has performed numerous biological resource surveys and vegetation classification for projects within Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties and has applied her expertise in a wide range of upland, riparian, and wetland habitats. Kristin is the project lead and project manager for several complex, multi-disciplinary projects in southern California and has completed several technical Biological Resource Assessments in accordance with the requirements of the California Environmental Quality Act (CEQA).

Habitat Evaluation and Vegetation Mapping: Kristin has applied various vegetation classification systems and standard field vegetation sampling protocols pursuant to identification of habitat type and percentage of vegetative cover. She has applied protocols within a range of southern California plant communities with emphasis on coastal sage scrub, native grasslands, and riparian forests. She has performed several habitat evaluations to determine the potential for sensitive species occupation.

Threatened and Endangered Species: Kristin is permitted through the U.S. Fish and Wildlife Service to perform focused protocol surveys for the Federally-threatened coastal California gnatcatcher. She has participated in habitat assessments and focused surveys for the Federally-endangered quino checkerspot butterfly and Pacific pocket mouse and the Federally- and State-endangered southwestern willow flycatcher, and has conducted focused surveys for the Federally- and State-endangered least Bell's vireo.

Wildlife Movement Corridor Analysis: Kristin has conducted wildlife movement analyses, focusing on medium to large mammals, utilizing aerial photography and topographic map review; automated, infrared, photographic trail monitors; and, wildlife track analysis to determine the presence of wildlife movement within the area, potential project related impacts, and mitigation measures.

Rare Plant Surveys: Kristin has conducted several rare plant surveys within Orange, Riverside, and San Bernardino Counties and has participated in the preparation of floral inventories of sites within the many southern California counties.

Regulatory Experience: Kristin has performed several wetland delineations and processed permits under Sections 401 and 404 of the Clean Water Act and Section 1603 of the California Fish and Game Code. Kristin completed Pre-Construction Notifications (PCN) and Biological Assessments for permits with the U.S. Army Corps of Engineers.

Client Contact: Kristin has worked closely with clients throughout project implementation including coordination of project plans, contract administration, and correspondence.

Permits: USFWS coastal California gnatcatcher permit number TE016487-1

PCR Biography

Marc Blain, SENIOR WILDLIFE BIOLOGIST

Professional History

- M.S., Applied Ecology and Conservation Biology, Frostburg State University, Frostburg, Maryland, 1997
- B.S., Environmental Biology, California State University, Northridge, California, 1994
- Herbarium Manager/Assistant Curator, Brooklyn Botanic Garden, Brooklyn, New York, 1996 - 1997
- Biological Technician, Southern California Edison, San Clemente, California, 1993 - 1994
- Laboratory Instructor/Avian Curator, Frostburg State University, Frostburg, Maryland, 1994 - 1996

Expertise

Marc Blain is a biologist with training in a variety of areas in the field. His expertise lies in the biology and ecology of Southern California wildlife and includes the ability to identify and classify the plants, animals, and plant communities of the region. More specific areas of expertise include avian ecology, wildlife movement, and conservation biology. Marc is also well versed in the requirements for regulatory compliance including the ESA, CESA, CEQA, NCCP, CWA, MBTA, and other biological statutes of regional counties and cities.

Experience

Regional Resource Planning: As part of an update to the Los Angeles County General Plan, Marc managed a regional study of the biological resources within the County. The 14 volume conclusion of the study proposed Significant Ecological Areas (SEA) status for 443,000 acres of un-incorporated County lands and recommended a variety of management practices designed to sustain the ecological functions of each SEA. In addition, Mr. Blain has performed numerous regional analysis of wildlife movement in the preparation of CEQA documents.

Biological Assessments: Marc has conducted biological resource assessments for projects located throughout Southern California as well as Kern and San Luis Obispo Counties of central California. He has applied his expertise in a wide range of upland and wetland habitat in the Santa Ana Mountains, San Gabriel Mountains, San Bernardino Mountains, Santa Monica Mountains, Santa Susana Mountains, Simi Hills, Chino/Puente Hills, and inland valleys. Representative projects Marc has either managed or contributed to include Coal Canyon, Porter Ranch, AERA Puente Hills, and Audie Murphy Ranch.

Sensitive Species Surveys: Marc has conducted or assisted in focused surveys for a variety of listed faunal species including: the California gnatcatcher, California red-legged frog, quino checkerspot butterfly, Arroyo toad, San Bernardino kangaroo rat, San Joaquin kit fox, southwestern willow flycatcher, and least Bell's vireo. Mr. Blain has also conducted focused surveys for many listed plant species and numerous un-listed rare plants and animals. He currently holds a federal permit to conduct focused surveys for both the California gnatcatcher and the southwestern willow flycatcher.

Vegetation/Habitat Evaluations: Marc has identified and delineated the plant communities of project sites ranging from inland deserts to pine forests as well as the coastal strand. In doing so, he has applied a variety of vegetative classification systems and standard sampling protocols to determine species composition. The preciseness of Marc's mapping abilities have been essential to many large scale projects including the 576,000 acre mapping effort of the L.A. County SEA study.

Research: Marc was awarded a research grant from the Department of Fish and Game in Maryland and conducted a study to determine the taxonomic status of a rare lily of the Allegheny Mountains in western Maryland. The results of the study have been approved for publication in *Rhodora*.

PCR Biography

Jenni J. K. Snibbe, BIOLOGIST/ECOLOGIST

Professional History

- B.S., Ecology and Systematic Biology, California Polytechnic State University, San Luis Obispo, California, 1995
- Biological Field Technician, USDA Forest Service, Pacific Southwest Research Station, Riverside, California, 1995 - 1999
- Field Botanist, USDA Forest Service, Sierra National Forest, California, 1995
- Research Technician I, U.S. Army Land Condition - Trend Analysis, Fort Hunter Liggett, California, 1995

Expertise

Jenni Snibbe has over 9 years of experience in field ecology and botany, ornithology terrestrial biology and laboratory techniques and research. Her knowledge encompasses a wide range of experience including knowledge of the flora and fauna of California, including sensitive species, and has experience in plant ecology, soil science, biochemistry, and conservation biology. She has conducted long-term research projects including data analysis and documentation.

Experience

Habitat Assessment: Jenni has applied standardized vegetation sampling techniques and classification such as identification of community types, individual species, ecotones, biological diversity, and percent cover.

Habitat Restoration: Jenni has worked on several restoration projects in southern California with an emphasis on coastal sage scrub habitats. She participated in reference site selection and data collection, development of conceptual mitigation monitoring plan documents, and site preparation.

Biological Evaluation/Assessment: Based upon her field studies, Jenni assisted in the completion of biological evaluation document for the NEPA process. She also assisted in the completion of technical biological assessment reports in accordance with the California Environmental Quality Act (CEQA).

Field Surveys: Jenni has participated in numerous ecological studies throughout California and Arizona habitats. Her work included inventory and monitoring of project sites for species composition, including rare and endangered native plant species, and collected and identified plant specimens for a herbarium. Jenni is also permitted through the U.S. Fish and Wildlife Service (USFWS) to perform focused protocol surveys for the coastal California gnatcatcher.

Research: Jenni has performed technical assignments as part of long-term research projects. Her work encompassed identifying and selecting tree species for specific physiological, morphological, and microsite attributes.

Coastal Sage Scrub Genetics Research: Jenni has provided biological support work using standardized laboratory and field ecology practices. Her work encompassed research on the long-term success of restored populations of coastal sage scrub species throughout California. She co-authored a poster presentation on Correlation Analysis of Floral Morphological, Environmental, Genetic, and Geographic Distances for twelve populations of *Lotus scroparius* at the Annual Meeting of The Society for The Study of Evolution, 1998.

Permits: USFWS California gnatcatcher permit number TE044520-0

PCR Biography

Stephanie A. Seapin, ASSOCIATE BIOLOGIST/CERTIFIED ARBORIST

Professional History

- B.A., Geography, emphasis in environmental analysis, California State University, Fullerton, California, 1998
- Naturalist/Intern, Ocean Institute, Dana Point, California, 1997 - 1999
- Project Manager Cooperative, U.S. Army Corps of Engineers, Regulatory Branch, San Diego Field Office, 1999
- Environmental Specialist Aide, California Department of Fish and Game, San Diego Office, 2000 - 2001

Expertise

Stephanie is an environmental geographer with two years of experience in regulatory work and environmental impact assessments. Her work has included 1601/1603 Streambed Agreement process with the California Department of Fish and Game, as well section 404 of the Clean Water Act. She is familiar with the flora and fauna of southern California, including identification of wildlife and plant communities in this region.

Experience

U.S. Army Corps of Engineers: Stephanie has experience in evaluating Nationwide Permits pursuant to Section 404 of the Clean Water Act and has assisted in conducting jurisdictional wetland delineations.

California Department of Fish and Game: Stephanie's experience with the Department includes delineating Fish and Game jurisdictional areas and assessing impacts to these jurisdictional areas. Additionally, she has conducted mitigation compliance site visits.

Human Impact Surveys: Stephanie has conducted human impact surveys at the Dana Point Marine Life Refuge (DPMLR) for the Ocean Institute in Dana Point, California. She conducted surveys to assess the multiple activities occurring during low tide and how these activities affected the marine life in the refuge over time. Her surveying was a part of an on-going 8-year study.

Arboriculture: Stephanie has successfully completed tree surveys, risk assessments, and mitigation plans pursuant to local ordinances throughout Southern California. This work has entailed the application of various criteria by which to evaluate the health and value of trees. Most of these assessments have focused on native tree species.

Agency Contact: Stephanie has an excellent working relationship with the regulatory agencies and has worked closely with clients throughout project implementation, including coordination of project plans and correspondence.

Since Stephanie has worked for both Corps and Fish and Game she has built up a working relationship with the two, sharing a common objective of compromise, between both applicant and regulatory agencies.

Certification: Certified Arborist, Certificate Number WE-5921A

PCR Biography

Ryan Roberts, BOTANIST

Professional History

- B.S., Environmental Biology emphasizing Botany, California State University, Humboldt, 1997
- Botanist, EDAW Inc., San Diego, California, 2001 – 2002
- Botanist, AMEC Earth and Environmental Inc., San Diego, California, 1999 – 2001
- Botanist, The Nature Conservancy, Yosemite National Park, California, 1998 – 1999
- Botanist, United States Geological Survey, The California Mojave Desert, California, 1997 – 1998
- Botanist, United States Forest Service, Quincy California, 1996 – 1997

Expertise

Ryan Roberts has over two years of experience as an environmental consultant and two years as a research vegetation ecologist and forest botanist. He has skills in vegetation mapping and classification, plant identification, rare plant surveys, botanical monitoring, botanical inventory, CEQA/NEPA compliance, HCP compliance, habitat assessment, plant taxonomy, quino checkerspot butterfly surveys, and restoration planning. Mr. Roberts is also competent in the identification, delineation and jurisdictional determination of riparian and wetland communities.

Experience

Ryan managed the planning, evaluation, botanical transect monitoring, and reporting of 15 restoration projects in San Diego County. Contributed to the design of a 117-acre restoration project including wetland, riparian, coastal sage, and native grassland habitat at the Marine Corps Base, Camp Pendleton. Ryan conducted and coordinated biological field surveys at various locations throughout San Diego and Riverside Counties. Survey work included vegetation mapping, wetland, delineations, vernal pool mapping, vernal pool monitoring, hydrologic mapping, wildlife habitat assessment, wildlife corridor assessment, quino checkerspot butterfly surveys and sensitive plants surveys. Ryan presented results and analysis of numerous surveys in bio-technical reports in accordance with sub-regional and sub-area habitat conservation plans.

Ryan directed field operations and mapped vegetation on the 248,160 acre Callegus Watershed in southern Ventura County. Delineated color aerial photography and labeled vegetation polygons using a modified CNPS vegetation classification. Assisted in compiling vegetation polygons into a GIS data layer.

Ryan planned and organized field expeditions throughout the Mojave Desert and Yosemite National Park. Placed vegetation more than 800 releve vegetation plots using CNPS releve methods and protocols. Data from these vegetation plots has helped refine the National Vegetation Classification System and the CNPS vegetation classification. Data has also been used in the creation of a GIS vegetation map of the Mojave Desert in California and Yosemite National Park. Prioritized work, trained personnel and coordinated with the National Park Service and University of California Reserve System.

Permits. Quino Checkerspot Butterfly. Wetland Delineation Certification.

PCR Biography

James C. Mazza, ASSOCIATE BIOLOGIST/RESTORATION SPECIALIST

Professional History

- B.S., Biological Sciences, specialization in ecology, University of California, Irvine, 1997
- Environmental Intern Specialist, Crystal Cove State Park, Laguna Beach, California, 1998 - 2000
- Biology Intern, USFWS, Kauai National Wildlife Refuge Complex, Kauai, Hawaii, 1999

Expertise

James Mazza is a biologist with four years of practical experience in ecological restoration and terrestrial biology. His knowledge encompasses avian monitoring, habitat conservation, and a wide range of techniques in ecological restoration of coastal sage scrub and wetland communities. James has worked extensively in the field and has managed and maintained a number of restoration sites. He has performed seabird reproductive success studies, monitoring and banding, waterbird population census, and avian habitat restoration. James also has experience in vegetation monitoring, surveys and mapping, as well as, non-native plant eradication and prescribed burns.

Experience

Habitat Restoration: James has worked on a number of restoration projects designed specifically for the creation and/or enhancement of avian habitat. The focus species for the majority of the projects he has worked on has been the California gnatcatcher (*Poliaptila californica*), which is found primarily in coastal sage scrub communities. James has been actively involved in site selection, site preparation, native vegetation planting, and continued site monitoring and maintenance. He has prepared mitigation and monitoring plans that focus on the restoration, enhancement and creation of riparian and upland habitat types. He also has experience in wetland restoration for endangered waterbird habitat on the island of Kauai.

Threatened and Endangered Species: James is permitted through the U.S. Fish and Wildlife Service (USFWS) to perform focused protocol surveys for the coastal California gnatcatcher. He has also conducted surveys for the least Bell's vireo.

Wildlife Field Surveys and Research: While employed by the California Department of Parks and Recreation at Crystal Cove SP, James performed presence/absence surveys for the Coastal cactus wren and the federally threatened California gnatcatcher in Orange County. As an intern for the USFWS, he was involved in the banding and monitoring of selected endangered and threatened waterbirds and seabirds at the Kilauea Point NWR, Kauai. James has also performed reproductive success studies on selected seabirds and has conducted nest searches of endangered Hawaiian geese (Nene).

Resource Management: James has worked with a number of riparian, upland, coastal terrace, and wetland habitats throughout Orange and northern San Diego counties. As an employee of the California Department of Parks and Recreation, he has been involved in a prescribed burn and trained on the use and application of herbicide treatments to be used in the eradication of non-native plants from preserved lands and the subsequent restoration of those sites.

Permits: USFWS CAGN permit number TE032728-0

PCR Biography

Susan H. Erickson, ASSISTANT WILDLIFE BIOLOGIST

Professional History

- Assistant Wildlife Biologist, PCR, Irvine, California, 2002
- Master of Environmental Science & Management (MESM), University of California, Santa Barbara, 2002
- B.S., Geography/Environmental Studies, University of California, Los Angles, 2000

Expertise

Susan Erickson has 2 years of experience in graduate courses involving field ecology and restoration, ornithology, terrestrial and marine biology and laboratory techniques and research. She has completed a year-long group master's thesis focusing on the California red-legged frog and the western spadefoot toad. Her thesis involved the preparation of a restoration plan for the potential relocation of these protected amphibian species.

Experience

Habitat Restoration: As part of her master's thesis, Susan participated in reference site selection and data collection, development of a monitoring protocol, and creation of success criteria for the California red-legged frog and the western-spadefoot toad.

Biological Evaluation/Assessment: Susan has taken a number of professional workshops on Environmental Impact Assessment, focused on the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). She also has experience working with the California Coastal Act and the Endangered Species Act.

Field Surveys: Susan has participated in numerous ecological studies throughout California habitats. Her work included standardized vegetation sampling techniques and classification such as identification of natural community types, individual species, ecotones, biological diversity, and vegetative cover.

Research: Susan has performed technical assignments as part of long-term research projects. Her work encompassed extensive literature reviews, interviews and communication with biologists, experts, and agency representatives.

Resource Management: Her work involved the creation of an adaptive management plan following research on species-driven restoration for the California red-legged frog and the western-spadefoot toad.

PCR Biography

Oscar T. Uranga, GIS SPECIALIST

Professional History

- B.A., Geography, California State University Fullerton, California, 2001
- GIS Technician, City of Santa Ana, Public Works Agency, 1999 - 2002

Expertise

Oscar Uranga specializes in the use of Geographic Information Systems (GIS) and Global Positioning System (GPS) for the mapping and analysis of natural resources. Oscar has over three years experience using GIS, Graphics and CAD software packages. He has extensive experience using GIS for various environmental and planning related applications. He also has programming experience using Visual Basic and Avenue and is currently working towards earning a Microsoft Certificate as a Solutions Developer.

Experience

Geographic Information Systems: Oscar is skilled and has worked in a variety of different GIS projects dealing with Planning, Land Use, Transportation Modeling, Pavement Management, Traffic Signal inventory, Tree Inventory, Maintenance Tracking, Rolling Black-out Police Dispatch, Library Use Distribution and Demographics, Abatement Application, Crime analysis, Capitol Improvement Plans, Historic Registry and Resources, Noticing, Wetland Delineation, Sensitive Plant Locations, Tree Mapping, Endangered-Sensitive Species Location, Parcel level data, owner information, property information, census data, aerial photography, 3D modeling, and Traffic Accident Location.

GIS computer skills include: ArcView 3.x, Arc GIS 8, Spatial Analyst, 3D Analyst, Trimble GPS, Pathfinder software, Visual Basic 6.0, Avenue, Seagate Crystal Reports, Geomedia Professional 3.0 – 4.0, Geomedia Network, MGE, Smart Sketch, Aerial Imagery, Microstation SE-J and AutoCAD 2000.

APPENDIX B: PLANT AND WILDLIFE SPECIES COMPENDIA

VASCULAR PLANTS	
Scientific Name	**Common Name**
Angiosperms (Dicotyledons)	
Amaranthaceae	**Amaranth Family**
* *Amaranthus albus*	tumbling pigweed
Anacardiaceae	**Sumac or Cashew Family**
* *Schinus molle*	Peruvian pepper tree
Apocynaceae	**Dogbane Family**
* *Nerium oleander*	oleander
Asclepiadaceae	**Milkweed Family**
Asclepias eriocarpa	Indian milkweed
Asteraceae	**Sunflower Family**
Ambrosia acanthicarpa	annual bur-sage
Ambrosia psilostachya	western ragweed (sandbur)
Artemisia californica	California sagebrush
Artemisia douglasiana	mugwort
Artemisia dracunculus	tarragon
Baccharis salicifolia	mule fat
* *Centaurea melitensis*	tocalote
* *Centaurea solstitialis*	yellow star-thistle
Corethrogyne filaginifolia var. *bernardina*	corthrogyne
Ericameria arborescens	golden-fleece
Ericameria pinifolia	pinebush
Erigeran foliosus	leafy daisy
Helianthus annuus	common sunflower
Heterotheca grandiflora	telegraph weed
* *Hypochaeris glabra*	smooth cat's-ear
Lepidospartum squamatum	scale-broom
Lessingia filaginifolia	California aster
Boraginaceae	**Borage Family**
Amsinckia menziesii	common fiddleneck
Cryptantha intermedia	common forget-me-not
Pectocarya linearis ssp. *ferocula*	slender pectocarya
Plagiobothrys sp.	popcorn flower
Plagiobothrys collinus	California popcorn flower

VASCULAR PLANTS	
Scientific Name	**Common Name**
Brassicaceae	**Mustard Family**
* *Brassica nigra*	black mustard
Descurainia pinnata	western tansy-mustard
Erysimum capitatum	western wallflower
* *Hirshfeldia incana*	short-podded mustard
Lepidium nitidum	shining peppergrass
* *Lobularia maritima*	sweet-alyssum
* *Sisymbrium altissimum*	tumble mustard
* *Sisymbrium irio*	London rocket
Cactaceae	**Cactus Family**
Opuntia prolifera	coast cholla
Caprifoliaceae	**Honeysuckle Family**
Sambucus mexicana	Mexican elderberry
Caryophyllaceae	**Pink Family**
Silene antirrhina	catchfly
* *Silene gallica*	common catchfly
Chenopodiaceae	**Goosefoot Family**
Chenopodium californicum	California goosefoot
Salsola tragus	Russian thistle
Convolvulaceae	**Morning-Glory Family**
Calystegia macrostegia	western bindweed
* *Ipomoea purpurea*	common morning-glory
Crassulaceae	**Stonecrop Family**
Crassula connata	pygmy-weed
Cucurbitaceae	**Gourd Family**
Marah macrocarpus	wild cucumber
Euphorbiaceae	**Spurge Family**
Croton californicus	California croton
* *Ricinus communis*	castor bean
Fabaceae	**Legume Family**
Astragalus spp.	milk-vetch
Astragalus pomonensis	Pomona rattleweed
Astragalus trichopodus	Santa Barbara locoweed
Lotus scoparius	deerweed
Geraniaceae	**Geranium Family**
Erodium sp.	filaree
* *Erodium botrys*	broad-lobed filaree

VASCULAR PLANTS	
Scientific Name	**Common Name**
* *Erodium cicutarium*	red-stemmed filaree
Hydrophyllaceae	**Waterleaf Family**
Eriodictyon trichocalyx var. *trichocalyx*	hairy yerba santa
Eucrypta chrysanthemifolia	common eucrypta
Phacelia distans	fern-leaf phacelia
Phacelia minor	wild canterbury-bell
Juglandaceae	**Walnut Family**
Juglans californica var. *californica*	Southern California black walnut
Lamiaceae	**Mint Family**
* *Marrubium vulgare*	horehound
Monardella lanceolata	mustang mint
Salvia apiana	white sage
Salvia columbariae	chia
Salvia mellifera	black sage
Malvaceae	**Mallow Family**
Malacothamnus fasciculatus	mesa bushmallow
Myrtaceae	**Myrtle Family**
* *Eucalyptus* sp.	gum tree
* *Eucalyptus globulus*	blue gum
Oleaceae	**Olive Family**
* *Olea europaea*	olive
Onagraceae	**Evening Primrose Family**
Camissonia bistorta	California sun cup
Orobanchaceae	**Broom-rape Family**
* *Orobanche vallicola*	broom-rape
Platanaceae	**Sycamore Family**
Platanus racemosa	western sycamore
Polemoniaceae	**Phlox Family**
Eriastrum sapphirinum	sapphire eriastrum
Polygonaceae	**Buckwheat Family**
Eriogonum elongatum var. *elongatum*	long-stemmed buckwheat
Eriogonum fasciculatum	California buckwheat
Eriogonum gracile	slender woolly buckwheat
Rumex hymenosepalus	desert rhubarb
Ranunculaceae	**Buttercup Family**
Delphinium cardinale	scarlet larkspur

VASCULAR PLANTS	
Scientific Name	**Common Name**
Rhamnaceae	**Buckthorn Family**
Ceanothus crassifolius	hoary leaf ceanothus
Ceanothus cuneatus	buck brush
Ceanothus megacarpus	big-podded ceanothus
Ceanothus spinosus	green bark ceanothus
Rosaceae	**Rose Family**
Adenostoma fasciculatum	chamise
Prunus ilicifolia	holly-leafed cherry
Solanaceae	**Nightshade Family**
Nicotiana attenuata	coyote tobacco
Nicotiana glauca	tree tobacco
Angiosperms (Monocotyledons)	
Liliaceae	**Lily Family**
Calochortus plummerae	Plummer's mariposa lily
Chlorogalum pomeridianum	soap plant
Dichelostemma capitatum	blue dicks
Muilla maritima	common muilla
Yucca whipplei	our Lord's candle
Poaceae	**Grass Family**
* *Avena barbata*	slender wild oat
* *Avena fatua*	wild oat
* *Bromus diandrus*	ripgut grass
* *Bromus madritensis* ssp. *rubens*	foxtail chess
* *Bromus tectorum*	cheat grass
Elymus glaucus	blue wildrye
* *Hordeum murinum*	glaucous foxtail barley
Hordeum vulgare	barley
* *Lamarckia aurea*	goldentop
* *Lolium perenne*	perennial ryegrass
* *Schismus arabicus*	Arabian grass
* *Schismus barbatus*	Mediterranean schismus

* = *Non-native Species*

	REPTILES	
	Scientific Name	**Common Name**
	Iguanidae	**Iguanid Lizards**
?	*Phrynosoma coronatum blainvillei*	San Diego Horned lizard
	Sceloporus graciosus vandenburgianus	southern sagebrush lizard
?	*Sceloporus occidentalis biseriatus*	Great Basin fence lizard
?	*Sceloporus orcutti*	spiny granite lizard
?	*Uta stansburiana*	side-blotched lizard
	Teiidae	**Whiptail lizards**
?	*Cnemidophorus hyperythrus beldingi*	orange-throated whiptail
	Cnemidophorus tigris multiscutatus	coastal western whiptail
	Anguidae	**Alligator Lizards**
?	*Elgaria multicarinatus webbi*	San Diego alligator lizard
	Colubridae	**Colubrid Snakes**
?	*Diadophis punctatus modestus*	San Bernardino ringneck snake
?	*Lampropeltis getulus californiae*	California kingsnake
	Masticophis flagellum piceus	red coachwhip
?	*Pituophis cantenifer annectens*	San Diego gopher snake
	Viperidae	**Vipers**
	Crotalus viridis helleri	southern pacific rattlesnake

* = *Non-native Species*
? = *Potentially Present*

BIRDS	
Scientific Name	**Common Name**
Ardeidae	**Herons**
Ardea alba	great egret
Anatidae	**Waterfowl**
Anas platyrhynchos	mallard
Cathartidae	**New World Vultures**
Cathartes aura	turkey vulture
Accipitridae	**Hawks**
? *Elanus leucurus*	white-tailed kite
Circus cyaneus	northern harrier
? *Accipiter striatus*	sharp-shinned hawk
Accipiter cooperii	Cooper's hawk
Buteo lineatus	red-shouldered hawk
? *Buteo swainsoni*	Swainson's hawk
Buteo jamaicensis	red-tailed hawk
? *Aquila chrysaetos*	golden eagle
Falconidae	**Falcons**
Falco sparverius	American kestrel
? *Falco mexicanus*	prairie falcon
Phasianidae	**Pheasants and Quails**
Callipepla californica	California quail
Charadriidae	**Plovers**
Charadrius vociferus	killdeer
Columbidae	**Pigeons and Doves**
* *Columba livia*	rock dove
Zenaida macroura	mourning dove
Cuculidae	**Cuckoos and Roadrunners**
Geococcyx californianus	greater roadrunner
Caprimulgidae	**Goatsuckers**
Chordeiles acutipennis	lesser nighthawk
Apodidae	**Swifts**
Aeronautes saxatalis	white-throated swift
Trochilidae	**Hummingbirds**
Calypte anna	Anna's hummingbird
Calypte castae	Costa's hummingbird
Picidae	**Woodpeckers**
Picoides nuttallii	Nuttall's woodpecker
? *Picoides pubescens*	downy woodpecker
? *Picoides villosus*	hairy woodpecker

BIRDS	
Scientific Name	**Common Name**
Colaptes auratus	northern flicker
Tyrannidae	**Tyrant Flycatchers**
Contopus cooperi	olive-sided flycatcher
Contopus sordidulus	western wood-pewee
Empidonax oberholseri	dusky flycatcher
? *Empidonax difficilis*	Pacific-slope flycatcher
Sayornis nigricans	black phoebe
Sayornis saya	Say's phoebe
Myiarchus cinerascens	ash-throated flycatcher
Tyrannus verticalis	western kingbird
Alaudidae	**Larks**
? *Eremphila alpestris actia*	California horned lark
Hirundinidae	**Swallows**
Tachycineta thalassina	violet-green swallow
Petrochelidon pyrrhonota	cliff swallow
Stelgidapteryx serripennis	northern rough-winged swallow
Hirundo rustica	barn swallow
Corvidae	**Jays and Crows**
Aphelocoma californica	western scrub-jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven
Aegithalidae	**Bushtits**
Psaltriparus minimus	bushtit
Troglodytidae	**Wrens**
? *Salpinctes obsoletus*	rock wren
Thryomanes bewickii	Bewick's wren
Troglodytes aedon	house wren
Regulidae	**Kinglets**
Regulus calendula	ruby-crowned kinglet
Sylviidae	**Old World Warblers, Gnatcatchers**
Polioptila caerulea	blue-gray gnatcatcher
Turdidae	**Thrushes**
? *Catharus ustulatus*	Swainson's thrush
? *Catharus guttatus*	hermit thrush
? *Turdus migratorius*	American robin
? *Sialia currucoides*	mountain bluebird
? *Sialia mexicana*	western bluebird
Muscicapidae	**Wrentits**

BIRDS	
Scientific Name	**Common Name**
Chamaea fasciata	wrentit
Mimidae	**Thrashers**
Mimus polyglottos	northern mockingbird
Toxostoma redivivum	California thrasher
Bombycillidae	**Waxwings**
? *Bombycilla cedrorum*	cedar waxwing
Ptilogonatidae	**Silky Flycatchers**
Phainopepla nitens	phainopepla
Laniidae	**Shrikes**
Lanius ludovicianus	loggerhead shrike
Sturnidae	**Starlings**
* *Sturnus vulgaris*	European starling
Porulidae	**Wood Warblers**
? *Vermivora celata*	orange-crowned warbler
Dendroica coronata	yellow-rumped warbler
Oporonis tolmiei	MacGillivray's warbler
Wilsonia pusilla	Wilson's warbler
Cardinalidae	**Cardinals**
Pheucticus melanocephalus	black-headed grosbeak
Guiraca caerulea	blue grosbeak
Passerina amoena	lazuli bunting
Thraupidae	**Tanagers**
Piranga ludoviciana	western tanager
Emberizidae	**Emberizids**
Pipilo crissalis	California towhee
Pipilo maculatus	spotted towhee
Aimophila ruficeps conescens	Southern California rufous-crowned sparrow
? *Spizella passerina*	chipping sparrow
Spizella atrogularis	black-chinned sparrow
Chondestes grammacus	lark sparrow
Amphispiza belli belli	Bell's sage sparrow
? *Passerculus sandwichensis*	savannah sparrow
Ammodramus savannarum	grasshopper sparrow
? *Passerella iliaca*	fox sparrow
Melospiza melodia	song sparrow
Zonotrichia leueophrys	white-crowned sparrow
Junco hyemalis	dark-eyed junco

		BIRDS	
		Scientific Name	**Common Name**
		Icteridae	**Blackbirds**
		Agelaius phoeniceus	red-winged blackbird
		Sturnella neglecta	western meadowlark
?		*Euphagus cyanocephalus*	Brewer's blackbird
		Molothrus ater	brown-headed cowbird
		Icterus cucullatus	hooded oriole
		Icterus bullockii	Bullock's oriole
		Fringillidae	**Finches**
		Carpodacus mexicanus	house finch
		Carduelis psaltria	lesser goldfinch
?		*Carduelis lawrencei*	Lawrence's goldfinch
?		*Carduelis tristis*	American goldfinch
		Passeridae	**Old World Sparrows**
?	*	*Passer domesticus*	house sparrow

* = *Non-native Species*
? = *Potentially Present*

		MAMMALS	
		Scientific Name	**Common Name**
		Didelphidae	**New World Opossums**
?	*	*Didelphis virginiana*	Virginia opossum
		Soricidae	**Shrews**
?		*Sorex ornatus*	ornate shrew
		Talpidae	**Moles**
?		*Scapanus latimanus occultus*	broad-handed mole
		Vespertilionidae	**Evening Bats**
?		*Antrozous pallidus pacificus*	pallid bat
?		*Myotis californicus californicus*	California myotis
?		*Lasiurus cinereus*	hoary bat
?		*Pipistrellus hesperus*	western pipistrelle
?		*Plecotus townsendii pallescens*	Townsend's big-eared bat
		Molossidae	**Free-Tailed Bats**
?		*Tadarida brasiliensis*	Brazilian free-tailed bat
?		*Eumops perotis californicus*	California mastiff bat
		Leporidae	**Hares and Rabbits**
?		*Lepus californicus bennettii*	San Diego black-tailed jackrabbit
		Sylvilagus audubonii sanctidiegi	Audubon's cottontail
		Sciuridae	**Squirrels**
		Spermophilus beecheyi nesioticus	California ground squirrel
		Geomyidae	**Pocket Gophers**
		Thomomys bottae	Botta's pocket gopher
		Heteromyidae	**Pocket Mice and Kangaroo Rats**
		Perognathus longimembris brevinasus	Los Angeles pocket mouse
		Chaetodipus californicus	California pocket mouse
		Chaetodipus fallax fallax	northwestern San Diego pocket mouse
?		*Dipodomys agilis*	Pacific kangaroo rat
?		*Dipodomys merriami parvus*	San Bernardino Merriam's kangaroo rat
		Dipodomys simulans	Dulzura kangaroo rat
		Muridae	**Mice, Rats, and Voles**
		Peromyscus californicus	California mouse
?		*Peromyscus californicus insignis*	California parasitic mouse
		Reithrodontomys megalotis	western harvest mouse
		Peromyscus eremicus	cactus mouse
		Peromyscus maniculatus	deer mouse
?		*Neotoma fuscipes*	dusky-footed woodrat

		MAMMALS	
		Scientific Name	**Common Name**
		Neotoma lepida	desert woodrat
?		*Neotoma lepida intermedia*	San Diego desert woodrat
?	*	*Rattus norvegicus*	Norway rat
?	*	*Rattus rattus*	black rat
?	*	*Mus musculus*	house mouse
		Microtus californicus	California vole
		Canidae	**Wolves and Foxes**
		Canis latrans	coyote
?		*Urocyon cinereoargenteus*	gray fox
		Procyonidae	**Raccoons**
?		*Procyon lotor*	raccoon
		Mustelidae	**Weasels, Skunks, and Otters**
?		*Spilogale gracilis*	western spotted skunk
?		*Mephitis mephitis*	striped skunk
		Felidae	**Cats**
?		*Lynx rufus*	bobcat
		Cervidae	**Deer**
		Odocoileus hemionus	mule deer

* = *Non-native Species*
? = *Potentially Present*

APPENDIX C: TREE SURVEY REPORT

ETIWANDA SUBDIVISION TENTATIVE TRACT 16072 TREE SURVEY REPORT

San Bernardino County, California

December 2002

IPCR

ETIWANDA SUBDIVISION TENTATIVE TRACT 16072 TREE SURVEY REPORT

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San Bernardino County, California

December 2002

TABLE OF CONTENTS

LIST OF FIGURES

ETIWANDA SUBDIVISION TENTATIVE TRACT 16072
TREE SURVEY REPORT

1.0 INTRODUCTION

This report presents the results of a tree survey conducted for the Etiwanda Subdivision, Tentative Tract 16072, San Bernardino County, California. The project site is located in an unincorporated portion of San Bernardino County north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue north of the City of Rancho Cucamonga as shown in Figure 1, *Regional Map*, on page 2 and Figure 2, *Vicinity Map*, on page 3. The project site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. The project site is contained on the United States Geological Survey 7.5' Cucamonga Peak Quadrangle, in Section 21, T. 1 N., R. 6 W. The elevation of the project site is approximately 1,600 to 1,800 feet above mean sea level.

The project site is included in the City of Rancho Cucamonga's Etiwanda North Specific Plan. The City has established tree preservation guidelines for trees within the City boundary that meet their definition of "heritage tree". According to these guidelines the City requires a tree removal permit application be accompanied with any application for tentative subdivision maps or other proposals for urban development. The tree removal permit application must be submitted with a tree survey report containing all requested information according to section 19.08.060 of the City's tree preservation guidelines. Therefore, PCR was contracted by Richland Pinehurst, Inc. to conduct a tree survey for the proposed development of 359 single-family, detached residential units on approximately 150 acres of undeveloped land (Figure 3, *Proposed Project Plan*, on page 4). Any trees located within the proposed project development footprint were surveyed and then evaluated on whether they met the City's "heritage tree" criteria. The proposed project is surrounded by low density housing to the west, an Edison utility corridor to the north, very low density housing and flood control/resource conservation area to the east, and estate residential and water treatment plant facilities to the south (Figure 4, *Surrounding Land Uses*, on page 5).

The scope of this tree survey report encompasses the methods, survey results, recommendations, and conclusions for the trees located on the project site. This report is consistent with accepted scientific and professional standards of the Council of Tree & Landscape Appraisers, "Guide for Plant Appraisal" and is consistent with the City of Rancho Cucamonga's Tree Preservation Guidelines (Chapter 19.08). In accordance with the City's tree preservation guidelines an application has been obtained and shall be submitted with this report.

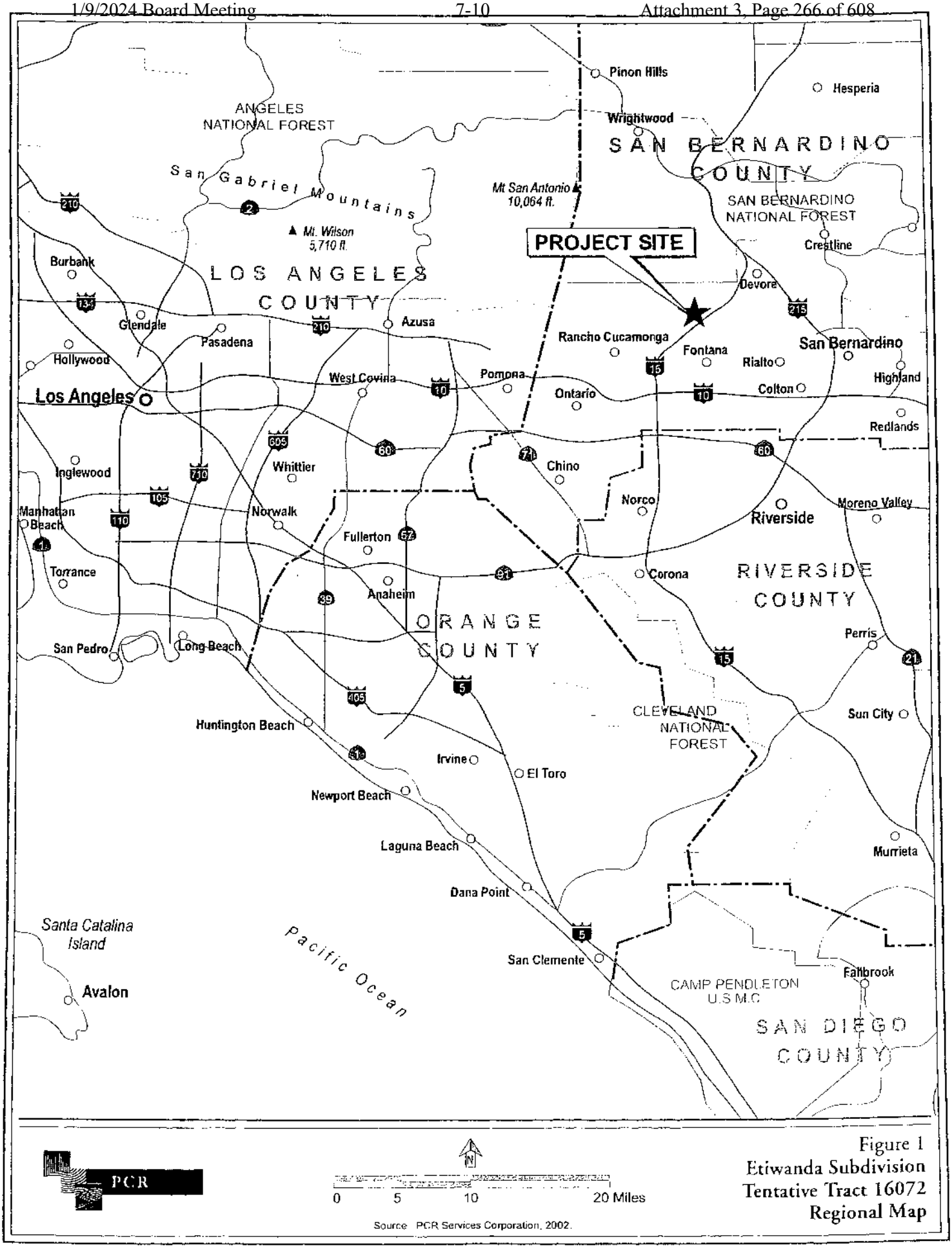
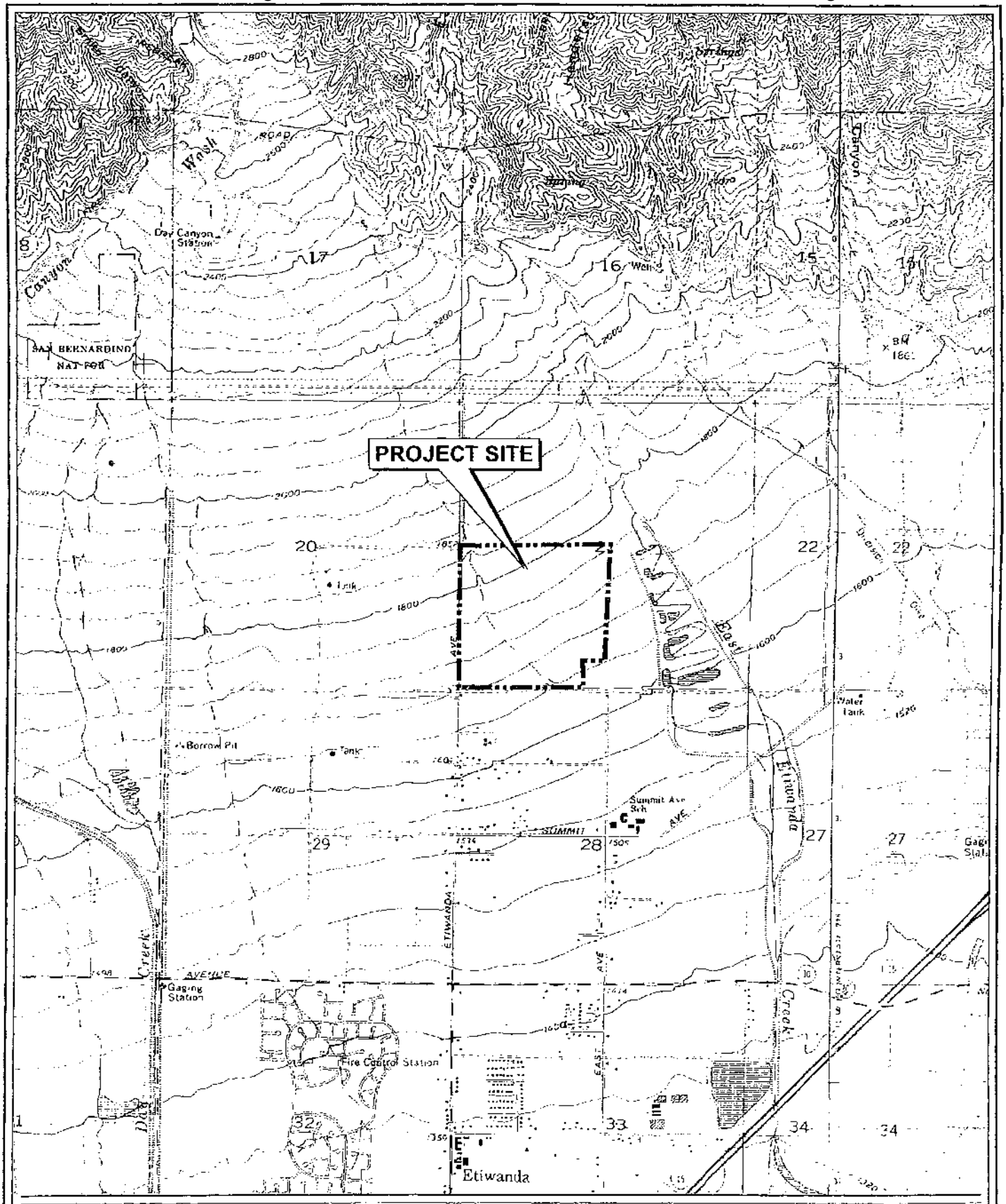


Figure 1
Etiwanda Subdivision
Tentative Tract 16072
Regional Map



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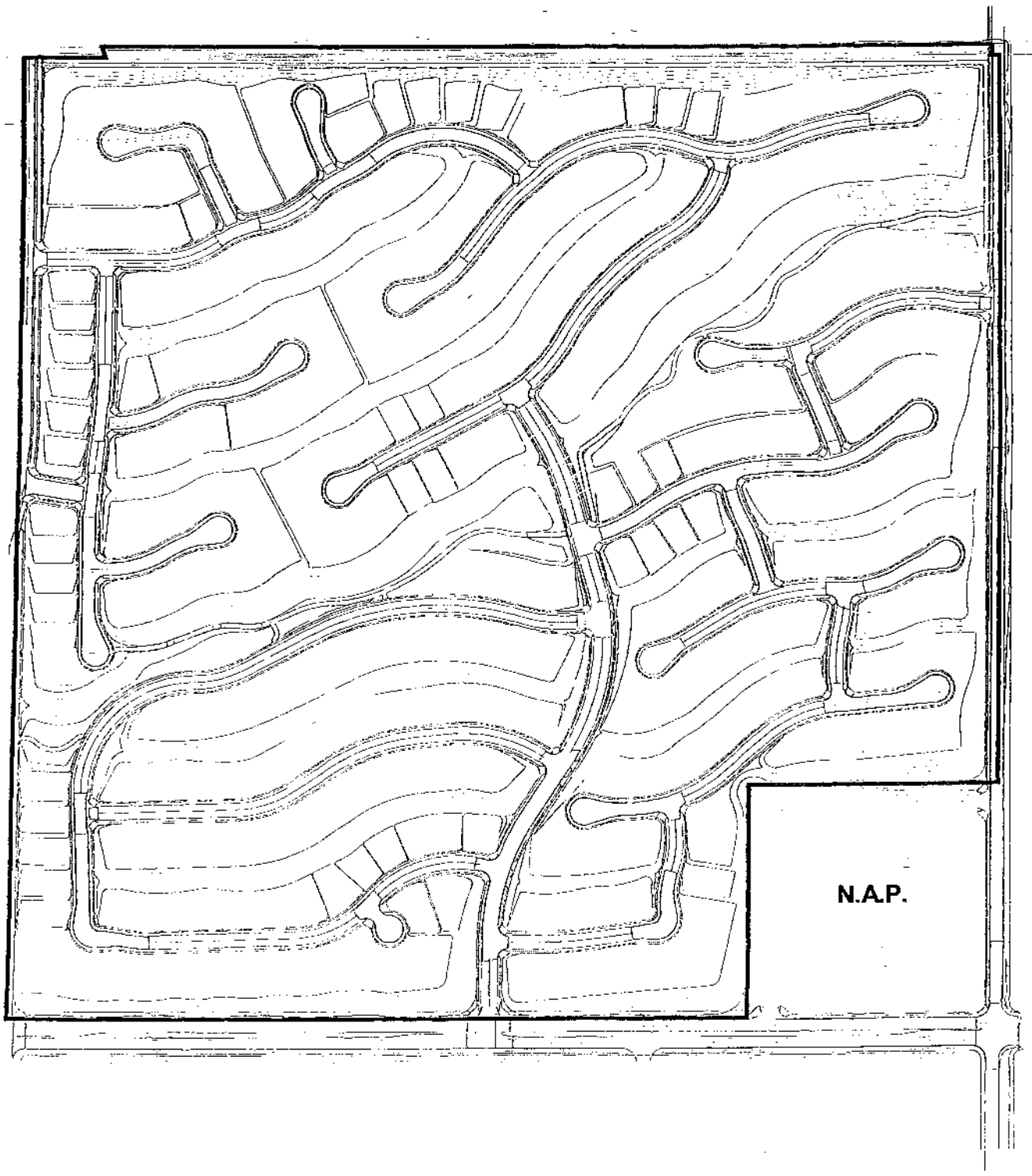
Source: USGS Quadrangles Cucamonga Peak and Devore, California 1966, photorevised 1988.

Figure 2
Etiwanda Subdivision
Tentative Tract 16072
Vicinity Map



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400 0 400 Feet

Source: PCR Services Corporation, 2002.

Figure 3
Etiwanda Subdivision,
Tentative Tract 16072
Proposed Project Plan

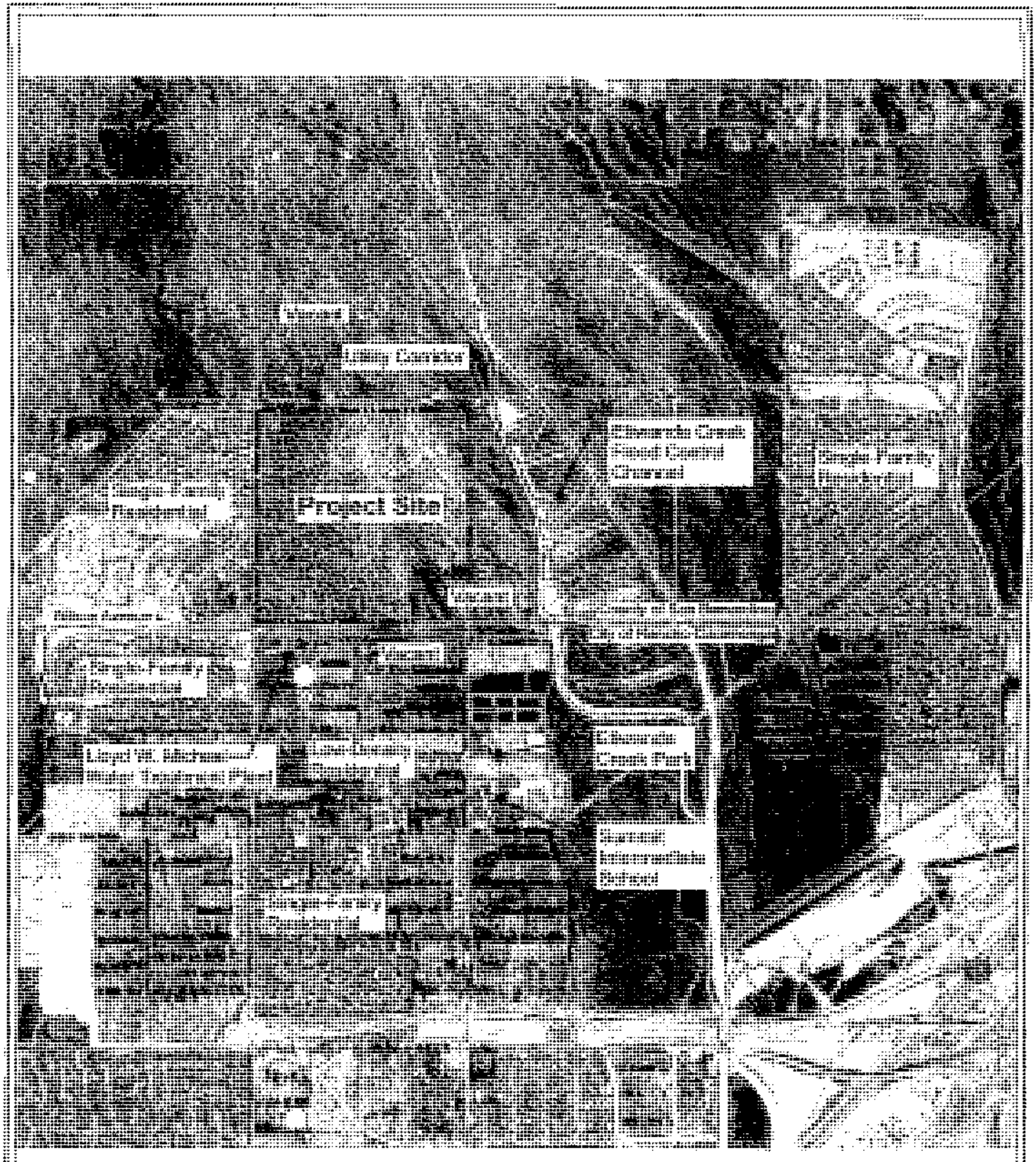


Figure 4
Riverside Subdivision
Tentative Tract 16873
Surrounding Land Uses

The report shall contain, per City guidelines, the following information: (a) a statement as to reasons for removal or relocation; (b) the number, species, and size (circumference as measured twenty-four inches from ground level) and height of tree; (c) the location of all trees on-site on a plot plan in relation to structures and improvements (e.g., streets, sidewalks, fences, slopes, retaining walls, etc.). If the application is associated with a proposal for development, the location of all trees on-site shall be plotted on a grading plan; (d) photographs of the trees to be removed or relocated; (e) if a tree is proposed to be relocated, the relocation site shall be identified and site preparation and relocation methods described; (f) proposed method of removal; (g) the health of any tree declared diseased, infested, or dying shall be verified by a written report of a qualified arborist; and (h) in addition, the city planner may cause to be prepared, at the applicant's expense, a report by a qualified arborist to assist in making a determination on a tree removal permit application.

2.0 METHODOLOGY

This tree survey report is based on information compiled through field reconnaissance, previous documentation, and appropriate reference materials. Consistent with the City's tree preservation guidelines all trees were surveyed that met one of the following "heritage tree" criteria: (1) all eucalyptus windrows; or (2) all woody plants in excess of fifteen feet in height and baving a single trunk circumference of fifteen inches or more; or (3) any multi-trunk tree(s) having a total circumference of thirty inches or more, as measured twenty-four inches from ground level; (4) a stand of trees the nature of which makes each dependent upon the others for survival; or (5) any other tree as may be deemed historically or culturally significant by the city planner because of size, condition, location, or aesthetic qualities. The tree survey was conducted on August 6, 20, September 5, and 11, 2002. All surveys were conducted by qualified PCR Biologist/ISA Certified Arborist, Stephanie Seapin and assisted by biologists Kristin Szabo, Susan Erickson, and GIS Technician, Oscar Uranga. The tree survey consisted of tagging each tree, measuring the circumference of each tree at 24-inches above ground level (in accordance with City tree preservation guideline standards), measuring diameter at breast height (DBH) of each tree at 4.5-feet above ground level (in accordance with International Society of Arboriculture (ISA) standards), noting height and canopy width, and assessing the condition of each tree, by rating their health, structure, and aesthetics with an excellent, good, fair, poor, or dead rating. In addition, a global positioning system was used to digitally map the location of each tree surveyed.

3.0 RESULTS

A total of 213 trees were surveyed and evaluated as meeting the City's "heritage tree" criteria. Approximately 175 eucalyptus trees (*Eucalyptus spp.*), 11 unidentifiable ornamental

trees, 14 pepper trees (*Schinus molle*), 9 southern California black walnut trees (*Juglans californica* var. *californica*), and 4 western sycamore trees (*Platanus racemosa*) occur on-site (Figure 5, *Tree Locations Map,* on page 8). In general, all the trees within the project boundary were found to be in fair to poor condition physiologically, structurally, and aesthetically (Appendix A, *Tree Matrix*).

All 175 eucalyptus trees on-site occur as part of windrows and all show signs of beetle and/or psyllid infestation. These eucalyptus windrows are not maintained by the City or any other entity and have therefore been stressed which has made them easy targets for insect pests. In addition, there have been two fires that have swept through the area. In September 1988, a fire burned an area from Etiwanda Canyon to Lytle Creek and a second fire followed in November 1989, burning from East Canyon wash at Summit Avenue to San Sevaine wash along the foothills, and burning to the top of the mountain in San Sevaine and Ingvaldsen Canyons (Hickcox 1981). Eucalyptus trees are well adapted to fire, encouraging massive sprouting (Figure 6, *Fire Damaged Tree Photographs,* on page 9).

The eucalyptus trees show signs of beetle damage to the leaves and trunks/limbs of the eucalyptus trees. A live beetle was found and sent to the Department of Entomology at the University of California, Riverside (UCR) for identification. UCR Staff Research Associate, Kathleen Campbell identified the beetle to be a Eucalyptus Tortoise Beetle or Australian Tortoise Beetle (ATB) (*Trachymela sloanei*). ATB chews notches along the leaves that "look like little steps" (Burns 2001) and create sinuous galleries (tunnels) in the inner bark (Owen 1991) (Figure 7, *Beetle Gallery Photographs,* on page 10). ATB is a leaf-feeding beetle and there is growing concern with experts in the field that this defoliation will further weaken the drought-stressed eucalyptus trees throughout the area and other parts of the state, predisposing them to attack by the eucalyptus longhorned borer (ELB) and/or the Yellow Phoracantha (Hagen 2001). Also, a few of the eucalyptus appear to have been attacked by redgum lerp psyllid (*Glycapsis brimbecombei*). Redgum lerp psyllid is the most conspicuous and most destructive new pest in this group (Hagen 2001). Psyllids feed by sucking plant juices and excreting, "honeydew" which is secreted on leaves creating a sticky nuisance problem (Stepp 1999). Affected leaves soon shrivel and fall causing extensive defoliation, weakening the trees and resulting in an increase to the trees susceptibility to wood-boring pests such as ELB (Hagen 2001). The following photographs show tiny, white dome shaped dots which are called "lerps" which are homes for the psyllid (Figure 8, *Lerp Photographs,* on page 11). Psyllid nymphs create these "lerps" made of gums and resins (Stepp 1999).

The pepper trees, sycamores, walnuts, and unidentifiable ornamental trees are all in fair health or aesthetics with poor structure. The pepper and walnut trees in particular, as well as some of the eucalyptus trees have severe paintball activity injury (Figure 9, *Paintball Damaged Tree Photographs,* on page 12). Injuries include, paintball pellets embedded into the trunks and

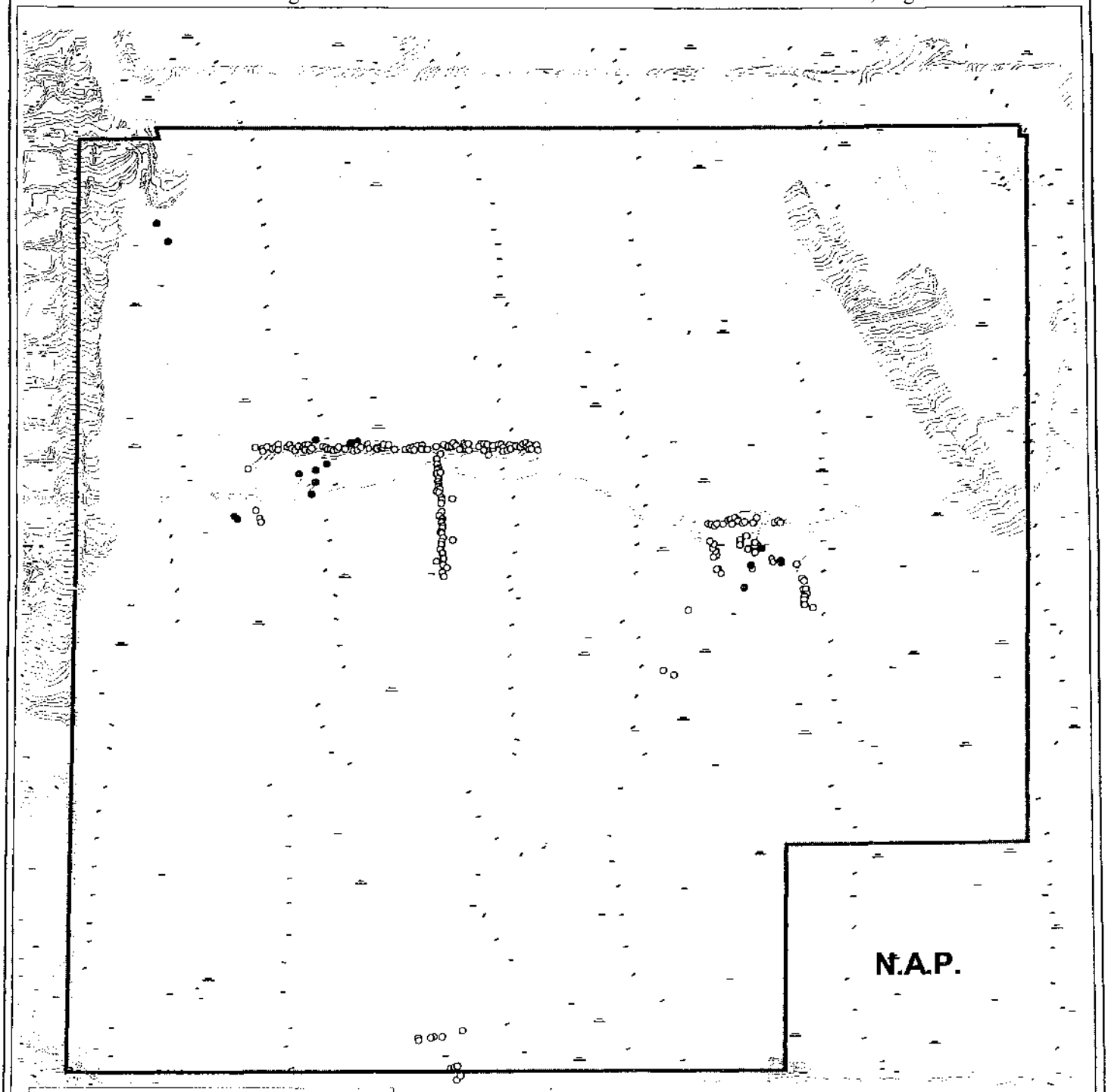


Figure 5
Etiwanda Subdivision,
Tentative Tract 16072
Tree Locations Map

PCR

Source: PCR Services Corporation, 2002.

Figure 6
Etiwanda Subdivision
Tentative Tract 16072
Fire Damaged Tree Photographs

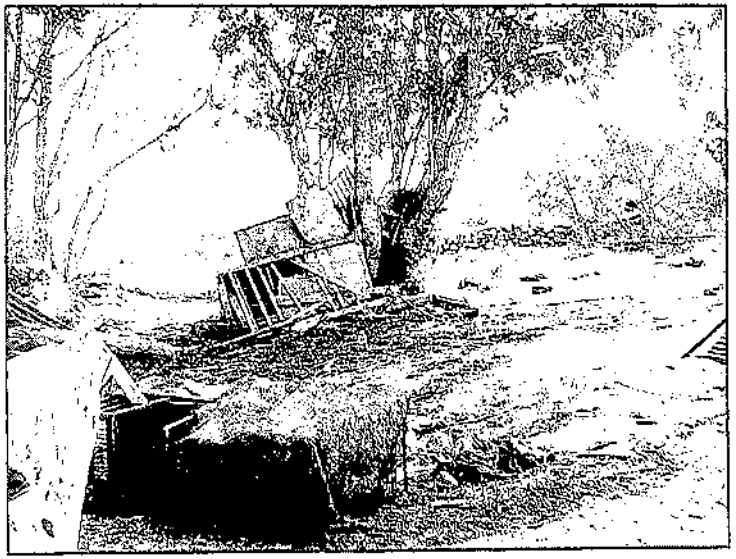
PCR

Source: PCR Services Corporation, 2002

Figure 7
Etiwanda Subdivision
Tentative Tract 16072
Beetle Gallery Photographs

Source: PCR Services Corporation, 2002

Figure 8
Etiwanda Subdivision
Tentative Tract 16072
Lerp Photographs



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Source: PCR Services Corporation, 2002.

Figure 9
Etiwanda Subdivision
Tentative Tract 16072
Paintball Damaged Tree Photographs

branches of the trees, particle board, ply-wood, and pallets nailed to the trunks of the trees used for target practice or for protection during paintball wars.

4.0 IMPACTS

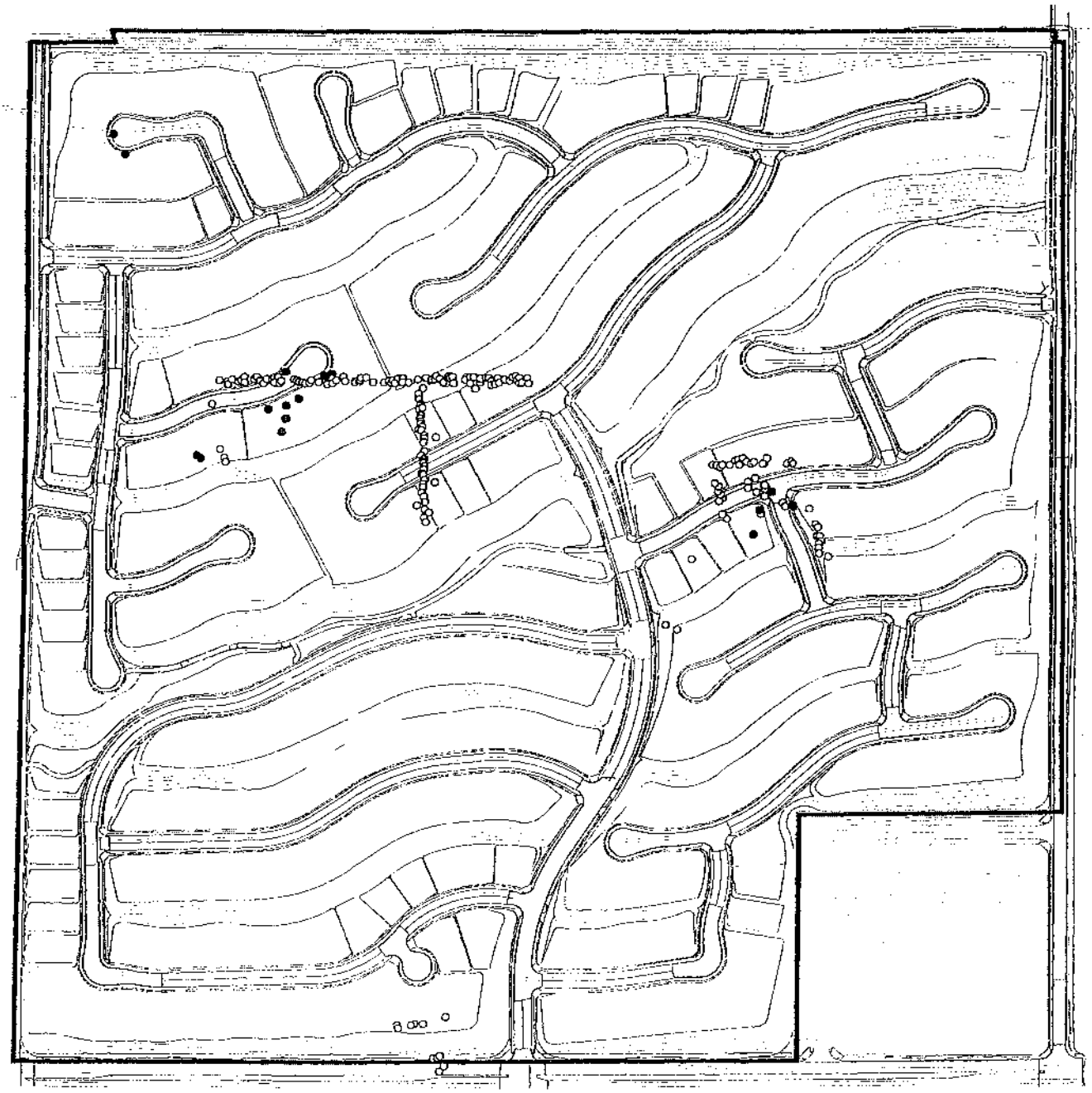
The proposed residential development would result in the loss of approximately 213 native and non-native/ornamental trees (Figure 10, *Impacts to Trees,* on page 14).

5.0 RECOMMENDATIONS

The City of Rancho Cucamonga requires that all trees meeting the City's "heritage tree" criteria and that are to be removed shall be replaced with spotted gum (*Eucalyptus maculata*) or a City approved tree species along the established City grid pattern or the boundaries of the project property. The replacement trees shall be fifteen-gallon size, minimum spaced at eight feet on center, and properly staked, unless otherwise specified by a specific plan or community plan. All removals shall be mitigated at a 1:1 ratio.

Through our survey and evaluation we have determined no healthy candidates to be relocated/transplanted, due to their stressed condition. Stressed trees suffer from soil pH imbalances, drought, lack of minerals, or excess water (Lilly 2001). As a result, stressed trees are more likely to succumb to drought, defoliation, borers, bark beetles, or vascular wilt diseases (Lilly 2001). When a tree has entered this state of decline as mentioned above, it is said to be in a mortality spiral (Lilly 2001). Mortality spiral is defined as a sequence of events causing the decline, and eventual death, of a tree (Lilly 2001). Consequently, the feasibility of relocating/transplanting any of these trees on-site or off-site is not advisable or economically reasonable.

PCR advocates that the 213 "heritage trees" be removed and replaced with native trees within the proposed development. We recommend replacing the 200 non-native/ornamental trees and 13 native trees with coast live oaks (*Quercus agrifolia*), interior live oak (*Quercus wislizeni* var. *frutescens*), western sycamores (*Platanus racemosa*), and southern California black walnuts (*Juglans californica var. californica*) at a 1:1 ratio. We believe sufficient mitigation can be successfully completed on-site through the planting of oaks, sycamores, and walnuts within the greenbelt of the residential development (Figure 11, *Recommended Mitigation Tree Location,* on page 15). According to the conceptual landscape plan prepared by Gary Bye of Rainville & Bye an approximate 200 oaks and sycamores are planned within the greenbelt area of the proposed development (Rainville & Bye July 2002).



Tree Locations
- Eucalyptus
- Unidentifiable Ornamental
- Pepper
- Western Sycamore
- Southern California Black Walnut

Project Boundary
(N.A.P. - not a part of project)

PCR

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400 0 400 Feet

Source: PCR Services Corporation, 2002.

Figure 10
Etiwanda Subdivision,
Tentative Tract 16072
Impacts to Trees

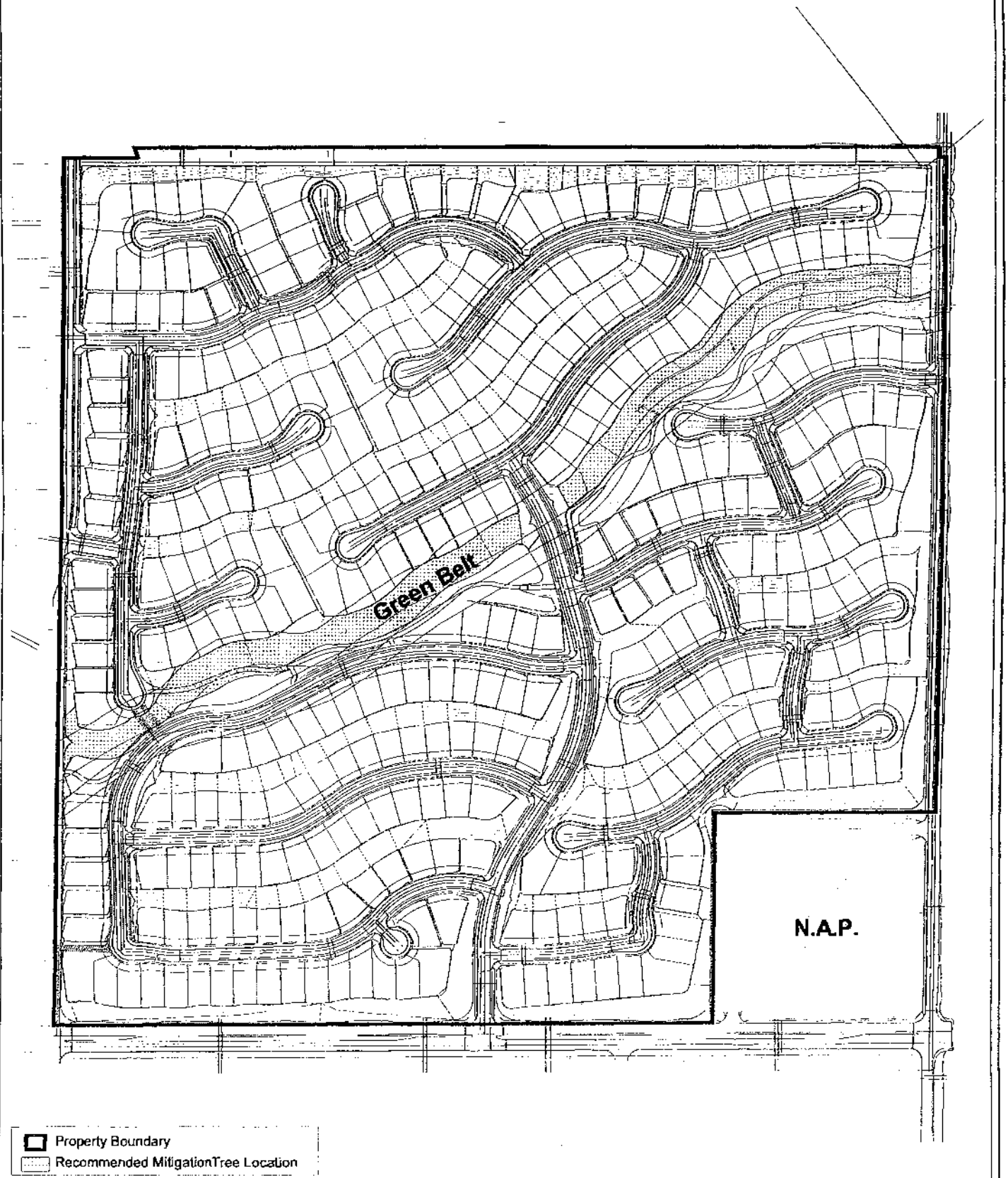


Figure 11
Etiwanda Subdivision, Tentative Tract 16072 Recommended Mitigation Tree Locations

6.0 CONCLUSIONS

The proposed residential development would result in the loss of approximately 213 non-native/ornamental and native trees. All trees are located within the project boundary and found to be in fair to poor condition physiologically, structurally, and aesthetically. The trees have been surveyed and evaluated according to the City's guidelines and can be found in appendix A. PCR believes sufficient mitigation can be successfully completed on-site through the planting of oaks, sycamores, and walnuts within the greenbelt of the proposed residential development.

REFERENCES

City of Rancho Cucamonga. *Tree Preservation Guideline.* Chapter 19.08.

Council of Tree & Landscape Appraisers. 2000. *Guide for Plant Appraisal.* 9th edition, Champaign, Illinois.

Burns, Katie. 2001. *UC Scientists continue releasing wasps to kill eucalyptus pests.* North County Times. October 17, 2001.

Hagen, Bruce W. 2001. *New Pests Threaten Urban Eucalyptus.* California Department of Forestry and Fire Protection. June 22, 2001.

Hickcox, Robert L. 1981. *Dates in the History of Etiwanda, California.* September 23, 1981. WebSite:www.chaffey.org/community/etiwanda/dates_in_the_history_of_etiwanda.html

Lilly, Sharon J. 2001. *Arborists' Certification Study Guide.* International Society of Arboriculture (ISA). Champaign, Illinois.

Owen, Donald R. 1991. *The Western Pine Beetle.* Tree Notes, California Department of Forestry and Fire Protection. Number: 13. April 1991.

PCR Services Corporation. March 2001. *Initial Study-Etiwanda Subdivision, San Bernardino County, California.* Prepared for Hill Country S.A., Ltd.

Rainville Bye. July 12, 2002. *Conceptual Hardscape and Landscape Plan-Etiwanda Tentative Tract 16072.* Prepared by Gary Bye, Landscape Architect. Prepared for Richland Pinehurst, Inc.

Stepp, John. 1999. *Lerp Invasion, Report from the Western Front.* Tree Care Industry Magazine. December 1999.

United States Geological Survey. 1966. *Cucamonga Peak,* California 7.5-minute Topographic Quadrangle. Photo revised 1988.

H:\PROJECTS\1Pre-2001 Active\Etiwanda\Tree survey & report\Richland Etiwanda Tree Survey Rpt-Fmtd

APPENDIX A: TREE MATRIX

	TREEID	SPECIES	TRUNK	DBH (in.)	CANOPY (ft.)	HEIGHT (ft)	HEALTH	STRUCTURE	AESTHETICS	CIRCUMFERENCE AT 2 (ft)
1.	601	Sycamore	Multi	24.5	40	30	Fair	Poor	Fair	86.3
2.	602	Sycamore	Multi	26	50	35	Fair	Poor	Fair	98.9
3.	603	Eucalyptus	Multi	23	25	25	Poor	Poor	Poor	100.5
4.	604	Eucalyptus	Multi	4.5	10	20	Poor	Poor	Poor	14.1
5.	605	Eucalyptus	Multi	5.5	10	15	Poor	Poor	Poor	22.0
6.	07	Eucalyptus	Multi	22	10	30	Poor	Poor	Poor	95.8
7.	608	Eucalyptus	Multi	18.5	15	35	Poor	Poor	Poor	70.6
8.	609	Eucalyptus	Multi	25	20	40	Poor	Poor	Poor	109.9
9.	610	Eucalyptus	Multi	22	20	35	Poor	Poor	Poor	83.2
10.	611	Eucalyptus	Multi	25.5	20	50	Poor	Poor	Poor	94.2
11.	612	Eucalyptus	Multi	27.5	20	50	Poor	Poor	Poor	100.5
12.	613	Eucalyptus	Multi	6	8	25	Poor	Poor	Poor	22.0
13.	614	Eucalyptus	Multi	42	25	60	Poor	Poor	Poor	182.1
14.	615	Eucalyptus	Multi	29	20	50	Poor	Poor	Poor	111.5
15.	616	Eucalyptus	Multi	24	20	60	Poor	Poor	Poor	87.9
16.	617	Eucalyptus	Multi	19.5	10	60	Poor	Poor	Poor	70.6
17.	618	Eucalyptus	Multi	10.5	10	25	Poor	Poor	Poor	40.8
18.	619	Eucalyptus	Multi	54	20	60	Poor	Poor	Poor	191.5
19.	620	Eucalyptus	Multi	30.5	25	60	Poor	Poor	Poor	153.9
20.	621	Eucalyptus	Multi	14	15	30	Poor	Poor	Poor	39.2
21.	622	Eucalyptus	Multi	19.5	20	60	Poor	Poor	Poor	72.2
22.	623	Eucalyptus	Multi	9	8	25	Poor	Poor	Poor	34.5
23.	624	Eucalyptus	Standard	7.5	10	20	Poor	Poor	Poor	31.4
24.	625	Eucalyptus	Multi	9	10	20	Poor	Poor	Poor	37.7
25.	626	Eucalyptus	Multi	61.5	30	55	Poor	Poor	Poor	237.1
26.	627	Pepper	Multi	17.5	35	20	Poor	Poor	Poor	62.8
27.	628	Pepper	Multi	24	30	25	Fair	Poor	Poor	83.2
28.	629	Pepper	Multi	42.5	40	20	Fair	Poor	Poor	138.2
29.	630	Pepper	Multi	52	45	30	Fair	Poor	Poor	168.0
30.	631	Pepper	Multi	30	20	20	Fair	Poor	Fair	95.8
31.	632	Pepper	Multi	47.5	30	40	Poor	Poor	Poor	191.5
32.	633	Eucalyptus	Multi	30	15	30	Poor	Poor	Poor	117.7
33.	634	Eucalyptus	Multi	54.5	15	60	Poor	Poor	Poor	201.0
34.	635	Eucalyptus	Multi	17	15	60	Poor	Poor	Poor	65.9
35.	636	Eucalyptus	Multi	8.5	8	25	Poor	Poor	Poor	31.4
36.	637	Eucalyptus	Multi	6	5	35	Poor	Poor	Poor	23.5

	TREEID	SPECIES	TRUNK	DBH (in.)	CANOPY (ft.)	HEIGHT (ft.)	HEALTH	STRUCTURE	AESTHETICS	CIRCUMFERENCE AT 2 (ft.)
37.	638	Eucalyptus	Multi	30.5	20	50	Poor	Poor	Poor	124.0
38.	639	Eucalyptus	Multi	26	15	60	Poor	Poor	Poor	103.6
39.	640	Eucalyptus	Multi	34.5	30	35	Poor	Poor	Poor	152.3
40.	641	Pepper	Multi	20	40	35	Fair	Poor	Fair	73.8
41.	642	Pepper	Multi	10.75	20	30	Fair	Poor	Fair	48.7
42.	643	Pepper	Multi	8	10	20	Poor	Poor	Poor	29.8
43.	644	Eucalyptus	Multi	10.5	15	30	Poor	Poor	Poor	54.9
44.	645	Eucalyptus	Multi	8	10	15	Poor	Poor	Poor	31.4
45.	646	Eucalyptus	Multi	26.5	20	35	Poor	Poor	Poor	103.6
46.	647	Eucalyptus	Multi	9.5	10	25	Poor	Poor	Poor	34.5
47.	648	Eucalyptus	Multi	51.5	30	55	Poor	Poor	Poor	197.8
48.	649	Eucalyptus	Multi	26	35	55	Poor	Poor	Poor	94.2
49.	650	Eucalyptus	Multi	20	15	45	Poor	Poor	Poor	78.5
50.	651	Eucalyptus	Multi	13.5	15	30	Poor	Poor	Poor	45.5
51.	652	Eucalyptus	Multi	23.5	25	40	Poor	Poor	Poor	70.6
52.	653	Eucalyptus	Multi	16	20	35	Poor	Poor	Poor	77.7
53.	654	Eucalyptus	Multi	24	15	30	Poor	Poor	Poor	89.5
54.	655	Eucalyptus	Multi	24.5	20	50	Poor	Poor	Poor	103.6
55.	656	Eucalyptus	Multi	41	25	40	Poor	Poor	Poor	138.2
56.	657	Eucalyptus	Multi	21.5	20	35	Poor	Poor	Poor	84.8
57.	660	Eucalyptus	Multi	22.5	25	30	Poor	Poor	Poor	91.1
58.	661	Eucalyptus	Multi	10	10	35	Poor	Poor	Poor	51.8
59.	662	Eucalyptus	Multi	31.5	30	50	Poor	Poor	Poor	122.5
60.	663	Eucalyptus	Multi	7	8	15	Poor	Poor	Poor	31.4
61.	664	Eucalyptus	Multi	66.5	30	60	Poor	Poor	Poor	213.5
62.	665	Eucalyptus	Multi	7.5	10	45	Poor	Poor	Poor	48.7
63.	666	Eucalyptus	Multi	16.5	15	55	Poor	Poor	Poor	64.4
64.	667	Eucalyptus	Multi	13	10	20	Poor	Poor	Poor	47.1
65.	668	Eucalyptus	Multi	36	25	40	Poor	Poor	Poor	130.3
66.	669	Eucalyptus	Multi	52	30	60	Poor	Poor	Poor	135.0
67.	670	Eucalyptus	Multi	55	40	35	Poor	Poor	Poor	262.2
68.	671	Eucalyptus	Multi	10	8	45	Poor	Poor	Poor	34.5
69.	672	Eucalyptus	Multi	25.5	10	30	Poor	Poor	Poor	91.1
70.	673	Eucalyptus	Multi	40.5	20	70	Poor	Poor	Poor	124.0
71.	674	Eucalyptus	Multi	25	20	40	Poor	Poor	Poor	111.5
72.	675	Eucalyptus	Multi	13.5	10	30	Poor	Poor	Poor	59.7
73.	676	Eucalyptus	Multi	19.5	15	30	Poor	Poor	Poor	78.5
74.	677	Eucalyptus	Multi	12	15	35	Poor	Poor	Poor	44.0
75.	678	Eucalyptus	Multi	14	15	35	Poor	Poor	Poor	45.5
76.	679	Eucalyptus	Multi	13.5	15	25	Poor	Poor	Poor	54.9
77.	680	Eucalyptus	Multi	16	15	25	Poor	Poor	Poor	61.2

	TREEID	SPECIES	TRUNK	DBH (in.)	CANOPY (ft)	HEIGHT (ft)	HEALTH	STRUCTURE	AESTHETICS	CIRCUMFERENCE AT 2 (ft)
78.	681	Eucalyptus	Multi	21.5	20	45	Poor	Poor	Poor	91.1
79.	682	Eucalyptus	Multi	41	20	35	Poor	Poor	Poor	122.5
80.	683	Eucalyptus	Multi	12	15	20	Poor	Poor	Poor	54.9
81.	684	Eucalyptus	Multi	61.5	30	50	Poor	Poor	Poor	211.9
82.	685	Eucalyptus	Multi	8	5	25	Poor	Poor	Poor	34.5
83.	686	Eucalyptus	Multi	39	20	45	Poor	Poor	Poor	153.9
84.	687	Eucalyptus	Multi	12.5	15	30	Poor	Poor	Poor	51.8
85.	688	Eucalyptus	Multi	54.5	35	40	Poor	Poor	Poor	175.8
86.	689	Eucalyptus	Multi	12.5	10	25	Poor	Poor	Poor	47.1
87.	690	Eucalyptus	Multi	34	30	60	Poor	Poor	Poor	122.5
88.	691	Eucalyptus	Multi	18.5	15	60	Poor	Poor	Poor	100.5
89.	692	Eucalyptus	Multi	15	15	55	Poor	Poor	Poor	61.2
90.	693	Eucalyptus	Multi	34	30	60	Poor	Poor	Poor	133.4
91.	694	Eucalyptus	Multi	17.5	15	40	Poor	Poor	Poor	64.4
92.	695	Eucalyptus	Multi	32.5	20	45	Poor	Poor	Poor	64.4
93.	696	Eucalyptus	Multi	58.5	30	50	Poor	Poor	Poor	164.8
94.	697	Eucalyptus	Multi	12	20	50	Poor	Poor	Poor	39.2
95.	698	Eucalyptus	Multi	31.5	20	60	Poor	Poor	Poor	120.9
96.	699	Eucalyptus	Multi	19.5	15	40	Poor	Poor	Poor	72.2
97.	700	Eucalyptus	Multi	38	25	60	Poor	Poor	Poor	144.4
98.	701	Eucalyptus	Multi	14	15	25	Poor	Poor	Poor	54.9
99.	702	Eucalyptus	Multi	23	20	60	Poor	Poor	Poor	87.9
100.	703	Eucalyptus	Multi	25.5	15	30	Poor	Poor	Poor	100.5
101.	704	Eucalyptus	Multi	29	15	40	Poor	Poor	Poor	103.6
102.	705	Eucalyptus	Multi	44.5	30	55	Poor	Poor	Poor	232.4
103.	706	Eucalyptus	Multi	46.5	20	60	Poor	Poor	Poor	204.1
104.	707	Eucalyptus	Multi	38	30	60	Poor	Poor	Poor	141.3
105.	708	Eucalyptus	Multi	33	30	30	Poor	Poor	Poor	109.9
106.	709	Eucalyptus	Multi	53.5	30	50	Poor	Poor	Poor	205.7
107.	710	Eucalyptus	Multi	15	15	30	Poor	Poor	Poor	54.9
108.	711	Eucalyptus	Multi	40.5	20	30	Poor	Poor	Poor	141.3
109.	712	Eucalyptus	Multi	14.5	10	25	Poor	Poor	Poor	51.8
110.	713	Eucalyptus	Multi	6.5	8	20	Poor	Poor	Poor	23.5
111.	714	Eucalyptus	Multi	17	15	30	Poor	Poor	Poor	61.2
112.	715	Eucalyptus	Multi	4	10	25	Poor	Poor	Poor	15.7
113.	716	Eucalyptus	Multi	56.5	30	40	Poor	Poor	Poor	196.2
114.	717	Eucalyptus	Multi	11.5	10	20	Fair	Poor	Poor	45.5
115.	718	Eucalyptus	Multi	11	10	25	Poor	Poor	Poor	37.7
116.	719	Eucalyptus	Multi	13.5	10	35	Poor	Poor	Poor	42.4
117.	720	Eucalyptus	Multi	35	25	30	Poor	Poor	Poor	127.2
118.	721	Eucalyptus	Multi	28.5	10	40	Poor	Poor	Poor	100.5

Appendix A: Tree Matrix

	TREEID	SPECIES	TRUNK	DBH (in.)	CANOPY (ft.)	HEIGHT (ft.)	HEALTH	STRUCTURE	AESTHETICS	CIRCUMFERENCE AT 2 (ft.)
119.	722	Eucalyptus	Multi	18	8	20	Poor	Poor	Poor	61.2
120.	723	Eucalyptus	Multi	14.5	20	20	Poor	Poor	Poor	50.2
121.	724	Eucalyptus	Multi	24.5	20	25	Poor	Poor	Poor	78.5
122.	725	Eucalyptus	Multi	71.5	30	65	Fair	Poor	Fair	235.5
123.	726	Eucalyptus	Multi	19	20	30	Fair	Poor	Fair	67.5
124.	727	Eucalyptus	Multi	37	30	50	Poor	Poor	Poor	124.0
125.	728	Eucalyptus	Multi	11.5	8	20	Poor	Poor	Fair	37.7
126.	729	Eucalyptus	Multi	7.5	8	20	Poor	Poor	Poor	28.3
127.	730	Eucalyptus	Multi	17.5	20	25	Poor	Poor	Poor	58.1
128.	731	Eucalyptus	Multi	8	8	20	Poor	Poor	Fair	28.3
129.	732	Eucalyptus	Multi	13.5	15	20	Poor	Poor	Poor	42.4
130.	733	Eucalyptus	Multi	9	8	25	Poor	Poor	Poor	28.3
131.	734	Eucalyptus	Multi	18.5	20	35	Poor	Poor	Poor	61.2
132.	735	Eucalyptus	Multi	21.5	20	30	Poor	Poor	Poor	67.5
133.	736	Eucalyptus	Multi	32.5	20	50	Poor	Poor	Poor	102.0
134.	737	Eucalyptus	Multi	55	35	65	Poor	Poor	Poor	186.8
135.	738	Eucalyptus	Multi	9	15	30	Poor	Poor	Poor	29.8
136.	739	Eucalyptus	Multi	34	15	45	Poor	Poor	Poor	116.2
137.	740	Eucalyptus	Multi	10.5	8	20	Poor	Poor	Poor	33.0
138.	741	Eucalyptus	Multi	40.5	30	35	Poor	Poor	Poor	127.2
139.	742	Eucalyptus	Multi	21.5	20	30	Poor	Poor	Poor	67.5
140.	743	Eucalyptus	Multi	21.5	8	40	Poor	Poor	Poor	65.9
141.	744	Eucalyptus	Multi	17	20	20	Poor	Poor	Poor	53.4
142.	745	Eucalyptus	Multi	40.5	25	40	Poor	Poor	Poor	138.2
143.	746	Eucalyptus	Multi	24.5	20	25	Poor	Poor	Poor	76.9
144.	747	Eucalyptus	Multi	41.5	25	55	Poor	Poor	Poor	138.2
145.	748	Eucalyptus	Multi	42	20	55	Poor	Poor	Poor	75.4
146.	749	Eucalyptus	Multi	8.5	10	15	Poor	Poor	Poor	23.5
147.	750	Eucalyptus	Multi	39	30	40	Poor	Poor	Poor	51.8
148.	751	Eucalyptus	Multi	11.5	15	50	Poor	Poor	Poor	42.4
149.	752	Eucalyptus	Multi	36	20	45	Poor	Poor	Poor	124.0
150.	753	Eucalyptus	Multi	27.5	20	40	Poor	Poor	Poor	135.0
151.	754	Eucalyptus	Multi	13.5	15	15	Poor	Poor	Poor	48.7
152.	755	Eucalyptus	Multi	26.5	10	35	Poor	Poor	Poor	84.8
153.	756	Eucalyptus	Multi	16	20	35	Poor	Poor	Poor	80.1
154.	757	Eucalyptus	Multi	17	15	40	Poor	Poor	Poor	53.4
155.	758	Eucalyptus	Multi	28	15	35	Poor	Poor	Poor	108.3
156.	760	Eucalyptus	Multi	30.5	20	55	Poor	Poor	Poor	100.5
157.	761	Eucalyptus	Multi	18	20	35	Poor	Poor	Poor	65.9
158.	762	Eucalyptus	Multi	45	30	50	Poor	Poor	Poor	92.6
159.	763	Eucalyptus	Multi	57.5	25	50	Poor	Poor	Poor	218.2

	TREEID	SPECIES	TRUNK	DBH (in.)	CANOPY (ft.)	HEIGHT (ft.)	HEALTH	STRUCTURE	AESTHETICS	CIRCUMFERENCE AT 2 (ft.)
160.	764	Walnut	Multi	22.5	40	15	Fair	Poor	Poor	76.9
161.	765	Walnut	Multi	19	30	18	Fair	Poor	Poor	67.5
162.	766	Walnut	Multi	18	30	16	Fair	Poor	Fair	75.4
163.	767	Pepper	Multi	7	10	20	Poor	Poor	Poor	26.7
164.	768	Walnut	Multi	9	20	15	Fair	Fair	Fair	31.4
165.	769	Walnut	Multi	8	20	15	Poor	Poor	Poor	31.4
166.	770	Pepper	Multi	12	20	16	Poor	Poor	Poor	42.4
167.	771	Pepper	Multi	26.5	30	16	Fair	Poor	Poor	97.3
168.	772	Eucalyptus	Multi	51.5	20	35	Poor	Poor	Poor	194.7
169.	773	Eucalyptus	Multi	31	25	35	Poor	Poor	Poor	120.9
170.	774	Eucalyptus	Multi	31	25	35	Poor	Poor	Poor	130.3
171.	775	Eucalyptus	Multi	32	20	40	Poor	Poor	Poor	131.9
172.	776	Eucalyptus	Multi	38.5	30	40	Poor	Poor	Poor	168.0
173.	777	Eucalyptus	Multi	7	8	25	Poor	Poor	Poor	17.3
174.	778	Eucalyptus	Multi	17	10	30	Poor	Poor	Poor	83.2
175.	779	Eucalyptus	Multi	48	25	40	Poor	Poor	Poor	169.6
176.	780	Eucalyptus	Multi	35.5	15	25	Poor	Poor	Poor	108.3
177.	781	Eucalyptus	Multi	32	20	20	Poor	Poor	Poor	109.9
178.	782	Pepper	Multi	93	50	50	Fair	Poor	Fair	282.6
179.	783	Walnut	Multi	7.5	8	15	Poor	Poor	Poor	33.0
180.	784	Pepper	Multi	14.5	20	25	Fair	Poor	Poor	53.4
181.	785	Eucalyptus	Multi	69	50	70	Poor	Poor	Poor	295.2
182.	786	Eucalyptus	Multi	24.5	20	55	Poor	Poor	Poor	80.1
183.	787	Eucalyptus	Multi	21.5	20	55	Poor	Poor	Poor	69.1
184.	788	Eucalyptus	Multi	32.5	20	55	Poor	Poor	Poor	119.3
185.	789	Eucalyptus	Multi	19.5	20	35	Poor	Poor	Poor	64.4
186.	790	Eucalyptus	Multi	20	15	35	Poor	Poor	Poor	72.2
187.	791	Eucalyptus	Standard	29.5	20	45	Poor	Poor	Poor	111.5
188.	792	Eucalyptus	Multi	29.5	30	50	Poor	Poor	Poor	100.5
189.	793	Eucalyptus	Multi	124	50	50	Poor	Poor	Poor	42.4
190.	794	Eucalyptus	Multi	36	20	45	Poor	Poor	Poor	127.2
191.	795	Eucalyptus	Multi	29	25	45	Poor	Poor	Poor	147.6
192.	796	Eucalyptus	Multi	48.5	30	50	Poor	Poor	Poor	161.7
193.	797	Eucalyptus	Multi	53	25	48	Poor	Poor	Poor	183.7
194.	798	Eucalyptus	Multi	30	25	35	Poor	Poor	Poor	94.2
195.	799	Eucalyptus	Multi	21	15	30	Poor	Poor	Poor	78.5
196.	800	Eucalyptus	Multi	30	30	45	Poor	Poor	Poor	87.9
197.	801	Eucalyptus	Multi	51.5	40	42	Poor	Poor	Poor	182.1
198.	802	Walnut	Multi	5	6	6	Poor	Poor	Poor	15.7
199.	803	Walnut	Multi	7	6	6.2	Poor	Poor	Poor	22.0
200.	804	Walnut	Multi	19	25	15	Poor	Poor	Poor	53.4

	TREEID	SPECIES	TRUNK	DBH (in.)	CANOPY (ft.)	HEIGHT (ft.)	HEALTH	STRUCTURE	AESTHETICS	CIRCUMFERENCE AT 2 (ft.)
201.	805	Other	Standard	11	20	30	Good	Poor	Fair	36.1
202.	806	Other	Standard	12	20	25	Fair	Poor	Poor	34.5
203.	807	Other	Standard	4.5	10	30	Poor	Poor	Poor	14.1
204.	808	Other	Standard	6	15	28	Fair	Poor	Poor	18.8
205.	809	Other	Standard	11	15	35	Poor	Fair	Fair	31.4
206.	810	Other	Standard	6.5	10	35	Poor	Fair	Fair	22.0
207.	811	Other	Standard	8	10	28	Poor	Poor	Poor	22.0
208.	812	Other	Standard	11	15	45	Fair	Fair	Fair	28.3
209.	813	Other	Standard	7	10	35	Fair	Fair	Fair	22.0
210.	814	Other	Multi	9	10	20	Fair	Poor	Poor	22.0
211.	815	Other	Standard	8.5	20	55	Fair	Good	Fair	28.3
212.	816	sycamore	multi	17.5	20	30	Poor	Poor	Poor	55.7
213.	817	sycamore	multi	6.25	15	30	Poor	Poor	Poor	22.0

APPENDIX D: JURISDICTIONAL DELINEATION REPORT

December 20, 2002

Mr. John Schafer
RICHLAND COMMUNITIES, INC.
3 Imperial Promenade, Suite 150
Santa Ana, California 92707

Re: Delineation of Jurisdictional Waters at the Etiwanda Property, San Bernardino County, California

Dear Mr. Schafer:

This letter report presents the findings of an investigation conducted by PCR Services Corporation (PCR) of jurisdictional "Waters of the U.S." and wetlands at the Etiwanda property, located in San Bernardino County, California. An assessment of jurisdictional wetlands and "Waters of the U.S." was conducted within and immediately adjacent to the 150-acre study area to determine whether or not the on-site drainages are subject to the jurisdiction of the U.S. Army Corps of Engineers (ACOE) and/or the California Department of Fish and Game (CDFG). The initial assessment was conducted by PCR Senior Ecologist Mark Sudol and Wildlife Biologist Ken Halama on September 2, 1998. A revised assessment was conducted by PCR Biologists Kristin Szabo and Ryan Roberts on October 24, 2002 to include an additional 20-acre parcel in the northwestern portion of the site, the flood control channel along the southern property boundary, and portions of off-site drainages beyond the northwestern and eastern property boundaries.

The formal jurisdictional determination was conducted to determine the presence or absence of features regulated by the ACOE, CDFG, and/or Regional Water Quality Control Board (RWQCB). As detailed in the attachment three jurisdictional drainages are present on-site totaling approximately 6,335 linear feet. These drainages support approximately 1.13 acres of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional streambed. Jurisdictional areas immediately adjacent to the site are within the three aforementioned drainages. Jurisdictional determinations were made for off-site portions of these drainages to the extent they may be impacted by activities associated with the Etiwanda Subdivision (Tentative Tract 16072) development project. Drainages measured adjacent to the site include approximately 4,343 linear feet and 0.98 acre of ACOE and CDFG jurisdictional streambed. Numerous other smaller drainages were also observed, but were not deemed jurisdictional due to their extremely ephemeral nature.

PCR is pleased to provide this letter/report summarizing the results of our jurisdictional delineation of the Etiwanda site in San Bernardino County. If you have any questions regarding our findings, please call us at (949) 753-7001.

Sincerely,
PCR SERVICES CORPORATION

Steven G. Nelson
Director of Biological Services

Kristin Szabo
Senior Biologist

Attachments

INVESTIGATION OF JURISDICTIONAL WATERS ON THE ETIWANDA SITE

SITE DESCRIPTION

The project site consists of approximately 150 acres of undeveloped land in an unincorporated area of San Bernardino County located north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue just north of the City of Rancho Cucamonga (see Figure 1, *Regional Map*, attached). The project site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. The project site is contained on the United States Geological Survey (USGS) 7.5' Cucamonga Peak Quadrangle, in Section 24, T. 1 N., R. 7 W. (see Figure 2, *Vicinity Map*, attached).

Topographically the project site is characterized by alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. There are two drainages found on the project site that convey flow from the northwest to the southeast and merge with a defined flood control channel. Scrub communities dominate the project site. The project site has an approximately 14-acre area that has been heavily disturbed by past uses including an abandoned residence, ornamental and ruderal vegetation, and geotechnical trenching areas. Elevation on the project site ranges between 1,600 and 1,800 feet above mean sea level. Surrounding land uses include vacant land to the north, a County flood control channel to the east, sparse residential development to the southeast, a water treatment plant to the south, and residential development to the west. A utility corridor with overhead power lines is adjacent to the northern property boundary.

SUMMARY OF REGULATIONS

There are three key agencies which regulate activities within inland streams, wetlands, and riparian areas in California. The ACOE Regulatory Program regulates activities pursuant to Section 404 of the Federal Clean Water Act (CWA), the CDFG regulates activities within wetlands under the Fish and Game Code Section 1600-1607, and the RWQCB under Section 401 of the Federal CWA and the California Porter Cologne Act.

The ACOE regulates "discharge of dredged or fill material" into "Waters of the U.S.," which includes tidal waters, interstate waters, and "all other waters, interstate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce or which are tributaries to waters subject to the ebb and flow of the tide" (933 C.F.R. 328.3(a)), pursuant to provisions of Section 404 of the CWA. In accordance with Section 1601 of the California Fish and Game Code (Streambed Alteration), the CDFG regulates activities which "will substantially divert, obstruct, or substantially change the natural flow or bed, channel or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit." The ACOE generally takes jurisdiction within rivers and streams to the "ordinary high water mark" (OHWM) determined by erosion, the deposition of vegetation or debris, and changes in vegetation. The CDFG takes jurisdiction to the bank of the stream or to the limit of the adjacent riparian vegetation.

Any development proposal that involves impacting the drainages, streams or wetlands on the Site through filling, stockpiling, conversion to a storm drain, channelization, bank stabilization, road or utility line crossings, or any other modification would require permits from the ACOE, RWQCB, and CDFG before any development could commence on-site. Both permanent and temporary impacts are regulated and would trigger the need for these permits. Processing of the 401 and 1603 can occur concurrently with the ACOE permit process and can utilize the same information and analysis. The ACOE will not issue its authorization until the Water Board completes the Section 401 permit. Applications to the Water Board for a Section 401 permit and CDFG for a 1603 permit both require submittal of a valid document required by the California Environmental Quality Act.

METHODS

Prior to visiting the site, a review of historic and current aerial photographs, USGS topographic map, and the Los Angeles county soil survey map was conducted. The purpose of this review was to identify current drainage features in the vicinity and make preliminary determinations on their jurisdictional status based on historic, natural drainage patterns. Drainage features were then "ground-truthed" during field observations to obtain characteristic measurements and detailed descriptions. The entire site was evaluated and all areas which fall under the jurisdiction of the ACOE and/or the CDFG were identified. ACOE jurisdictional wetlands were delineated using a routine determination according to the methods outlined in the Corps of Engineers Wetland Delineation Manual (1987) based on hydrologic and edaphic features, and on the vegetation composition of the site. Non-wetland "Waters of the U.S." were delineated based on the limits of the OHWM as determined by erosion, the deposition of vegetation or debris, and changes in vegetation. The CDFG jurisdiction was defined to the bank (OHWM) of the stream/channels or to the limit of the adjacent riparian vegetation.

PCR staff ecologists used the definitions identified above, as well as the diagnostic environmental characteristics and ACOE approved procedures for the determination of jurisdictional "Waters of the U.S." and delineation of wetlands. Each area was examined for evidence of an OHWM, saturation, and/or wetland vegetation. If any of these criteria were met, a series of transects were run to determine the extent of jurisdictional waters.

Vegetation

Vegetation is considered wetland vegetation if prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic conditions described in the definition above. Hydrophytic species have morphological, physiological, and/or reproductive adaptation(s), which enable them to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Prevalent vegetation is generally defined as greater than 50 percent of the dominant species would be obligate wetland species (OBL), facultative wetland species (FACW), or facultative species with greater probability of occurrence in wetlands (FAC+).

Soils

Soils are considered hydric if they have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions. Hydric soils are those which are flooded, or ponded long enough during the growing season to develop anaerobic conditions.

Hydrology

Hydrology is present if the area is inundated either permanently or periodically at mean water depths ≤6.6 feet, or soil is saturated to the surface at some time during the growing season of the prevalent vegetation.

In southern California with its Mediterranean climate, most streams have only ephemeral or intermittent flows and only a very small number are considered perennial watercourses. With only limited winter rainfall, there is generally not enough water for most ephemeral or intermittent streams to form well-established hydric soils. The result is that most riparian areas in the southwest do not meet the ACOE definition of a wetland but are only considered "waters". However, this does not mean these areas have less value, on the contrary, these areas have proportionally higher value and functional capacity than eastern wetlands. Southwestern riparian areas function as a refuge during the long, hot summers and provide valuable foraging and breeding habitat for a wide variety of species.

The CDFG has a broader definition on what constitutes jurisdictional "Waters of the State" of California. The CDFG determines jurisdiction based on established scientific criteria. Wetland categories which CDFG regulates include (but are not limited to) freshwater marshes, wet meadows, vernal pools, riparian woodland, riparian scrub, and coastal salt marshes. The following activities are regulated if the project will:

1. divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake designated by the Department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit;

2. use material from the streambeds designated by the Department; or

3. result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by the department.

RESULTS

The Etiwanda property is located within a portion of an alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. These processes form several major drainages which channel the high flows and a myriad of minor drainage channels which form an intricate network and carry the smaller flows during storm events. These major drainages migrate slowly across the fan as material is deposited during storm events. In the arid southwest, these major channels may take 50-100 years to migrate across a large fan. In the case of this property, the high flows are being confined to two major channels on-site and through a flood control channel at the southern property

boundary. The smaller drainages found on the project site are local drainage courses which convey runoff from rain falling on the fan itself.

As shown in Figure 3, *Etiwanda Site Drainages,* attached, the project site contains three jurisdictional drainages, labeled Drainage 1, 2, and 3. The drainges total 6,335 linear feet and support 1.13 acres of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State." Jurisdictional areas immediately adjacent to the site are within reaches of the three aforementioned drainages. Jurisdictional determinations were made for off-site portions of these drainages to the extent they may be impacted by activities associated with the Etiwanda Subdivision (Tentative Tract 16072) development project. Drainages measured adjacent to the site include approximately 4,342 linear feet and 0.98 acre of ACOE and CDFG jurisdictional streambed. None of the areas meet the ACOE definition of a jurisdictional wetland due to the lack of hydrophytic vegetation and hydric soils. The site investigation also identified other very minor drainages which exhibited indications of water flow. However, after consultation with the ACOE, these minor drainages were not considered jurisdictional because their width was less than one foot, the OHWM was not distinctive over the entire length, and there was no riparian or wetland vegetation present in or around the area. A brief description of the drainages is provided below.

Drainage 1 is an ephemeral stream which flows from the northwest to southeast. This drainage channel begins at the confluence of the concrete flood control channel which is located at the northwestern corner of the property adjacent to the housing complex and a natural channel which flows from the northwest to the southeast and merges with a defined flood control channel which parallels the southern boundary of the site. Drainage 1 is approximately 3,300 feet long and the average OHWM is 9.5 feet wide within the property. Clear evidence of an OHWM was observed. Very limited riparian vegetation, including four sycamore trees, has become established in the upper reaches. The remainder of the drainage has only upland vegetation such as mugwort, pine-bush, coyote bush, buckwheat, scale-broom, white sage and California sagebrush. Soils were rocky, sandy, and well drained with some leaf litter. On-site this drainage supports approximately 0.72 acre of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State." Jurisdiction immediately north of the site was measured for approximately 865 linear feet north of the property boundary within Drainage 1. The OHWM is an average of 7.4 feet wide within that reach. This off-site reach encompasses approximately 0.28 acre of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State."

Drainage 2 is an ephemeral stream found on the eastern side of the property which flows from the northwest to the southeast. It flows off-site and also eventually merges with the flood control channel on the southern boundary. Drainage 2 is approximately 1,310 feet long and an average of 3 feet wide within the property boundary. Evidence of an OHWM was observed. There was no riparian vegetation in or around this drainage, only upland vegetation such as pine-bush, buckwheat, white sage, deerweed, and California sagebrush. Soils were sandy and well drained with no evidence of organic layers. On-site this drainage supports approximately 0.09 acre of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State." Jurisdiction immediately adjacent to the site was measured for approximately 1,747 linear feet beyond the eastern property boundary within Drainage 2. The OHWM is an average of 10.2 feet wide within that reach. This off-site reach encompasses approximately 0.41 acre of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State".

Drainage 3 is a flood control channel that flows from west to east along the southern edge of the property boundary. This drainage conveys local surface run off from rain and the adjacent housing development and has no inlet or culvert. Drainage 3 is approximately 1,725 feet long and 8 feet wide within and immediately adjacent to the property. Evidence of an OHWM was observed. There was no riparian vegetation in or around this drainage, only upland vegetation such as pine-bush, white sage, and California sagebrush. Soils were sandy and well drained with no evidence of organic layers. On-site this drainage supports approximately 0.32 acre of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State". Jurisdiction immediately adjacent to the site was measured for approximately 1,731 linear feet beyond the southeastern property boundary within Drainage 3. The OHWM is an average of 7.4 feet wide within that reach. This off-site reach encompasses approximately 0.29 acre of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State."

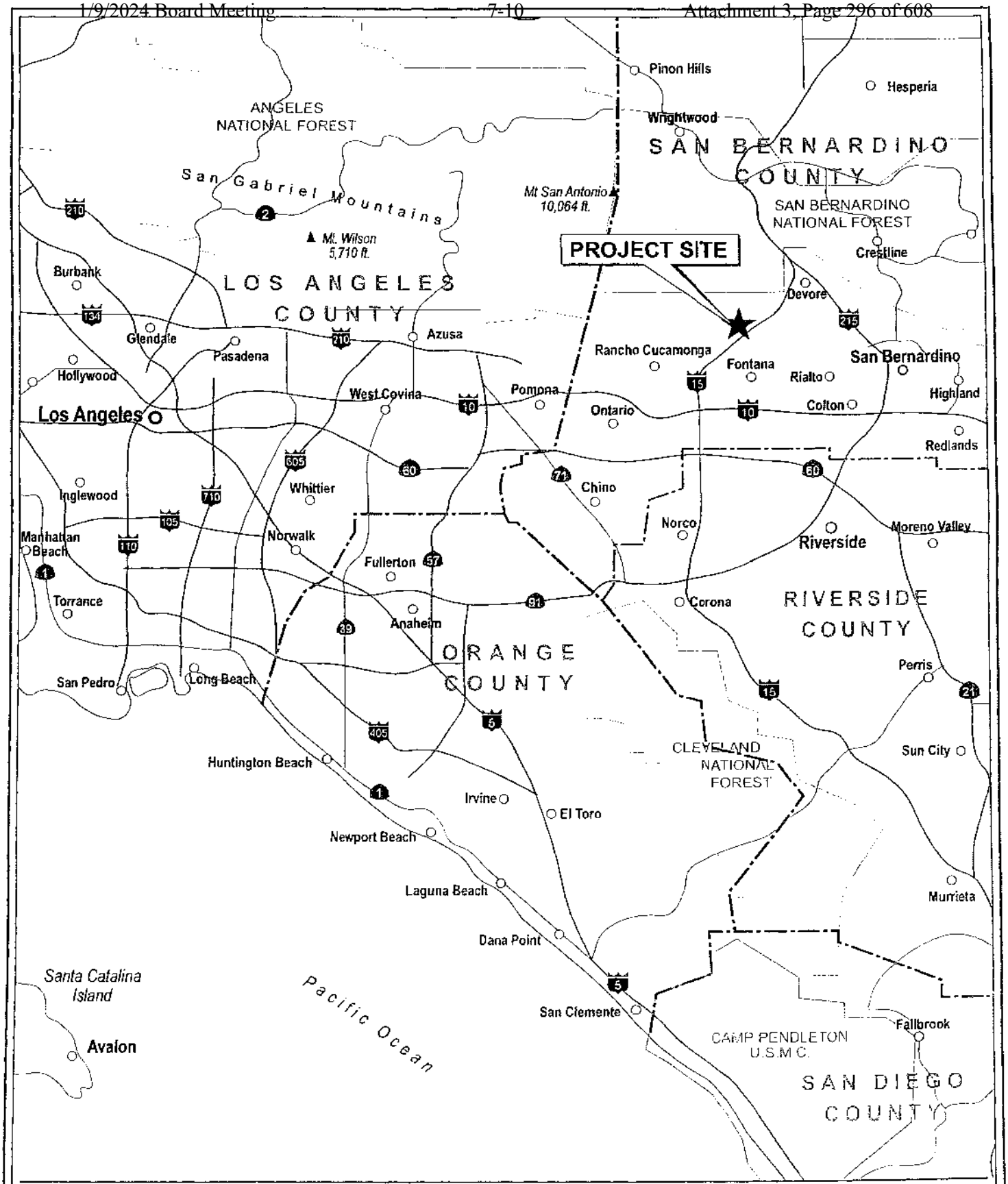
CONCLUSIONS

The Etiwanda property contains a total of three jurisdictional drainages totaling approximately 6,335 linear feet on-site. In addition, 4,343 linear feet within these three drainages were measured off-site. There are 1.13 acres of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State" on-site. In addition 0.98 acre of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State" were measured off-site. All drainages are ephemeral, and most likely only contain flowing water during storm events. There is little or no evidence of riparian vegetation (four sycamore trees within Drainage 1) and no wetlands were observed. Drainages 1, 2, and 3 have been characterized as jurisdictional waters due to the presence of hydrology indicators OHWM and photographic evidence of historical drainages patterns in the vicinity. Drainage 1 and 3 are indicated on USGS topographic maps as blue-line streams. The habitat on the project site typifies alluvial out-wash areas found to the west of the peninsular mountain ranges in southern California.

Table 1
Etiwanda Subdivision
Summary of Jurisdictional Area

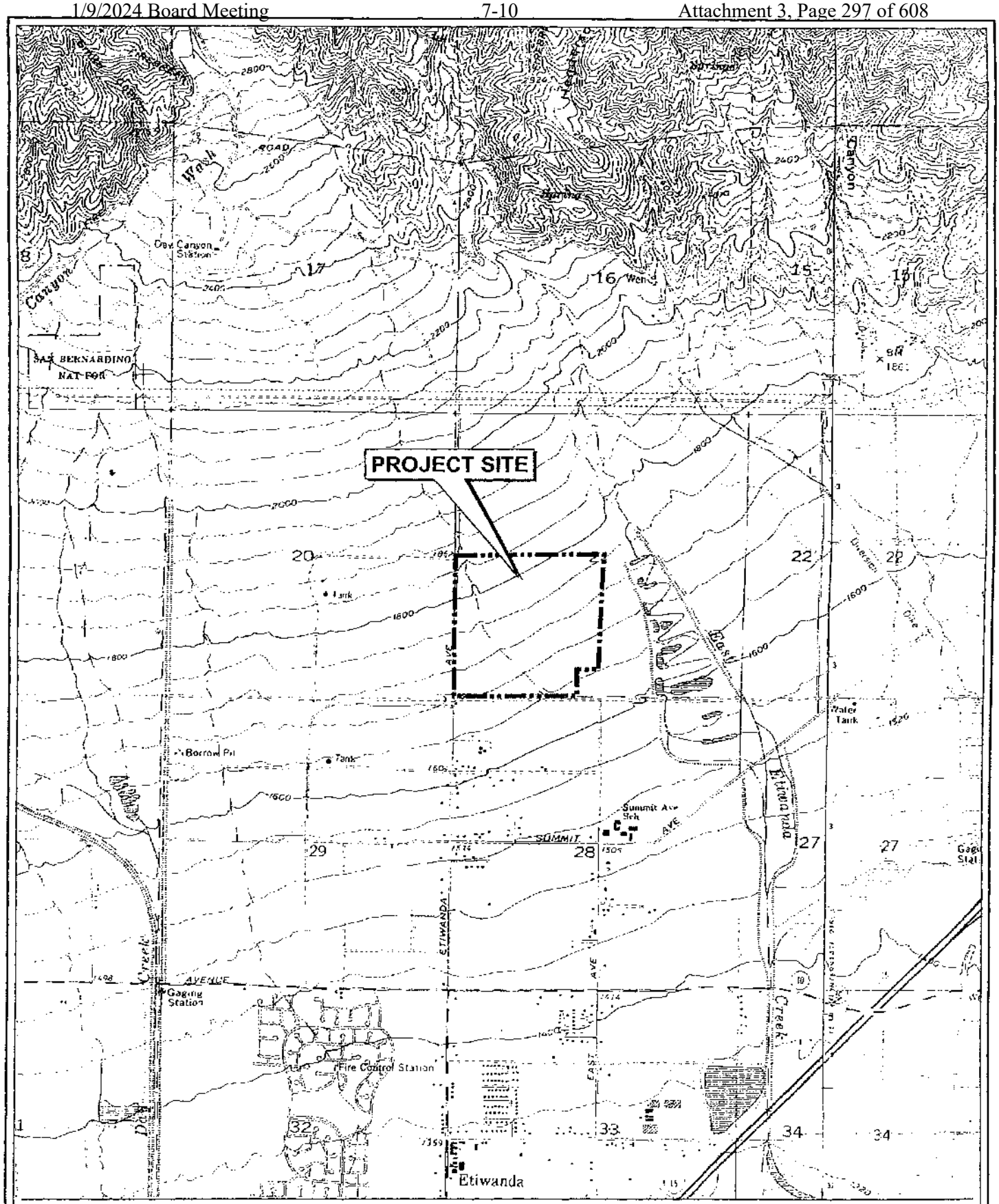
	On-site Length (ft.)	Off-site Length (ft.)	On-site ACOE (acres)	Off-site ACOE (acres)	On-site CDFG (acres)	Off-site CDFG (acres)	Nature
Drainage 1	3,300	865	0.72	0.28	0.72	0.28	Ephemeral
Drainage 2	1,310	1,747	0.09	0.41	0.09	0.41	Ephemeral
Drainage 3	1,725	1,731	0.32	0.29	0.32	0.29	Ephemeral
Total	**6,335**	4,343	1.13	**0.98**	**1.13**	**0.98**	

Source: PCR Services Corporation 1998 and 2002



Source: PCR Services Corporation, 2002.

Figure 1
Etiwanda Subdivision
Tentative Tract 16072
Regional Map



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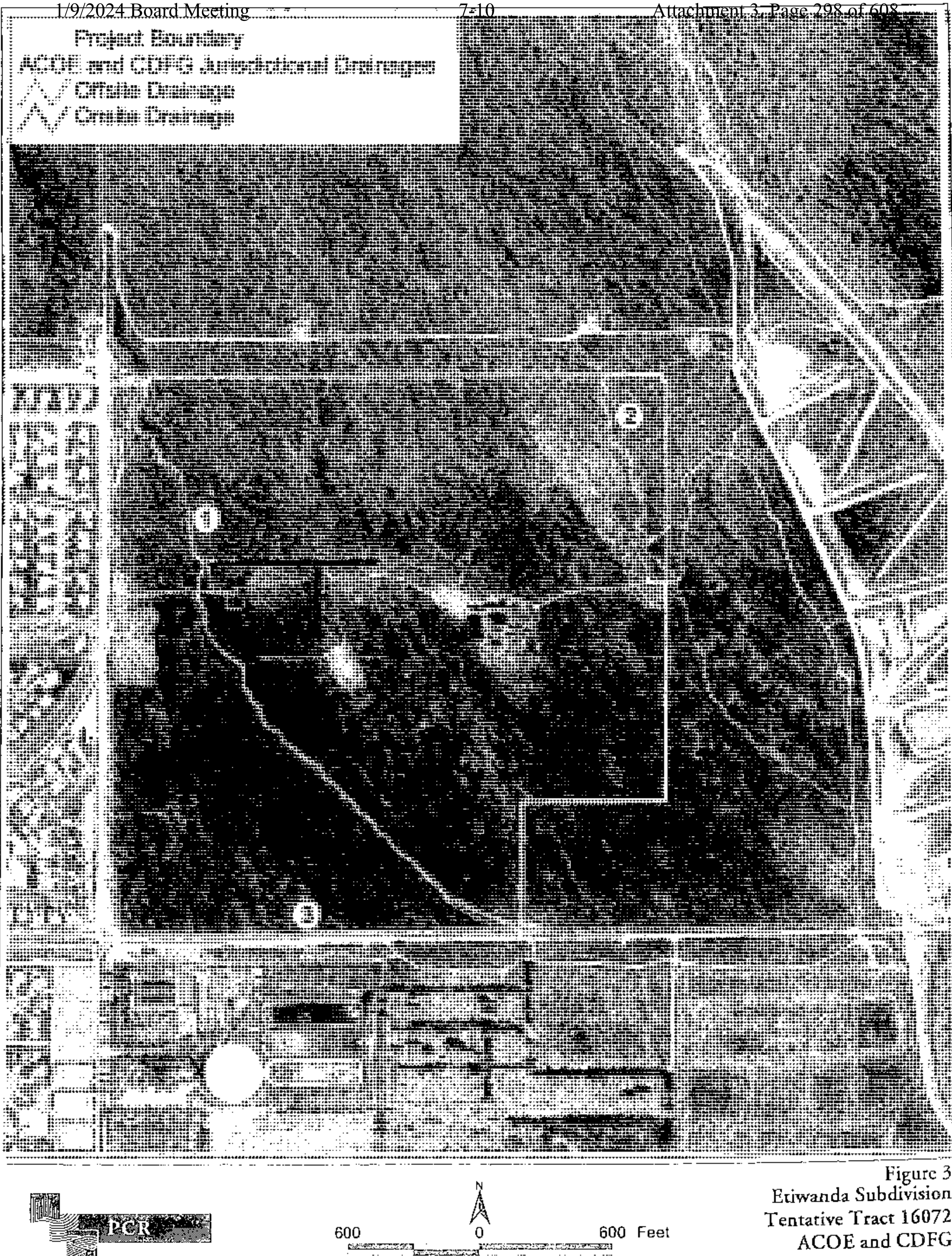
Source: USGS Quadrangles Cucamonga Peak and Devore, California 1966, photorevised 1988.

Figure 2
Etiwanda Subdivision
Tentative Tract 16072
Vicinity Map



Source: PCR Services Corporation, 2002.

Figure 3
Etiwanda Subdivision
Tentative Tract 16072
ACOE and CDFG
Jurisdictional Drainages

SAN BERNARDINO KANGAROO RAT (*Dipodomys merriami parvus*) Trapping Program - Etiwanda Tentative Tract 16072

San Bernardino County, California

Final Report

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October 2002

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TABLE OF CONTENTS

Page

LIST OF FIGURES

San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) Trapping Program Etiwanda Tentative Tract 16072 San Bernardino County, California

1.0 INTRODUCTION

A focused trapping program was conducted to determine the presence/absence of the federally endangered San Bernardino kangaroo rat (*Dipodomys merriami parvus*), (SBKR) within those areas directly or indirectly impacted by the proposed Etiwanda Tentative Tract 16072 proposed development (Project Site) including all suitable habitats located within the Edison Corridor (immediately north of the project site), east tributaries, and East and West Avenue extensions.

1.1 SAN BERNARINO KANGAROO RAT NATURAL HISTORY

The SBKR was first described in 1894. It is the most highly differentiated of the nineteen recognized subspecies of Merriam's kangaroo rat (*Dipodomys merriami*). Historically, this subspecies was known to occur in at least 25 locations within its range. Today it has been reduced to eight known locations of which only four, including Santa Ana Wash, San Jacinto Wash, Lytle Creek and Cajon Wash, contain substantial populations. The remaining populations are threatened by habitat loss and fragmentation in conjunction with urban development, flood control projects, off-road vehicle use, and sand and gravel mining operations and include Bautista Creek and Etiwanda alluvial fan (USFWS 2002). In an attempt to reverse the trend, the SBKR was designated by the United States Fish and Wildlife Service (USFWS) as a Category 2 candidate species for federal listing as endangered or threatened in 1991. In 1994, the USFWS reviewed new information supporting the proposal for listing and elevated its status to Category 1. Subsequently, the SBKR was emergency listed as endangered on January 27, 1998 and formally listed on September 24, 1998 (USFWS). In addition, the California Department of Fish and Game (CDFG) listed it as a "Species of Special Concern". This species is primarily found on sandy loam substrates, characteristic of alluvial fans and floodplains (USFWS 1994). These habitats are generally dominated by alluvial scrub vegetation, which consists of chaparral and sage scrub species.

On April 23, 2002, the USFWS designated 13,485 hectares (33,295 acres) of land in Riverside and San Bernardino counties, California, as critical habitat for the endangered SBKR. The USFWS states:

> "Critical habitat identifies geographic areas that are important for the conservation of a threatened or endangered species and which may require special management considerations. However, a designation does not affect

land ownership or establish a refuge, wilderness, reserve, preserve, or other special conservation area. It does not allow government or public access to private lands and does not close areas to all access or use. Rather, its impact is that federal agencies must consult with the Service on activities they undertake, fund, or permit that may affect critical habitat.

The areas designated as critical habitat are identified in four separate units. The four units are within the geographical range of the San Bernardino kangaroo rat and support the habitats the species requires for foraging, sheltering, reproduction, rearing of young, dispersal, and genetic exchange." USFWS 2002.

Specifically, the project site is located completely within critical habitat Unit 4: Etiwanda Alluvial Fan Wash. As stated by the USFWS:

"*The Etiwanda Alluvial Fan and Wash which encompass approximately 1.950 ha (4,820 ac.), is located in western San Bernardino County and represents the approximate westernmost extent of the known range of the San Bernardino kangaroo rat. Within the northern boundary of the unit are portions of San Bernardino National Forest. This unit includes lands within and between the active hydrological channels of Deer, Day, and Etiwanda creeks. A large alluvial fan, floodplains, and terraces occur throughout the unit. Soils are primarily sandy or sandy loam and support alluvial fan sage scrub. This unit also includes portions within the boundaries of the cities of Rancho Cucamonga and Fontana; and the approximately 310 ha (760 ac) North Etiwanda Preserve*" (USFWS 2002).

1.2 PROJECT SITE LOCATION/DESCRIPTION

The project site is located in unincorporated San Bernardino County (County) north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue north of the City of Rancho Cucamonga as shown in Figure 1, Regional Map. The project site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains, approximately 0.9 km (0.6 mile) south of the North Etiwanda Preserve as shown in Figure 2, Vicinity Map. The project site is contained on the United States Geological Survey (USGS) 7.5' Cucamonga Peak Quadrangle, in Section 24, T1N, R7W as shown in Figure 2, Vicinity Map. The elevation of the project site is approximately 488 m to 549 m (1,600 to 1,800) feet above mean sea level (MSL).

As described by PCR Services Corporation:

"*Topographically, the project site is characterized by alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. There are two major drainages found on the project site which convey flows from the northwest to the southeast and merges with a defined flood control channel. Riversidean sage scrub dominates the project site with small drainages forming a network throughout the project site. The*

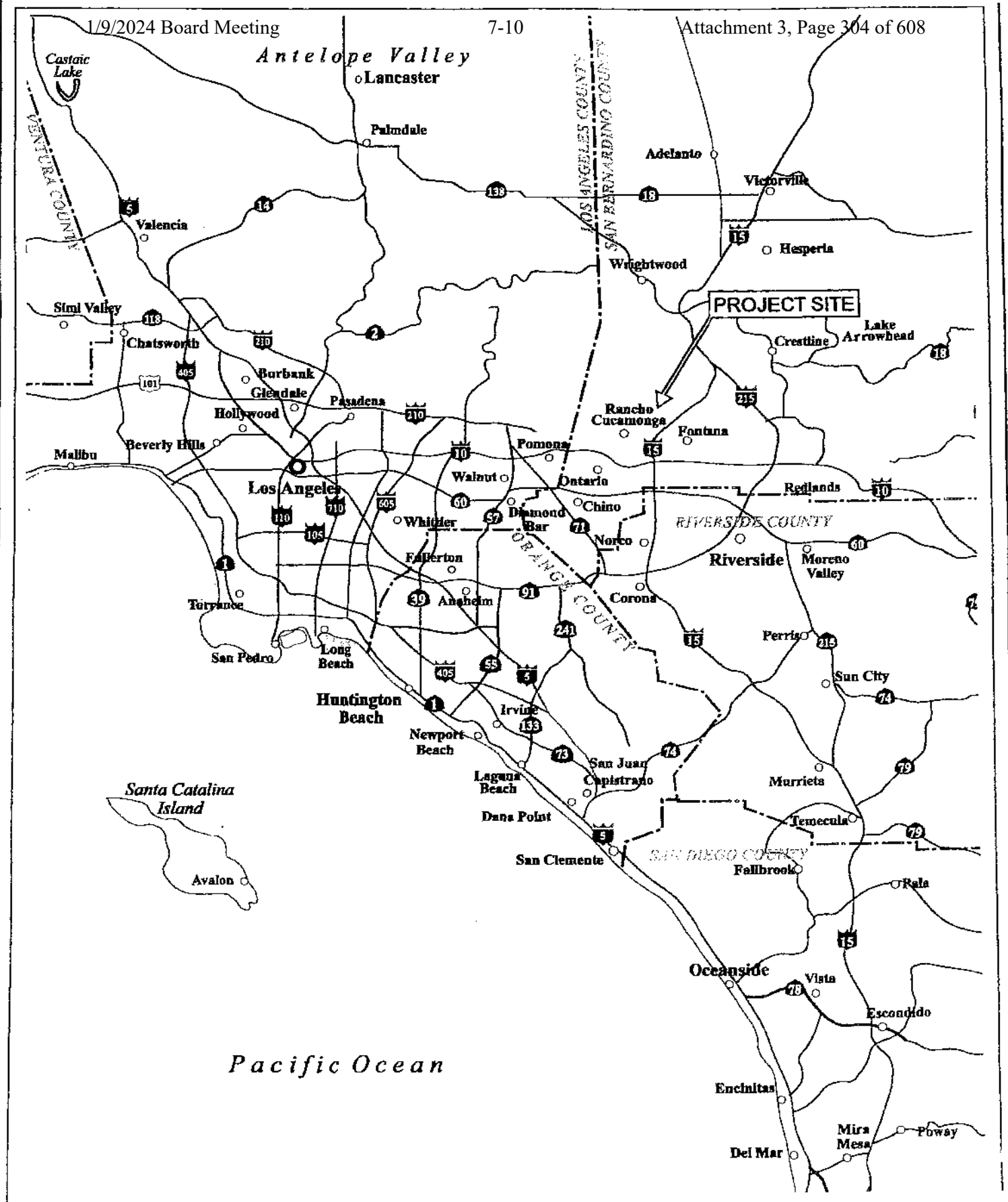

Figure 1 - Regional Map
Etiwanda Tentative Tract 16072
San Bernardino Kangaroo Rat Trapping Program

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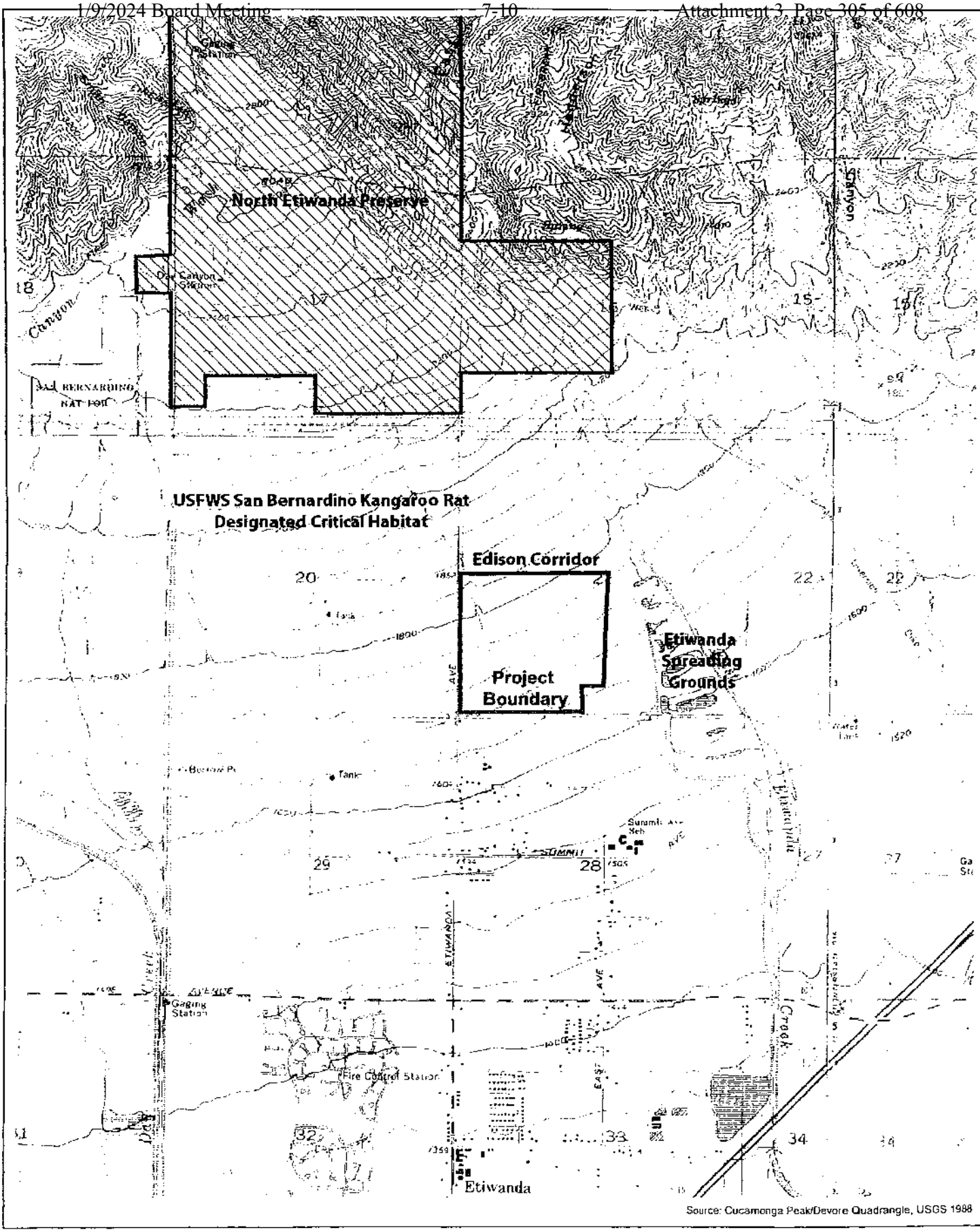

Figure 2 - Vicinity Map
Etiwanda Tentative Tract 16072
San Bernardino Kangaroo Rat Trapping Program

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project site has an approximately 14-acre area that has been heavily disturbed by past uses including an abandoned residence, ornamental and ruderal vegetation, and geotechnical trenching areas. Surrounding land uses include vacant land to the north, a County flood control channel (Etiwanda Spreading Grounds) *to the east, sparse residential development to the southeast, a water treatment plant to the south, and residential development to the west. A utility corridor with overhead power lines* (Edison Corridor) *is adjacent to the northern property boundary.*" (PCR Services Corporation 2001)

1.3 PROPOSED PROJECT/DESCRIPTION

The proposed project provides for the development of single-family detached residential units, multi-purpose trails, and open space paseos and areas on approximately 160 acres of undeveloped land. Landscape areas would be provided adjacent to all internal roadways, within an enhanced parkway in the primary internal north-south street, within an enhanced parkway on the north side of Wilson Avenue, and within in a paseo on the south side of Wilson Avenue (PCR Services Corporation 2001).

The discussion of natural community names and hierarchical structure follows the CDFG List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base, January 1999 Edition. A brief summary of each natural community is discussed below. Natural community descriptions are based on PCR Services Corporation findings, Sawyer and Keeler-Wolfe (1995), and/or Holland (1986), as appropriate. In addition, a description of the locations on the project site and the variations of the community are discussed. Listed with each natural community is the CNDDB community code. Natural communities are mentioned in hierarchical order according to the CNDDB (PCR Services Corporation 2001).

Riversidean Alluvial Fan Sage Scrub (32.005.02)

Riversidean alluvial fan sage scrub is distinguished by its vegetative composition, including being dominated by more mesic species than most coastal sage scrub stands. This community may be found on sandy, rocky alluvia deposited by streams and is adapted to harsh outwash conditions with porous, low fertility substrate. Riversidean alluvial fan sage scrub is considered a distinct and rare plant community found primarily on alluvial fans and flood plains along the southern bases of the Transverse Ranges and portions of the Peninsular Range in southern California (CNDDB 1999). Scalebroom (*Lepidospartum squamatum*), considered indicative of the alluvial scrub association, is also referred to as "scalebroom series" by Sawyer and Keeler-Wolf (1995). Riversidean alluvial sage scrub consists of numerous evergreen shrubs, a diverse assemblage of sub-shrubs, a springtime ground cover of annual wildflowers, and scalebroom, a shrub with high fidelity to alluvial substrates (Hanes et al. 1989). Smith (1980) describes three types of alluvial scrub recognized as pioneer, intermediate, and mature stands each containing scalebroom as a dominant species.

The Etiwanda project site supports typical characteristic plants of Riversidean alluvial fan sage scrub throughout the drainage bisecting the project site flowing northwest to southeast. Plant species found on the project site include scalebroom, white sage (*Salvia apiana*), California sagebrush (*Artemesia californica*), California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), yerba santa (*Eriodictyon trichocalyx*), pine-bush (*Ericameria pinifolia*), locoweed (*Astragalus* spp.), deerweed (*Lotus scoparius*), California aster (*Lessingia filaginifolia*), California croton (*Croton californicus*), holly-leaved cherry (*Prunus ilicifolia*), bushmallow (*Malacothamnus fasciculatus*), hoaryleaf ceanothus (*Ceanothus crassifolius*), and green bark ceanothus (*Ceanothus spinosus*).

Upland Riversidean Sage Scrub (32.005.00)

Riversidean sage scrub is the most xeric expression of coastal sage scrub in southern California. It is the driest, most inland expression of the collection of sage scrub or coastal scrub series, and ranges throughout southern California south into Baja California between approximately 457 m to 1,372 m (1,500 and 4,500) feet above MSL. Typically this low, open shrub occurs on dry sites such as steep slopes, severely drained soils or clays that release stored moisture slowly. This community consists of drought-deciduous low shrubs, averaging two to three feet in height, and an herbaceous understory.

The upland Riversidean sage scrub community, found along the step-like scrub covered terrace of the site, represents a predominant expression of alluvial fan sage scrub as a monotypic stand of white sage. Also known as white sage series in Sawyer and Keeler-Wolf (1995), this community is dominated by white sage or white sage co-dominant with California sagebrush. Plant species found throughout the terrace area on-site include white sage, California sagebrush, California buckwheat, pine-bush, locoweed, California aster, brome grass (*Bromus* spp.), deerweed, yerba santa, holly-leaved cherry, wand buckwheat (*Eriogonum elongatum*), green bark ceanothus, our Lord's candle (*Yucca whipplei*), wild oat (*Avena fatua*), storksbill (*Erodium cicutarium*), and California croton as shown in Figure 3, *Site Photographs*.

Disturbed/Disturbed Upland Riversidean Sage Scrub (32.005.00)

Disturbed areas on the project site are mostly devoid of vegetation as the result of an abandoned residence and geotechnical trenching areas. In some areas there are small amounts of vegetation beginning to re-establish (predominately non-native, weedy species adapted to frequent disturbance) including Riversidean sage scrub species. Many of the characteristic species of disturbed habitat are also indicator species of non-native grasslands, but disturbed areas tend to be dominated more by forbs than grasses as shown in Figure 4, *Site Photographs*.

Types of disturbed areas found on the project site include cleared land, geotechnical trenching areas, and dirt access roads. Ruderal vegetation found on the project site includes non-native grasses and a high proportion of weedy species including castor bean (*Ricinus communis*), telegraph weed (*Heterotheca grandiflora*), and black mustard (*Brassica nigra*). There are also eight Southern California black walnut trees located in the immediate vicinity of the abandoned residence as shown in Figure 4, *Site Photographs*.

Top: Northeast view from the southwest corner of the project site. Bottom: Northwest view from the southeast corner of the project site. Upland Riversidean sage scrub is the dominant vegetation community occurring onsite as shown in both photographs.

Figure 3 - Site Photographs
Etiwanda Tentative Tract 16072
San Bernardino Kangaroo Rat Trapping Program

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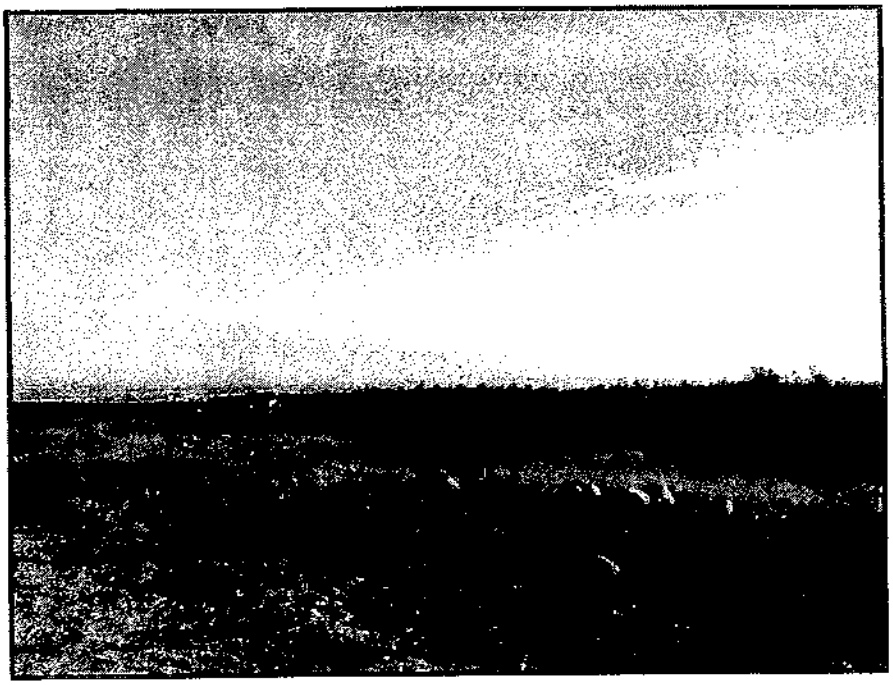

Top: Southwest view from the northeast corner of the project site. Disturbed/Upland Riversidean sage scrub transitions to Upland Riversidean sage scrub near the center of the photograph. Bottom: West view toward the center of the project site. The stand of eucalyptus (ornamental plantings) located in the center of the photograph represent the approximate center of the project site.

Figure 4 - Site Photographs
Etiwanda Tentative Tract 16072
San Bernardino Kangaroo Rat Trapping Program

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Ornamental Landscaping (99.900.06)

Developed and otherwise disturbed areas on the project site have ornamental landscaping species which include blue gum (*Eucalyptus globulus*), Peruvian pepper tree (*Schinus molle*), olive tree (*Olea europaea*), oleander (*Nerium oleander*), and silk tree (*Albizia julibrissin*) as shown in Figure 4, *Site Photographs.*

2.0 METHODOLOGY

In a collective effort to adequately determine presence/absence of the SBKR within and adjacent to those areas potentially impacted by the proposed project, two separate trapping bouts were conducted. Each trapping bout consisted of 240 traps set and checked for 5 consecutive days/nights for a total of 2,400 trap nights (one trap night = one trap set and checked for one night) as shown in Figure 5, *Trapline Locations*. Nine inch (modified) and twelve inch Sherman live traps were alternated throughout the trap lines resulting in 120 nine inch and 120 twelve inch traps set per bout. Each trap was baited with an oatmeal/seed mix. All animals captured were identified. In addition, all target species were measured. Measurements included HF-hind foot (mm), E-ear (mm), T-tail (mm), BL-body length (mm), and TL-total length. All traps were placed near characteristic k-rat/small mammal sign (active burrow entrances/dust baths, runways, etc.).

Specifically, 400 traps were placed in transects located throughout the project site or immediately adjacent to the northern (Edison Corridor) and southeast boundary, 60 traps were set in a rivulet (east of the project site boundary) extending in a southeast direction toward the Etiwanda Spreading Grounds, and 20 traps were set adjacent to the intersection of unimproved East and Wilson Avenues for a total of 480 traps. The trapping effort (480 traps) conducted within (160 acres) or immediately adjacent (approximately 35 acres) to the project site represented a density of 2.5 traps/acre.

All trapping was conducted by Ruben S. Ramirez, Jr. of Cadre Environmental as authorized by USFWS Federal Permit 780566 and CDFG Memorandum of Understanding, while assisted by Jason Berkley of PCR Services Corporation. Trapping bout 1 was conducted from August 27th to August 31st, 2002 and trapping bout 2 was conducted from September 24th to September 28th, 2002.

3.0 RESULTS

No SBKR were captured during the trapping program. However, three (3) sensitive species were documented and include the Los Angeles pocket mouse (*Perognathus longimembris brevinasus*) a California Special Concern and Forest Service Sensitive Species and northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*) and San Diego desert woodrat (*Neotoma lepida intermedia*), California Special Concern Species as

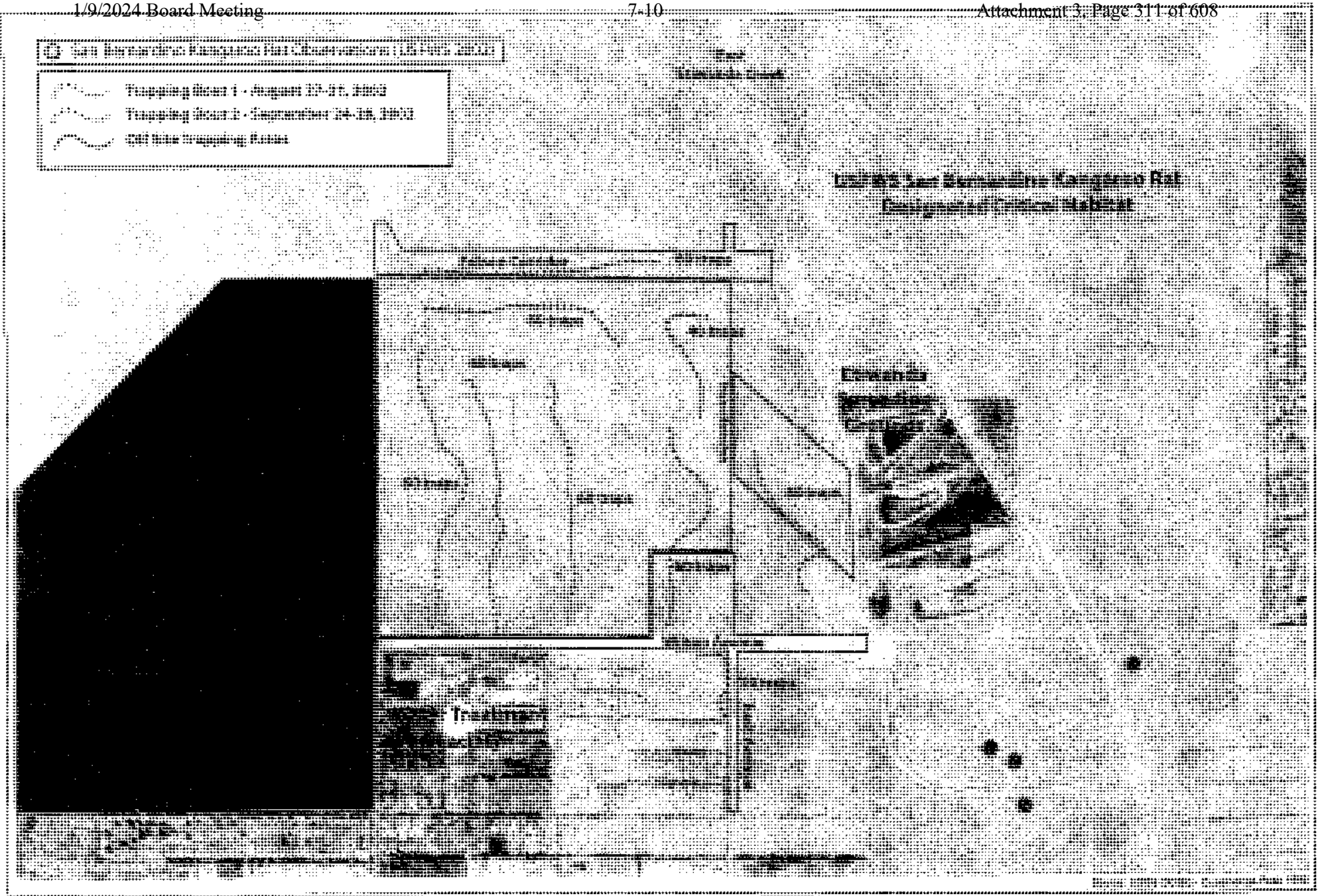

Figure 5 - Trapline locations
Etiwanda Tenative Tract 16072
San Bernardino Kangaroo Rat Trapping Program

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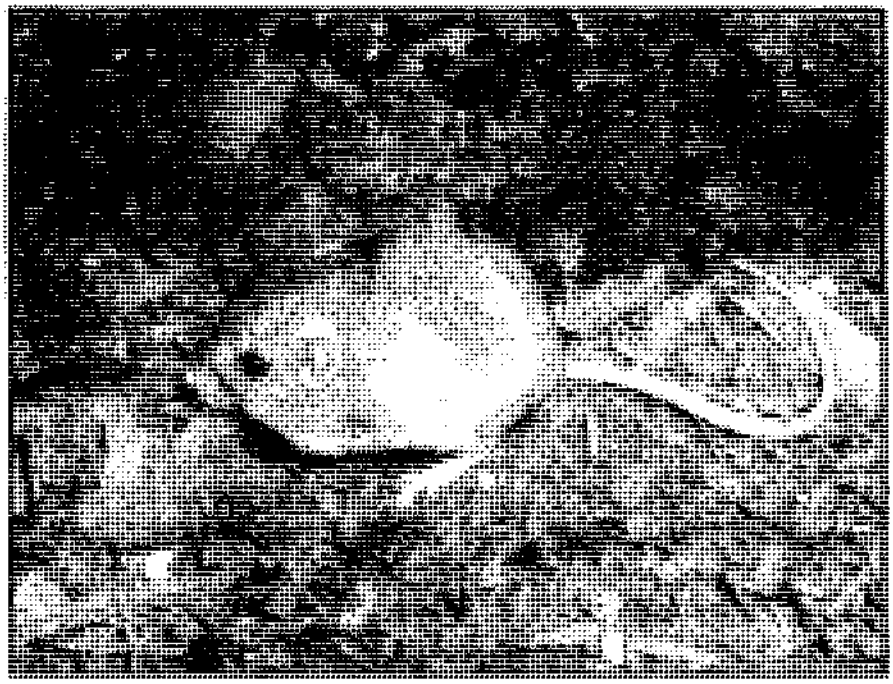
1 inch = 640 feet

shown in Figures 6 and 7, *Mammal Photographs.* Eight (8) additional small mammal species were captured during the trapping program including the California pocket mouse (*Chaetodipus californicus*), Dulzura kangaroo rat (*Dipodomys simulans*) , California mouse (*Peromyscus californicus*), western harvest mouse (*Reithrodontomys megalotis*), cactus mouse (*Peromyscus eremicus*), deer mouse (*Peromyscus maniculatus*), dusky-footed woodrat (*Neotoma fuscipes*), and house mouse (*Mus musculus*) as shown in Appendix A, *2002 San Bernardino Kangaroo Rat Trapping Program – Etiwanda Tentative Tract 16072, Trapping Bout 1 and 2.*

Although no SBKR were documented during the trapping program, four (4) observations have been documented approximately 700 m (2,297 feet) southeast of the project site within and adjacent to the southern portion of the Etiwanda Spreading Grounds (USFWS 2002) as shown in Figure 5, *Trapline Locations.* The project site is also contained within the USFWS designated critical habitat as shown in Figure 5, *Trap Line Locations.* As stated previously, "The fact that a project occurs within a designated critical habitat for a listed species does not allow the government or public access to private lands and does not close areas to all access or use; rather, its impact is that federal agencies such as the US Army Corps of Engineers (Corps) must consult with the USFWS on activities they undertake, fund, or permit that may affect critical habitat. Specifically, in the event the tributaries located within the project site are regulated by the Corps, consultation with the USFWS would be required.



Los Angeles Pocket Mouse (*Perognathus longimembris brevinasus*) - California Special Concern Species (CSC), Forest Service Sensitive (FS)

Dulzura Kangaroo Rat (*Dipodomys simulans*)

Figure 6 - Mammal Photographs
Etiwanda Tentative Tract 16072
San Bernardino Kangaroo Rat Trapping Program

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Northwestern San Diego Pocket Mouse (*Chaetodipus fallax fallax*) - California Special Concern Species (CSC).

California Pocket Mouse (juvenile) (*Chaetodipus californicus*)

Figure 7 - Mammal Photographs
Etiwanda Tentative Tract 16072
San Bernardino Kangaroo Rat Trapping Program

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4.0 LITERATURE CITED

Braden, G.T., McKernan, R.L. 2000. A Data Based Survey Protocol and Quantitative Description of Suitable Habitat for the Endangered San Bernardino Kangaroo Rat (Dipodomys merriami parvus). San Bernardino County Museum of Natural History.

Cockrum, E.L. 1962. Introduction to Mammalogy. Ronald Press, New York.

Erickson, Richard A. Undated. Pacific Pocket Mouse (*Perognathus longimembris pacificus).* LSA Associates, Inc.

Hall, E.R. 1981. The Mammals of North America. Ronald Press, New York.

Holland, R.F. 1986, updated 1992. Preliminary Descriptions of the Terrestrial Natural Communities of California. Unpublished report. State of California Resources Agency, California Department of Fish and Game, Non-Game Heritage Division, Sacramento, CA.

Ingles, L.G. 1965. Mammals of the Pacific States. Stanford Press, Stanford.

Jameson, E.W. Jr., and H.J. Peeters. 1988. California Mammals. University of California Press, Berkeley.

McKernan, Robert L. Undated. Los Angeles Pocket Mouse (*Perognathus longimembris brevinasus*). San Bernardino County Museum of Natural History.

McKernan, Robert L. September 1997. The Status and Known Distribution of the San Bernardino Kangaroo Rat (Dipodomys merriami parvus): field surveys conducted between 1987 and1996. San Bernardino County Museum of Natural History.

Montgomery, S.J. 1998a. Results of a Life-Trapping Survey for the San Bernardino Merriam's Kangaroo Rat (SBKR) (*Dipodomys merriami parvus*) on the approximately 470-acre Lytle Creek Project in the County of San Bernardino. SJM Biological Consultants for Sunwest Materials, Inc.

Montgomery, S.J. 1998b. Results of a Life-Trapping Survey for the San Bernardino Merriam's Kangaroo Rat (SBKR) (*Dipodomys merriami parvus*) on the approximately 470-acre Lytle Creek Project in the County of San Bernardino. SJM Biological Consultants for Sunwest Materials, Inc.

O'Farrell, M.J. 1978. Home Range Dynamics of Rodents in a Sagebrush Community. J. Mamm. 59:657-668.

PCR Services Corporation, 2000, Jurisdictional Waters at the Etiwanda Property, San Bernardino County, California.

PCR Services Corporation, 2001. Biological Resources Assessment – Etiwanda Properties Tentative Tract 16072, San Bernardino, California. 57 pp.

Ramirez, Ruben S. 1998. Population Densities of the San Bernardino Kangaroo Rat and Los Angeles Pocket Mouse for the Lytle Creek North Village Project. Planning Consultants Research. Irvine, California.

San Bernardino County Museum. June 26, 1993. Biology and Management of Rodents in Southern California.

Sapphos Environmental, Inc. June 15, 1999. Results of San Bernardino Kangaroo Rat Survey on Interstate I-15 between Sierra Avenue Avenue and Kenwood near Devore, San Bernardino County, California.

Sawyer, J. O. and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento, CA.

Slade, Norman A., Eifler, Maria A., Gruenhagen, Ned M., and Davelos, Anita L. 1993. Differential Effectiveness of Standard and Long Sherman Livetraps in Capturing Small Mammals.

U.S. Department of the Interior, Fish and Wildlife Service. July 11, 1994. Endangered and Threatened Wildlife and Plants; Emergency Rule to List the San Bernardino Kangaroo Rat as Endangered. 50 CFR Part 17.

U.S. Department of the Interior, Fish and Wildlife Service. 1998. Emergency Rule to List the San Bernardino Kangaroo Rat, San Bernardino and Riverside Counties in Southern California as Endangered. Federal Register 64(17):3835-3843.

U.S. Department of the Interior, Fish and Wildlife Service. 2000. Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the San Bernardino Kangaroo Rat; Proposed Rule. Federal Register 65(237):177178-77208.

U.S. Department of the Interior, Fish and Wildlife Service. 2002. Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the San Bernardino Kangaroo Rat; Final Rule. Federal Register 67(78):19812-19831.

U. S. Geological Survey. Devore 7.5' Topographic Quadrangle. 1966, photorevised 1988.

APPENDIX A

2002 San Bernardino Kangaroo Rat Trapping Program
Etiwanda Tentative Tract 16072

Trapping Bout 1

	8/27	8/28	8/29	8/30	8/31	Total
Number of Traps	240	240	240	240	240	1,200
Species						
*Los Angeles pocket mouse (*Perognathus longimembris brevinasus*)	7	5	9	5	7	33
California pocket mouse (*Chaetodipus californicus*)	0	0	0	1	4	5
**Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)	49	66	73	78	97	363
Dulzura Kangaroo Rat (*Dipodomys simulans*)	2	5	4	5	6	22
California mouse (*Peromyscus californicus*)	7	6	7	2	3	25
Western harvest mouse (*Reithrodontomys megalotis*)	0	0	0	1	0	1
Cactus mouse (*Peromyscus eremicus*)	4	7	5	8	7	31
Deer mouse (*Peromyscus maniculatus*)	11	7	10	7	5	40
Dusky-footed woodrat (*Neotoma fuscipes*)	0	0	0	1	0	1
**San Diego desert woodrat (*Neotoma lepida intermedia*)	8	4	8	5	3	28
House mouse (*Mus musculus*)	0	0	0	0	0	0
Total	**88**	**100**	**116**	**113**	**132**	**549**
Capture Ratio %	**37**	**42**	**48**	**47**	**55**	**45**

Source: Cadre Environmental 2002

*California Special Concern Species, Forest Service Sensitive
**California Special Concern Species

APPENDIX A - continued

2002 San Bernardino Kangaroo Rat Trapping Program
Etiwanda Tentative Tract 16072

Trapping Bout 2

	9/24	8/25	8/26	8/27	8/28	Total
Number of Traps	240	240	240	240	240	1,200
Species						
*Los Angeles pocket mouse (*Perognathus longimembris brevinasus*)	6	4	8	12	6	36
California pocket mouse (*Chaetodipus californicus*)	0	2	1	1	2	6
**Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)	48	52	70	73	59	302
Dulzura Kangaroo Rat (*Dipodomys simulans*)	6	3	3	7	11	30
California mouse (*Peromyscus californicus*)	14	8	13	8	7	50
Western harvest mouse (*Reithrodontomys megalotis*)	2	0	1	0	0	3
Cactus mouse (*Peromyscus eremicus*)	4	4	7	0	3	18
Deer mouse (*Peromyscus maniculatus*)	5	2	0	7	4	18
Dusky-footed woodrat (*Neotoma fuscipes*)	0	0	0	0	0	0
**San Diego desert woodrat (*Neotoma lepida intermedia*)	2	6	5	6	4	23
House mouse (*Mus musculus*)	0	0	1	0	0	1
Total	**87**	**81**	**109**	**114**	**96**	**487**
Capture Ratio %	**36**	**34**	**45**	**48**	**40**	**41**

Source: Cadre Environmental 2002

*California Special Concern Species, Forest Service Sensitive
**California Special Concern Species

PCR

September 20, 2001

Robert Henninger
RICHLAND COMMUNITIES, INC.
3 Imperial Promenade, Suite 150
Santa Ana, California 92707

Re: Results of Focused Sensitive Plant Surveys for the Etiwanda Project Site, San Bernardino County, California

Dear Mr. Henninger:

This report presents the findings of focused sensitive plant surveys for the Etiwanda project site in San Bernardino County, California. PCR Services Corporation (PCR) biologists conducted surveys within the 130-acre study area to determine the presence or absence of special status plant species potentially located within the project site. Plummer's mariposa lily (*Calochortus plummerae*) [California Native Plant Society (CNPS) List 1B (Rare, Threatened, or Endangered in California and Elsewhere)] and Southern California black walnut (*Juglans californica*) [CNPS List 4 (Species of limited distribution in California, but whose existence does not appear to be susceptible to threat.)] were observed on-site.

STUDY AREA

The project site consists of approximately 130 acres of undeveloped land in an unincorporated area of San Bernardino County located north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue just north of the City of Rancho Cucamonga (see Figure 1, *Regional Map*, attached). The project site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. The project site is contained on the United States Geological Survey (USGS) 7.5' Cucamonga Peak Quadrangle, in Section 24, T. 1 N., R. 7 W. (see Figure 2, *Vicinity Map*, attached).

Topographically the project site is characterized by an alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. There are two drainages found on the project site that convey flow from the northwest to the southeast and merge with a defined flood control channel. Upland Riversidean sage scrub dominates the project site. The project site has an approximately 14-acre area that has been heavily disturbed by past uses including an abandoned residence, ornamental and ruderal vegetation, and geotechnical trenching areas. Elevation on the project site ranges between 1,600 and 1,800 feet above mean sea level. Surrounding land uses include vacant land to the north, a County flood control channel to the east, sparse residential development to the southeast, a water treatment plant to the south, and residential development to the west. A utility corridor with overhead power lines is adjacent to the northern property boundary.

PCR

VEGETATION

The discussion of vegetation/plant community names and hierarchical structure follows the California Department of Fish and Game's (CDFG) *List of California Terrestrial Natural Communities Recognized by the Natural Diversity Database.*[1] A brief summary of each plant community is discussed below. Community descriptions are based on PCR findings, Sawyer and Keeler-Wolfe,[2] and/or Holland,[3] as appropriate. In addition, a description of the locations on the project site and the variations of the community are discussed. Listed with each community are two numbers: the first is the California Natural Diversity Database (CNDDB) community code, the second is the on-site community acreage. The locations of the communities on the project site are indicated in Figure 3, *Locations of the Communities on the Project Site*, attached.

Riversidean Alluvial Fan Sage Scrub (32.005.02) (3.9 acres)

The Etiwanda project site supports typical characteristic plants of Riversidean alluvial fan sage scrub throughout the drainage bisecting the project site flowing northwest to southeast. Plant species found on the project site include scalebroom (*Lepidospartum squamatum*), white sage (*Salvia apiana*), California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), yerba santa (*Eriodictyon trichocalyx*), pine-bush (*Ericameria pinifolia*), locoweed (*Astragalus trichopodus*), deerweed (*Lotus scoparius*), California aster (*Lessingia filaginifolia*), California croton (*Croton californicus*), holly-leaved cherry (*Prunus ilicifolia*), bushmallow (*Malacothamnus fasciculatus*), hoaryleaf ceanothus (*Ceanothus crassifolus*), green bark ceanothus (*Ceanothus spinosus*), western sycamore (*Platanus racemosa*), mule fat (*Baccharis salicifolia*), mugwort (*Artemisia douglasiana*), and blue wildrye (*Elymus glaucus*). Very limited riparian vegetation in one of the drainages consists of three western sycamore trees that have become established in the upper reaches.

Upland Riversidean Sage Scrub (32.005.00) (116.3 acres)

Riversidean sage scrub is the most xeric expression of coastal sage scrub in southern California. It is the driest, most inland expression of the collection of sage scrub or coastal scrub series, and ranges throughout southern California south into Baja California between approximately 1,500 and 4,500 feet above msl. Typically this low, open shrub occurs on dry sites such as steep slopes, severely drained soils or clays that release stored moisture slowly. This community consists of drought-deciduous low shrubs, averaging two to three feet in height, and an herbaceous understory.

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[1] *State of California. Department of Fish and Game. Wildlife & Habitat Data Analysis Branch. California Natural Diversity Database. October 13, 2000. List of Terrestrial Natural Communities Recognized by the California Natural Diversity Database. 65pp.*

[2] *Sawyer, John O. and T. Keeler-Wolf. 1995. A Manual of California Vegetation. Sacramento: California Native Plant Society.*

[3] *Holland, R. F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, California: State of California Resources Agency, Department of Fish and Game, Non-Game Heritage Program.*

The upland Riversidean sage scrub community, found along the step-like scrub covered terraces of the site, represents a predominant expression of alluvial fan sage scrub as a monotypic stand of white sage. Also referred to as white sage series by Sawyer and Keeler-Wolf, this community is dominated by white sage or white sage is co-dominant with California sagebrush. Plant species found throughout the terrace area on-site include white sage, California sagebrush, California buckwheat, pine-bush, locoweed, California aster, brome grass (*Bromus* spp.), deerweed, yerba santa, holly-leaved cherry, wand buckwheat (*Eriogonum elongatum*), green bark ceanothus, our Lord's candle (*Yucca whipplei*), wild oat (*Avena fatua*), storksbill (*Erodium cicutarium*), and California croton.

Disturbed (N/A) (8.7 acres)

Disturbed areas on the project site are mostly devoid of vegetation or contain predominately non-native, weedy species adapted to frequent disturbance. Types of disturbed areas found on the project site include cleared land, geotechnical trenching areas, and dirt access roads. Plant species found on the project site include non-native grasses and a high proportion of weedy species including castor bean (*Ricinus communis*), storksbill, telegraph weed (*Heterotheca grandiflora*), black mustard (*Brassica nigra*), and wild oat.

Ornamental Landscaping (99.900.06) (1.5 acres)

Developed and otherwise disturbed areas on the project site have ornamental landscaping species including blue gum (*Eucalyptus globulus*), Peruvian pepper tree (*Schinus molle*), olive tree (*Olea europaea*), oleander (*Nerium oleander*), and silk tree (*Albizia julibrissin*). There are also eight Southern California black walnut trees located in the immediate vicinity of the abandoned residence.

METHODOLOGY

Surveys were conducted in accordance with survey guidelines published in the *Inventory of Rare and Endangered Vascular Plants of California*[4]. These guidelines have also been adopted by the CDFG. Sensitive plants include those species State and Federally listed as endangered or threatened under the Federal or California Endangered Species Acts, or rare under the California Native Plant Protection Act. Sensitive plants include those listed, or candidates for listing by the CDFG,[5,6] and the CNPS (particularly lists 1A, 1B, and 2). The rare and endangered plants listed in Attachment A, *Sensitive Plant Species Table*, have either been observed or are known to occur within the vicinity of the site.

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[4] *Skinner, M. W., and B. M. Pavlik. 1994. California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California. California Native Plant Society. Special Publication No. 1, 5th ed. Sacramento, California.*

[5] *State of California Resources Agency. January 2001. Department of Fish and Game. Natural Heritage Division. State and Federally Listed Endangered, Threatened, and Rare Plants and California. Sacramento.*

[6] *State of California Resources Agency. July 2001. Department of Fish and Game. Natural Diversity Database. Special Vascular Plants, Bryophytes, and lichens List. Biannual publication.*

Surveys for sensitive plants were conducted by PCR biologists Jenni Snibbe, Kristin Szabo, and Marc Blain on April 12, 17, 24, and May 7, 30, June 1, 13, 20, 27, 2001. Collectively, survey dates encompassed the flowering periods of all sensitive plants potentially occurring on-site. Methods used included slowly walking over all portions of the site. Close attention was paid to all sensitive plant species that have the potential to occur in the vicinity of the project site and were reported in the CNDDB including, Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*), many-stemmed dudleya (*Dudleya multicaulis*), Southern California black walnut (*Juglans californica*), Hall's monardella (*Monaredella macrantha* ssp. *hallii*), Pringle's monardella (*Monardella pringlei*), pygmy poppy (*Canbya candida*), Santa Ana river woollystar (*Eriastrum densifolium* ssp. *Sanctorum*), Parry's spineflower (*Chorizanthe parryi* var. *parryi*), slender-horned spineflower (*Chorizanthe parryi* var. *parryi*), Plummer's mariposa lily (*Calochortus plummerae*), intermediate mariposa lily (*Calochortus weedii* var. *intermedius*), thread-leaved brodiaea (*Brodiaea filifolia*), and California muhly (*Muhlenbergia californica*). These methods were intensified within suitable habitat areas. Other plant species surveyed for that typically occur at elevations above 4,500 feet were reported in the CNDDB within the Cucamonga Peak quad including Laguna mountains jewel-flower, (*Streptianthus bernardinus*) San Gabriel linanthus (*Linanthus concinnus*), Johnston's buckwheat (*Eriogonum microthecum* var. *johnstonii*), and Peirson's spring beauty (*Claytonia lanceolota* var. *peirsonii*). All plant species observed were recorded in field notes or collected and later identified using taxonomic keys. A list of all plant species observed on-site is included in the attached compendium (Attachment B, *Plant Compendium*). Plant taxonomy follows Hickman[7]. Common plant names, when not available from Hickman, were taken from Munz[8] and McAuley[9]. Scientific names are included only during the first mention of the species. Thereafter, common names alone are used.

It should be noted that the species accounts below reflect available information and the findings of focused plant surveys contributing to this report. It is acknowledged that plant population numbers (particularly among annual species) do vary from year to year depending on environmental factors (e.g., rainfall, temperatures), other natural phenomena (e.g., wild fires) and physical features (e.g., elevational ranges, aspect). Therefore, some sensitive plant populations may vary in their detectability from season to season. From a purely scientific standpoint this potential for variation may seem problematic. From a practical standpoint and pursuant to CEQA, however, biological assessments are based on the best available information including reasonable field study efforts. In the case of this assessment, every effort was made to conduct surveys for sensitive plants during the peak flowering periods and varying habitat associations for these species.

Results

Plummer's mariposa lily and Southern California black walnut were observed on-site. All plant species observed were recorded in field notes and are included in the Plant Compendium (attached). Plummer's mariposa lily was observed growing in abundance throughout the upland Riversidean sage

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[7] *Hickman, J. C. 1993. The Jepson Manual: Higher Plants of California. Berkeley: University of California Press.*
[8] *Munz, P. A., 1974. A Flora of Southern California. Berkeley: University of California Press.*
[9] *McAuley, M. 1996. Wildflowers of the Santa Monica Mountains. Canoga Park: Canyon Publishing.*

scrub plant community. The project site is estimated to support a population of thousands of individuals randomly scattered as single plants and as clusters of varying densities, especially along the bare areas. In addition, a small stand of approximately eight Southern California black walnut trees were observed within the abandoned residence area on-site.

Other sensitive plant species have been found in the general vicinity of the Etiwanda project site and could potentially occur on-site, but no other sensitive plant species were observed during the April-June 2001 sensitive plant surveys.

Should you have any questions regarding the methodology or findings in this report, please do not hesitate to contact Steven G. Nelson or Jenni J. K. Snibbe at (949) 753-7001.

Sincerely,
PCR SERVICES CORPORATION

Steven G. Nelson
Director of Biological Services

Jenni Snibbe
Biologist/Ecologist

Attachments

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ATTACHMENT A: SENSITIVE PLANT SPECIES TABLE

BRASSICACEAE - MUSTARD FAMILY

ROBINSON'S PEPPER-GRASS – *Lepidium virginicum* var. *robinsonii*

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 1B
Habitat:	Chaparral, coastal sage scrub
Flowering Period:	January-July
Life Form:	Annual herb
Distribution:	Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties, Santa Cruz Island, Baja California.
Comments:	Threatened by erosion and feral herbivores. This species typically occurs at elevations above 1,500 feet.

A single record of Robinson's pepper-grass was reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys, however there is a low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

LAGUNA MOUNTAINS JEWEL-FLOWER – *Streptanthus bernardinus*

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 4
Habitat:	Chaparral, lower montane, coniferous forest
Flowering Period:	June-July
Life Form:	Perennial
Distribution:	Elevations above 4,500 feet
Comments:	Clay or decomposed granite soils.

Laguna mountains jewel-flower was not observed on the project site. This species typically occurs at elevations above 4,500 feet therefore there is no potential for occurrence.

CRASSULACEAE - STONECROP FAMILY

MANY-STEMMED DUDLEYA – *Dudleya multicaulis*

USFWS Status:	FSC
CDFG Status:	None
CNPS Status:	List 1B
Habitat:	California plant communities, including sage scrub, valley and foothill grassland; heavy clay soils or rock outcrops;- variety of southern California.
Flowering Period:	May-June
Life Form:	Succulent perennial herb.
Distribution:	Los Angeles County to San Onofre Mt. in San Diego County. Reported from Temescal Wash south of Arcilla, northwest slope of Estelle Mountain.
Comments:	Declining due to habitat loss. This species typically occurs at elevations below 2,000 feet.

Several records of Many-stemmed dudleya were reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

JUGLANDACEAE – WALNUT FAMILY

SOUTHERN CALIFORNIA BLACK WALNUT – *Juglans californica*

USFWS Status:	None
CDFG Status:	Walnut woodland/forest is a CDFG highest inventory priority community.
CNPS Status:	List 4
Habitat:	Sage scrub, chaparral, cismontane woodland; often in association with oaks/oak woodland; frequently found on steep hillsides with northern exposures; deep alluvial soils.
Flowering Period:	March-May.
Life Form:	Deciduous tree.
Distribution:	Ventura, LA, Orange, Riverside, San Bernardino, San Diego Counties – foothills. Especially abundant in Santa Monica Mountains (center of dispersal for species).
Comments:	Declining natural community. This species typically occurs at elevations below 4,800 feet.

Southern California black walnut was observed on the project site. A small stand of approximately eight trees was observed within the abandoned residence area.

LAMIACEAE – MINT FAMILY

HALL'S MONARDELLA – *Monardella macrantha* ssp. *hallii*

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 1B
Habitat:	Lower montane coniferous forest, valleys and foothill grassland; broadleaf upland forest, chaparral, cismontane woodland.
Flowering Period:	June-August
Life Form:	Perennial herb.
Distribution:	Orange, Riverside, San Bernardino, and San Diego Counties.
Comments:	Intermediates to subspecies macrantha are common. This species typically occurs at elevations between 1,800 and 6,200 feet.

A single record of Hall's monardella was reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

PRINGLE'S MONARDELLA – *Monardella pringlei*

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 1A
Habitat:	Coastal sage scrub.
Flowering Period:	May-June
Life Form:	Annual herb.
Distribution:	Riverside, San Bernardino
Comments:	Habitat lost to urbanization. This species typically occurs at elevations between 900 and 1,500 feet.

A single record of Pringle's monardella was reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

PAPAVERACEAE – POPPY FAMILY

PYGMY POPPY– *Canbya candida*

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 4
Habitat:	Joshua tree woodland, Mojavean desert scrub
Flowering Period:	March-June
Life Form:	Annual herb
Distribution:	Kern, Los Angeles, San Bernardino
Comments:	Sandy places. This species typically occurs at elevations between 1,800 and 4,000 feet.

A single record of Pygmy poppy was reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

POLEMONIACEAE – PHLOX FAMILY

SANTA ANA RIVER WOOLLYSTAR – *Eriastrum densifolium* ssp. *sanctorum*

USFWS Status:	FE
CDFG Status:	SE
CNPS Status:	List1B
Habitat:	Chaparral, sage scrub (alluvial fan)
Flowering Period:	July–August
Life Form:	Perennial herb
Distribution:	San Bernardino County (formerly Orange County; presumed extirpated).
Comments:	Known from one extended, but fragmented population. This species typically occurs at elevations below 4,800 feet.

A single record of Santa Ana River woollystar was reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

SAN GABRIEL LINANTHUS – *Linanthus concinnus*

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 1B
Habitat:	Lower montane coniferous forest, upper montane coniferous forest
Flowering Period:	May-July
Life Form:	Herb
Distribution:	Elevations over 5,000 feet
Comments:	Dry, rocky slopes. Often in Jeffrey Pine/Canyon Oak forest.

San Gabriel linanthus was not observed on the project site. This species typically occurs at elevations above 5,000 feet therefore there is no pntential for occurrence.

POLYGONACEAE – BUCKWHEAT FAMILY

PARRY'S SPINEFLOWER – *Chorizanthe parryi* var. *parryi*

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 3
Habitat:	Coastal or desert sage scrub, chaparral, dry slopes or flat ground, sandy soils.
Flowering Period:	April-June.
Life Form:	Annual herb.
Distribution:	Riverside and San Bernardino Counties, possibly Los Angeles County.
Comments:	Declining due to development and known from only 20 occurrences in Riverside County. This species typically occurs at elevations between 900 and 3,500 feet.

Two records of Parry's spineflower were reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

SLENDER-HORNED SPINEFLOWER – *Dodecahema leptoceras*

USFWS Status:	FE
CDFG Status:	SE
CNPS Status:	List 1B
Habitat:	Alluvial sage scrub vegetation on sandy flood-deposited rivers and washes
Flowering Period:	April–June
Life Form:	Annual herb
Distribution:	Los Angeles, Riverside and San Bernardino counties: San Gabriel, San Bernardino and San Jacinto Mountains; reported from Lake Elsinore and Hemet.
Comments:	Declining due to urbanization, flood control activities, off-road vehicle use, and competition from exotic species. This species typically occurs at elevations below 2,000 feet.

Several records of Slender-horned spineflower were reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

JOHNSTON'S BUCKWHEAT – *Eriogonum microthecum* var. *johnstonii*

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 1B
Habitat:	Subalpine coniferous forest, upper montane coniferous forest
Flowering Period:	July-September
Life Form:	Shrub
Distribution:	Slopes and ridges on granite or limestone, elevation over 6,000 feet.
Comments:	Known only from Los Angeles and San Bernardino Counties

Johnston's buckwheat was not observed on the project site. This species typically occurs at elevations above 6,000 feet therefore there is no potential for occurrence.

PORTULACACEAE - PURSLANE FAMILY

PEIRSON'S SPRING BEAUTY – *Claytonia lanceolata* var. *peirsonii*

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 1B
Habitat:	Upper montane, coniferous forest, subalpine coniferous forest.
Flowering Period:	May-Jnne
Life Form:	Perennial, tuber
Distribution:	Endemic to San Beruardino County, 7,800 feet and over.
Commeuts:	Granitic scree slopes, often with a sandy or fine soil component and granitic cobble.

Peirson's spring beauty was not observed on the project site. This species typically occurs at elevations above 7,800 feet therefore there is no potential for occurrence.

LILIACEAE - LILY FAMILY

PLUMMER'S MARIPOSA LILY – *Calochortus plummerae*

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 1B
Habitat:	Variety uf southern California plant communities, including sage scrub, valley and foothill grassland, yellow pine forest; dry, rocky or sandy sites, granitic or alluvial soil.
Flowering Period:	May-July.
Life Form:	Bulbiferous perennial herb.
Distribution:	Ventura, Los Angeles, Riverside and San Bernardino Counties.
Comments:	Reported from divide road between Oak Flat and Pleasants Peak, Santa Ana Mountains. This species typically occurs at elevations below 4,800 feet.

Plummer's mariposa lily was observed on the project site in abundance.

INTERMEDIATE MARIPOSA LILY – *Calochortus weedii* var. *intermedius*

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 1B
Habitat:	Chaparral, coastal scrub, valley and foothill grasslands.
Flowering Period:	May-July.
Life Form:	Bulbiferous perennial herb.
Distribution:	Los Angeles, Orange, and Riverside Counties.
Comments:	Threatened by developmeut, road construction and fuel modification. This species typically occurs at elevations below 2,000 feet.

Several records of Intermediate mariposa lily were reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

THREAD-LEAVED BRODIAEA – *Brodiaea filifolia*

USFWS Status:	FT
CDFG Status:	SE
CNPS Status:	List 1B
Habitat:	A variety of communities including sage scrub, valley and foothill grasslaud, yellow pine forest, rocky or sandy sites, granitic or alluvial soil.
Flowering Period:	March-June.
Life Form:	Bulbiferous perennial herb.
Distribution:	Los Angeles, Riverside, Orange, San Diego and San Bernardino Counties.
Comments:	This species may hybridize with other Brodiaea species. This species typically occurs at elevations below 4,800 feet.

The thread-leaved brodiaca was not observed during the April-June 2001 sensitive plant surveys however there is a low likelihood of occurrence due to presence of suitable habitat and isolated areas undetected due to inherent difficulties of observing all suitable locations.

POACEAE - GRASS FAMILY

CALIFORNIA MUHLY – *Muhlenbergia californica*

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 4
Habitat:	Coastal sage, chaparral, meadows, lower montane coniferous forest
Flowering Period:	July-September
Life Form:	Herb
Distribution:	From San Bernardino vicinity to the edge of deserts,
Comments:	Usually found near streams or seeps. This species typically occurs at elevations between 1,300 and 6,500 feet.

Several records of California muhly were reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed dnring the April-Jnne 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitahle locations.

Key to Species Listing Status Codes

FE	*Federally Listed as Endangered*	SCE	*State Candidate for Endangered*
FT	*Federally Listed as Threatened*	SCT	*State Candidate for Threatened*
SE	*State Listed as Endangered*	SP	*State Protecced*
ST	*State Listed as Threatened*	SFP	*State Fully Protected*
FPE	*Federally Proposed as Endangered*	CSC	*California Special Concern Species*
FPT	*Federally Proposed as Threatened*		

California Native Plant Society (CNPS)

List 1A: *Presumed extinct in California.*
List 1B: *Rare, threatened, or endangered throughout their range.*
List 2: *Rare, threatened, or endangered in California, but more common in other states.*
List 3: *Plant species for which additional information is needed before rarity can be determined.*
List 4: *Species of limited distribution in California (i.e., naturally rare in the wild), but whose existence does not appear to be susceptible to threat.*

ATTACHMENT B: PLANT COMPENDIUM

VASCULAR PLANTS	
Scientific Name	Common Name
Angiosperms (Dicotyledons)	
Anacardiaceae	Sumac or Cashew Family
* *Schinus molle*	Peruvian pepper tree
Apocynaceae	Dogbane Family
* *Nerium oleander*	oleander
Asclepiadaceae	Milkweed Family
Asclepias eriocarpa	Indian milkweed
Asteraceae	Sunflower Family
Artemisia californica	California sagebrush
Artemisia douglasiana	mugwort
Artemisia dracunculus	tarragon
Baccharis salicifolia	mulefat
* *Centaurea melitensis*	tocalote
* *Centaurea solstitialis*	yellow star-thistle
Corethrogyne filaginifolia var. *bernardina*	corthrogyne
Ericameria arborescens	golden-fleece
Ericameria pinifolia	pinebush
Erigeron foliosus	leafy daisy
Helianthus annuus	common sunflower
Heterotheca grandiflora	telegraph weed
* *Hypochaeris glabra*	smooth cat's-ear
Lepidospartum squamatum	scale-broom
Lessingia filaginifolia	California aster
Boraginaceae	Borage Family
Amsinckia menziesii	common fiddleneck
Cryptantha intermedia	common forget-me-not
Pectocarya linearis ssp. *ferocula*	slender pectocarya
Plagiobothrys sp.	popcorn flower
Plagiobothrys collinus	California popcorn flower
Brassicaceae	Mustard Family
* *Brassica nigra*	black mustard
Descurainia pinnata	western tansy-mustard
Erysimum capitatum	western wallflower
* *Hirshfeldia incana*	short-podded mustard

VASCULAR PLANTS	
Scientific Name	Common Name
Lepidium nitidum	shining peppergrass
* *Lobularia maritima*	sweet-alyssum
* *Sisymbrium altissimum*	tumble mustard
* *Sisymbrium irio*	Loudon rocket
Cactaceae	Cactus Family
Opuntia prolifera	coast cholla
Caryophyllaceae	Pink Family
Silene antirrhina	catchfly
* *Silene gallica*	common catchfly
Chenopodiaceae	Goosefoot Family
Chenopodium californicum	California goosefoot
Convolvulaceae	Morning-Glory Family
Calystegia macrostegia	western bindweed
* *Ipomoea purpurea*	common morning-glory
Crassulaceae	Stonecrop Family
Crassula connata	pygmy-weed
Cucurbitaceae	Gourd Family
Marah macrocarpus	wild cucumber
Euphorbiaceae	Spurge Family
Croton californicus	California croton
* *Ricinus communis*	castor bean
Fabaceae	Legume Family
Albizia julibrissin	silk tree
Astragalus spp.	milk-vetch
Astragalus pomonensis	Pomona rattleweed
Astragalus trichopodus	Santa Barbara locoweed
Lotus scoparius	deerweed
Geraniaceae	Geranium Family
Erodium sp.	filaree
* *Erodium botrys*	broad-lobed filaree
* *Erodium cicutarium*	red-stemmed filaree
Hydrophyllaceae	Waterleaf Family
Eriodictyon trichocalyx var. *trichocalyx*	hairy yerba santa
Eucrypta chrysanthemifolia	common eucrypta
Phacelia distans	fern-leaf phacelia
Phacelia minor	wild canterbury-bell
Juglandaceae	Walnut Family
Juglans californica var. *californica*	Southern California black walnut
Lamiaceae	Mint Family

VASCULAR PLANTS	
Scientific Name	**Common Name**
* *Marrubium vulgare*	horehound
Monardella lanceolata	mustang mint
Salvia apiana	white sage
Salvia columbariae	chia
Salvia mellifera	black sage
Malvaceae	**Mallow Family**
Malacothamnus sp.	bushmallow
Malacothamnus fasciculatus	mesa bushmallow
Myrtaceae	**Myrtle Family**
* *Eucalyptus* sp.	gum tree
* *Eucalyptus globulus*	blue gum
Oleaceae	**Olive Family**
* *Olea europaea*	olive
Onagraceae	**Evening Primrose Family**
Camissonia bistorta	California sun cup
Orobanchaceae	**Broom-rape Family**
* *Orobanche vallicola*	broom-rape
Platanaceae	**Sycamore Family**
Platanus racemosa	western sycamore
Polemoniaceae	**Phlox Family**
Eriastrum sapphirinum	sapphire eriastrum
Polygonaceae	**Buckwheat Family**
Eriogonum elongatum var. *elongatum*	long-stemmed buckwheat
Eriogonum fasciculatum	California buckwheat
Rumex hymenosepalus	desert rhubarb
Ranunculaceae	**Buttercup Family**
Delphinium cardinale	scarlet larkspur
Rhamnaceae	**Buckthorn Family**
Ceanothus crassifolius	hoary leaf ceanothus
Ceanothus cuneatus	buck brush
Ceanothus megacarpus	big-podded ceanothus
Ceanothus spinosus	green bark ceanothus
Rosaceae	**Rose Family**
Prunus ilicifolia	holly-leaved cherry
Angiosperms (Monocotyledons)	
Liliaceae	Lily Family
Calochortus plummerae	Plummer's mariposa lily
Chlorogalum pomeridianum	soap plant
Dichelostemma capitatum	blue dicks

VASCULAR PLANTS	
Scientific Name	**Common Name**
Muilla maritima	common muilla
Yucca whipplei	Our Lord's candle
Poaceae	**Grass Family**
Avena sp.	oat
* *Avena barbata*	slender wild oat
* *Avena fatua*	wild oat
Bromus sp.	brome
* *Bromus diandrus*	ripgut grass
* *Bromus madritensis* ssp. *rubens*	foxtail chess
Elymus glaucus	blue wildrye
* *Hordeum murinum*	glaucous foxtail barley
Hordeum vulgare	barley
* *Lamarckia aurea*	goldentop
* *Schismus arabicus*	Arabian grass

* = *Non-native Species*

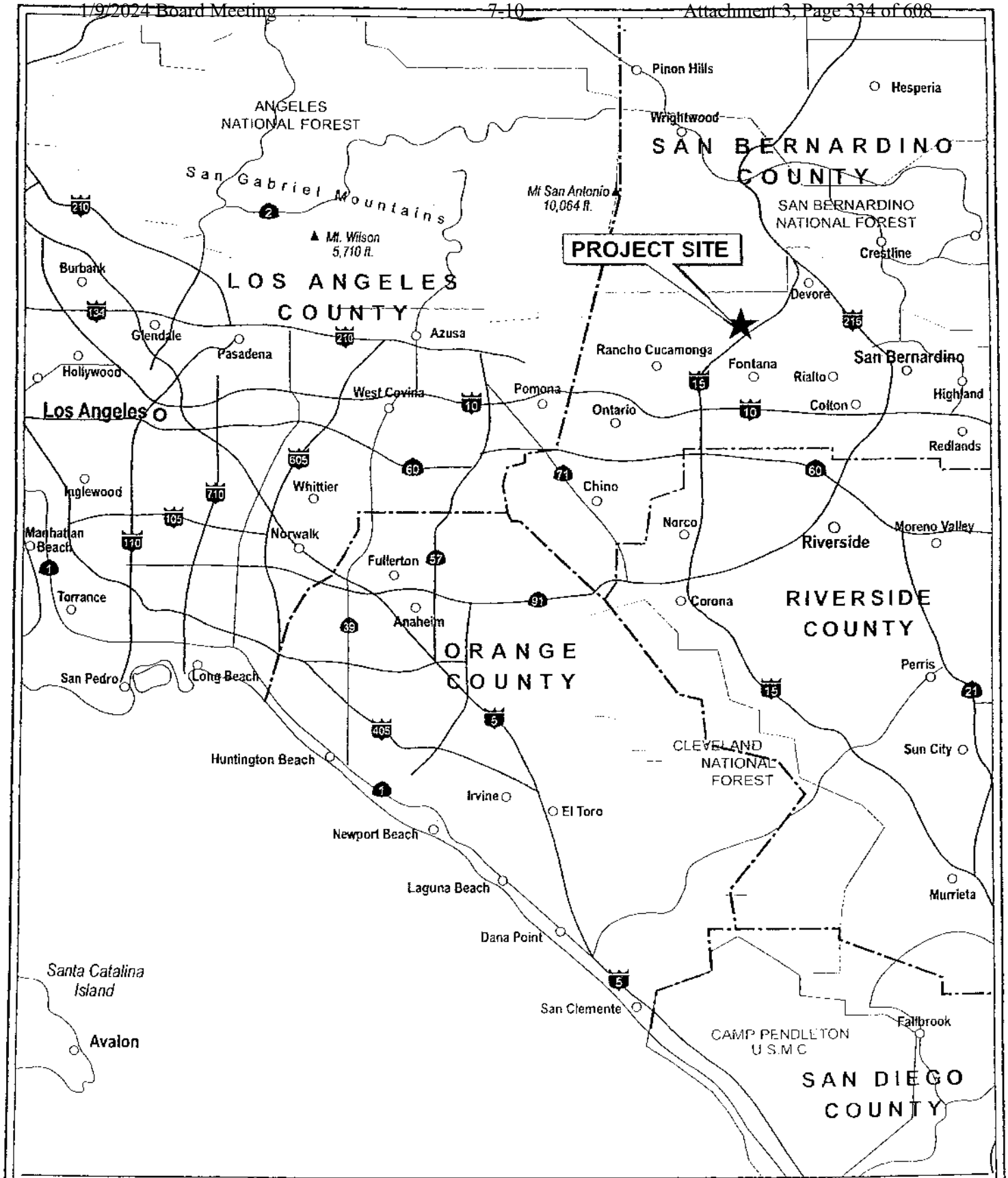


Figure 1
Etiwanda Subdivision
Regional Map

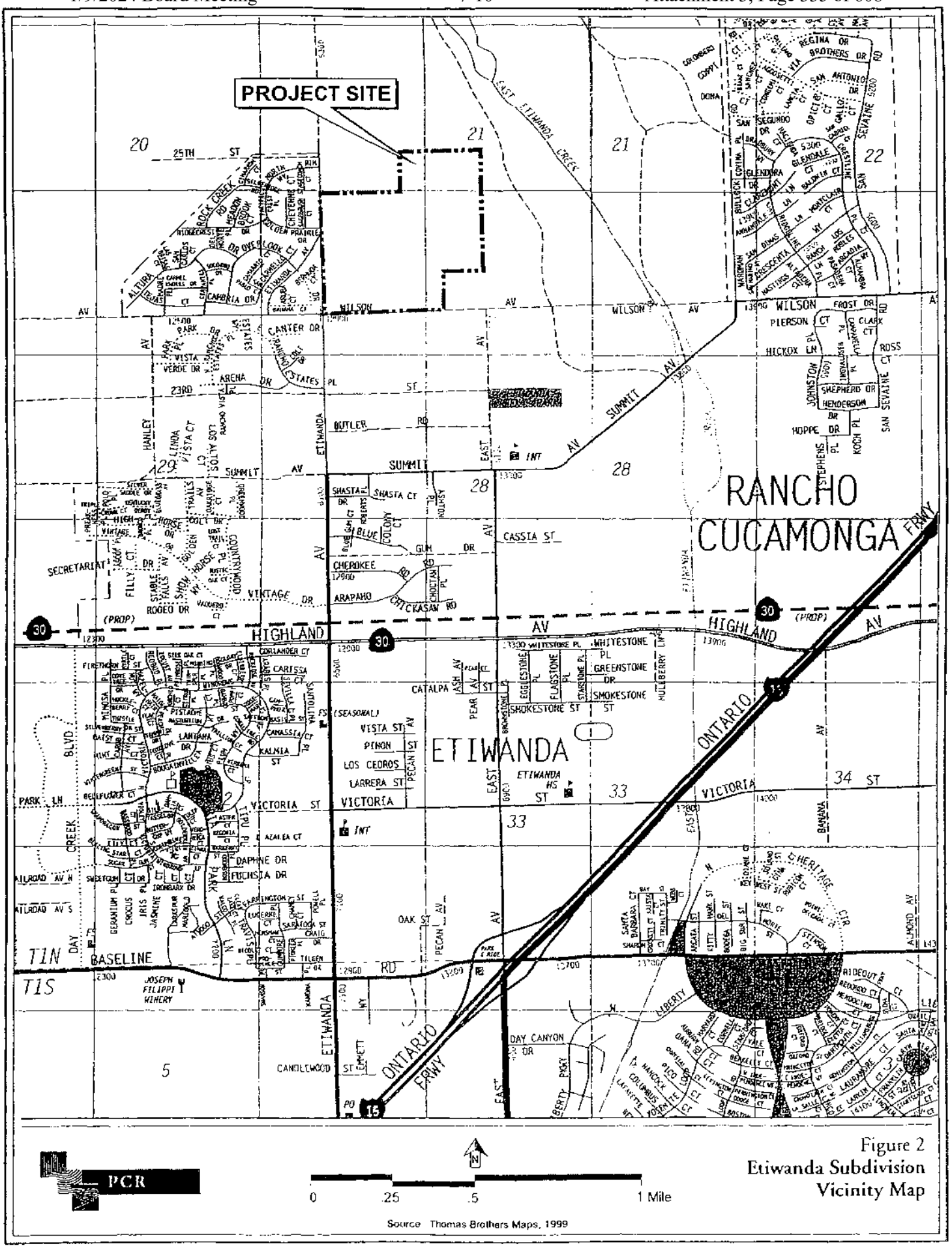
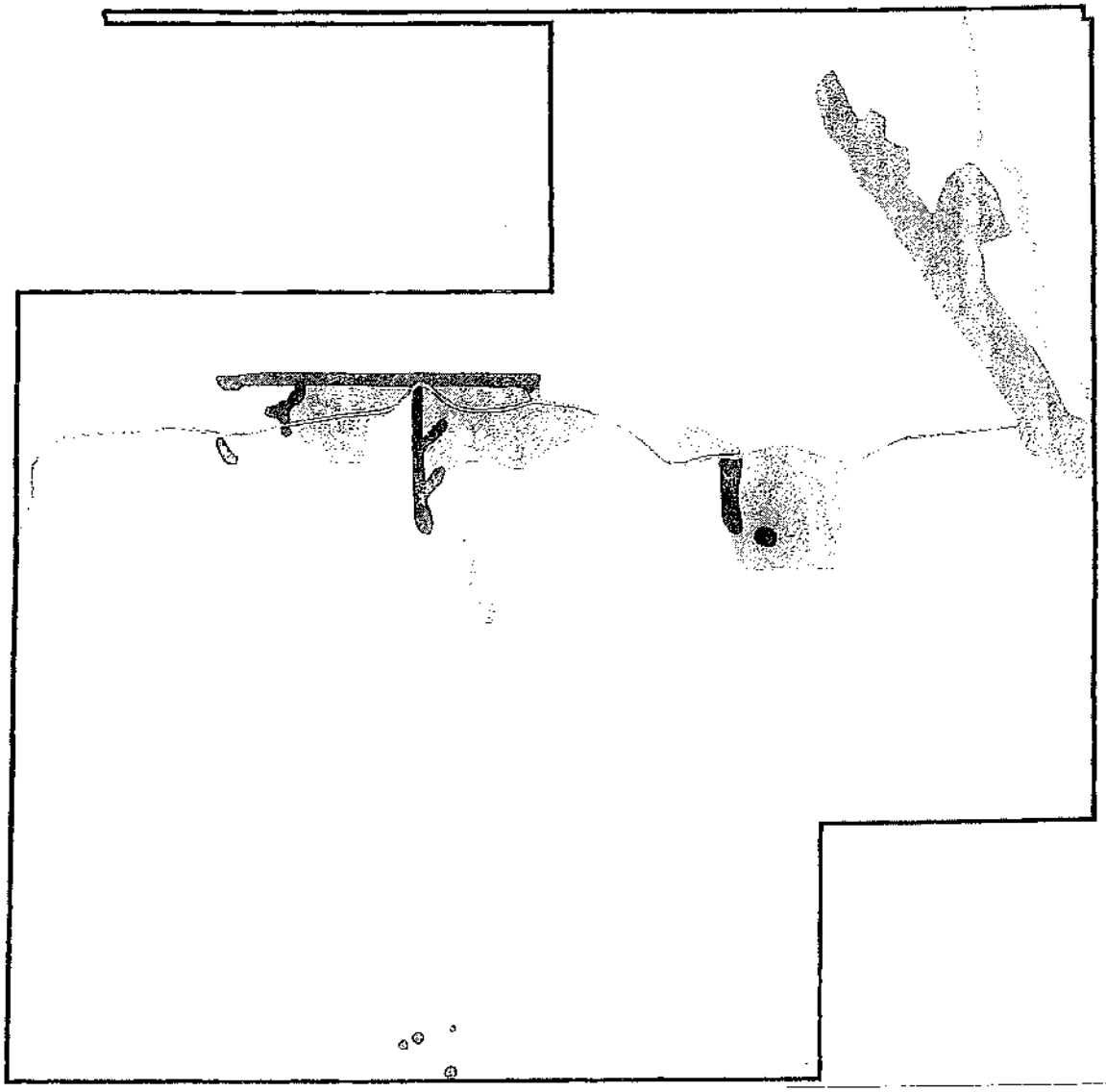


Figure 2
Etiwanda Subdivision
Vicinity Map



LEGEND:

- Project Area

Plant Communities

- Alluvial Wash
- Disturbed
- Ornamental Landscaping
- Riversidean Alluvial Fan Sage Scrub
- Riversidean Sage Scrub

PCR

N

400 0 400 800 Feet

Source: PCR Services 2001

Figure 3

Etiwanda Subdivision
Plant Communities

July 15, 2002

Ms. Christine Moen
U.S. FISH AND WILDLIFE SERVICE
2730 Loker Avenue West
Carlsbad, California 92008

Re: Results of Focused Coastal California Gnatcatcher Surveys for the Etiwanda Project Site, San Bernardino County, California

Dear Ms. Moen:

This report is prepared in compliance with the conditions of authorized permits issued under Section 10(a)(1)(A) of the Federal Endangered Species Act to **PCR Services Corporation (PCR)** biologists Kristin Szabo (TE016487-0), Marc Blain (TE001075-0), Jenni Snibbe (TE044520-0), and James Mazza (TE032728-0) for the performance of protocol surveys for the coastal California gnatcatcher (*Polioptila californica californica*). As such, this letter report summarizes the methodology and findings of surveys for this species on the Etiwanda project site in San Bernardino County, California. PCR conducted surveys on all potentially suitable habitat within the 150-acre study area to determine the presence and location or absence of the coastal California gnatcatcher within the project site. No coastal California gnatcatchers were observed on-site during the focused surveys conducted.

Previous surveys conducted by PCR in 1998 and 2001 also did not detect the presence of the coastal California gnatcatcher on the Etiwanda project site.

STUDY AREA

The project site consists of approximately 150 acres of undeveloped land in an unincorporated area of San Bernardino County located north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue just north of the City of Rancho Cucamonga (see Figure 1, *Regional Map*, attached). The project site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. The project site is contained on the United States Geological Survey 7.5' Cucamonga Peak Quadrangle, in Section 24, T. 1 N., R. 7 W. (see Figure 2, *Vicinity Map*, attached).

Topographically the project site is characterized by alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. There are two drainages found on the project site that convey flow from the northwest to the southeast and merge with a defined flood control channel. Riversidean sage scrub dominates the project site. The project site has an approximately 14-acre area that has been heavily disturbed by past uses including an abandoned residence, ornamental and ruderal vegetation, and geotechnical trenching areas. Elevation on the project site ranges between 1,600 and 1,800 feet above mean sea level. Surrounding land uses include vacant land to the north, a County flood control channel to the east, sparse residential development to the southeast, a water treatment plant to the south, and residential development to the west. A utility corridor with overhead power lines is adjacent to the northern property boundary.

PCR

VEGETATION

The discussion of vegetation community names and hierarchical structure follows the California Department of Fish and Game's *List of California Terrestrial Natural Communities Recognized by the Natural Diversity Database.*[1] A brief summary of each vegetation community is discussed below. Vegetation community descriptions are based on PCR findings, Sawyer and Keeler-Wolfe[2], and/or Holland[3], as appropriate. In addition, a description of the locations on the project site and the variations of the community are discussed. Table 1, *Plant Communities*, lists each plant community along with the California Natural Diversity Database (CNDDB) community code and the on-site community acreage. The locations of the communities on the project site are indicated in Figure 3, *Plant Communities*, attached.

Riversidean Alluvial Fan Sage Scrub

The Etiwanda project site supports typical characteristic plants of Riversidean alluvial fan sage scrub throughout the drainage bisecting the project site flowing northwest to southeast. Plant species found on the project site include scalebroom (*Lepidospartum squamatum*), white sage (*Salvia apiana*), California sagebrush (*Artemesia californica*), California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), yerba santa (*Eriodictyon trichocalyx*), pine-bush (*Ericameria pinifolia*), locoweed (*Astragalus trichopodus*), deerweed (*Lotus scoparius*), California aster (*Lessingia filaginifolia*), California croton (*Croton californicus*), holly-leaved cherry (*Prunus ilicifolia*), bushmallow (*Malacothamnus fasciculatus*), hoaryleaf ceanothus (*Ceanothus crassifolus*), green bark ceanothus (*Ceanothus spinosus*), western sycamore (*Platanus racemosa*), mule fat (*Baccharis salicifolia*), mugwort (*Artemisia douglasiana*), and blue wildrye (*Elymus glaucus*). Very limited riparian vegetation in the drainage consists of three western sycamore trees that have become established in the upper reaches.

Upland Riversidean Sage Scrub

The upland Riversidean sage scrub community, found along the step-like scrub covered terraces of the site, represents a predominant expression of alluvial fan sage scrub as a monotypic stand of white sage. Also referred to as white sage series by Sawyer and Keeler-Wolf, this community is dominated by white sage or white sage co-dominant with California sagebrush. Plant species found throughout the terrace area on-site include white sage, California sagebrush, California buckwheat, pine-bush, locoweed, California aster, brome grass (*Bromus* spp.), deerweed, yerba santa, holly-leaved cherry, wand buckwheat (*Eriogonum elongatum*), green bark ceanothus, our Lord's candle (*Yucca whipplei*), wild oat (*Avena fatua*), storksbill (*Erodium cicutarium*), and California croton.

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[1] State of California. Department of Fish and Game. Wildlife & Habitat Data Analysis Branch. California Natural Diversity Database. October 13, 2000. *List of Terrestrial Natural Communities Recognized by the California Natural Diversity Database.* 65pp.

[2] Sawyer, John O. and T. Keeler-Wolf. 1995. *A Manual of California Vegetation.* Sacramento: California Native Plant Society.

[3] Holland, R. F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California.* Sacramento, California: State of California Resources Agency, Department of Fish and Game, Non-Game Heritage Program.

Table 1

Plant Communities

Community Name	CNDDB Code	Acres On-site
Riversidean Alluvial Fan Sage Scrub	32.005.02	5.4
Upland Riversidean Sage Scrub	32.005.00	134.6
Disturbed	n/a	8.5
Ornamental Landscaping	99.900.06	1.5
Total		**150.0**

Source: PCR Services Corporation, 2001

Disturbed

Disturbed areas on the project site are mostly devoid of vegetation or contain predominately non-native, weedy species adapted to frequent disturbance. Types of disturbed areas found on the project site include cleared land, geotechnical trenching areas, and dirt access roads. Plant species found on the project site includes non-native grasses and a high proportion of weedy species including castor bean (*Ricinus communis*), storksbill, telegraph weed (*Heterotheca grandiflora*), black mustard (*Brassica nigra*), and wild oat.

Ornamental Landscaping

Developed and otherwise disturbed areas on the project site have ornamental landscaping species including blue gum (*Eucalyptus globulus*), Peruvian pepper tree (*Schinus molle*), olive tree (*Olea europaea*), oleander (*Nerium oleander*), and silk tree (*Albizia julibrissin*). There are also eight Southern California black walnut trees located in the immediate vicinity of the abandoned residence.

METHODOLOGY

Surveys for the coastal California gnatcatcher were conducted by PCR biologists Kristin Szabo (Permit No. TE016487-0), Marc Blain (TE001075-0), Jenni Snibbe (TE044520-0), and James Mazza (TE032728-0). Methods employed were in conformance with USFWS Coastal California Gnatcatcher Presence/Absence Survey Guidelines, issued July 28, 1997. Accordingly, six surveys were performed at least one week apart, between 6:00 A.M. and 12:00 P.M., within all portions of the study area containing suitable habitat. Temperatures during surveys ranged between 57 and 93 degrees Fahrenheit. Weather conditions were suitable for surveys, with skies ranging from clear to 100 percent overcast, and winds below Beaufort scale 2.

The site was divided into two plots of appropriate size to ensure complete coverage of all potential habitat during each survey and ensure that each investigator did not cover more than 80 acres each. Two permitted field investigators slowly walked over the site, stopping at appropriate intervals, uttered pishing sounds, and played a tape of recorded coastal California gnatcatcher vocalizations. The tape was played for several seconds at each interval, followed by a brief pause to listen for a response. Surveys were conducted on March 26, April 11, May 1, 23, 30, and June 6, 2002.

RESULTS

No coastal California gnatcatchers were observed on the Etiwanda project site during any of the focused surveys conducted. Bird activity was relatively high during the surveys and a list of those species observed is included in the attached compendium.

Sensitive species observed include loggerhead shrike (*Lanius ludovicianus*) [Federal Special Concern Species (FSC), California Special Concern Species (CSC)], Cooper's hawk (*Accipiter cooperi*) (CSC-nesting), northern harrier (*Circus cyaneus*) (CSC-nesting), southern California rufous-crowned sparruw (*Aimophila ruficeps canescens*) (FSC, CSC), Bell's sage sparrow (*Amphispiza belli belli*) (FSC, CSC-nesting), and Plummer's mariposa lily (*Calochortus plummerae*) [California Native Plant Society (CNPS) List 1B (Rare, Threatened, or Endangered in California and Elsewhere)].

On at least four occasions, between one and five brown-headed cowbirds (*Molothrus ater*) were observed on-site.

Should you have any questions regarding the methodology or findings in this report, please do not hesitate to contact Kristin Szabo at (949) 753-7001 or by email at k.szabo@pcrnet.com.

Sincerely,
PCR SERVICES CORPORATION

Kristin Szabo
Senior Biologist

Attachments

ETIWANDA
AVIAN COMPENDIUM
July 15, 2002 - Page A-1

PCR

BIRDS

SCIENTIFIC NAME	COMMON NAME
Cathartidae	**New World Vultures**
Cathartes aura	turkey vulture
Accipitridae	**Hawks**
Circus cyaneus	northern harrier
Accipiter cooperii	Cooper's hawk
Buteo jamaicensis	red-tailed hawk
Falconidae	**Falcons**
Falco sparverius	American kestrel
Odotophoridae	**Quails**
Callipepla californica	California quail
Charadriidae	**Plovers**
Charadrius vociferus	killdeer
Columbidae	**Pigeons and Doves**
* *Columba livia*	rock dove
Zenaida macroura	mourning dove
Caprimulgidae	**Goatsuckers**
Chordeiles acutipennis	lesser nighthawk
Apodidae	**Swifts**
Aeronautes saxatalis	white-throated swift
Trochilidae	**Hummingbirds**
Calypte costae	Costa's hummingbird
Calypte anna	Anna's hummingbird
Picidae	**Woodpeckers**
Colaptes auratus	northern flicker
Tyrannidae	**Tyrant Flycatchers**
Contopus cooperi	olive-sided flycatcher
Contopus sordidulus	western wood-pewee
Sayornis nigricans	black phoebe
Sayornis saya	Say's phoebe
Myiarchus cinerascens	ash-throated flycatcher
Tyrannus verticalis	western kingbird

ETIWANDA
AVIAN COMPENDIUM
July 15, 2002 - Page A-2

PCR

BIRDS

SCIENTIFIC NAME	COMMON NAME
Laniidae	**Shrikes**
Lanius ludovicianus	loggerhead shrike
Corvidae	**Jays and Crows**
Aphelocoma californica	western scrub-jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven
Hirundinidae	**Swallows**
Tachycineta thalassina	violet-green swallow
Petrochelidon pyrrhonota	cliff swallow
Stelgidopteryx serripennis	northern rough-winged swallow
Hirundo rustica	barn swallow
Muscicapidae	**Wrentits**
Chamaea fasciata	wrentit
Aegithalidae	**Bushtits**
Psaltriparus minimus	bushtit
Troglodytidae	**Wrens**
Troglodytes aedon	house wren
Thryomanes bewickii	Bewick's wren
Regulidae	**Kinglets**
Regulus calendula	ruby-crowned kinglet
Sylviidae	**Old World Warblers, Gnatcatchers**
Polioptila caerulea	blue-gray gnatcatcher
Mimidae	**Thrashers**
Mimus polyglottos	northern mockingbird
Toxostoma redivivum	California thrasher
Sturnidae	**Starlings**
* *Sturnus vulgaris*	European starling
Ptilogonatidae	**Silky Flycatchers**
Phainopepla nitens	phainopepla
Parulidae	**Wood Warblers**
Dendroica coronata	yellow-rumped warbler

ETIWANDA
AVIAN COMPENDIUM
July 15, 2002 - Page A-3

PCR

BIRDS

SCIENTIFIC NAME	COMMON NAME
Emberizidae	**Emberizids**
Pipilo crissalis	California towhee
Pipilo maculatus	spotted towhee
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow
Chondestes grammacus	lark sparrow
Spizella atrogularis	black-chinned sparrow
Amphispiza belli belli	Bell's sage sparrow
Ammodramus savannarum	grasshopper sparrow
Melospiza melodia	song sparrow
Zonotrichia leucophrys	white-crowned sparrow
Cardinalidae	**Cardinals**
Pheucticus melanocephalus	black-headed grosbeak
Guiraca caerulea	blue grosbeak
Passerina amoena	lazuli bunting
Icteridae	**Blackbirds**
Sturnella neglecta	western meadowlark
Molothrus ater	brown-headed cowbird
Icterus cucullatus	hooded oriole
Icterus bullockii	Bullock's oriole
Fringillidae	**Finches**
Carpodacus mexicanus	house finch
Carduelis psaltria	lesser goldfinch

* *Non-native species*
Source: PCR Services Corporation

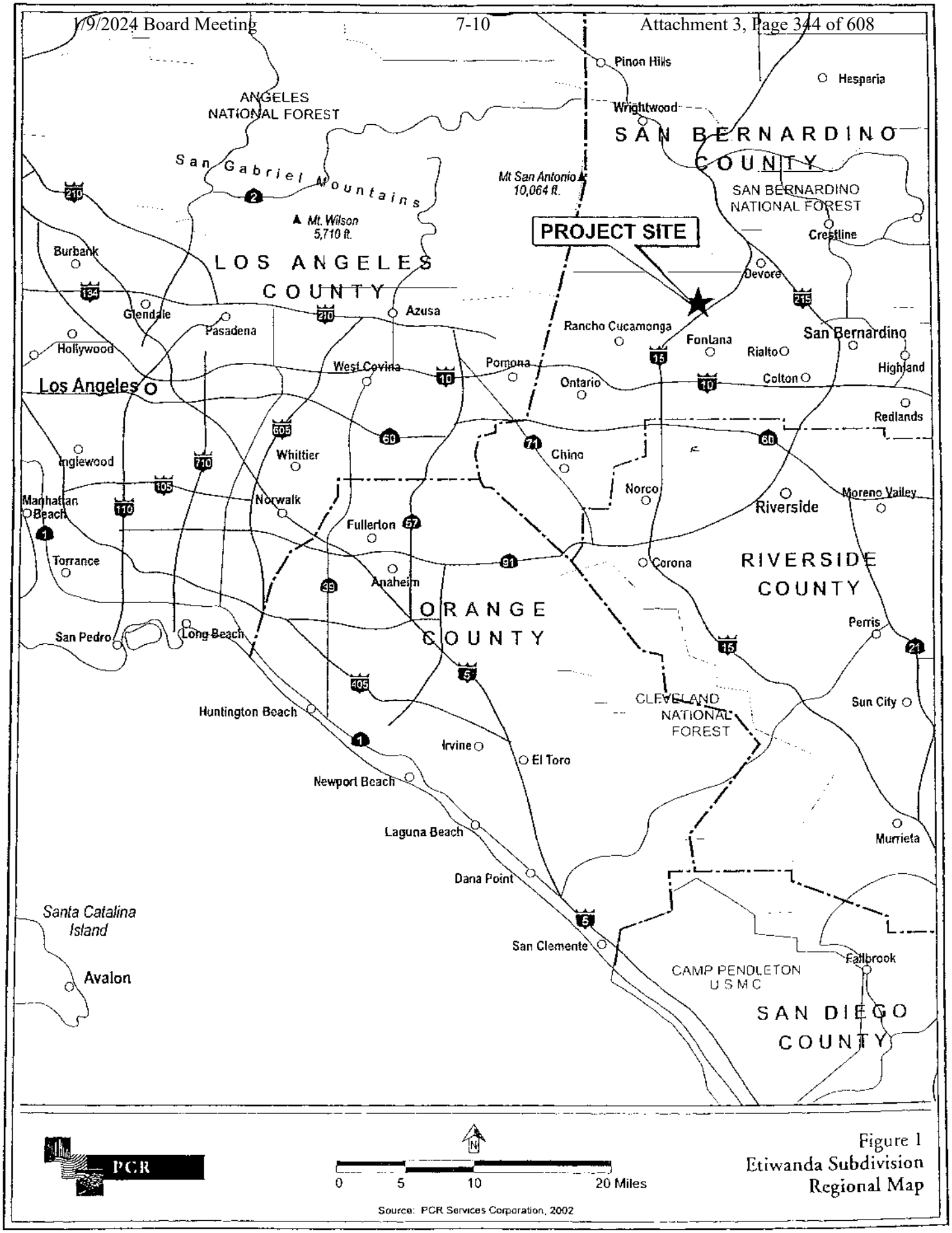

Figure 1
Etiwanda Subdivision
Regional Map

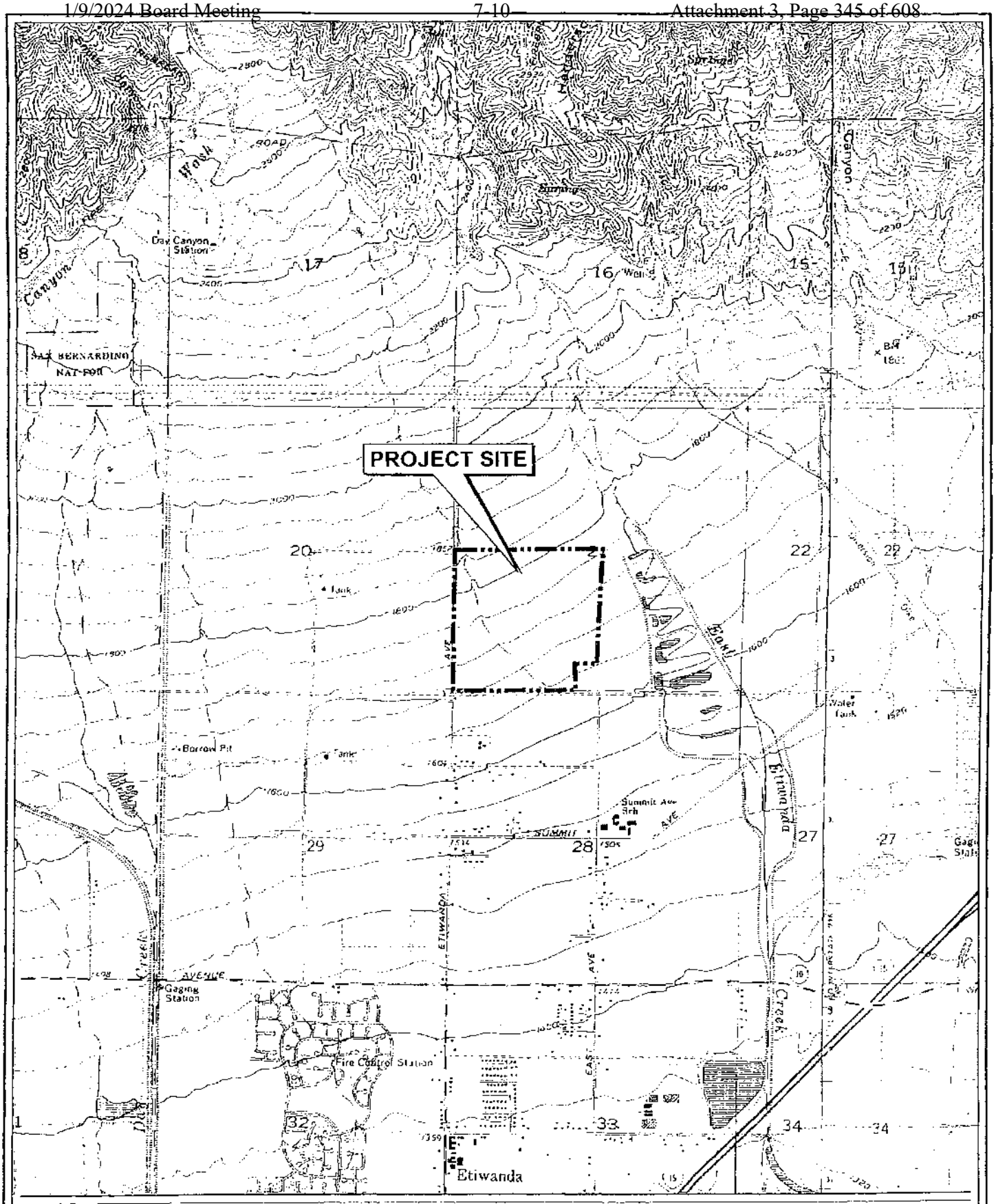

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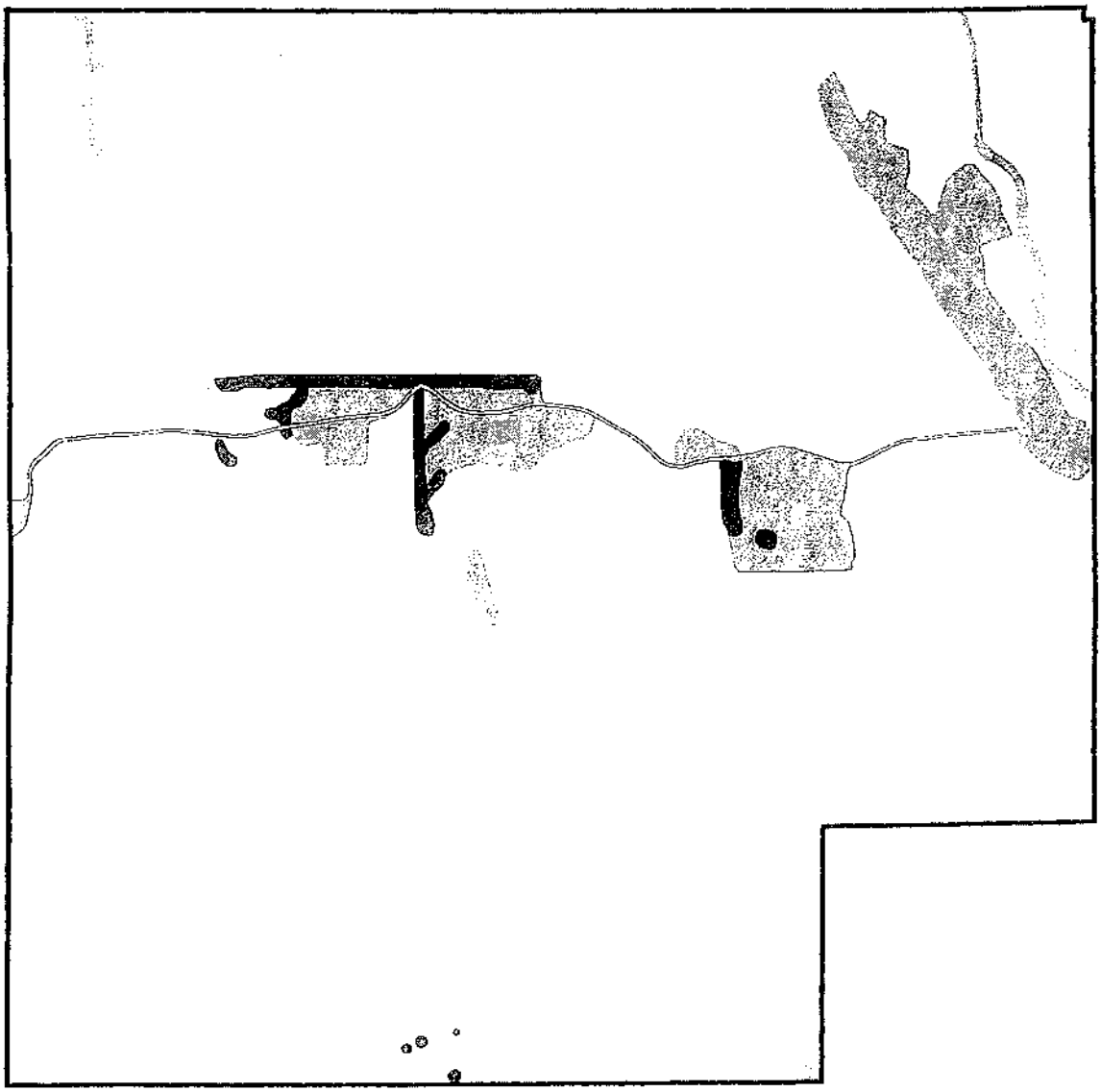
Figure 2
Etiwanda
Vicinity Map

Source: USGS Quadrangles Cucamonga Peak and Devore, California 1966, photorevised 1988



LEGEND:

- Project Area

Plant Communities

- Alluvial Wash
- Disturbed
- Ornamental Landscaping
- Riversidean Alluvial Fan Sage Scrub
- Riversidean Sage Scrub

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N

400 0 400 800 Feet

Source: PCR Services 2001.

Figure 3

Etiwanda Subdivision Plant Communities

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September 8, 1998

Mr. Robert Henninger
Vice President
RICHLAND COMMUNITIES, INC.
3 Imperial Promenade, Suite 150
Santa Ana, CA 92707

RE: DELINEATION OF JURISDICTIONAL WATERS AT THE ETIWANDA PROPERTY, SAN BERNARDINO COUNTY, CA.

Dear Mr. Henninger;

A standard wetlands delineation and determination of jurisdictional "waters of the United States" was conducted at the Etiwanda project site on September 2, 1998. Specific definitions and procedures outlined below were used. Results of the determination follow.

Two jurisdictional drainages were found on the property, totaling 0.34 acres. Numerous other smaller drainages were also observed, but were not deemed jurisdictional due to their extremely ephemeral nature.

PCR is pleased to provide this letter/report summarizing the results of our wetlands delineation of the Etiwanda site in San Bernardino County. If you have any questions regarding our findings, please call us at (949) 753-7001. Thank you for your consideration.

Sincerely,
PLANNING CONSULTANTS RESEARCH

Mark Sudol, D. ENV.
Senior Ecologist

Ken Halama
Ken Halama, Ph.D.
Wildlife Biologist

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INVESTIGATION OF JURISDICTIONAL WATERS ON THE ETIWANDA SITE

Site Description

The project site is located in San Bernardino County north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue just north of the cities of Rancho Cucamonga and Etiwanda . The site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains and may be referenced as being within the northeast corner of Section 24, T1N, R7W on the Cucamonga Peak 7.5 minute quadrangle. The project site elevation ranges from 1,600 feet above mean sea level to 1,800 feet above mean sea level.

Summary of Regulations

There are two key agencies which regulate activities within wetlands and riparian areas in California. The U.S. Army Corps of Engineers (Corps) Regulatory Program regulates activities pursuant to Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Resources, and Sanctuaries Act. The California Department of Fish and Game regulates activities within wetlands under the Fish and Game code Section 1600-1607.

The Corps of Engineers regulates the discharge of dredged or fill material into jurisdictional "waters of the United States" ("waters") through Section 404 of the Clean Water Act (as amended). The regulations (33 CFR 328.3) define "waters" as:

> (1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
>
> (2) All interstate waters including interstate wetlands;
>
> (3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate commerce including any such waters:

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(I) Which are or could be used by interstate or foreign travelers for recreation or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purposes by industries in interstate commerce;

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs (a) (1)-(4) of this section;

(6) The territorial seas;

(7) Wetlands adjacent to waters (other than waters which are themselves waters) identified in paragraphs (a) (1)-(6) of this section. (33 CFR 328.3(a))

The most important aspect of this definition is the interstate commerce clause. In order for the federal government to regulate an activity, there must be effects which impact one or more states. The definition of what constitutes interstate commerce has been litigated numerous times and found to include the movement of migratory birds and the recreational viewing of these birds by tourists (assuming interstate travel). This interpretation has allowed the Corps to regulate impacts to "waters of the United States", including intermittent and ephemeral streams in California.

Wetlands are included in the definition of "waters" but also have additional criteria for delineation because these areas are perceived to have higher value. The U.S. Army Corps of Engineers Wetland Delineation Manual (1987) provides a definition and diagnostic environmental characteristics for the identification and delineation of wetlands. The Corps and EPA define wetlands as (Federal Register, 1980):

"Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

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Wetlands have the following general diagnostic environmental characteristics:

Vegetation: The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic conditions described in the definition above. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Prevalent vegetation is generally defined as greater than 50 percent of the species would be obligate wetland species (OBL), facultative wetland species (FACW), or facultative species with greater probability of occurrence in wetlands (FAC+).

Soil: Soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions. Hydric soils are those which are flooded, or ponded long enough during the growing season to develop anaerobic conditions.

Hydrology: The area is inundated either permanently or periodically at mean water depths ≤ 6.6 feet, or soil is saturated to the surface at some time during the growing season of the prevalent vegetation.

In southern California with its Mediterranean climate, most streams have only ephemeral or intermittent flows and only a very small number are considered perennial watercourses. With only limited winter rainfall, there is generally not enough water for most ephemeral or intermittent streams to form well-established hydric soils. The result is that most riparian areas in the southwest do not meet the Corps' definition of a wetland but are only considered "waters". However, this does not mean these areas have less value, on the contrary, these areas have proportionally higher value and functional capacity than eastern wetlands. Southwestern riparian areas function as a refuge during the long, hot summers and provide valuable foraging and breeding habitat for a wide variety of species.

California Department of Fish and Game (CDFG) has broader definition on what constitutes jurisdictional waters of the state of California. CDFG determines jurisdiction based on established scientific criteria. Wetland categories which CDFG regulates include (but are not limited to) freshwater marshes, wet meadows, vernal pools, riparian woodland, riparian scrub, and coastal salt marshes. The following activities are regulated if the project will:

(1) divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake designated by the Department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit,

(2) use material from the streambeds designated by the Department, or

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(3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by the department.

Methods

A determination of jurisdictional wetlands and "waters of the United States" of the Etiwanda property was conducted by Dr. Mark Sudol and Dr. Ken Halama of Planning Consultants Research (PCR) on September 2, 1998. The entire site was evaluated and all areas which would fall under the jurisdiction of the U.S. Army Corps of Engineers and the California Department of Fish and Game were identified. A qualitative functional assessment of the habitat was also conducted during the site investigation.

PCR staff ecologists have used the definitions identified above, as well as the diagnostic environmental characteristics, and Corps approved procedures for the determination of jurisdictional "waters of the United States" and delineation of wetlands. Each area was examined for evidence of an "ordinary high water mark" and for wetland vegetation. If these criteria were met, then an excavation of the soil was conducted to determine if wetland indicators were present. Standard criteria were used to determine soil characteristics including comparison with standard plates within a Munsell soil color chart. Scientifically defensible indicators were used to determine the extent of jurisdictional habitat according to CDFG regulations.

Results

The Etiwanda property is located within a portion of an alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. These processes form several major drainages which channel the high flows and a myriad of minor drainage channels which form an intricate network and carry the smaller flows during storm events. These major drainages migrate slowly across the fan as material is deposited during storm events. In the arid southwest, these major channels may take 50-100 years to migrate across a large fan. In the case of this property, the high flows are being confined to two or three major channels through flood control activities. The smaller drainages found on the project site are local drainage courses which convey run off from rain falling on the fan itself.

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There are two minor drainages found on the Etiwanda property which convey flows across the fan and have sufficient flows to form a defined ordinary high water mark (Figure 1). The largest drainage channel begins at the confluence of the concrete flood control channel which is located at the northern end of the property adjacent to the housing complex and a natural channel which flows from the northwest. This channel flows from the northwest to the southeast and merges with a defined flood control channel which parallels the southern boundary of the site. The other drainage is found on the eastern side of the property, again running from the northwest to the southeast. It flows off site and also eventually merges with the flood control channel on the southern boundary. The site investigation also identified three other very minor drainages which exhibited indications of an ordinary high water flow. However, after consultation with the Corps, these minor drainages were not considered jurisdictional because their width was less than one foot, the ordinary high water mark was not distinctive over the entire length, and there was no riparian or wetland vegetation present in or around the area. While there were areas which would fall under the jurisdiction of the Corps, there were no areas which would qualify as wetlands on the project site. A brief description on each drainage is provided below.

Drainage 1 is a small, ephemeral stream which flows from the northwest to southeast. Drainage 1 is approximately 1820 feet long and six (6) feet wide throughout the property. Clear evidence of an ordinary high water mark was observed. Very limited riparian vegetation, including three sycamore trees, have become established in the upper reaches. The remainder of the drainage has only upland vegetation such as coyote bush, buckwheat, and sage. Soils were sandy and well drained with no evidence of organic layers. This drainage was approximately 0.25 acres of jurisdictional "waters of the U.S."

Drainage 2 is a very small ephemeral stream which flows from the northwest to southeast. Drainage 2 is approximately 1310 feet long and three (3) feet wide throughout the property. Evidence of an ordinary high water mark was observed. There was no riparian vegetation in or around this drainage, only upland vegetation similar to Drainage 1. Soils were sandy and well drained with no evidence of organic layers. This drainage was approximately 0.09 acres of jurisdictional "waters of the U.S."

Total area of jurisdiction under the Corps would be 0.34 acres of "waters of the U.S." and no acres of wetlands. Total area of jurisdiction under the CDFG would also be approximately 0.34 acres.

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Table 1. Summary of Jurisdictional Area on Etiwanda Property

	Length	Width	Acreage
Drainage 1	1820 feet	6 feet	0.25
Drainage 2	1310 feet	3 feet	0.09
Total			**0.34**

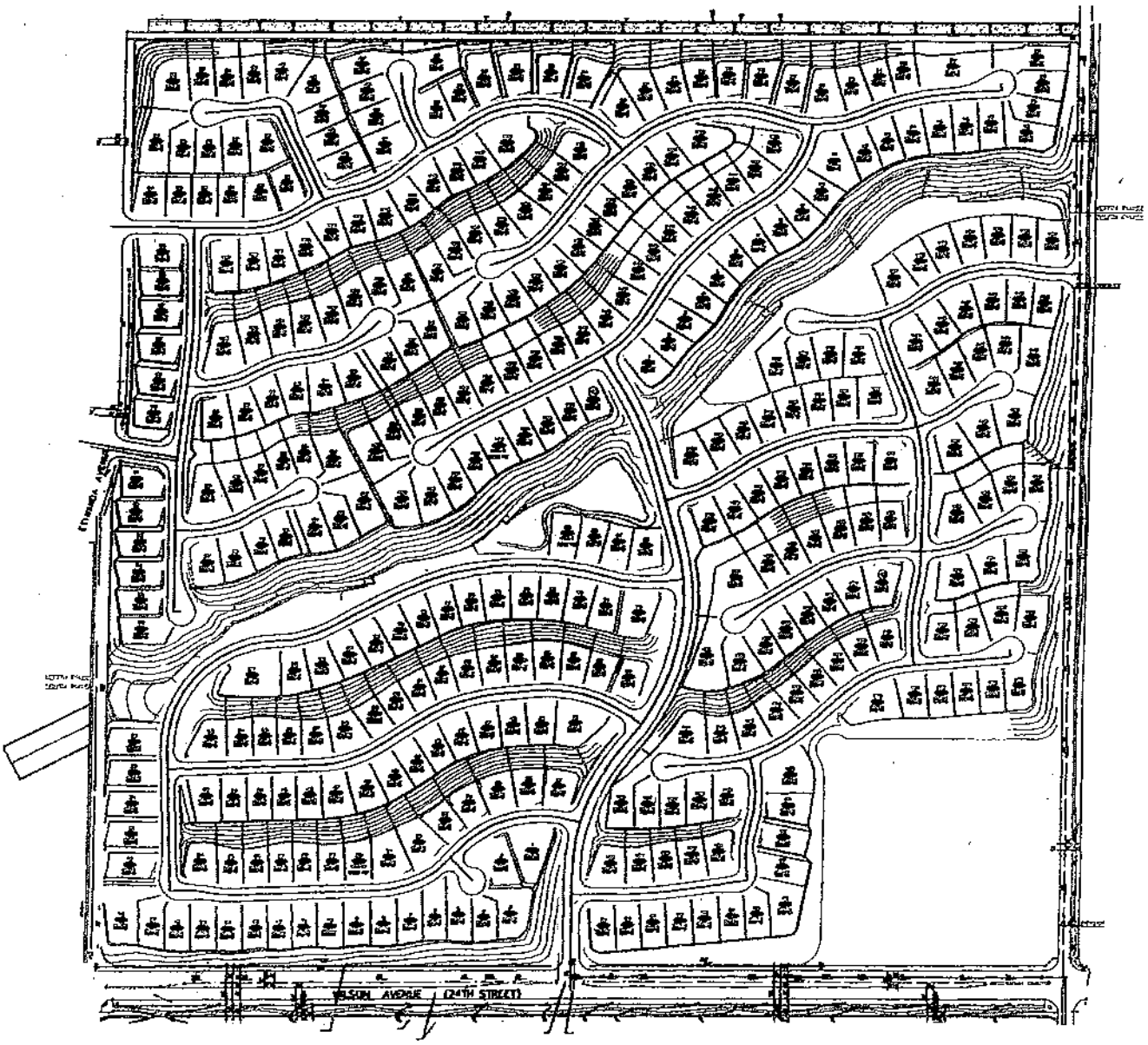
Conclusions

The habitat on the project site typifies alluvial out-wash areas found to the west of the peninsular mountain ranges in southern California. Coastal sage scrub dominates the site with small non-jurisdictional drainages forming a network throughout the site. All drainages are ephemeral, and most likely only contain flowing water during spring runoff. There is little or no evidence of wetland or riparian vegetation, therefore the functionality of these ephemeral washes is considered low.

Appendix D
Traffic Impact Study

Appendix D
Traffic Impact Study

ETIWANDA PROPERTIES (TTM 16072)
TRAFFIC IMPACT ANALYSIS
Rancho Cucamonga, California
(REVISED 6/17/02)



RK engineering group, inc.

RK engineering group, inc.

transportation planning ▪ traffic engineering
acoustical / air quality studies

June 17, 2002

Mr. John Schafer
RICHLAND COMMUNITIES
3 Imperial Promenade, Suite 150
Santa Ana, CA 92707

Subject: Etiwanda Properties Traffic Impact Analysis (Revised)

Dear Mr. Schafer:

RK ENGINEERING GROUP, INC. is pleased to submit the revised Etiwanda Properties Traffic Impact Analysis. This report provides a summary of the findings, analysis procedures and evaluation of the project area with respect to on-site and off-site traffic impacts pursuant to the City of Rancho Cucamonga and the County of San Bernardino and Congestion Management Program requirements.

This traffic impact analysis report includes an evaluation of Opening Year (2004) and Year 2020 scenarios pursuant to CMP requirements. A number of traffic recommendations are included for future conditions within Section 7 of this report.

If you have any questions regarding this study, please do not hesitate to call at (949) 474-0809.

Sincerely,

RK ENGINEERING GROUP, INC.

REGISTERED PROFESSIONAL ENGINEER
ROBERT KAHN
No. 0555
EXP. 12/31/05
TRAFFIC
STATE OF CALIFORNIA

Frank Yeh
Transportation Planner

Robert Kahn, P.E.
Principal

FY:RK:rd/1035
JN:1058-01-01

Attachments

20201 s.w. birch street, suite 250
newport beach, california 92660
tel 949.474.0809 fax 949.474.0909

ETIWANDA PROPERTIES (REVISED)
TRAFFIC IMPACT ANALYSIS
SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:

RICHLAND COMMUNITIES
3 Imperial Promenade, Suite 150
Santa Ana, CA 92707

Prepared by:

RK ENGINEERING GROUP, INC.
20201 S.W. Birch Street, Suite 250
Newport Beach, CA 92660

Frank Yeh
Robert Kahn, P.E.

June 17, 2002

JN:1058-01-01
FY:RK:rd/1035

TABLE OF CONTENTS

APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

ETIWANDA PROPERTIES (REVISED)
TRAFFIC IMPACT ANALYSIS
SAN BERNARDINO COUNTY, CALIFORNIA

1. INTRODUCTION

This report summarizes the traffic impact analysis conducted to assess the impacts of the potential land uses within the Etiwanda Properties development on the roadway system in the study area. The project is located in the County of San Bernardino. The general location of the project site is presented on Exhibit 1-A.

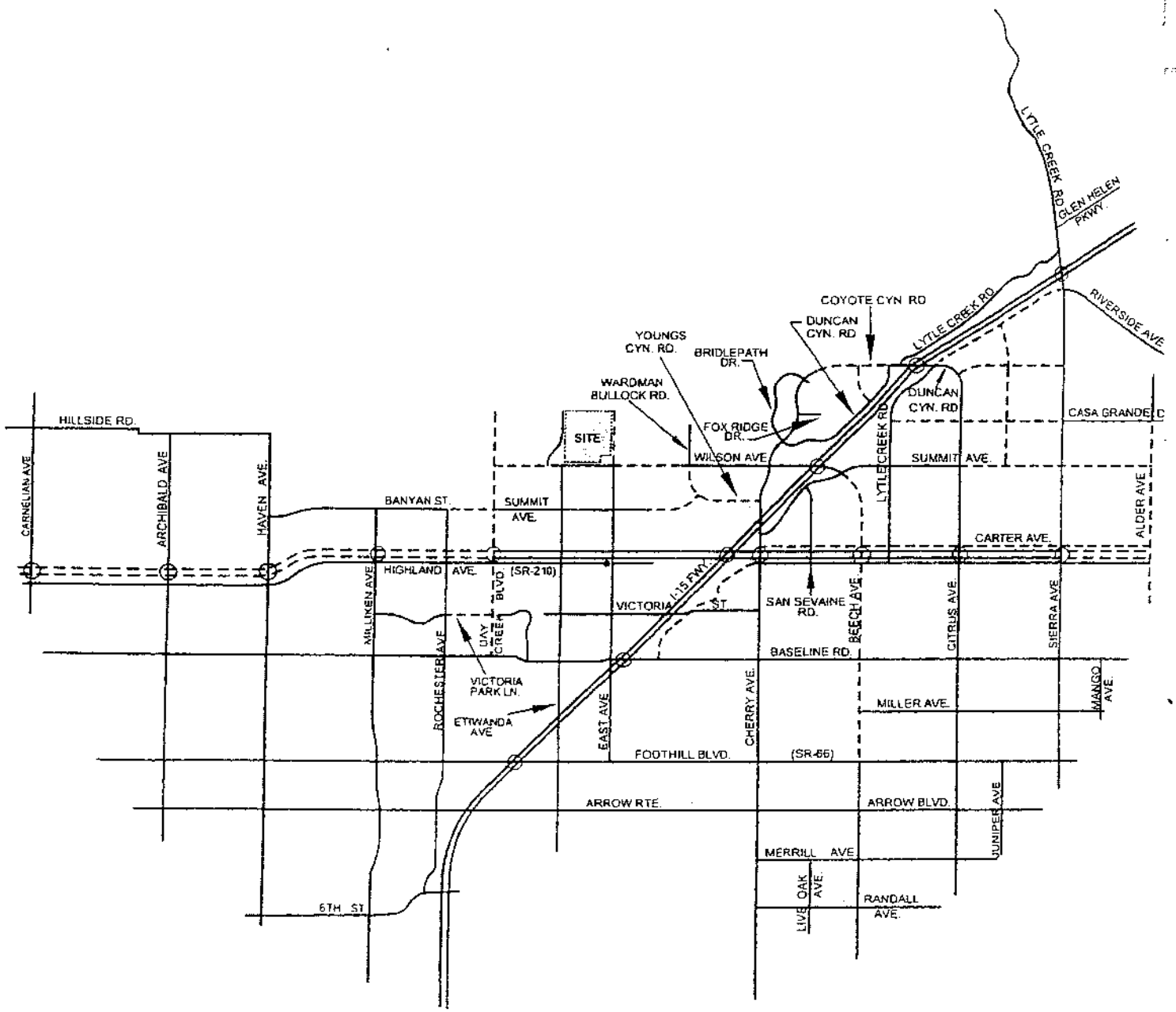
The traffic issues related to the proposed land use and development have been evaluated in the context of the California Environmental Quality Act (CEQA) and the San Bernardino County Congestion Management Program (CMP). The project is currently in the County of San Bernardino, however, the City of Rancho Cucamonga is the lead agency responsible for preparation of the traffic impact analysis, in accordance with both CEQA and CMP authorizing legislation since the project will be annexed to the City. Exhibit 1-B depicts the CMP roadway network and study area limits. The CMP requires no analysis further than 5 miles from the project site. In accordance with CMP requirements, both an Opening Year analysis and a CMP Horizon Year analysis are included in this report.

The introduction to this report presents an overview of the project and provides a brief description of the study area. The analysis methodologies used to evaluate the impacts of the project are described, and the definitions of roadway system deficiencies and significant project impacts are presented in the context of the CMP and CEQA requirements.

Subsequent sections of the report will describe the project in detail and provide a complete description of existing and projected traffic conditions within the study area.

EXHIBIT 1-A

PROJECT LOCATION MAP



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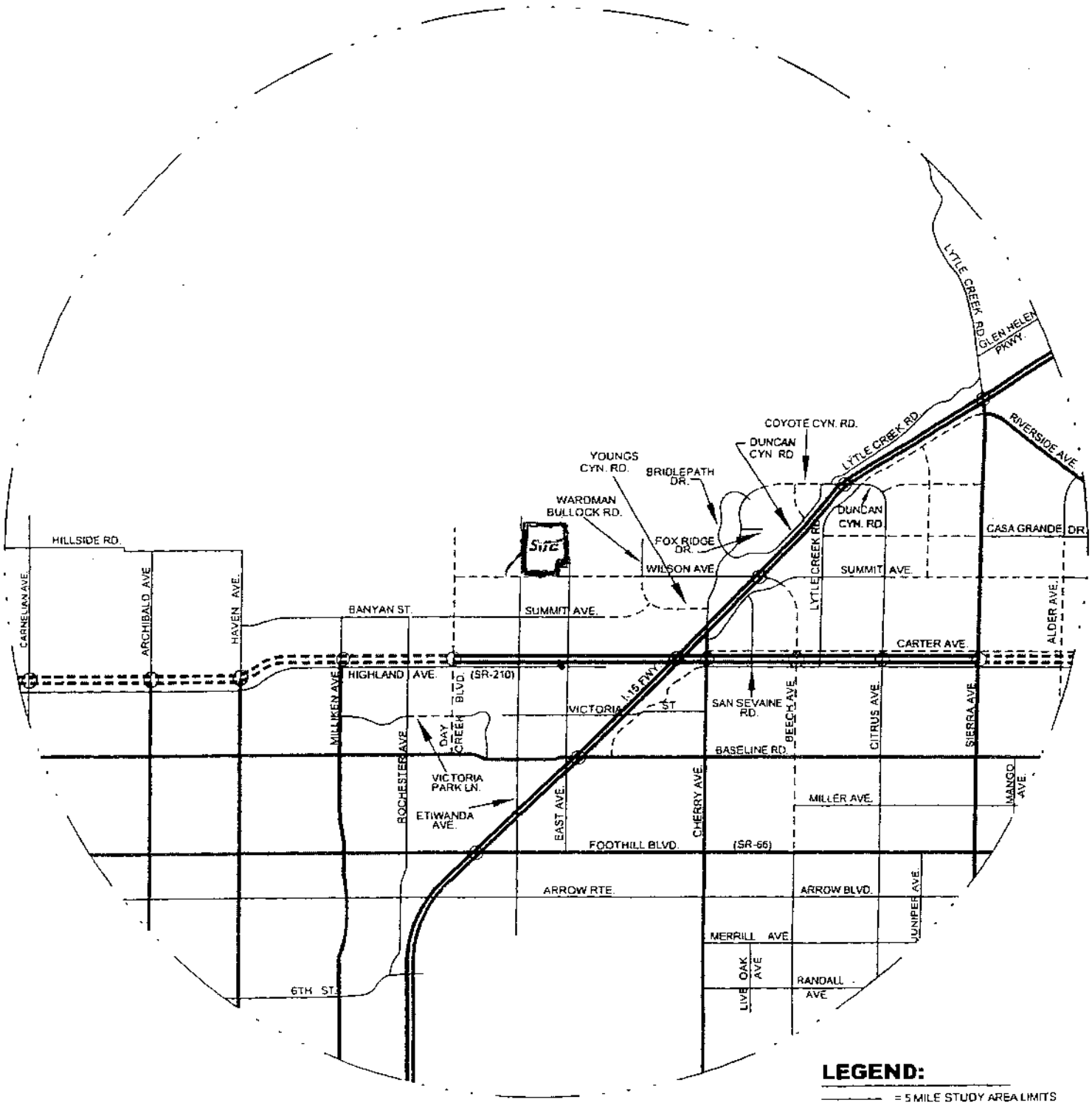
ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

EXHIBIT 1-B

CONGESTION MANAGEMENT PROGRAM NETWORK AND STUDY AREA



LEGEND:

= 5 MILE STUDY AREA LIMITS

= CMP ROADWAY

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ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

1.1 Project Overview

The project site is located in the County of San Bernardino, however, it will be annexed by the City of Rancho Cucamonga. The project's lead agency will be the City of Rancho Cucamonga. The project is located north of Wilson Avenue, between Etiwanda Avenue and East Avenue (see Exhibit 1-A).

The project site is proposed to be developed with 359 single-family detached residential dwelling units. Exhibit 1-C illustrates the project site plan.

Additional detailed discussion of the roadway network features of the project and its traffic generation characteristics will be provided in subsequent sections of this report.

1.2 Study Area

The overall study area evaluated in this study was previously presented on Exhibit 1-B, which also identified all CMP roadways within the study area. The roadway elements which must be analyzed in accordance with CMP requirements are dependent on both the analysis year (project Opening Year or CMP Horizon Year) and project generated traffic volumes.

Regional access to the site is provided by State Route 210 (SR-210) and the Interstate 15 (I-15) Freeway. Local access is provided by various arterial roadways in the vicinity of the site. The east-west arterials which will be most affected by the project include Wilson Avenue, Summit Avenue and Highland Avenue. North-south arterials expected to provide local access include Etiwanda Avenue and East Avenue.

A series of scoping discussions were conducted with the following agencies to define the desired analysis locations for each future analysis year:

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ETIWANDA PROPERTIES (TTM 18072), Rancho Cucamonga, California

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EXHIBIT 1-C

SITE PLAN

- City of Rancho Cucamonga
- San Bernardino Associated Governments (SANBAG)

In addition, staff from the Southern California Association of Governments (SCAG) have also been contacted to discuss the project and its associated travel patterns.

The Year 2020 horizon year analysis locations can only be determined once the projected Year 2020 project related traffic volumes have been developed. This information will be presented in subsequent sections of this report. The Opening Year (2004) and Year 2020 analyses include the entire project.

1.3 Analysis Methodologies

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are consistent with the San Bernardino County Congestion Management Program. The following analysis years are considered in this report:

- Existing Conditions - 2001
- Project Opening Year - 2004
- CMP Horizon Year - 2020

The overall methodologies used to develop future traffic volume forecasts, and the explicit traffic operations analysis methodologies are summarized herein. The primary section of interest to the non-technically oriented reviewer is Section 1.4.2 (Definition of Significant Impact).

1.3.1 Overall Analysis Methodology

As described previously, traffic conditions are evaluated in this report for both existing conditions and two future horizon years. Actual traffic count data

were obtained from a variety of sources to quantify existing traffic conditions. Traffic count data was also collected by RK ENGINEERING GROUP, INC. specifically for this study.

The CMP Horizon Year (2020) traffic volumes without the project have been derived from the subregional travel demand model currently being used for long range planning in San Bernardino County. This model is commonly referred to as the Comprehensive Transportation Plan (CTP) model. The CTP model is currently the only approved travel demand forecasting tool within the study area, as none of the locally developed travel demand models in the study area have received the necessary "finding of consistency" (with the CTP model) from SANBAG/SCAG.

Based upon discussions with SANBAG staff, the average daily traffic (ADT) volume forecasts have been determined using the growth increment approach on the CTP Model Year 1994 and Year 2020 ADT volume forecasts (see Appendix "A"). This difference defines the growth in traffic over the 26 year period. The incremental growth in ADT volume has been factored to reflect the forecast growth between Year 2001 and Year 2020. For this purpose, linear growth between the Year 1994 base condition and the forecast Year 2020 condition was assumed. Since the increment between Year 2001 and Year 2020 is 19 years of the 26-year time frame, a factor of 0.73 (i.e., 19/26) was used.

The peak hour directional roadway segment volume forecasts have been determined using the growth increment approach on the CTP Model Year 1994 and Year 2020 peak hour volumes. The incremental growth calculations are shown in Appendix "A". Current peak hour intersection approach/departure data is a necessary input to this approach. The existing traffic count data serves as both the starting point for the refinement process, and also provides important insight into current travel patterns and the relationship between peak hour and daily traffic conditions. The initial turning movement proportions are estimated

based upon the relationship of each approach leg's forecast traffic volume to the other legs forecast volumes at the intersection. The initial estimate of turning movement proportions is then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 255). A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

The Opening Year (2003) traffic volumes have been interpolated from the Year 2020 traffic volumes based upon a portion of the future growth increment.

Project traffic volumes for all future conditions projections were estimated using the manual approach described in the CMP guidelines. Trip generation has been estimated based on the regression equations contained in the Institute of Transportation Engineers (ITE) publication Trip Generation, 6th Edition. The project trip distributions were developed based on a review of the site access and projected future traffic patterns as predicted by the CTP model.

The input data to the CTP Model has been reviewed. The growth in housing in this data suggests that the proposed project is already included in the CTP baseline scenario. Project traffic volumes were therefore added to the future year background volumes obtained from the CTP Model. The result of this traffic forecasting procedure is a series of traffic volumes suitable for traffic operations analysis.

1.3.2 Traffic Operations Analysis

The current technical guide to the evaluation of traffic operations is the 1997 Highway Capacity Manual (HCM) (Transportation Research Board Special Report 209). The HCM defines level of service as a qualitative measure which

describes operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The criteria used to evaluate LOS (Level of Service) conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted.

The definitions of level of service for uninterrupted flow (flow unrestrained by the existence of traffic control devices) are:

- LOS "A" represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.

- LOS "B" is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.

- LOS "C" is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.

- LOS "D" represents high-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.

- LOS "E" represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.

- LOS "F" is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations.

Uninterrupted flow is generally found only on limited access (freeway) facilities in urban areas. The level of service is based on the HCM, Table 3-1.

The definitions of level of service for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control.

The level of service is typically dependent on the quality of traffic flow at the intersections along a roadway. The HCM methodology expresses the level of service at an intersection in terms of delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control. The levels of service determined in this study are calculated using an HCM methodology.

For signalized intersections, average total delay per vehicle is used to determine level of service. Levels of service at signalized study intersections have been evaluated using an HCM intersection analysis program.

Study area intersections which are stop sign controlled with stop-control on the minor street only have been analyzed using the two-way stop-controlled unsignalized intersection analysis methodology of the HCM. For these intersections, the calculation of level of service is dependent on the occurrence of gaps occurring in the traffic flow of the main street. Using data collected describing the intersection configuration and traffic volumes at these locations to calculate average intersection delay, the level of service has been calculated. The level of service criteria for this type of intersection analysis is based on total delay per vehicle for the worst minor street movements.

For all-way stop (AWS) controlled intersections, the ability of vehicles to enter the intersection is not controlled by the occurrence of gaps in the flow of the main street. The AWS controlled intersections have been evaluated using the HCM methodology for this type of multi-way stop controlled intersection

configuration. The level of service criteria for this type of unsignalized intersection analysis is based on average total delay per vehicle for the overall intersection.

The level of services are defined in terms of average delay for the intersection analysis methodology as follows:

LEVEL OF SERVICE	AVERAGE TOTAL DELAY PER VEHICLE (SECONDS)	
	SIGNALIZED	UNSIGNALIZED
A	0 to 10.00	0 to 10.00
B	10.01 to 20.00	10.01 to 15.00
C	20.01 to 35.00	15.01 to 25.00
D	35.01 to 55.00	25.01 to 35.00
E	55.01 to 80.00	35.01 to 50.00
F	80.01 and up	50.01 and up

Per CMP, signalized intersections are considered deficient (LOS "F") if the overall intersection critical volume to capacity (V/C) ratio equals or exceeds 1.0, even if the level of service defined by the delay value is below the defined LOS standard. The V/C ratio is defined as the critical volumes divided by the intersection capacity. A V/C ratio greater than 1.0 implies an infinite queue.

A level of service analysis must be conducted on all existing segments and intersections on the CMP network potentially impacted by the project or plan (as defined by the thresholds in Section 1B of the 1999 San Bernardino CMP). Urban segments (i.e., segments on roadways that are generally signalized) do not require segment analysis. Segment requirements can normally be determined by the analysis of lane requirements at intersections. Freeway

mainline segments must be analyzed, and ramp-weaving analysis may be required at local discretion, if a ramp or weaving problem is anticipated.

The LOS analysis for signalized intersections has been performed using optimized signal timing. This analysis has included an assumed lost time of two seconds per phase in accordance with San Bernardino CMP recommended default values. Signal timing optimization has considered pedestrian safety and signal coordination requirements. Appropriate time for pedestrian crossings have also been considered in the signalized intersection analysis. The following formula has been used to calculate the pedestrian minimum times for all HCM runs:

[(Curb to Curb distance – 6 feet) / (4 feet/second)] + 7 seconds

Saturation flow rates of 1,800 vehicles per hour of green (vphg) for through and right turn lanes and 1,700 vehicles for single left turn lanes, 1,600 vehicles per lane for dual left turn lanes and 1,500 vehicles per lane for triple left turn lanes have been assumed for all capacity analysis. These are the default values recommended by the CMP guidelines.

As required by the San Bernardino CMP, the peak hour traffic volumes have been adjusted to peak 15 minute volumes for analysis purposes using the existing observed peak 15 minute to peak hour factors for all scenarios analyzed. Where feasible improvements in accordance with the local jurisdiction's General Plan and which result in acceptable operations cannot be identified, the Year 2020 peak hour factor has been adjusted upwards to 0.95. This is specifically allowed by the San Bernardino CMP guidelines to account for the effects of congestion on peak spreading. Peak spreading refers to the tendency of traffic to spread more evenly across time as congestion increases.

1.4 Definition of Deficiency and Significant Impact

The following definitions of deficiencies and significant impacts have been developed in accordance with the City of Rancho Cucamonga General Plan CMP requirements.

1.4.1 Definition of Deficiency

The definition of an intersection deficiency has been obtained from the City of Rancho Cucamonga General Plan. The General Plan states that peak hour intersection operations of LOS "D" or better are generally acceptable. Therefore, any intersection operating at LOS "E" to "F" will be considered deficient. It should be noted that the City of Rancho Cucamonga has a list of several intersections where level of service "E" is acceptable. This list includes the project study intersection (Etiwanda Avenue at Highland Avenue).

For freeway facilities, the CMP controls the definition of deficiency for purposes of this study. The CMP definition of deficiency is based on maintaining a level of service standard of LOS "E" or better, except where an existing LOS "F" condition is identified in the CMP document (San Bernardino CMP Table 2-1). A CMP deficiency is, therefore, defined as any freeway segment operating or projected to operate at LOS "F", unless the segment is identified explicitly in the CMP document.

The identification of a CMP deficiency requires further analysis in satisfaction of CMP requirements, including:

- Evaluation of the mitigation measures required to restore traffic operations to an acceptable level with respect to CMP LOS standards.
- Calculation of the project share of new traffic on the impacted CMP facility during peak hours of traffic.

- Estimation of the cost required to implement the improvements required to restore traffic operations to an acceptable level of service as described above.

This study incorporates each of these aspects for all locations where a CMP deficiency is identified.

1.4.2 Definition of Significant Impact

The identification of significant impacts is a requirement of CEQA, and is not directly addressed in the CMP document. The City of Rancho Cucamonga General Plan and Circulation Element have been adopted in accordance with CEQA requirements, and any roadway improvements within the County of San Bernardino which are consistent with these documents are not considered a significant impact, so long as the project contributes its "fair share" funding for improvements.

A traffic impact is considered significant if the project both: i) contributes measurable traffic to and ii) substantially and adversely changes the level of service at any location projected to experience deficient operations under foreseeable cumulative conditions, where feasible improvements consistent with the City of Rancho Cucamonga and the County of San Bernardino General Plan cannot be constructed.

2. PROJECT DESCRIPTION AND CMP TRAFFIC CONTRIBUTION TEST

This section describes the project land uses and traffic characteristics for each of the future horizon years analyzed. The CMP traffic contribution test used to determine the CMP Horizon Year (2020) analysis locations is also presented in this section.

2.1 Project Description

The project site plan was previously presented on Exhibit 1-C. The project site is proposed to be developed with 359 single-family detached residential dwelling units.

2.2 Project Traffic

The traffic related to the project has been calculated in accordance with the following accepted procedural steps:

- Trip Generation
- Trip Distribution
- Traffic Assignment

These steps are described in detail below.

2.2.1 Project Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation Manual (6th Edition) has been used to calculate the overall quantity of traffic which the project site is estimated to generate. Table 2-1 presents the rates and equations which have been obtained from the ITE Trip Generation Manual.

TABLE 2-1

TRIP GENERATION RATES[1]

LAND USE	UNITS[2]	PEAK HOUR				DAILY
		AM		PM		
		IN	OUT	IN	OUT	
Single-Family Detached Residential	DU	0.19	0.56	0.65	0.36	9.57

[1] Source: Institute of Transportation Engineers (ITE), Trip Generation, Sixth Edition, 1997, Land Use Category 210.

[2] DU = Dwelling Units

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JN:1058-01-01

Table 2-2 summarizes the projected trip generation for the Etiwanda Properties development. The proposed development is projected to generate approximately 3,436 trip-ends per day with 269 vehicles per hour during the AM peak hour and 362 vehicles per hour during the PM peak hour.

2.2.2 Project Trip Distribution and Assignment

The trip distribution and assignment process represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the location of commercial, employment and recreational opportunities and the proximity to the regional freeway system.

The CTP model has been used to evaluate the regional distribution of project traffic. A select zone (trip distribution) analysis was performed using the CTP model with the assistance of SCAG staff. For the Opening Year (2004) trip distribution it has been assumed that Wilson Avenue would not be extended to the east of East Avenue.

The detailed trip distribution/traffic assignment process has been accomplished manually. The Opening Year (2004) project trip distribution is shown on Exhibit 2-A. Wilson Avenue, east of East Avenue, would be constructed in the horizon Year (2020). The Year 2020 project trip distribution is shown in Exhibit 2-E.

2.2.3 Project Only Traffic Volume Forecasts

The project only traffic forecasts have been developed by applying the trip generation, distribution, and traffic assignment calculations. The ADT volumes attributable to the project only are presented on Exhibit 2-B for Opening Year (2004), and on Exhibit 2-F for Year 2020. The AM peak hour project only traffic forecasts are depicted on Exhibit 2-C for Opening Year (2004), and on Exhibit

TABLE 2-2

PROJECT TRIP GENERATION

LAND USE	QUANTITY	UNITS[1]	PEAK HOUR				DAILY
			AM		PM		
			IN	OUT	IN	OUT	
Single-Family Detached Residential	359	DU	68	201	233	129	3,436

[1] DU = Dwelling Units

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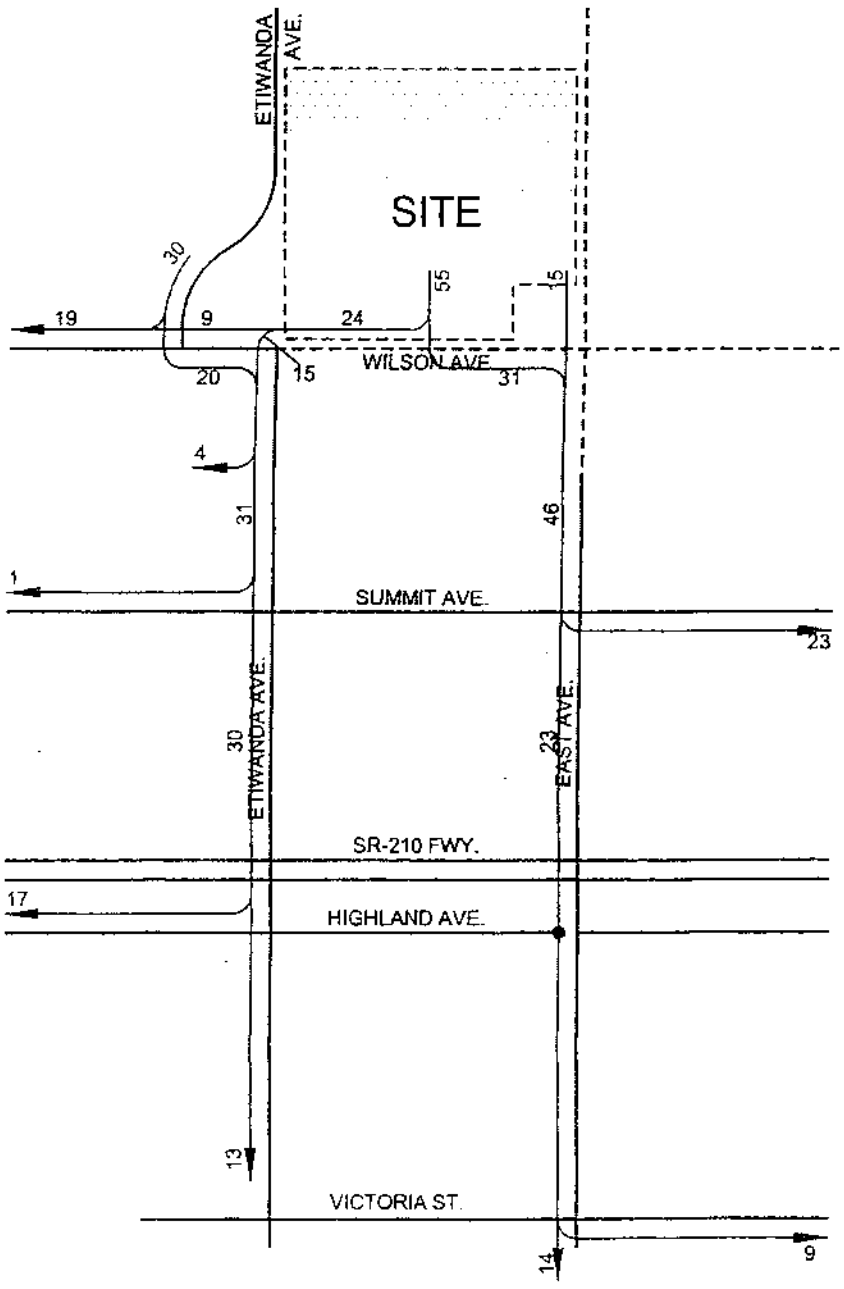
JN:1058-01-01

EXHIBIT 2-A

OPENING YEAR (2004) PROJECT TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT

● = CUL-DE SAC

N

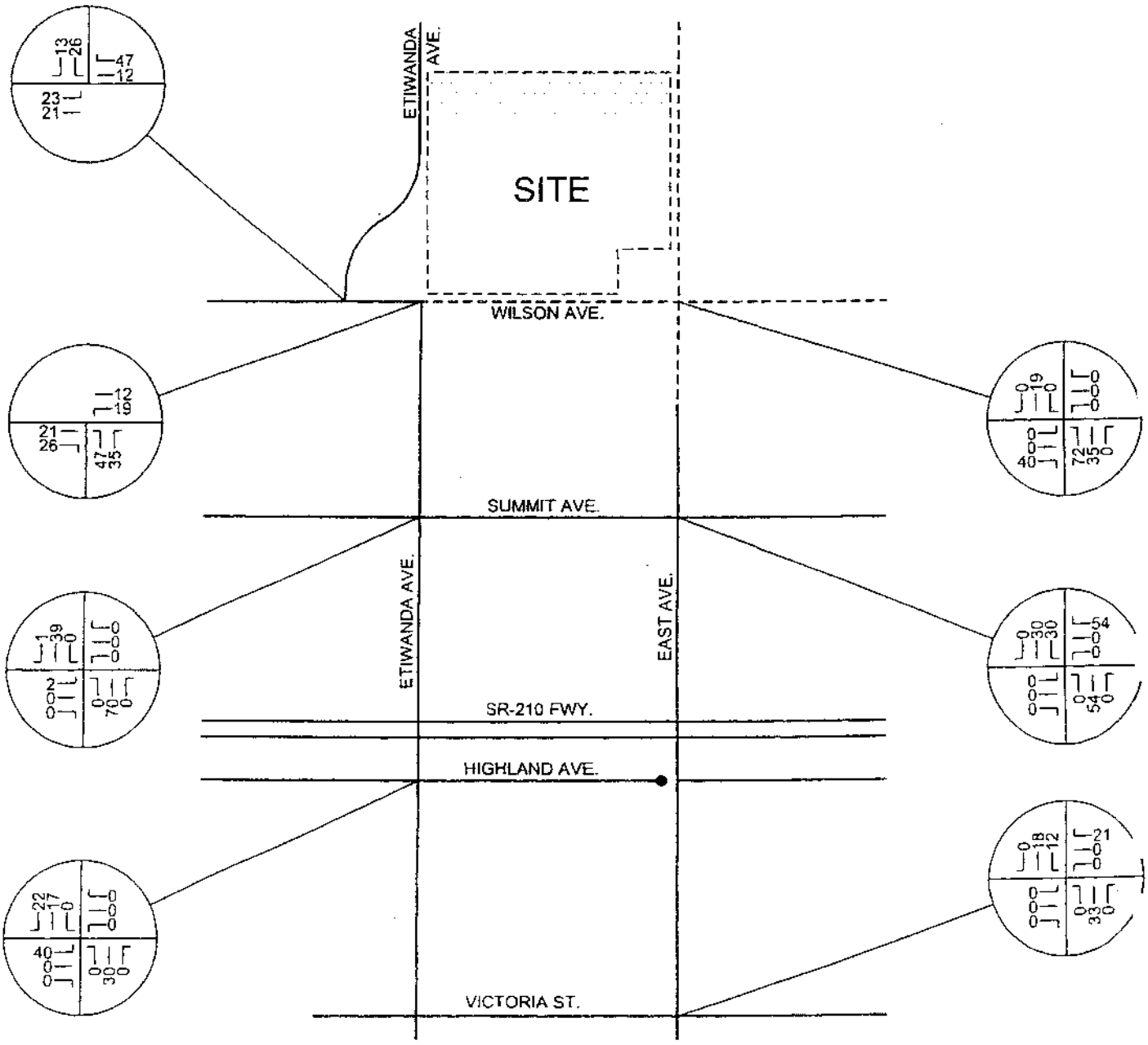
1058-01-01-EX-2_A

ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

EXHIBIT 2-D

OPENING YEAR (2004) PROJECT PM PEAK HOUR INTERSECTION VOLUMES



LEGEND:

● = CUL-DE SAC

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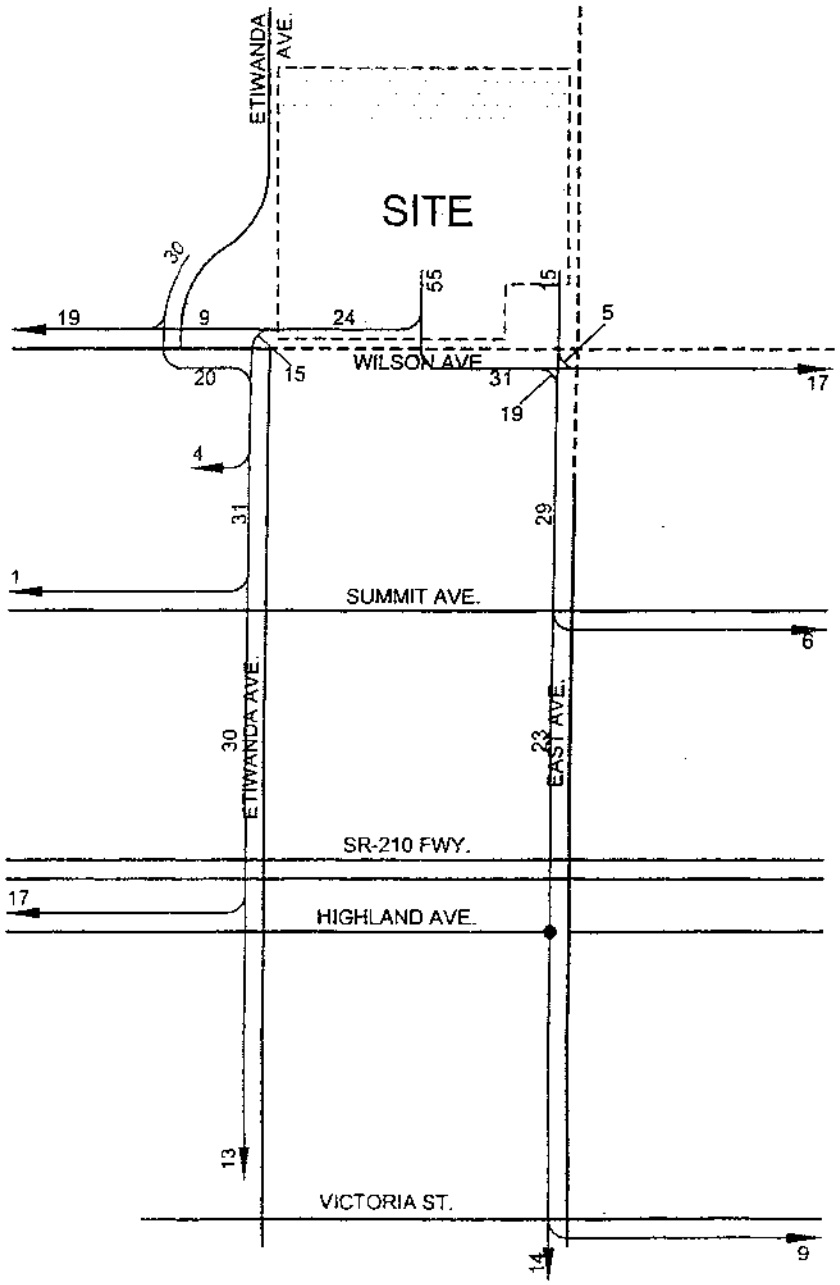
EXHIBIT 2-E
YEAR 2020 PROJECT TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT

● = CUL-DE SAC

N

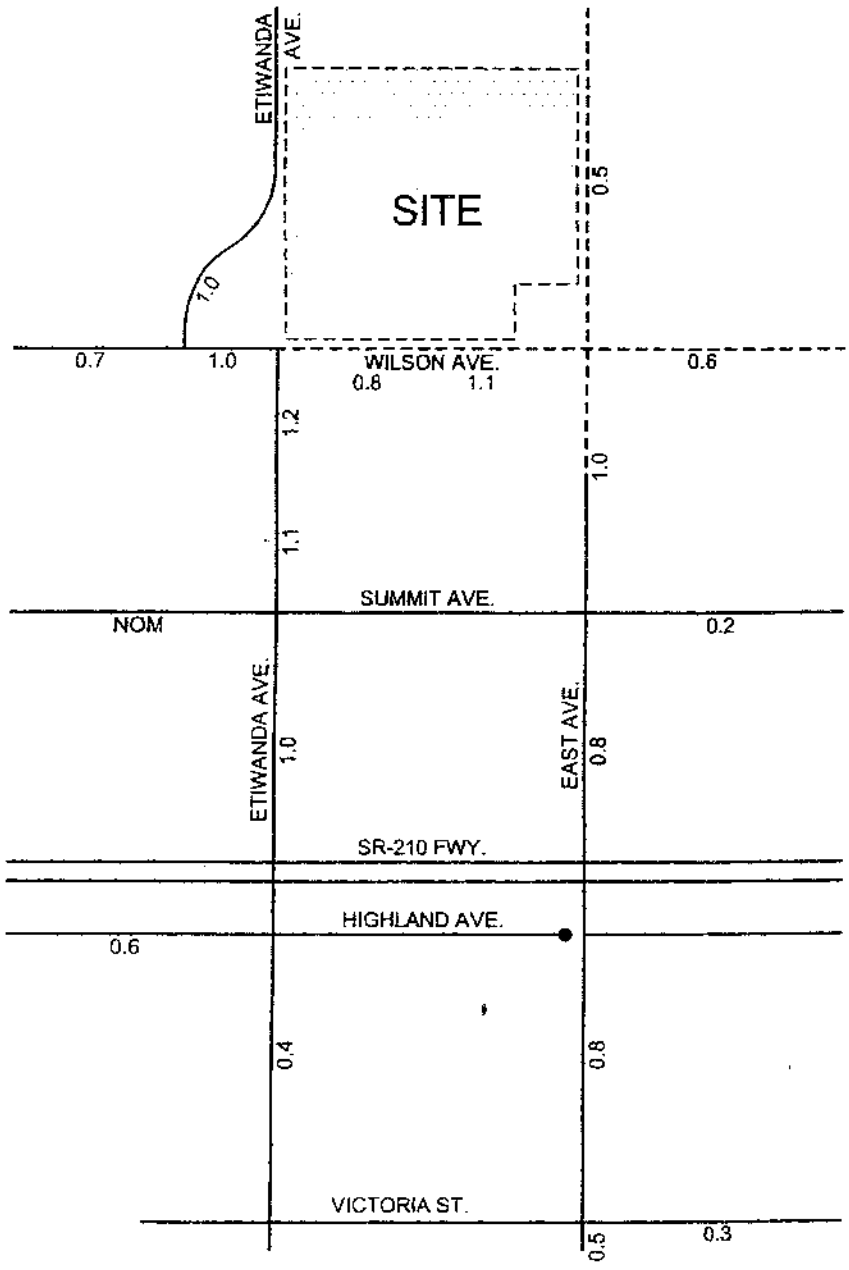
1058-01-01-EX_2-E

ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

EXHIBIT 2-F

YEAR 2020 PROJECT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)
● = CUL-DE SAC
NOM = NOMINAL (LESS THAN 50)

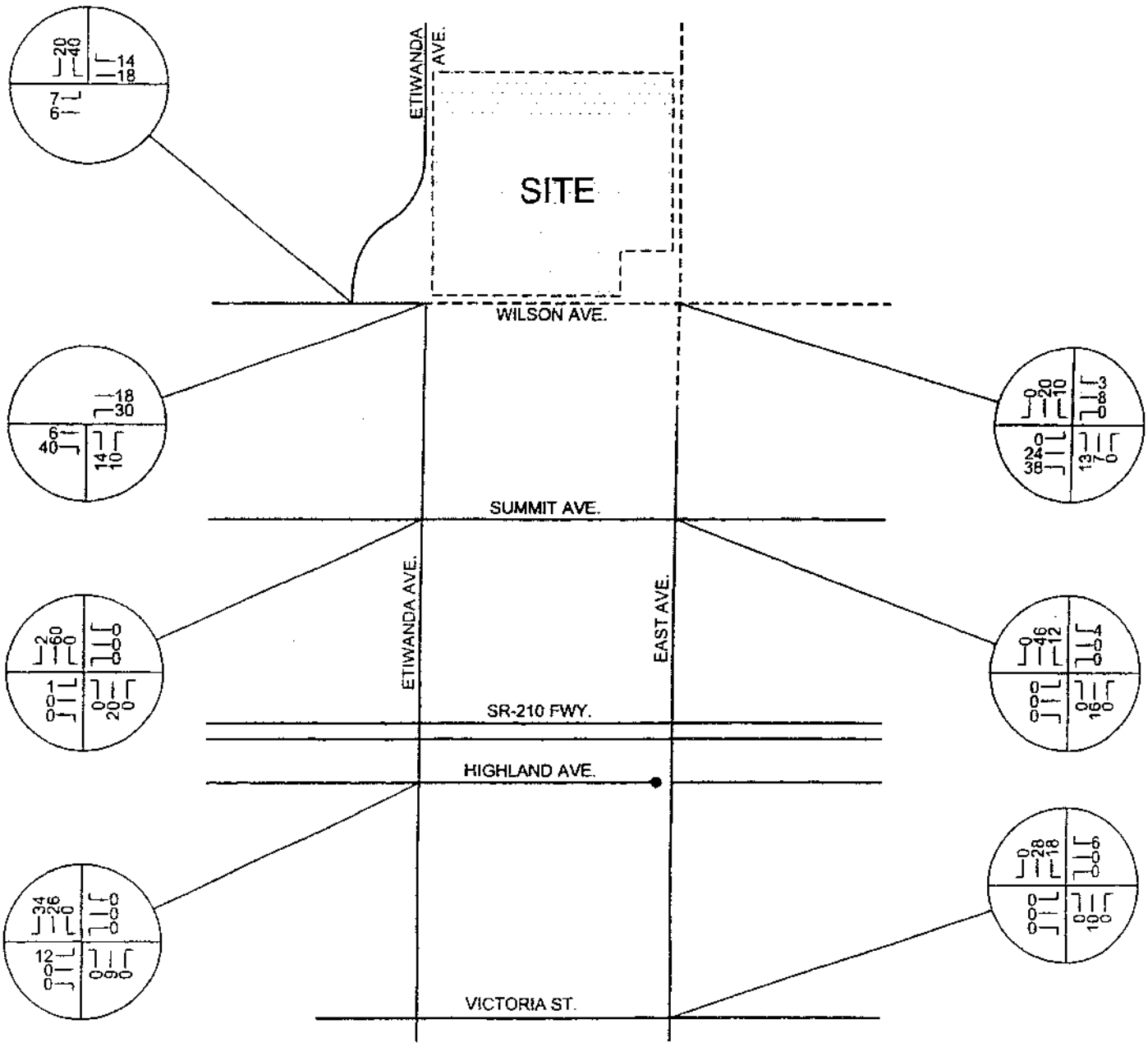
N

1058-01-01-EX_2-F
ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

EXHIBIT 2-G

YEAR 2020 PROJECT AM PEAK HOUR INTERSECTION VOLUMES



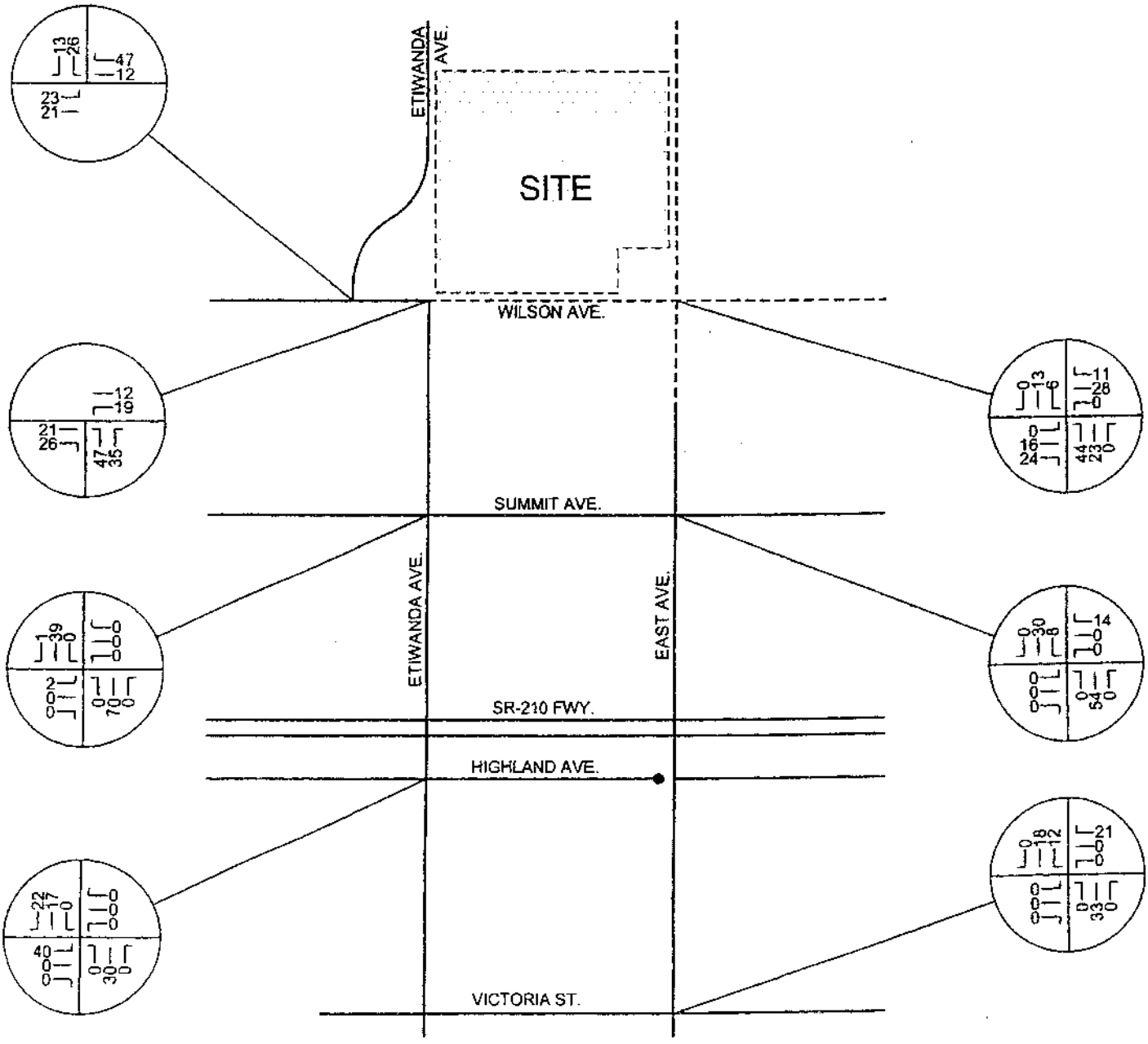
LEGEND:

● = CUL-DE SAC

N

EXHIBIT 2-H

YEAR 2020 PROJECT PM PEAK HOUR INTERSECTION VOLUMES



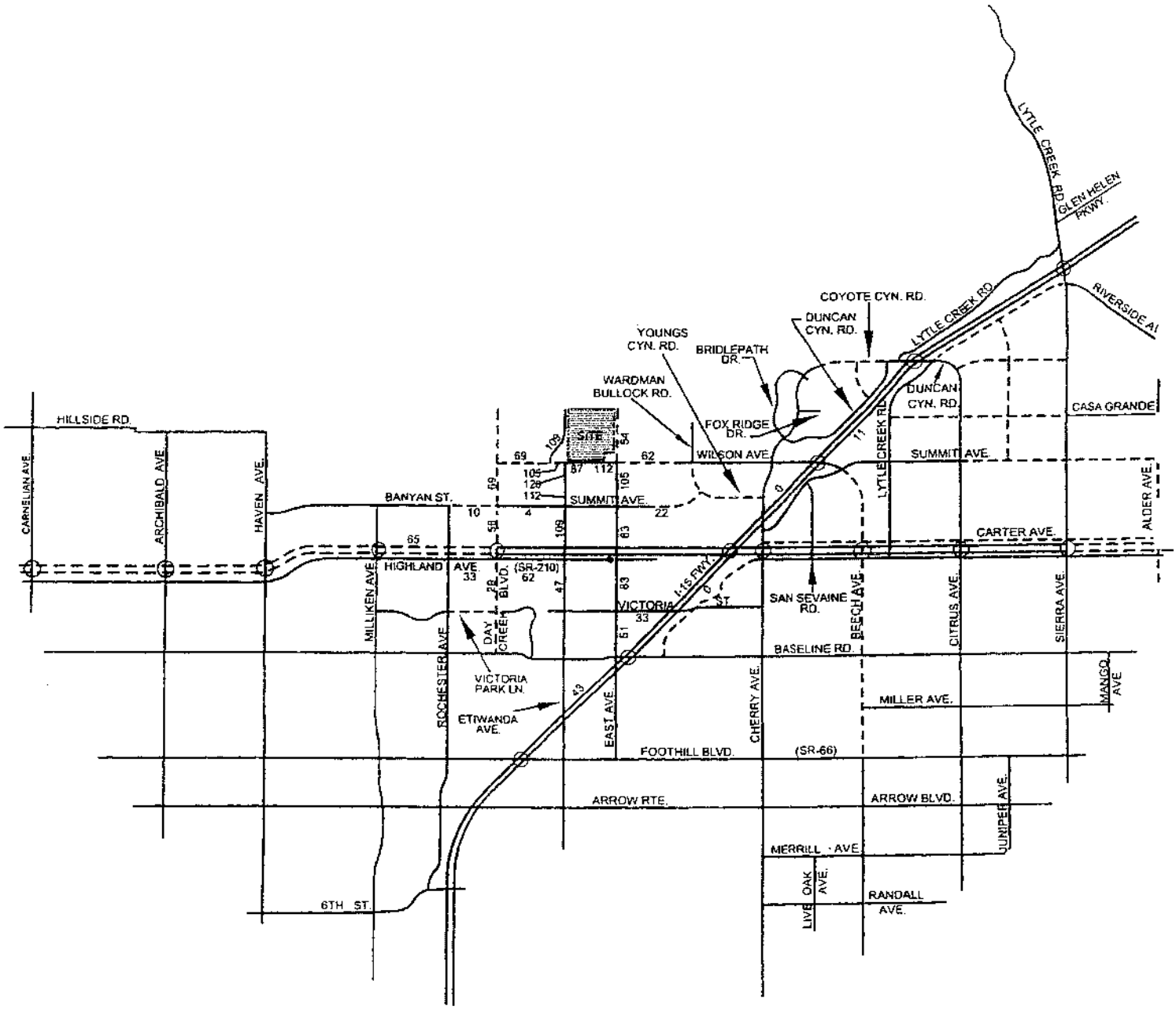
The project traffic volumes presented in this section are the criteria determining the limits of the required CMP Horizon Year (2020) analysis. The CMP states that any CMP roadway link carrying 80 or more two-way project trips or any CMP freeway link carrying 100 or more two-way project trips during the AM and/or PM peak hour must be analyzed to ensure that no CMP deficiencies are anticipated within the study area. Exhibit 2-I graphically depicts the CMP project traffic contribution test volumes on all of the roadway segments adjacent to the potential CMP intersection analysis locations previously identified, until the project volume contribution has clearly dropped below the CMP 80 trip threshold.

Table 2-3 summarizes the CMP traffic contribution test for the potential freeway segments in the study area. Only freeway segments with 100 or more two-way (total) trips need to be analyzed in accordance with CMP requirements. Exhibit 2-J presents the resulting final CMP Horizon Year (2020) analysis locations. Overall, 7 intersection locations and no freeway segments have been analyzed per CMP requirements.

The project does not contribute traffic greater than the CMP freeway threshold volume of 100 two-way trips to a State Highway (SR-210 Freeway and I-15 Freeway), and the project contribution test has indicated that the project will contribute more than 80 trips (CMP roadway threshold volume) along roadway segments serving CMP intersections within the City of Rancho Cucamonga. This means that the County of San Bernardino must notify the Congestion Management Agency (SANBAG) and the City of Rancho Cucamonga in accordance with CMP requirements. Each of these agencies must also be provided with a copy of the CMP traffic impact analysis, once the document is accepted by the County of San Bernardino.

EXHIBIT 2-I

CMP PROJECT TRAFFIC CONTRIBUTION TEST VOLUMES



LEGEND:

10 = PROJECT PM PEAK HOUR VOLUME

N

1058-01-01:EX_2-I

ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

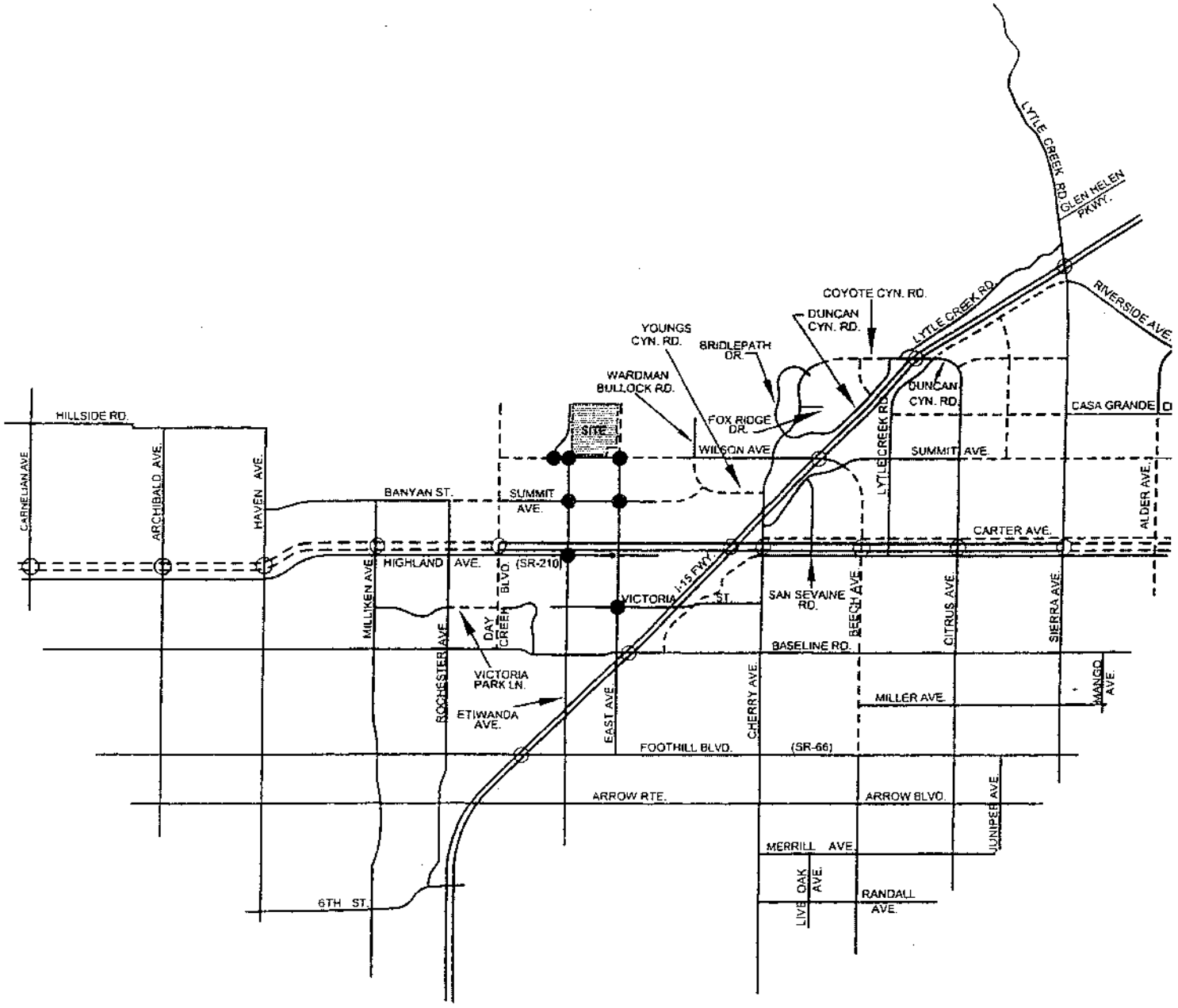
RK engineering group, inc.

TABLE 2-3

CMP FREEWAY PROJECT TRIP CONTRIBUTION SUMMARY

FREEWAY	SEGMENT	PROJECT TRIPS
SR-210	I-15 Fwy. to Day Creek Blvd.	0
SR-210	Day Creek Blvd. to Milliken Ave.	65
I-15	Foothill Blvd. to Baseline Rd.	43
I-15	Baseline Rd. to SR-210 Fwy. /I-15 Fwy. Interchange	0
I-15	SR-210 Fwy. /I-15 Fwy. Interchange to Wilson Ave.	0
I-15	Wilson Ave. to Coyote Cyn Rd.	11

EXHIBIT 2-J
CMP HORIZON YEAR ANALYSIS LOCATIONS



LEGEND:

● = INTERSECTION ANALYSIS LOCATION

N

1058-01-01:EX_2-J

ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

3. EXISTING CONDITIONS

This section of the report summarizes existing roadway and traffic conditions in the study area. The existing conditions intersection analysis locations are presented on Exhibit 3-A. The number of through travel lanes for existing roadways and intersection controls are presented, along with existing traffic count data collected for this study. This data was used to analyze existing traffic operations in the study area. Existing plans for roadway improvements are also described in this section.

3.1 Existing Roadway System and Daily Traffic Volumes

The number of through travel lanes for existing roadways and intersection controls within the study area are presented on Exhibits 3-B, while Exhibit 3-C depicts the current ADT volumes in the study area. Existing ADT volumes have been estimated by RK ENGINEERING GROUP, INC. using the following formula for each intersection leg:

PM Peak Hour (Approach + Exit Volume) x 12 = Daily Leg Volume.

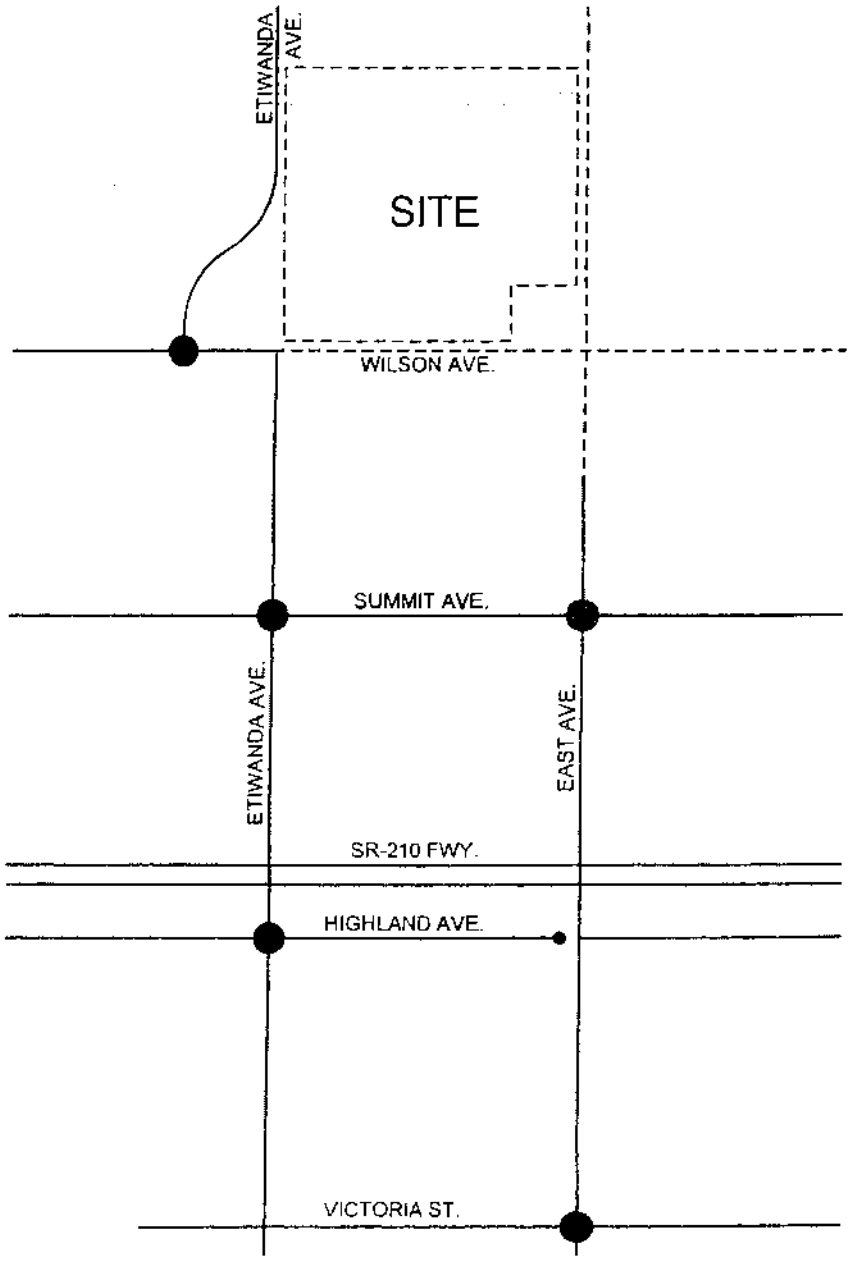
Regional access to the site is provided by the SR-210 Freeway and I-15 Freeway. Local access is provided by various arterial roadways in the vicinity of the site. The east-west arterials which will be most affected by the project include Wilson Avenue, Summit Avenue and Highland Avenue. North-south arterials expected to provide local access include Etiwanda Avenue and East Avenue.

3.2 Existing Peak Hour Traffic Volumes

Existing intersection level of service calculations are based upon manual AM and PM peak hour turning movement counts conducted specifically for RK ENGINEERING GROUP, INC. and are shown on Exhibits 3-D and 3-E. Peak

EXHIBIT 3-A

EXISTING ANALYSIS LOCATIONS



LEGEND:

● = INTERSECTION ANALYSIS LOCATION

● = CUL-DE SAC

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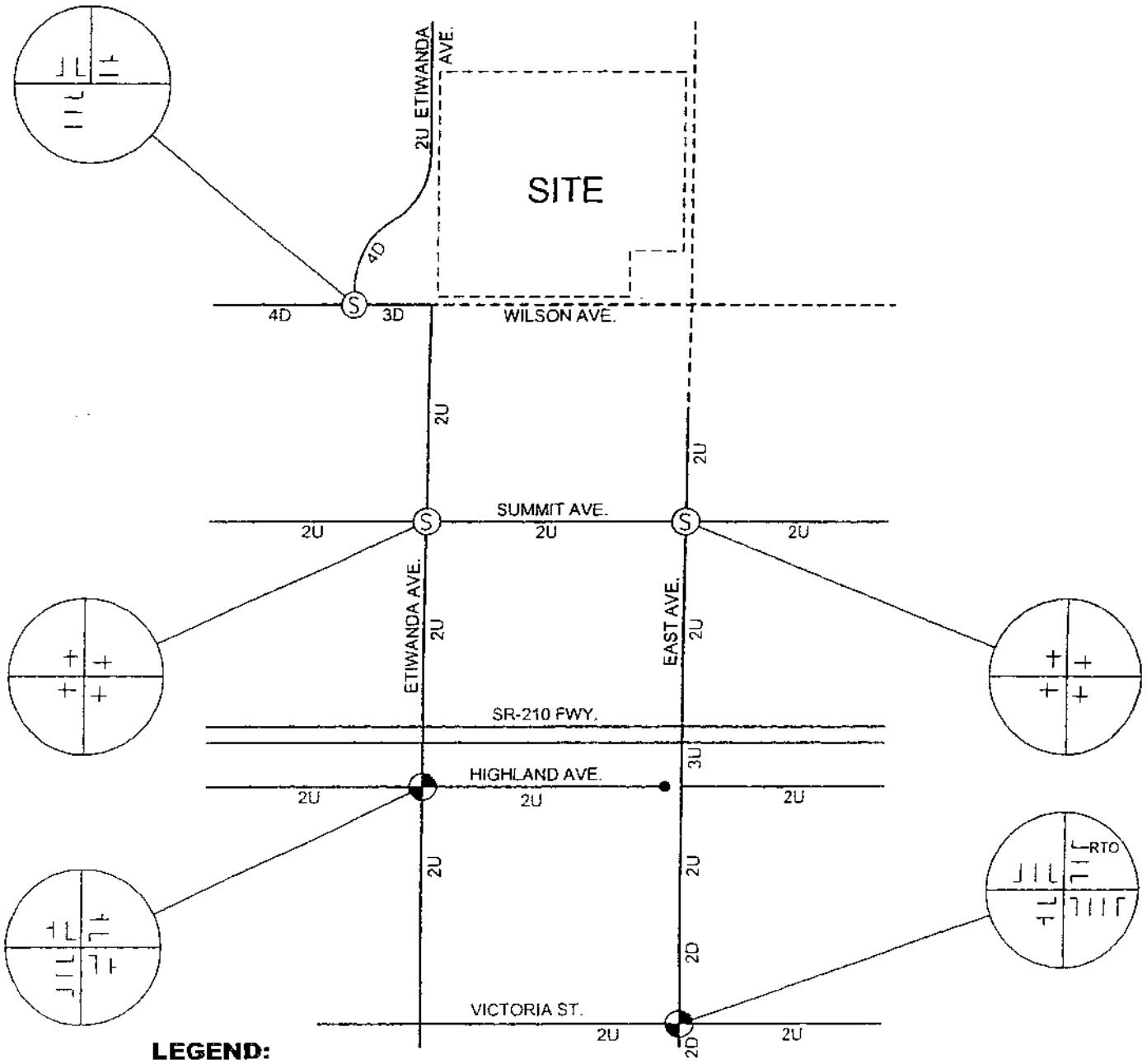
ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

EXHIBIT 3-B

EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



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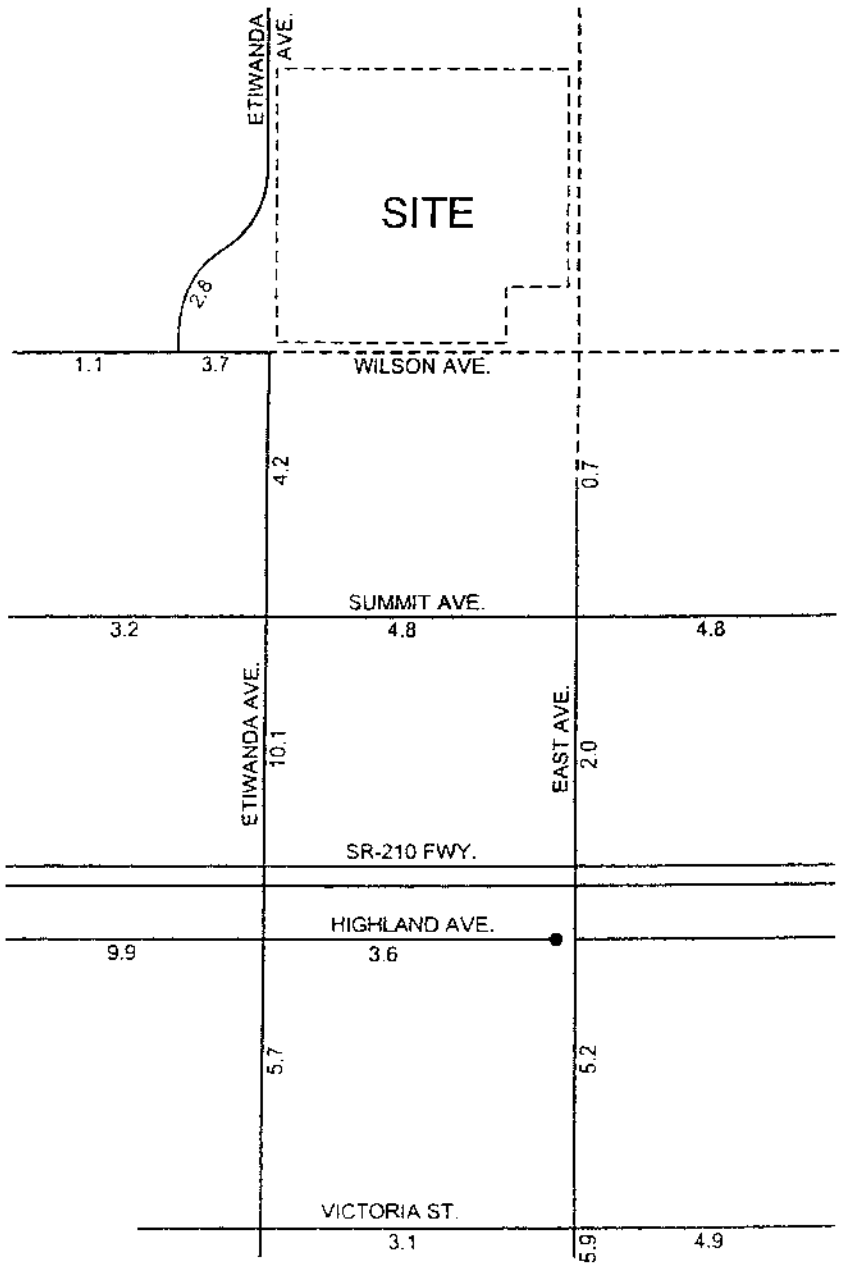
ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

EXHIBIT 3-C

EXISTING AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

● = CUL-DE SAC

N

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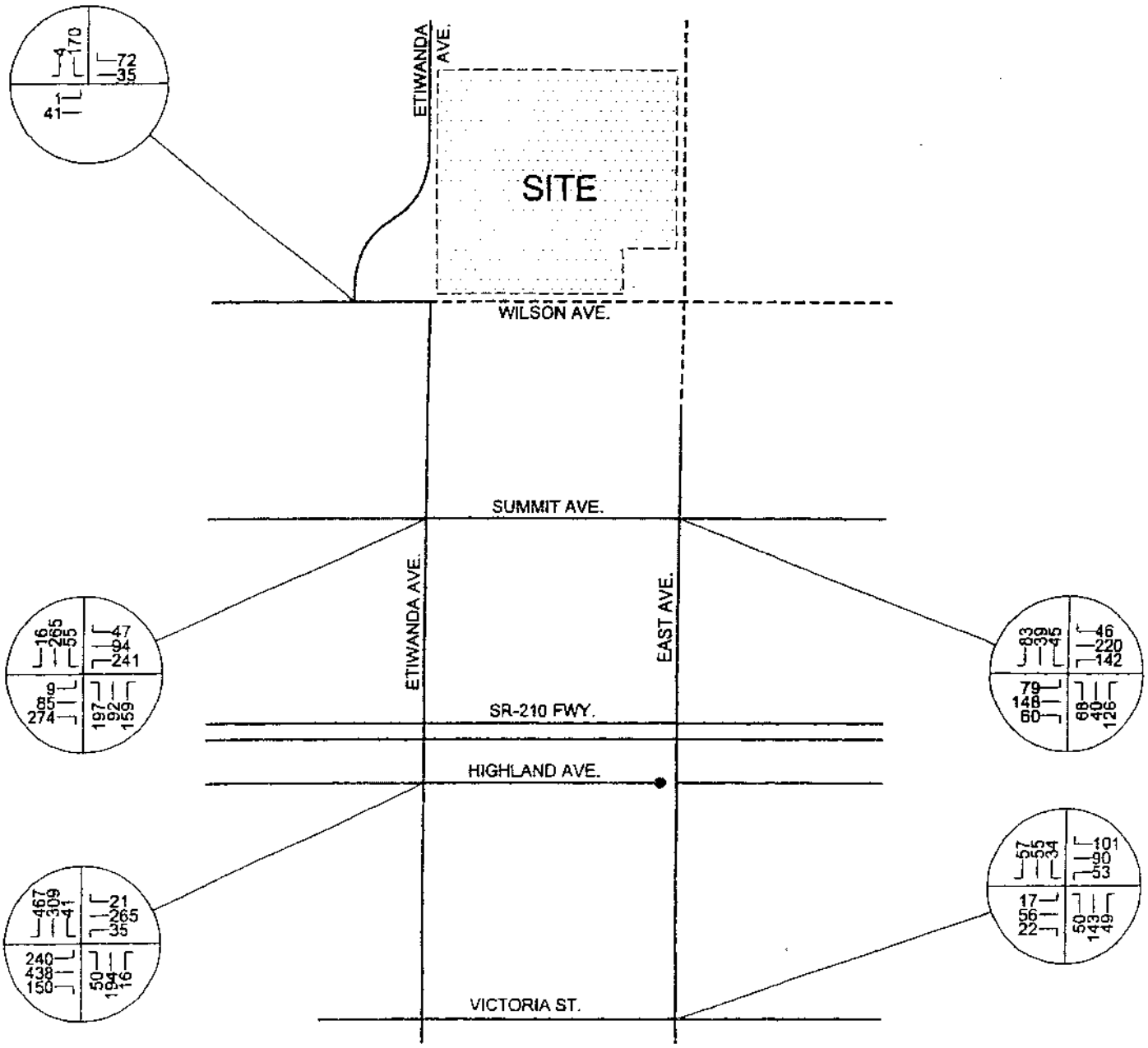
ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

EXHIBIT 3-D

EXISTING AM PEAK HOUR INTERSECTION VOLUMES



LEGEND:

● = CUL-DE SAC

N

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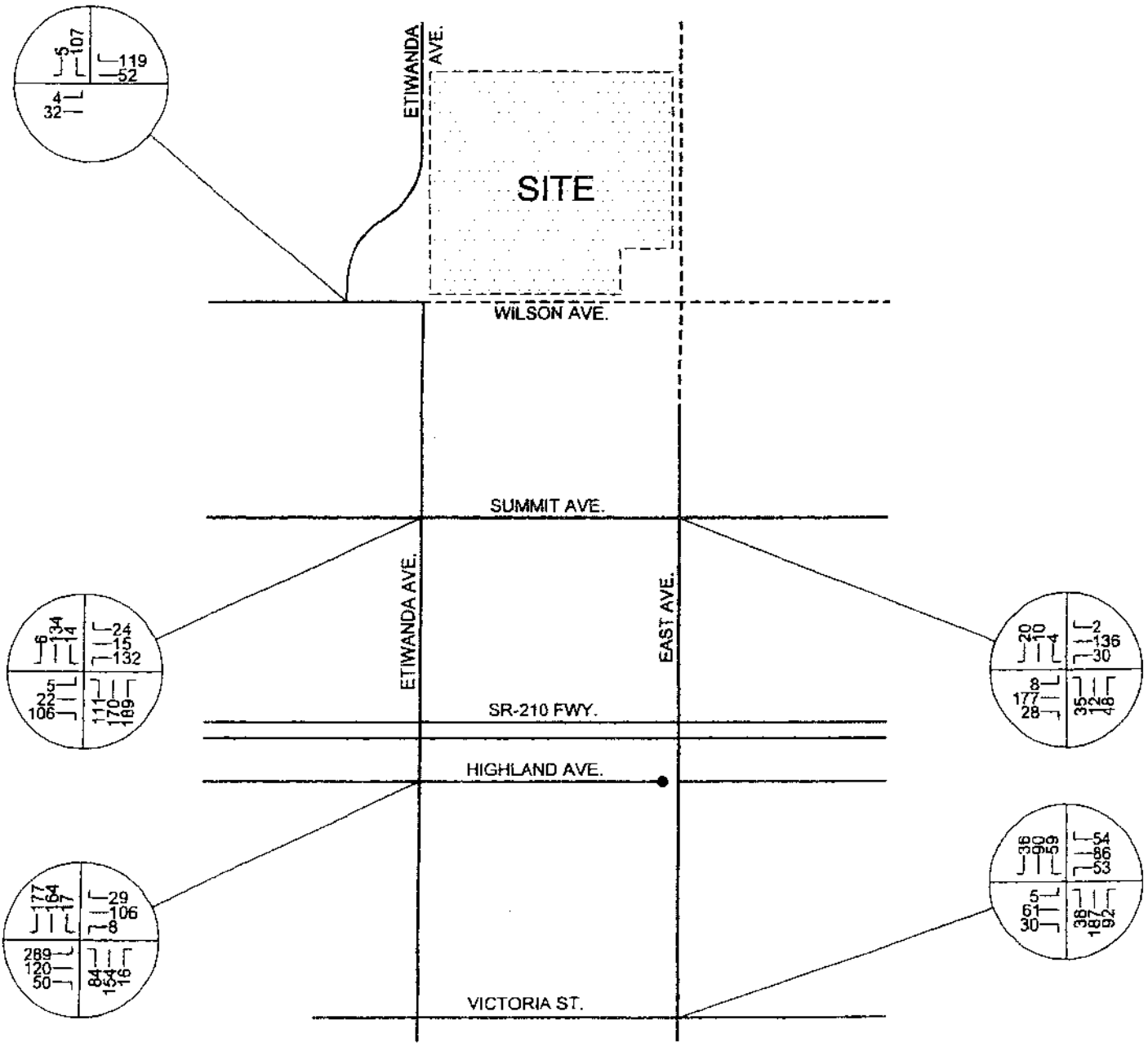
ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

EXHIBIT 3-E

EXISTING PM PEAK HOUR INTERSECTION VOLUMES



LEGEND:

● = CUL-DE SAC

N

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ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

hour traffic count worksheets are included in Appendix "B". Explicit peak hour factors have been calculated using the data collected for this effort as well. The AM peak hour traffic volumes were determined by counting the two hour period between 7:00 to 9:00 AM in the morning. Similarly, the PM peak hour traffic volumes were identified by counting the two hour period from 4:00 to 6:00 PM in the evening.

3.3 Existing Traffic Operations

Existing peak hour traffic operations have been evaluated for both the AM and PM peak hours of traffic throughout the study area. The results of this analysis are summarized in Table 3-1, along with the existing intersection geometrics and control devices at each analysis location.

The following study area intersections operate at Level of Service "E" to "F" during the peak hours:

Etiwanda Avenue (NS) at:

- Summit Avenue (EW)
- Highland Avenue (EW)

East Avenue (NS) at:

- Summit Avenue (EW)

The operations analysis worksheets for existing conditions are included in Appendix "C".

3.4 Planned Transportation Improvements and Relationships to General Plan

The transportation system within the study area is expected to undergo significant improvement as a result of work currently under construction by

TABLE 3-1

EXISTING CONDITIONS INTERSECTION ANALYSIS

INTERSECTION	TRAFFIC CONTROL[3]	INTERSECTION APPROACH LANES[1] NORTH-BOUND L	T	R	SOUTH-BOUND L	T	R	EAST-BOUND L	T	R	WEST-BOUND L	T	R	DELAY[2] (SECS.) AM	PM	LEVEL OF SERVICE AM	PM
Etiwanda Ave. - West (NS) at:																	
• Wilson Ave. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	9.1	8.4	A	A
Etiwanda Ave. - East (NS) at:																	
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	–[4]	15.1	F	C
• Highland Ave. (EW)	TS	1	1	0	1	1	0	1	1	1	1	1	0	57.8	18.0	E	B
East Ave. (NS) at:																	
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	–	8.9	F	A
• Victoria St. (EW)	TS	1	2	1	1	1	1	1	1	0	1	1	1>	13.1	14.2	B	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right;>> = Free Right Turn;> = Right Turn Overlap

[2] Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All Way Stop
TS = Traffic Signal

[4] – = Delay High, Intersection Unstable, Level of Service "F".

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JN:1058-01-01

Caltrans on the State Route 210 corridor. The County of San Bernardino Circulation Plan in the vicinity of the project is shown on Exhibit 3-F.

The City of Rancho Cucamonga Circulation Plan in the vicinity of the project is shown on Exhibit 3-G. The City of Rancho Cucamonga roadway cross-sections for each roadway classification presented on Exhibit 3-G are depicted on Exhibit 3-H.

The City of Fontana General Plan roadway classifications within the study area are shown on Exhibit 3-I. Exhibit 3-J shows the City of Fontana roadway cross-sections for the various classifications depicted on Exhibit 3-I.

Many of the roadways in the study area have not been fully constructed to their Master Plan Classification. A brief discussion of the various facilities providing direct access to the project and their ultimate configurations is, therefore, provided.

Interstate 15 is expected to undergo two significant changes. Two high occupancy vehicle (HOV) lanes (one in each direction) are included in the long term plans for this facility. In addition, a new interchange with the SR-210 Freeway is currently under construction. An interchange is also planned at Duncan Canyon Road.

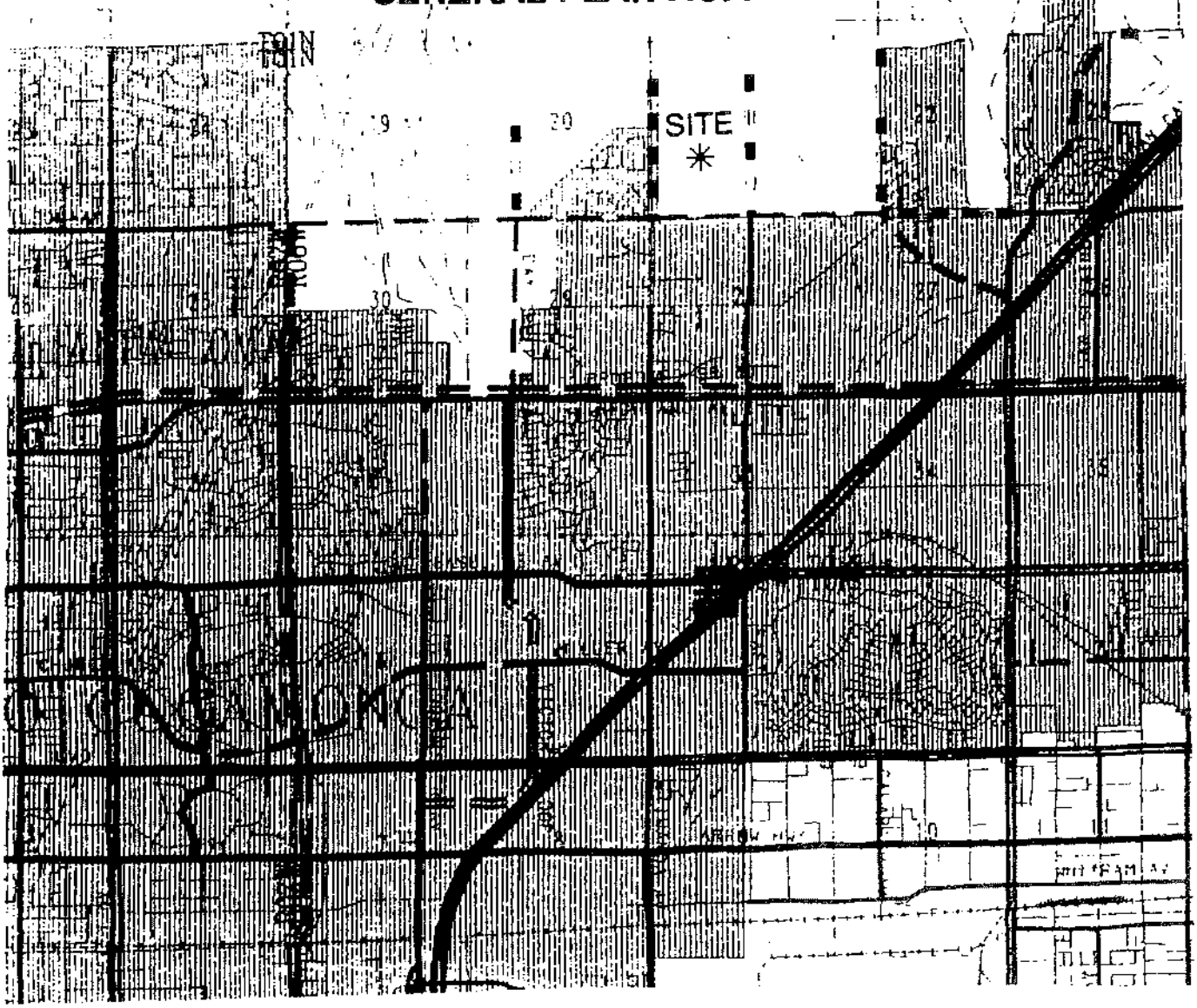
State Route 210 (SR-210) is currently under construction. In the vicinity of the project site between Day Creek Boulevard and Sierra, SR-210 is open to traffic.

3.4.1 Funded Roadway Improvements

The most significant improvement project in the study area involves the construction of the SR-210 Freeway between Los Angeles County and the City of San Bernardino. The Summit Avenue interchange with the I-15 Freeway is

EXHIBIT 3-F

COUNTY OF SAN BERNARDINO GENERAL PLAN ROADWAY CLASSIFICATIONS



EXISTING PROPOSED

- Freeway
- Major Divided Highway
- Major Arterial Highway
- Major Highway
- Secondary Highway
- Controlled/Limited Access Collector
- Mountain Major Highway
- Mountain Secondary Highway
- State Highway (Special Standards or Conditions)

SOURCE: COUNTY OF SAN BERNARDINO

N

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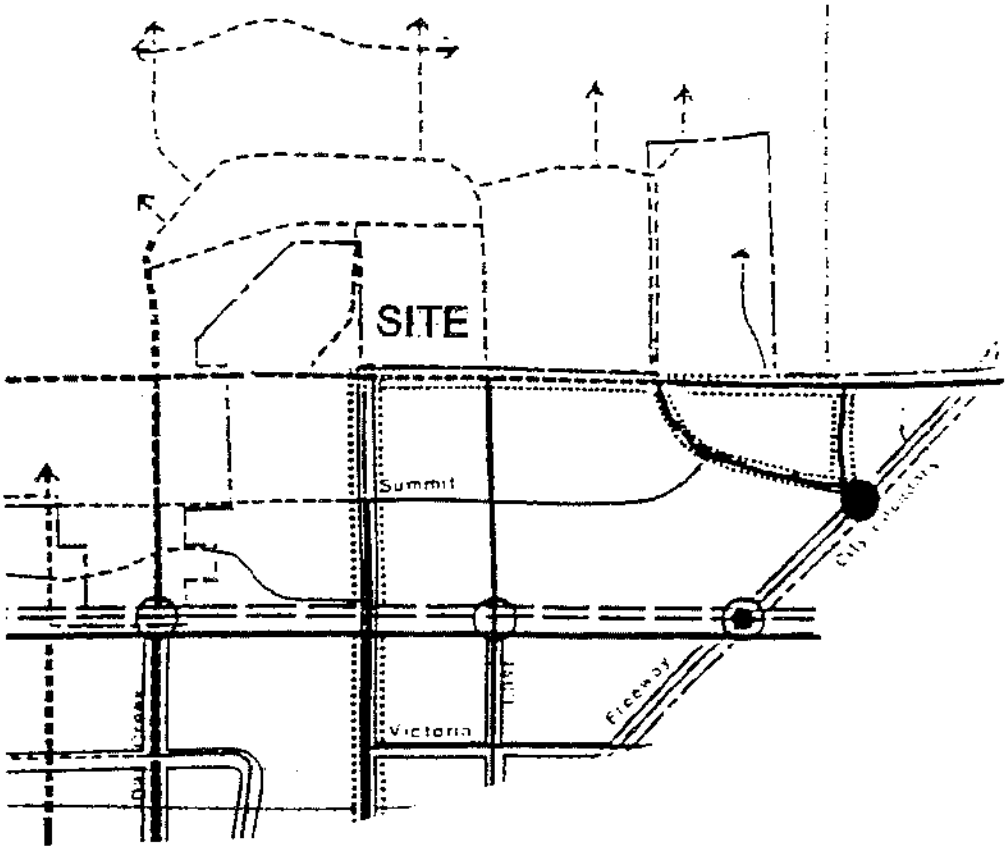
ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

EXHIBIT 3-G

CITY OF RANCHO CUCAMONGA GENERAL PLAN CIRCULATION ELEMENT



PROPOSED R.O.W. LOCATION

- COLLECTOR
- SECONDARY
- MAJOR ARTERIAL
- MAJOR DIVIDED ARTERIAL
- EXISTING INTERCHANGE
- PROPOSED INTERCHANGE
- FREEWAY INTERCHANGE
  FREEWAY TO FREEWAY, NO LOCAL ACCESS
- GRADE SEPARATION
- INTERSECTION FOR POSSIBLE WIDENING
- SPECIAL BOULEVARD
- SPECIAL DESIGN
- SPECIAL IMPACT STUDY ZONE

SOURCE: CITY OF RANCHO CUCAMONGA

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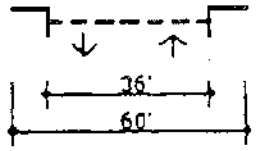
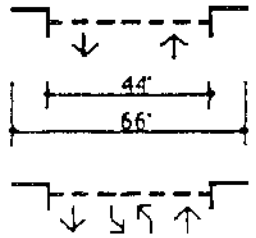
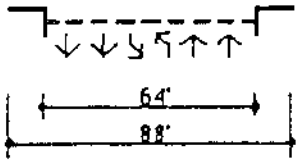
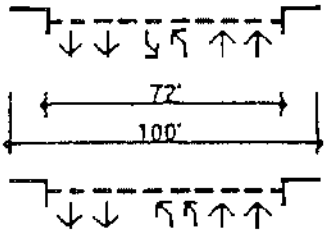
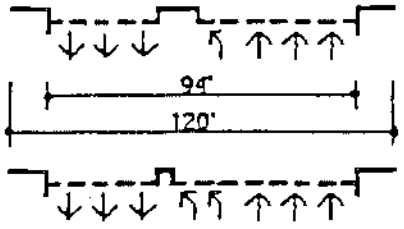
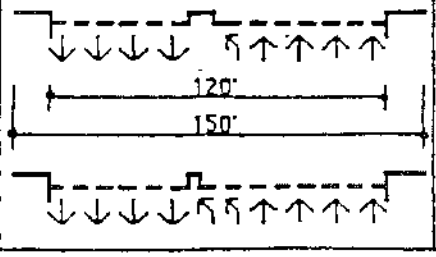
ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

3-11

EXHIBIT 3-H

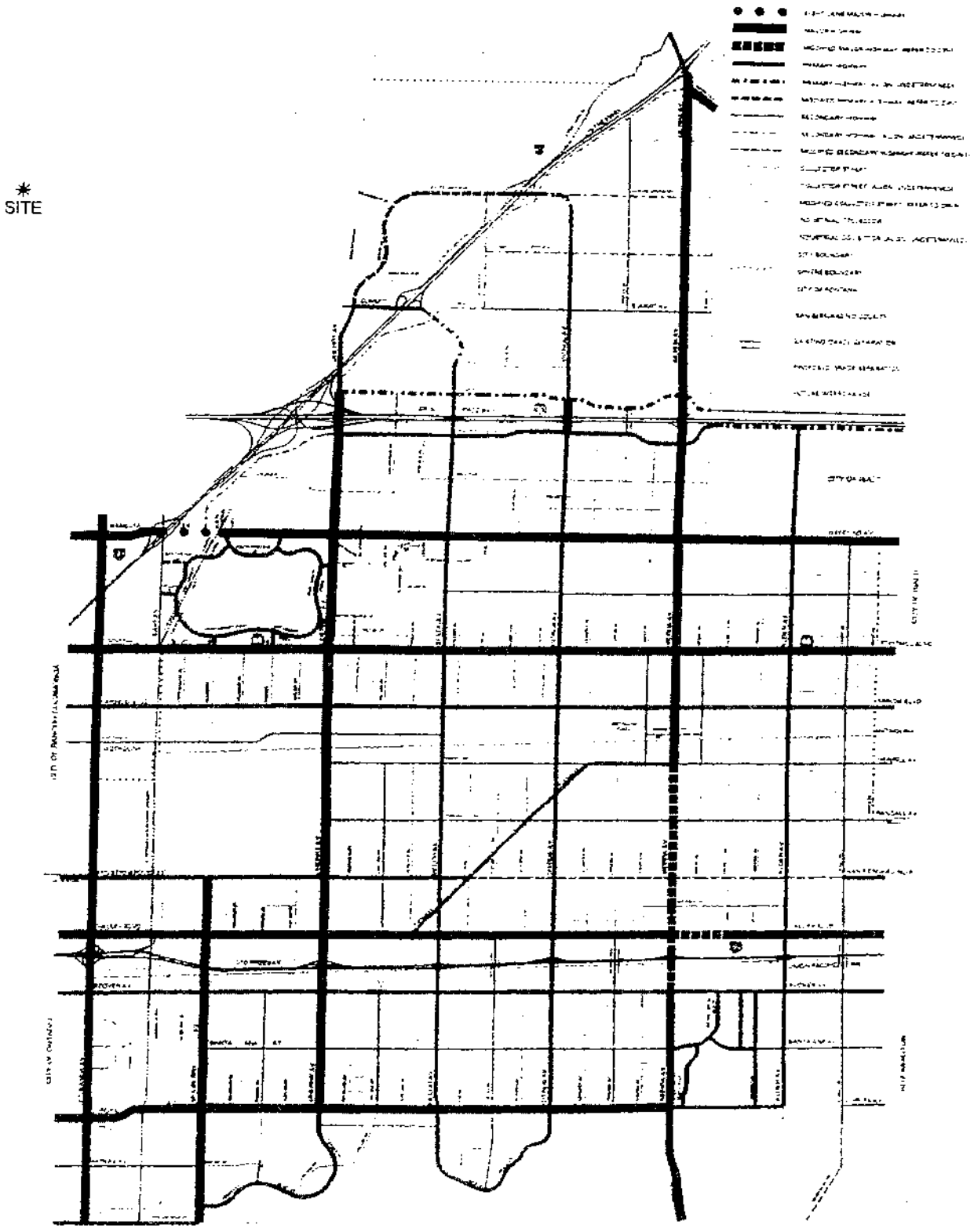
CITY OF RANCHO CUCAMONGA
GENERAL PLAN ROADWAY CROSS-SECTIONS

CODE	CROSS-SECTION	CLASSIFICATION	USE		
			Midblock	Intersection Minor	Intersection Major
A		Local Residential	■	■	■
B		Collector - Residential Local - Industrial 66' ROW	■	■ ■	■
C		Secondary Arterial	■	■	■
D		Major Arterial	■	■	■ ■
E		Major Divided Arterial	■	■	■ ■
F		Major Divided Highway for use where special intersection treatment is required.			■ ■

SOURCE: CITY OF RANCHO CUCAMONGA

EXHIBIT 3-I

CITY OF FONTANA
GENERAL PLAN ROADWAY CLASSIFICATIONS



SOURCE: CITY OF FONTANA

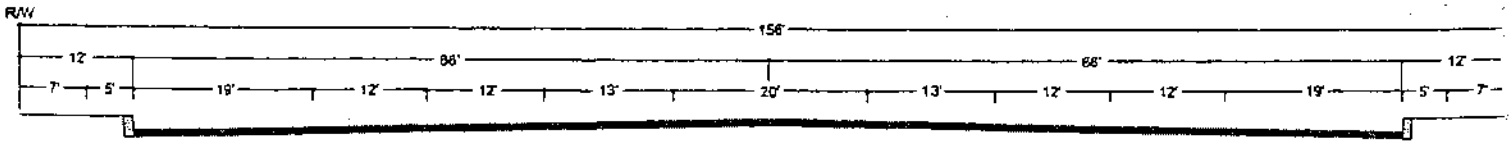
1058-01-01:17A

ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

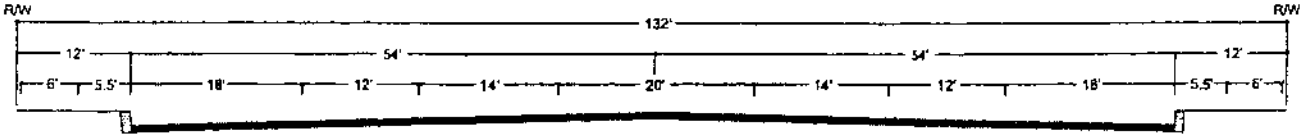
RK engineering group, inc.

EXHIBIT 3-J

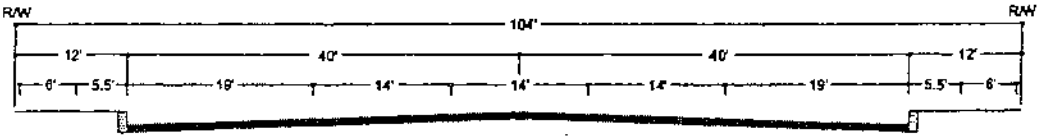
CITY OF FONTANA
GENERAL PLAN ROADWAY CROSS-SECTIONS



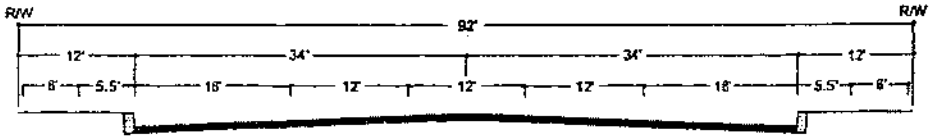
EIGHT LANE MAJOR HIGHWAY



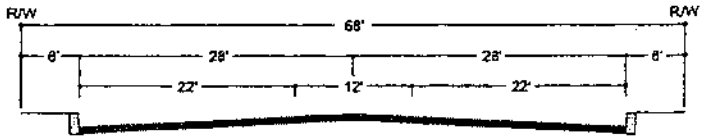
MAJOR HIGHWAY



PRIMARY HIGHWAY



SECONDARY HIGHWAY



COLLECTOR INDUSTRIAL

COLLECTOR

SOURCE: CITY OF FONTANA

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currently open for traffic. Day Creek Boulevard is being constructed by the University Property from Wilson Avenue to the SR-210 Freeway. Day Creek Boulevard between Baseline Road and Highland Avenue has been constructed and the traffic signals on Day Creek Boulevard at Highland Avenue and Etiwanda Avenue are installed, all by the City of Rancho Cucamonga. No other committed sources of funding for additional improvements necessary to serve the increase in traffic are in place. The analyses contained in this report, therefore, assumed minimal additional improvements beyond those anticipated in the State Route 210 corridor, Summit Avenue and Day Creek Boulevard.

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4. FUTURE DAILY TRAFFIC CONDITIONS

This chapter of the report describes the development of the future year traffic volume forecasts and presents the resulting traffic volumes which will be used for traffic operations analysis. Future traffic conditions without the project are presented first, followed by the future with project traffic volumes.

4.1 Future Without Project Daily Traffic Conditions

As described within Section 1.3.1, the refined Horizon Year 2020 ADT volume forecasts are developed using a growth increment process based on volumes predicted by the CTP Year 1994 and Year 2020 models. The growth increment for CMP Horizon Year 2020 on each roadway segment is the increase in CTP model volume from existing Year 2001 to Year 2020. The final Year 2020 roadway segment volume used for analysis purposes is then determined by adding the Year 2020 growth increment volume to the existing counted volume. Since the input data to the CTP 2020 scenario does not include the proposed development, the project volumes are added to the CTP baseline to determine 2020 with project traffic conditions.

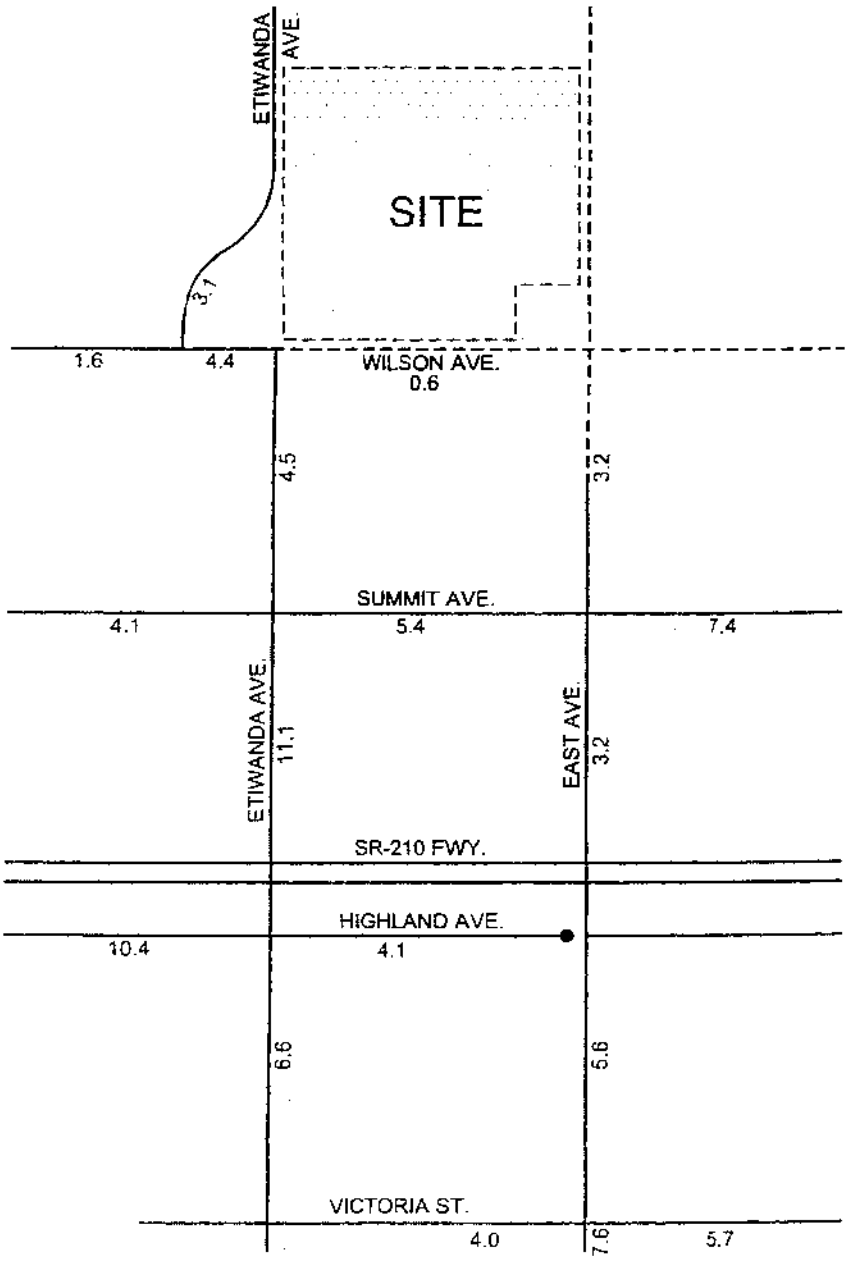
The Opening Year (2004) traffic projections have been interpolated between Year 2020 traffic volumes and existing traffic volumes utilizing a portion of the growth increment (see Section 1.3.1).

4.1.1 Opening Year (2004) Without Project Daily Traffic Conditions

Opening Year (2004) ADT volumes without the project traffic are shown on Exhibit 4-A.

EXHIBIT 4-A

OPENING YEAR (2004) WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

● = CUL-DE SAC

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For Opening Year (2004) without project traffic conditions, a traffic signal is projected to be warranted at the following study area intersection (see Appendix "D"):

Etiwanda Avenue (NS) at:

- Summit Avenue (EW)

4.1.2 Year 2020 Without Project Daily Traffic Conditions

Year 2020 ADT volumes without the project traffic are shown on Exhibit 4-B. For Year 2020 without project traffic conditions, traffic signals are projected to be warranted at the following additional study area intersections (see Appendix "D"):

East Avenue (NS) at:

- Wilson Avenue (EW)

4.2 Future With Project Daily Traffic Conditions

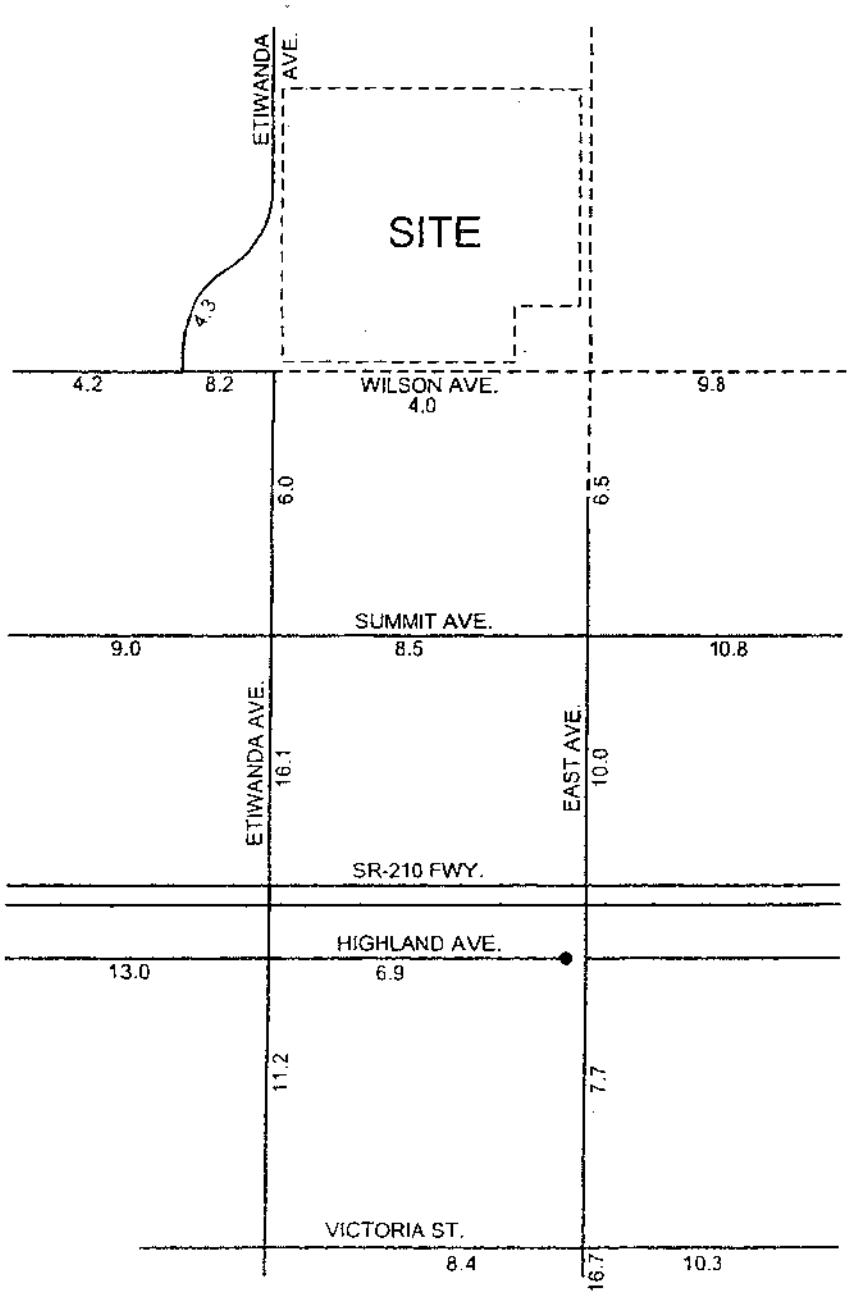
Project traffic volumes on study area roadway segments are determined by generating project trips and manually routing the traffic through the roadway network. The routing patterns follow the trip distribution which was presented in Section 2 on Exhibit 2-A. Trips are assigned to each individual roadway link occurring along a specific route.

The accumulation of traffic assigned to each roadway link represents the project traffic volume for that link. Project only ADT volumes for each analysis year were presented in Section 2 on Exhibit 2-B.

The future year with project traffic volumes are presented in the following sections.

EXHIBIT 4-B

YEAR 2020 WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

● = CUL-DE SAC

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4.2.1 Opening Year (2004) With Project Daily Traffic Conditions

The ADT's for the Opening Year (2004) with project have been determined using the volume addition process (see Section 1.3.1). Opening Year (2004) with project ADT volumes are shown on Exhibit 4-C.

For Opening Year (2004) with project traffic conditions, a traffic signal is projected to be warranted at the following study area intersection (see Appendix "D"):

East Avenue (NS) at:

- Summit Avenue (EW)

4.2.2 Year 2020 With Project Daily Traffic Conditions

The ADT's for the Year 2020 with project have been determined as described above using the volume addition process (see Section 1.3.1). Year 2020 with project ADT volumes are shown on Exhibit 4-D.

For Year 2020 with project traffic conditions, traffic signals are projected to be warranted at the following additional study area intersections (see Appendix "D"):

Etiwanda Avenue – West (NS) at:

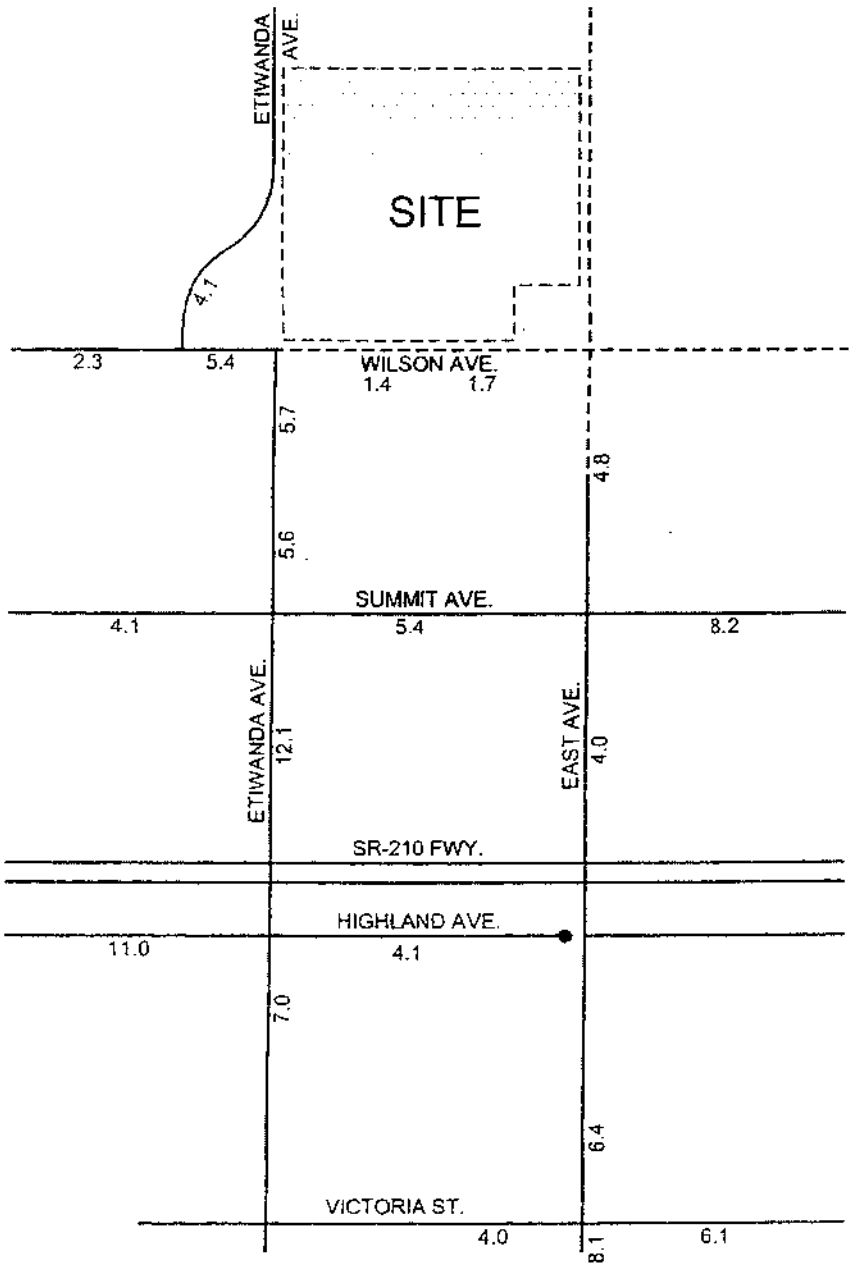
- Wilson Avenue (EW)

Etiwanda Avenue – East (NS) at:

- Wilson Avenue (EW)

EXHIBIT 4-C

OPENING YEAR (2004) WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

● = CUL-DE SAC

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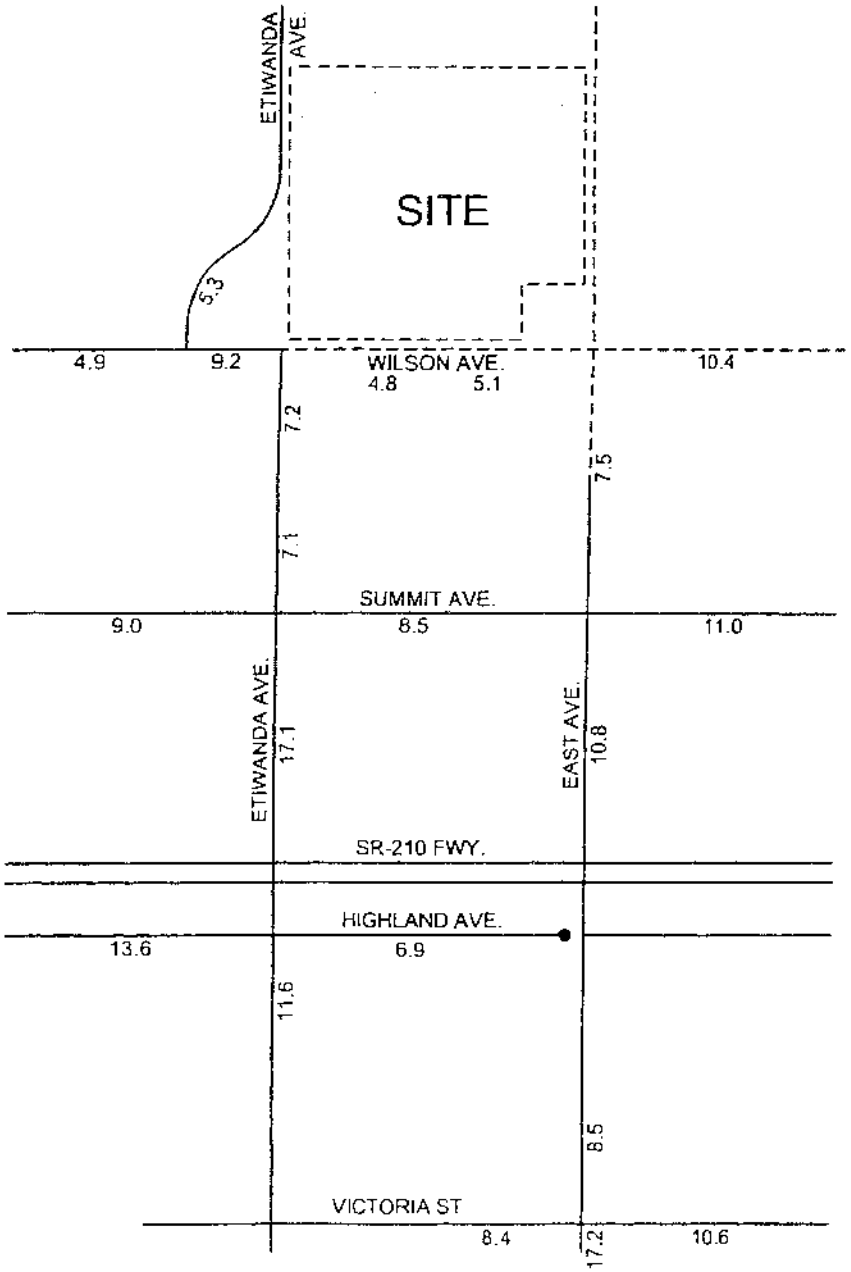
EXHIBIT 4-D

YEAR 2020 WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

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5. FUTURE TRAFFIC OPERATIONS ANALYSIS

This section of the report presents the operations analysis for the traffic volume forecasts for future baseline traffic conditions without the project and for future baseline traffic conditions with the project. The analysis procedures conform to the requirements of the San Bernardino CMP. The operations analysis for each analysis year is presented in a separate subsection.

5.1 Future Opening Year (2004) Traffic Operations

5.1.1 Opening Year (2004) Without Project Conditions

The intersection operations analysis for Opening Year (2004) without project traffic conditions with existing geometrics, construction of Day Creek Boulevard, and SR-210 Freeway improvements are summarized in Table 5-1. Improvements beyond existing conditions include:

- Construct the east leg of the intersection of Etiwanda Avenue - East at Wilson Avenue. A westbound departure lane, westbound through lane, and an eastbound departure lane are included in the analysis.

Opening Year (2004) without project AM and PM peak hour intersection turning movement volumes are shown on Exhibits 5-A and 5-B, respectively. The operations analysis worksheets for Opening (2004) without project conditions are included in Appendix "E". As shown in Table 5-1, the following intersections are projected to experience LOS "E" to "F" operations and are, therefore, deficient per the County of San Bernardino criteria:

Etiwanda Avenue - East (NS) at:

- Summit Avenue (EW)
- Highland Avenue (EW)

TABLE 5-1

OPENING YEAR (2004) WITHOUT PROJECT CONDITIONS INTERSECTION ANALYSIS

INTERSECTION	TRAFFIC CONTROL[3]	INTERSECTION APPROACH LANES[1]												DELAY[2] (SECS.)		LEVEL OF SERVICE	
		NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Etiwanda Ave. - West (NS) at:																	
• Wilson Ave. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	9.2	9.1	A	A
Etiwanda Ave. - East (NS) at:																	
• Wilson Ave. (EW)	CSS	0	1	0	0	0	0	0	1	0	0	1	0	0.1	10.9	A	B
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	--[4]	26.4	F	D
• Highland Ave. (EW)	TS	1	1	0	1	1	0	1	1	1	1	1	0	--	19.6	F	B
East Ave. (NS) at:																	
• Wilson Ave. (EW)	CSS	0	1	0	0	1	0	0	1	0	0	0	0	0.0	0.0	A	A
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	--	10.4	F	B
• Victoria St. (EW)	TS	1	2	1	1	1	1	1	1	0	1	1	1>	13.8	14.1	B	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; 1 = Improvement

[2] Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross Street Stop
TS = Traffic Signal
AWS = All Way Stop

[4] -- = Delay High, Intersection Unstable, Level of Service "F".

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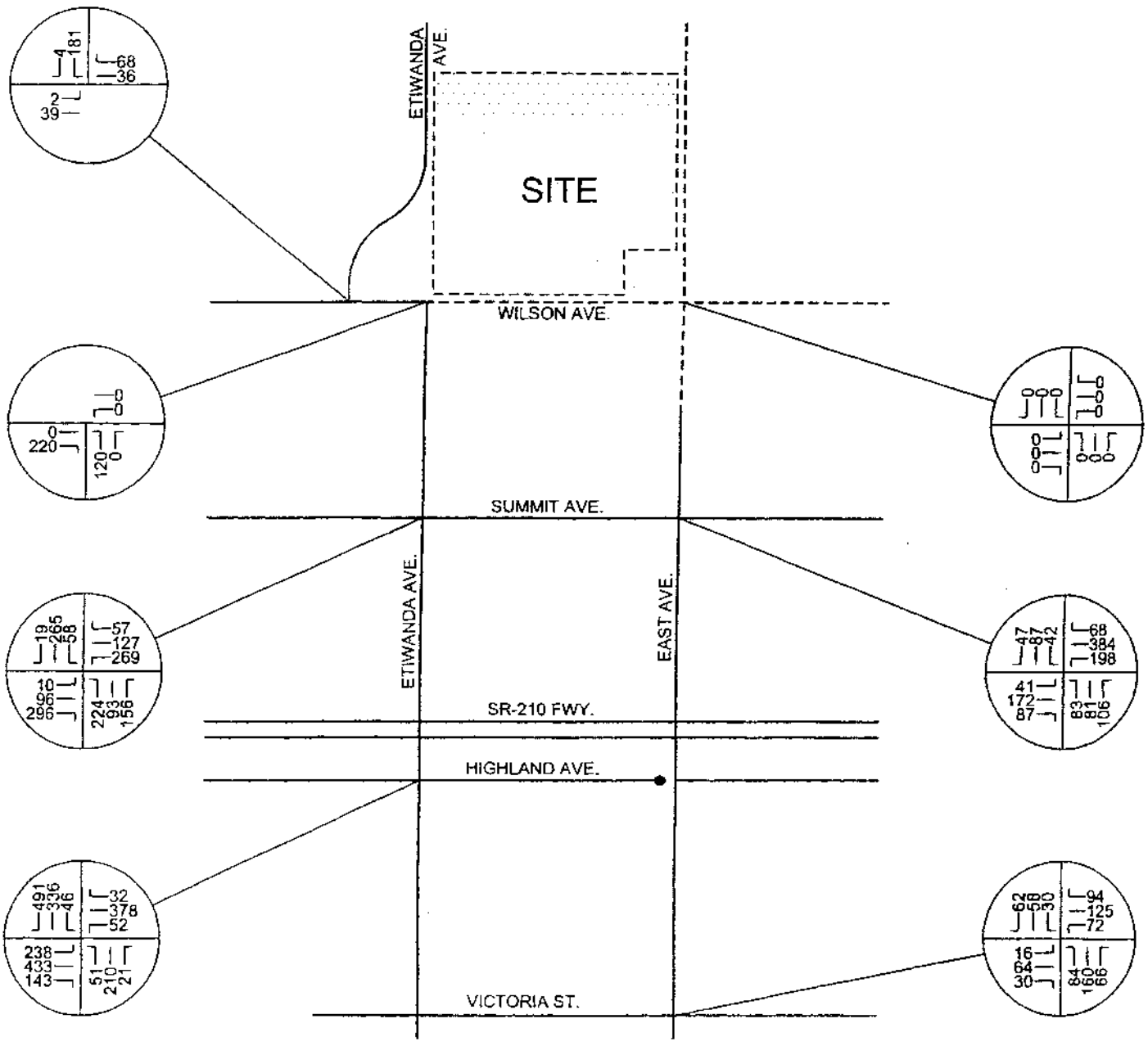
EXHIBIT 5-A

OPENING YEAR (2004) WITHOUT PROJECT AM PEAK HOUR INTERSECTION VOLUMES



LEGEND:

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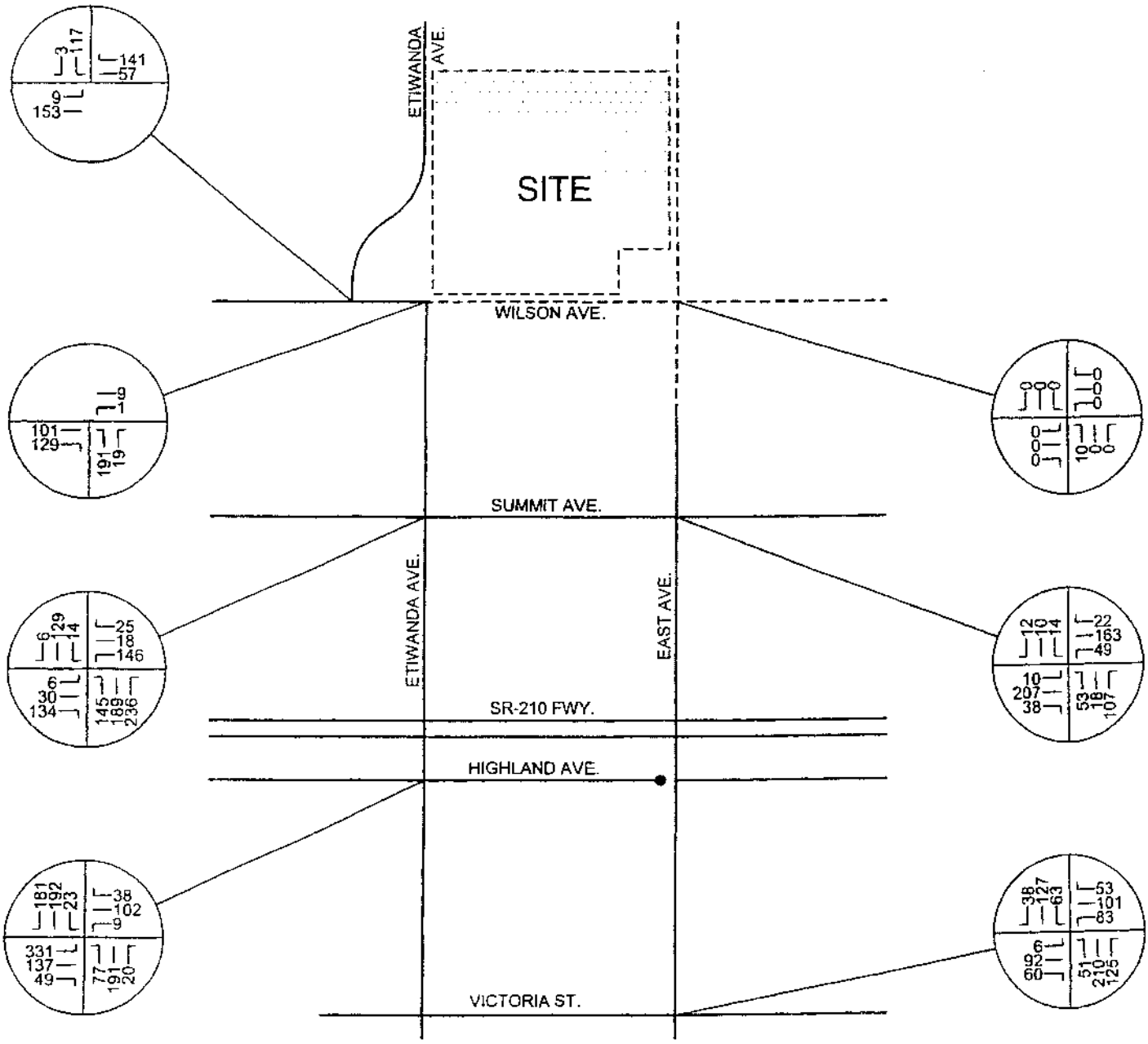
EXHIBIT 5-B

OPENING YEAR (2004) WITHOUT PROJECT PM PEAK HOUR INTERSECTION VOLUMES



LEGEND:

● = CUL-DE SAC

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East Avenue (NS) at:

- Summit Avenue (EW)

5.1.2 Opening Year (2004) With Project Conditions

The intersection operations analysis for Opening Year (2004) with project traffic conditions with existing geometrics are summarized in Table 5-2. Improvements beyond existing conditions are also shown and were described previously on Section 5.1.1. Opening Year (2004) with project AM and PM peak hour intersection turning movement volumes are shown on Exhibits 5-C and 5-D, respectively. The operations analysis worksheets for Opening Year (2004) with project conditions are included in Appendix "F". As shown in Table 5-2, the SAME intersections as in the Opening Year (2004) without project conditions are projected to experience LOS "E" to "F" operations and are, therefore, deficient per the County of San Bernardino criteria.

The intersection operations analysis for Opening Year (2004) with project traffic conditions with improvements are summarized in Table 5-3. Improvements presented in Table 5-3 include both funded improvements and any additional improvements needed to achieve LOS "D" or better during the peak hours. Additional improvements not described previously include traffic signals at the intersections of Etiwanda Avenue at Summit Avenue and East Avenue at Summit Avenue. Physical improvements that will be required at the intersection of Etiwanda Avenue and Highland Avenue include a northbound right turn lane, a southbound right turn lane (with right turn signal overlap phasing). The operations analysis worksheets for Opening Year (2004) with project conditions (with improvements) are included in Appendix "G". As shown in Table 5-3, the study area intersections are projected to operate at Level of Service "C" or better during the peak hours, with improvements.

TABLE 5-2

OPENING YEAR (2004) WITH PROJECT CONDITIONS INTERSECTION ANALYSIS

INTERSECTION	TRAFFIC CONTROL[3]	INTERSECTION APPROACH LANES[1] NORTH-BOUND L	T	R	SOUTH-BOUND L	T	R	EAST-BOUND L	T	R	WEST-BOUND L	T	R	DELAY[2] (SECS.) AM	PM	LEVEL OF SERVICE AM	PM
Etiwanda Ave. - West (NS) at:																		
• Wilson Ave. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	9.9	9.9	A	A
Etiwanda Ave. - East (NS) at:																		
• Wilson Ave. (EW)	CSS	0	1	0	0	0	0	0	1	0	0	1	0	10.9	12.9	B	B
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	--[4]	---	F	F
• Highland Ave. (EW)	TS	1	1	0	1	1	0	1	1	1	1	1	0	--	22.3	F	C
East Ave. (NS) at:																		
• Wilson Ave. (EW)	CSS	0	1	0	0	1	0	0	1	0	0	0	0	8.7	8.5	A	A
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	--	12.4	F	B
• Victoria St. (EW)	TS	1	2	1	1	1	1	1	1	0	1	1	1>	14.1	14.1	B	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; 1 = Improvement

[2] Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross Street Stop
TS = Traffic Signal
AWS = All Way Stop

[4] -- = Delay High, Intersection Unstable, Level of Service "F"

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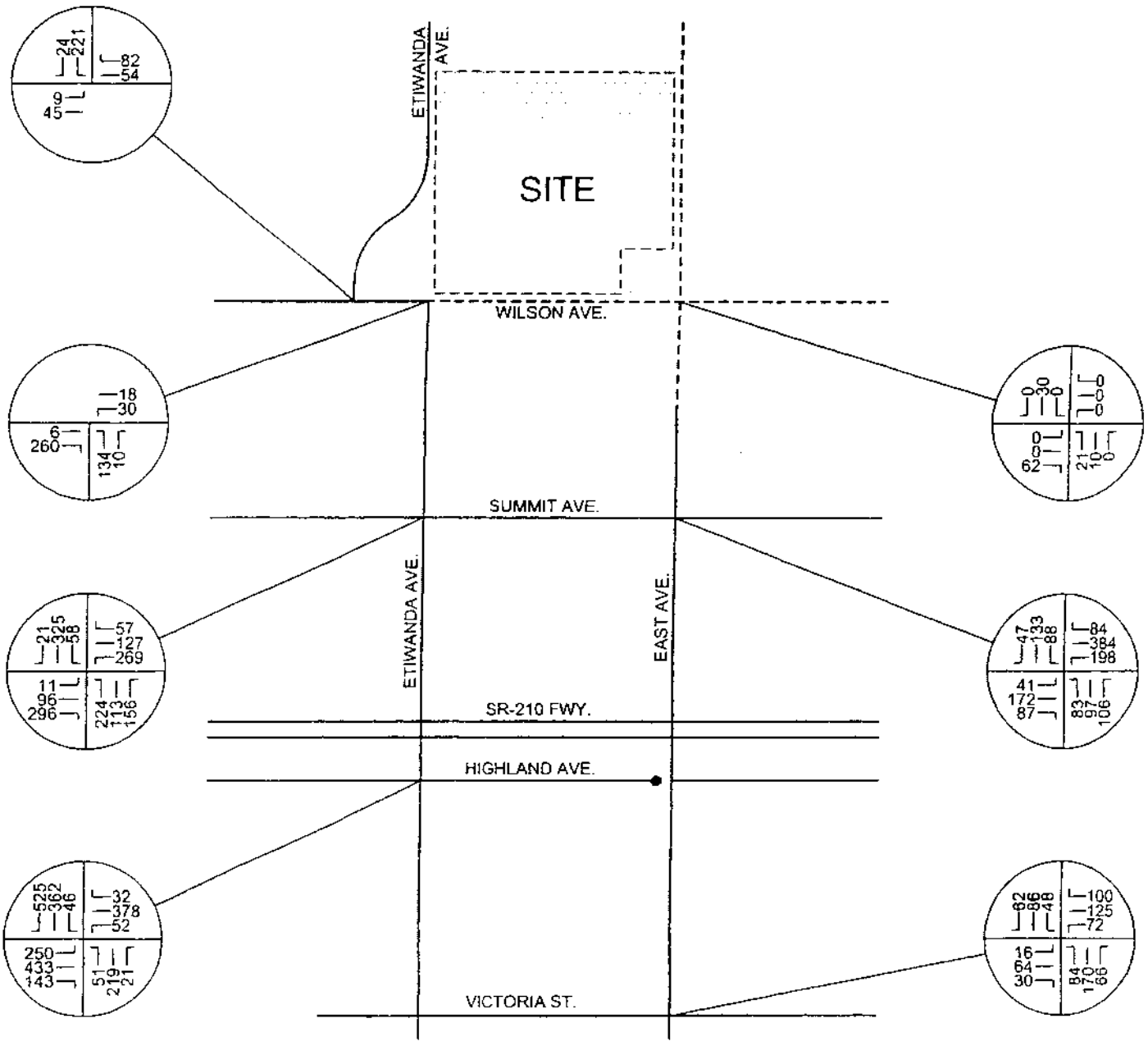
EXHIBIT 5-C

OPENING YEAR (2004) WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES



LEGEND:

● = CUL-DE SAC

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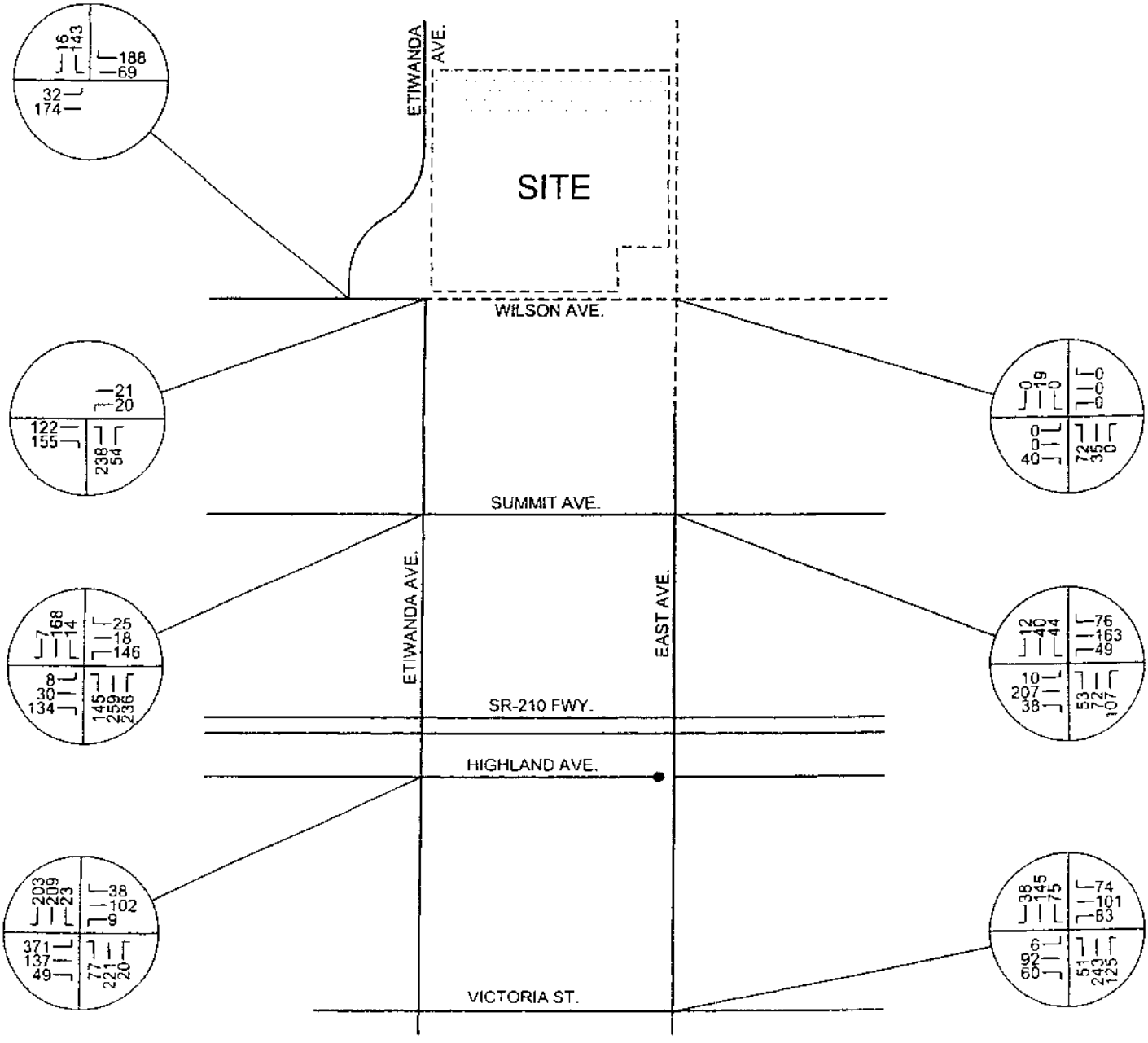
EXHIBIT 5-D

OPENING YEAR (2004) WITH PROJECT PM PEAK HOUR INTERSECTION VOLUMES



LEGEND:

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TABLE 5-3

OPENING YEAR (2004) WITH PROJECT CONDITIONS INTERSECTION ANALYSIS WITH IMPROVEMENTS

INTERSECTION	TRAFFIC CONTROL[3]	INTERSECTION APPROACH LANES[1]												DELAY[2] (SECS.)		LEVEL OF SERVICE	
		NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Etiwanda Ave. - West (NS) at:																	
• Wilson Ave. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	9.9	9.9	A	A
Etiwanda Ave. - East (NS) at:																	
• Wilson Ave. (EW)	CSS	0	1	0	0	0	0	0	1	0	0	1	0	10.9	12.9	B	B
• Summit Ave. (EW)	TS	0	1	0	0	1	0	0	1	0	0	1	0	15.3	9.5	B	A
• Highland Ave. (EW)	TS	1	1	0	1	1	1	1	1	1	1	1	0	46.8	18.6	D	B
East Ave. (NS) at:																	
• Wilson Ave. (EW)	CSS	0	1	0	0	1	0	0	1	0	0	0	0	8.7	8.5	A	A
• Summit Ave. (EW)	TS	0	1	0	0	1	0	0	1	0	0	1	0	15.8	10.3	B	B
• Victoria St. (EW)	TS	1	2	1	1	1	1	1	1	0	1	1	1>	14.1	14.1	B	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right Turn Overlap; 1 = Improvement

[2] Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All Way Stop
CSS = Cross Street Stop
TS = Traffic Signal

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5.2 Future CMP Horizon Year (2020) Traffic Operations

5.2.1 CMP Horizon Year (2020) Without Project Conditions

The intersection operations analysis for Year 2020 without project traffic conditions with existing geometrics, construction of Day Creek Boulevard, and SR-210 Freeway improvements are summarized in Table 5-4. Year 2020 without project AM and PM peak hour intersection turning movement volumes are shown on Exhibits 5-E and 5-F, respectively. The operations analysis worksheets for Year 2020 without project conditions are included in Appendix "H". As shown in Table 5-4, the following intersections are projected to experience LOS "D" to "F" operations and are, therefore, deficient per the County of San Bernardino criteria:

Etiwanda Avenue (NS) at:

- Wilson Avenue (EW)
- Summit Avenue (EW)
- Highland Avenue (EW)

East Avenue (NS) at:

- Summit Avenue (EW)

5.2.2 CMP Horizon Year (2020) With Project Conditions

The intersection operations analysis for Year 2020 with project traffic conditions with existing geometrics, construction of Day Creek Boulevard, and SR-210 Freeway improvements are summarized in Table 5-5. Year 2020 with project AM and PM peak hour intersection turning movement volumes are shown on Exhibits 5-G and 5-H, respectively. The operations analysis worksheets for

TABLE 5-4

YEAR 2020 WITHOUT PROJECT CONDITIONS INTERSECTION ANALYSIS

INTERSECTION	TRAFFIC CONTROL[3]	INTERSECTION APPROACH LANES[1] NORTH-BOUND L	T	R	SOUTH-BOUND L	T	R	EAST-BOUND L	T	R	WEST-BOUND L	T	R	DELAY[2] (SECS.) AM	PM	LEVEL OF SERVICE AM	PM
Etiwanda Ave. - West (NS) at:																	
• Wilson Ave. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	9.7	15.7	A	C
Etiwanda Ave. - East (NS) at:																	
• Wilson Ave. (EW)	CSS	0	1	0	0	0	0	0	1	0	0	1	0	10.6	--	B	F
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	--[4]	--	F	F
• Highland Ave. (EW)	TS	1	1	0	1	1	0	1	1	1	1	1	0	--	29.3	F	C
East Ave. (NS) at:																	
• Wilson Ave. (EW)	CSS	0	1	0	0	1	0	0	1	0	0	1	0	--	19.1	F	C
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	--	--	F	F
• Victoria St. (EW)	TS	1	2	1	1	1	1	1	1	0	1	1	1>	16.0	17.0	B	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; 1 = Improvement

[2] Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All Way Stop
CSS = Cross Street Stop
TS = Traffic Signal

[4] -- = Delay High, Intersection Unstable, Level of Service "F".

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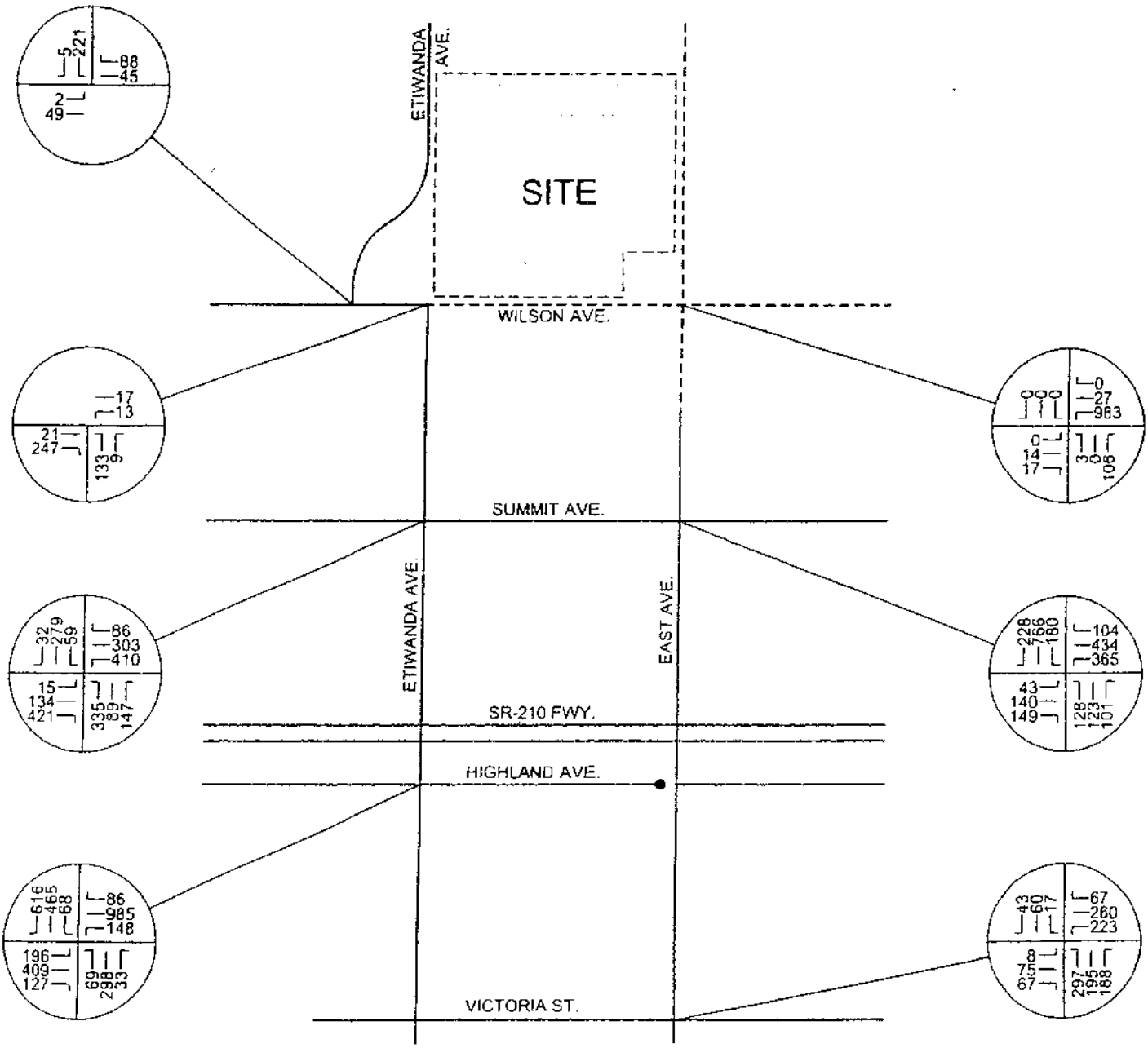
EXHIBIT 5-E

YEAR 2020 WITHOUT PROJECT AM PEAK HOUR INTERSECTION VOLUMES



LEGEND:

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5-12

EXHIBIT 5-F

YEAR 2020 WITHOUT PROJECT
PM PEAK HOUR INTERSECTION VOLUMES

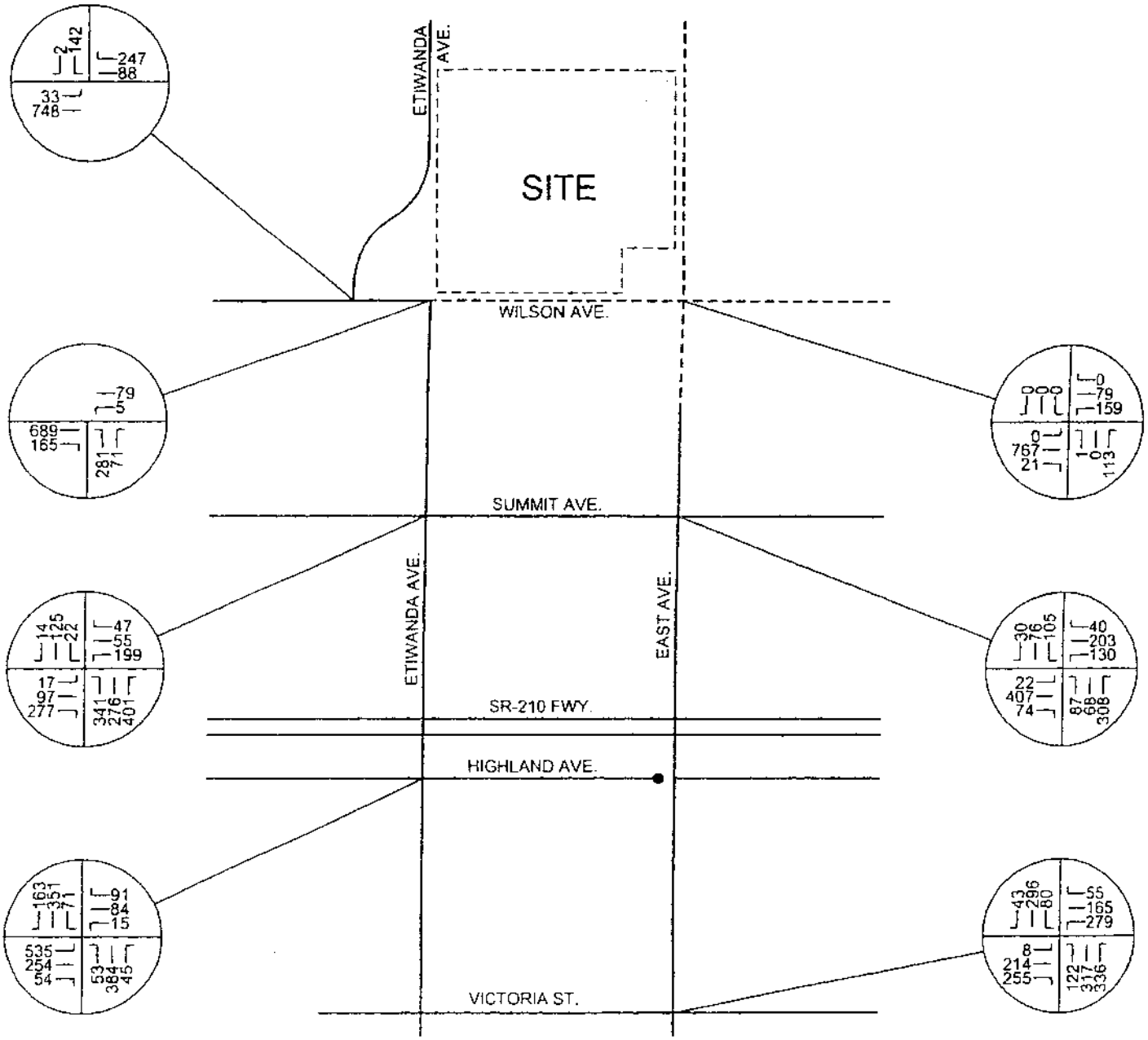

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TABLE 5-5

YEAR 2020 WITH PROJECT CONDITIONS INTERSECTION ANALYSIS

INTERSECTION	TRAFFIC CONTROL[3]	INTERSECTION APPROACH LANES[1] NORTH-BOUND L	T	R	SOUTH-BOUND L	T	R	EAST-BOUND L	T	R	WEST-BOUND L	T	R	DELAY[2] (SECS.) AM	PM	LEVEL OF SERVICE AM	PM
Etiwanda Ave. - West (NS) at:																	
• Wilson Ave. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	10.4	17.9	B	C
Etiwanda Ave. East (NS) at:																	
• Wilson Ave. (EW)	CSS	0	1	0	0	0	0	0	1	0	0	1	0	12.0	--	B	F
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	--[4]	--	F	F
• Highland Ave. (EW)	TS	1	1	0	1	1	0	1	1	1	1	1	0	--	34.2	F	C
East Ave. (NS) at:																	
• Wilson Ave. (EW)	CSS	0	1	0	0	1	0	0	1	0	0	1	0	--	--	F	F
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	--	--	F	F
• Victoria St. (EW)	TS	1	2	1	1	1	1	1	1	0	1	1	1>	16.0	17.0	B	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; 1 = Improvement

[2] Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All Way Stop
CSS = Cross Street Stop
TS = Traffic Signal

[4] -- = Delay High, Intersection Unstable, Level of Service "F".

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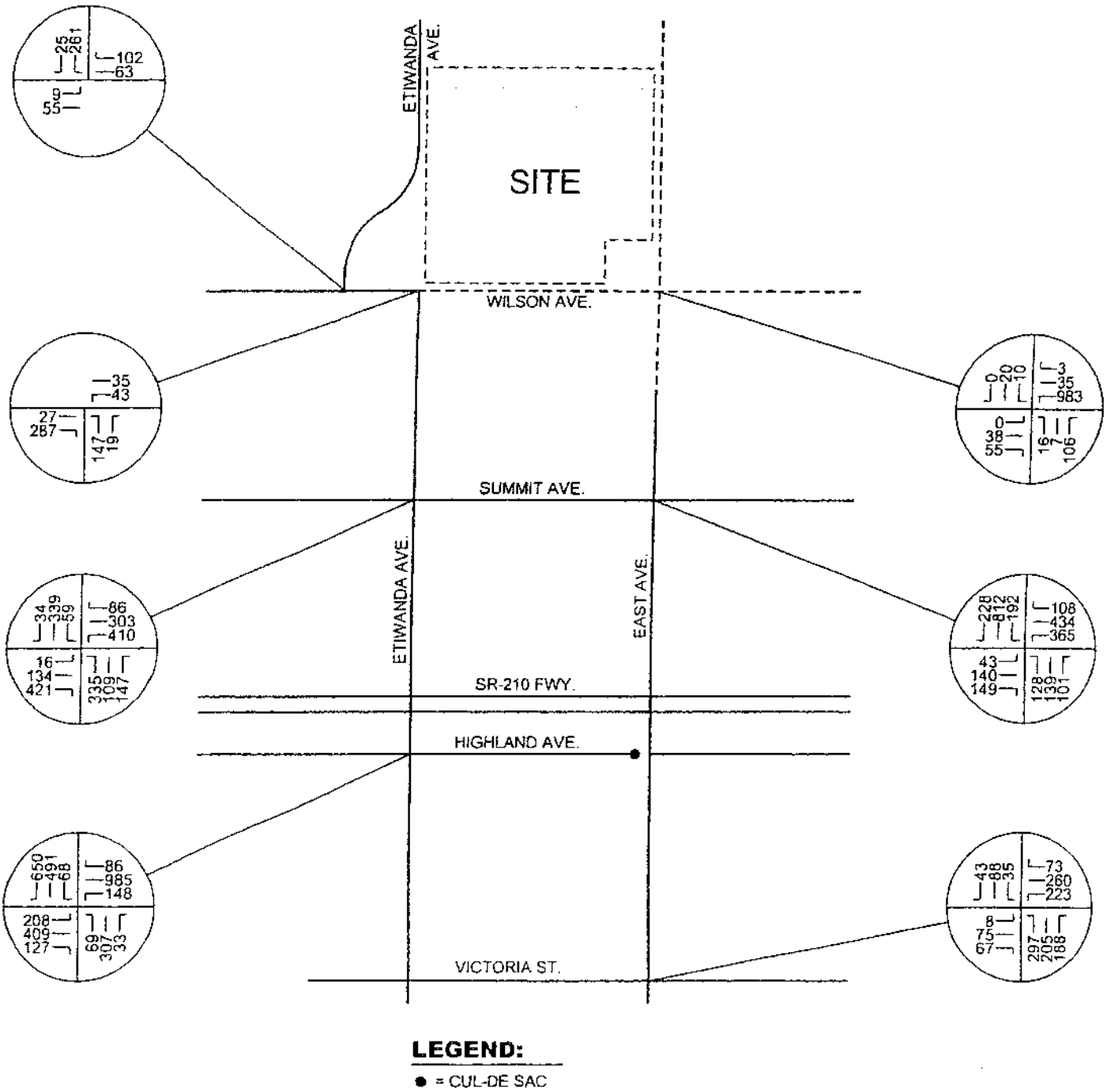
JN:1058-01-01

EXHIBIT 5-G

YEAR 2020 WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES



LEGEND:

● = CUL-DE SAC

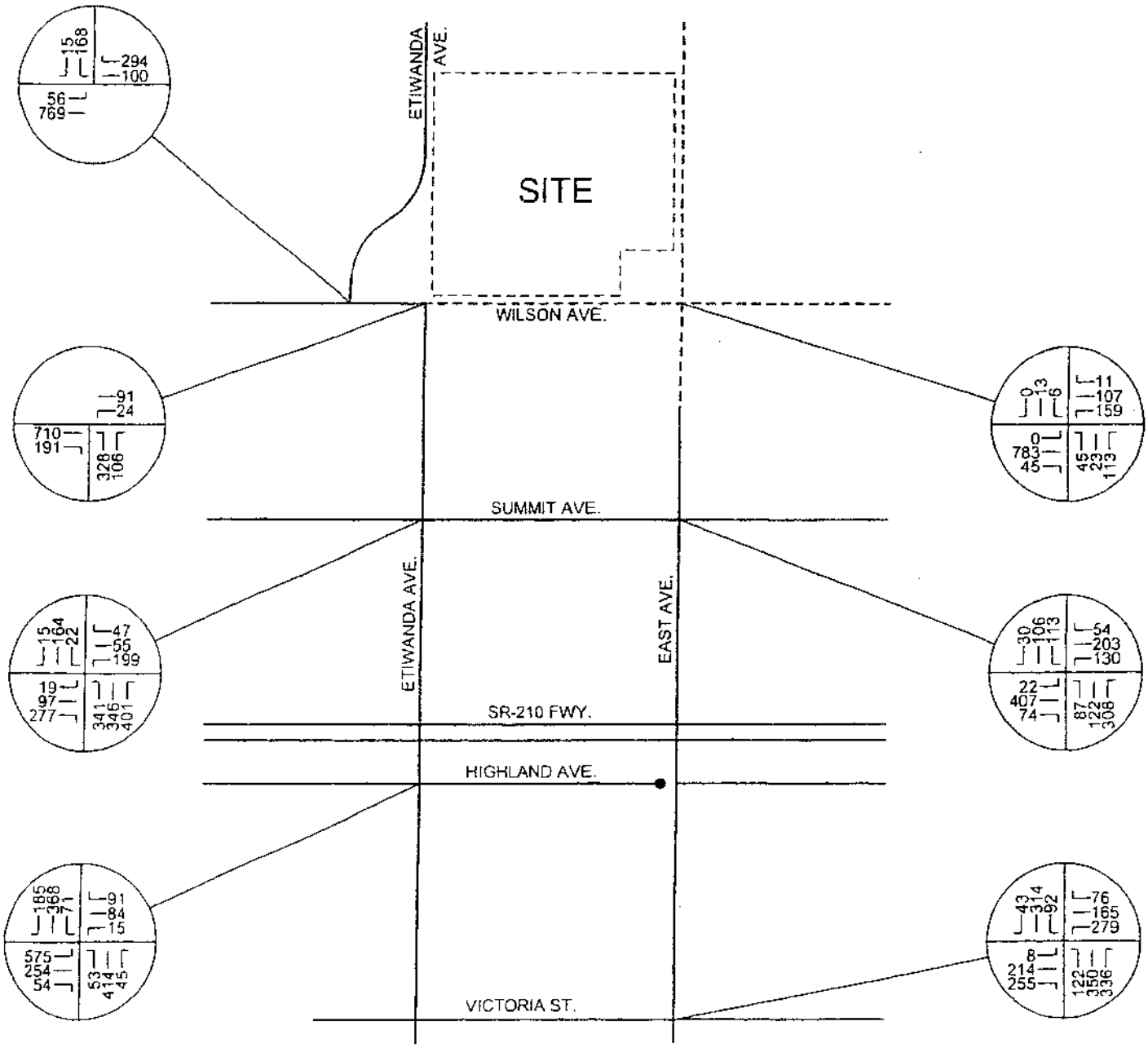
:29A

PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

EXHIBIT 5-H

YEAR 2020 WITH PROJECT
PM PEAK HOUR INTERSECTION VOLUMES



LEGEND:

● = CUL-DE SAC

N

1058-01-01:30A

ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

Year 2020 with project conditions are included in Appendix "I". As shown in Table 5-5, the **SAME** intersections as in the Year 2020 without project conditions are projected to experience LOS "D" to "F" operations and are, therefore, deficient per the County of San Bernardino criteria.

The intersection operations analysis for Year 2020 with project traffic conditions with improvements are summarized in Table 5-6. Improvements presented in Table 5-6 include both funded improvements and any additional improvements needed to achieve LOS "C" or better during the peak hours. Traffic signals will be required at all studied intersections, and physical improvements will be required at most of the locations analyzed. The operations analysis worksheets for Year 2020 with project conditions (with improvements) are included in Appendix "J." As shown in Table 5-6, the study area intersections are projected to operate at Level of Service "C" or better during the peak hours, with improvements.

5.3 CMP Freeway Evaluation

As required by the CMP, an analysis of Horizon Year (2020) freeway level of service is required for all freeway segments which carry 100 or more project trips in the peak hour. The project does not contribute traffic greater than the CMP freeway threshold of 100 two-way trips to a State Highway (SR-210 Freeway and I-15 Freeway).

TABLE 5-6

YEAR 2020 WITH PROJECT CONDITIONS INTERSECTION ANALYSIS WITH IMPROVEMENTS

INTERSECTION	TRAFFIC CONTROL[3]	INTERSECTION APPROACH LANES[1]												DELAY[2] (SECS.)		LEVEL OF SERVICE	
		NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Etiwanda Ave. - West (NS) at:																	
• Wilson Ave. (EW)	TS	0	0	0	1	0	1	1	2	0	0	2	0	9.9	6.5	A	A
Etiwanda Ave. - East (NS) at:																	
• Wilson Ave. (EW)	TS	0	1	0	0	0	0	0	1	0	0	1	0	8.6	19.3	A	B
• Summit Ave. (EW)	TS	0	1	0	0	1	0	0	1	0	0	1	0	22.9	30.1	C	C
• Highland Ave. (EW)	TS	1	1	0	1	1	1	1	1	1	1	2	0	29.8	32.8	C	C
East Ave. (NS) at:																	
• Wilson Ave. (EW)	TS	0	1	0	0	1	0	1	1	0	1	1	0	10.8	9.1	B	A
• Summit Ave. (EW)	TS	0	2	0	0	2	0	1	1	0	1	1	0	29.3	17.0	C	B
• Victoria St. (EW)	TS	1	2	1	1	1	1	1	1	0	1	1	1>	16.0	17.0	B	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right Turn Overlap; 1 = Improvement

[2] Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal

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6. IMPROVEMENT COSTS AND PROJECT CONTRIBUTION

This section of the report summarizes the improvements and associated costs required to meet CMP level of service requirements at CMP analysis locations. The project fair share contribution for the improvements at each location is also identified.

6.1 CMP Required Improvements and Costs

Improvements which will eliminate all anticipated roadway operational deficiencies throughout the study area have been identified for CMP Opening Year (2004) and CMP Horizon Year (2020) traffic conditions. The improvements were determined through the operations analysis of Section 5.

The approximate costs for the CMP Year 2020 improvements have generally been estimated using cost guidelines in the 1999 CMP Handbook (see Appendix "K"). A unit cost of $120,000 for installation of a traffic signal has been substituted for the somewhat lower value cited in the CMP materials. The needed improvements and resulting costs are summarized in Table 6-1 for intersections and roadway links. For the arterial roadway system, some of the improvements identified in Sections 3 and 5 are already funded. For instance, if the San Bernardino RTIP indicated that a roadway was to be improved to a six lane divided facility, three through lanes and a single left turn lane were assumed to be constructed as part of the funded improvements. The physical improvements at the intersections of Etiwanda Avenue - East and East Avenue at Wilson Avenue are examples of funded improvements in the study area (the project will construct most of these improvements in conjunction with development.) Therefore, no cost is shown in Table 6-1 for already funded improvements. The total cost of needed and unfunded arterial roadway improvements is $1,527,000.

TABLE 6-1

SUMMARY OF INTERSECTION AND ROADWAY IMPROVEMENTS AND COSTS

INTERSECTION/SEGMENT	IMPROVEMENT	TOTAL COST
Etiwanda Ave. - West (NS) at:		
• Wilson Ave. (EW)	Install Traffic Signal	$120,000
Etiwanda Ave. - East (NS) at:		
• Wilson Ave. (EW)	Install Traffic Signal 2020	$120,000
• Summit Ave. (EW)	Install Traffic Signal 2004	$120,000
• Highland Ave. (EW)	Construct SB Right Turn Lane 2004	$50,000
	Construct an Additional WB Through Lane 2020	$259,000
East Ave. (NS) at:		
• Wilson Ave. (EW)	Install Traffic Signal ~~2004~~ 2020	$120,000
• Summit Ave. (EW)	Install Traffic Signal 2004	$120,000
	Construct One Additional NB Lane to Provide a Share Left and Through and Shared Right and Through Lane 2020	$259,000
	Construct One Additional SB Lane to Provide a Shared Left and Through and Shared Right and Through Lane	$259,000
	Construct EB Left Turn Lane	$50,000
	Construct WB Left Turn Lane	$50,000
TOTAL		$1,527,000

6.2 Project Contribution and Fair Share Costs

In conformance with CMP requirements, project fair share contributions have also been calculated for CMP Horizon Year improvement locations. The project share of cost has been based on the proportion of project peak hour traffic contributed to the improvement location relative to the total new peak hour Year 2020 traffic volume.

Table 6-2 presents a summary of improvement cost and project cost shares at each CMP Horizon Year (2020) intersection improvement location. The intersection fair share cost calculations are based on the PM peak hour traffic volumes, since this is when most (and the most severe) intersection deficiencies occur. As shown in Table 6-2, the project's fair share of identified intersection and roadway link costs is $162,324.

TABLE 6-2

PROJECT FAIR SHARE INTERSECTION TRAFFIC CONTRIBUTION

INTERSECTION/SEGMENT	TOTAL COST	EXISTING TRAFFIC	YEAR 2020 WITH PROJECT TRAFFIC	PROJECT TRAFFIC	TOTAL NEW TRAFFIC	PROJECT % OF NEW TRAFFIC	PROJECT COST SHARE
Etiwanda Ave. - West (NS) at:							
• Wilson Ave. (EW)	$120,000	319	1,402	142	1,083	13.1%	$15,734
Etiwanda Ave. - East (NS) at:							
• Wilson Ave. (EW)	$120,000	291	1,450	160	1,159	13.8%	$16,566
• Summit Ave. (EW)	$120,000	928	1,983	112	1,055	10.6%	$12,739
• Highland Ave. (EW)	$309,000	1,214	2,209	109	995	11.0%	$33,850
East Ave. (NS) at:							
• Wilson Ave. (EW)	$120,000	0	1,305	165	1,305	12.6%	$15,172
• Summit Ave. (EW)	$738,000	510	1,656	106	1,146	9.2%	$68,262
TOTAL	$1,527,000						$162,324

7. SUMMARY AND RECOMMENDATIONS

This chapter summarizes the findings of this traffic impact analysis, and provides a series of recommendations related to project implementation.

7.1 Summary

The traffic issues related to the proposed land use and development have been evaluated in the context of the California Environmental Quality Act (CEQA) and the San Bernardino County Congestion Management Program (CMP). The City of Rancho Cucamonga is the lead agency responsible for preparation of the traffic impact analysis, in accordance with both CEQA and CMP authorizing legislation. In accordance with explicit CMP requirements, both an Opening Year analysis and a CMP Horizon Year analysis are included in this report.

A series of scoping discussions were conducted with the following agencies to define the desired analysis locations for each future analysis year:

- City of Rancho Cucamonga
- San Bernardino Associated Governments (SANBAG)

In addition, staff from the Southern California Association of Governments (SCAG) have also been contacted to discuss the project and its associated travel patterns.

The project does not contribute traffic greater than the CMP freeway threshold volume of 100 two-way trips to a State Highway (SR-210 Freeway and I-15 Freeway), and the project contribution test has indicated that the project will contribute more than 80 trips (CMP roadway threshold volume) along roadway segments serving CMP intersections within the City of Rancho Cucamonga.

This means that the City of Rancho Cucamonga must notify the Congestion Management Agency (SANBAG) in accordance with CMP requirements. SANBAG must also be provided with a copy of the CMP traffic impact analysis, once the document is accepted by the City of Rancho Cucamonga.

The CMP Horizon Year (2020) traffic volumes without the project have been derived from the subregional travel demand model currently being used for long range planning in San Bernardino County. This model is commonly referred to as the Comprehensive Transportation Plan (CTP) model. The CTP model is currently the only approved travel demand forecasting tool within the study area, as none of the locally developed travel demand models in the study area have received the necessary "finding of consistency" (with the CTP model) from SANBAG/SCAG.

Project traffic volumes for all future conditions projections were estimated using the manual approach described in the CMP guidelines. Trip generation has been estimated based on the trip rates contained in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 6th Edition. The project trip distribution was developed based on a review of existing traffic volumes and projected future traffic patterns as predicted by the CTP model.

Project traffic volumes were then subtracted from the future year background volumes. The result of this traffic forecasting procedure is a series of traffic volumes suitable for traffic operations analysis.

7.1.1 The Project

The project site is proposed to be developed with 359 single-family detached residential dwelling units. Exhibit 1-C illustrates the project site plan.

The traffic related to the project has been calculated in accordance with the following accepted procedural steps:

- Trip Generation
- Trip Distribution
- Traffic Assignment

Table 2-2 summarizes the projected trip generation for the Etiwanda Properties development. The proposed development is projected to generate approximately 3,436 trip-ends per day with 269 vehicles per hour during the AM peak hour and 362 vehicles per hour during the PM peak hour.

The trip distribution/traffic assignment process has been accomplished manually. The individual distribution pattern for the project has been developed based on the regional trip distribution, as well as the individual access points and local traffic patterns.

7.1.2 Existing Study Area Conditions

All CMP Horizon Year (2020) analysis locations, which exist today, have been analyzed. Regional access to the site is provided by the SR-210 Freeway and I-15 Freeway. Local access is provided by various arterial roadways in the vicinity of the site. The east-west arterials which will be most affected by the project include Wilson Avenue, Summit Avenue and Highland Avenue. North-south arterials expected to provide local access include Etiwanda Avenue and East Avenue.

The study area intersections analyzed currently operate at Level of Service "C" or better during the peak hours, except for the following intersections which operate at Level of Service "E" to "F" during the peak hours:

Etiwanda Avenue (NS) at:

- Highland Avenue (EW)

East Avenue (NS) at:

- Summit Avenue (EW)

7.1.3 Future Conditions

An Opening Year (2004) analysis and a CMP Horizon Year (2020) analysis are included in this report. Opening Year (2004) traffic operations analysis has been completed for the AM and PM peak hours and are shown in Tables 5-1 through 5-3. AM peak hour and PM peak hour traffic operations analysis are summarized in Tables 5-4 through 5-6 for Year 2020 conditions. Most study area operational deficiencies will occur whether or not the project is constructed. Improvements have been identified for all operational deficiencies with the project.

For Opening Year (2004) without project traffic conditions, a traffic signal is projected to be warranted at the following study area intersection (see Appendix "D"):

Etiwanda Avenue (NS) at:

- Summit Avenue (EW)

For Opening Year (2004) with project traffic conditions, a traffic signal is projected to be warranted at the following study area intersection (see Appendix "D"):

East Avenue (NS) at:

- Summit Avenue (EW)

For Year 2020 without project traffic conditions, traffic signals are projected to be warranted at the following additional study area intersections (see Appendix "D"):

East Avenue (NS) at:

- Wilson Avenue (EW)

For Year 2020 with project traffic conditions, a traffic signal is projected to be warranted at the following study area intersection (see Appendix "D"):

Etiwanda Avenue – East (NS) at:

- Wilson Avenue (EW)

Etiwanda Avenue – West (NS) at:

- Wilson Avenue (EW)

7.2 Recommendations

The recommendations in this section address on-site improvements, off-site improvements and the phasing of all necessary study area transportation improvements.

7.2.1 On-Site Improvements.

On-site improvements and improvements adjacent to the site will be required in conjunction with the proposed development to ensure adequate circulation within the project itself. Exhibit 7-A depicts the recommended on-site circulation system.

7.2.2 Off-Site Improvements

The necessary off-site improvement recommendations were described in previous sections of this report. The project should contribute towards the cost of necessary study area improvements on a fair share or "pro-rata" basis.

7.2.3 Phasing

Actual improvement phasing should be monitored, as actual growth patterns may not match the growth projections exactly. New traffic count data should be obtained and evaluated as individual project phases are constructed.

7.2.4 Transportation System Management Actions

a. Off-Site

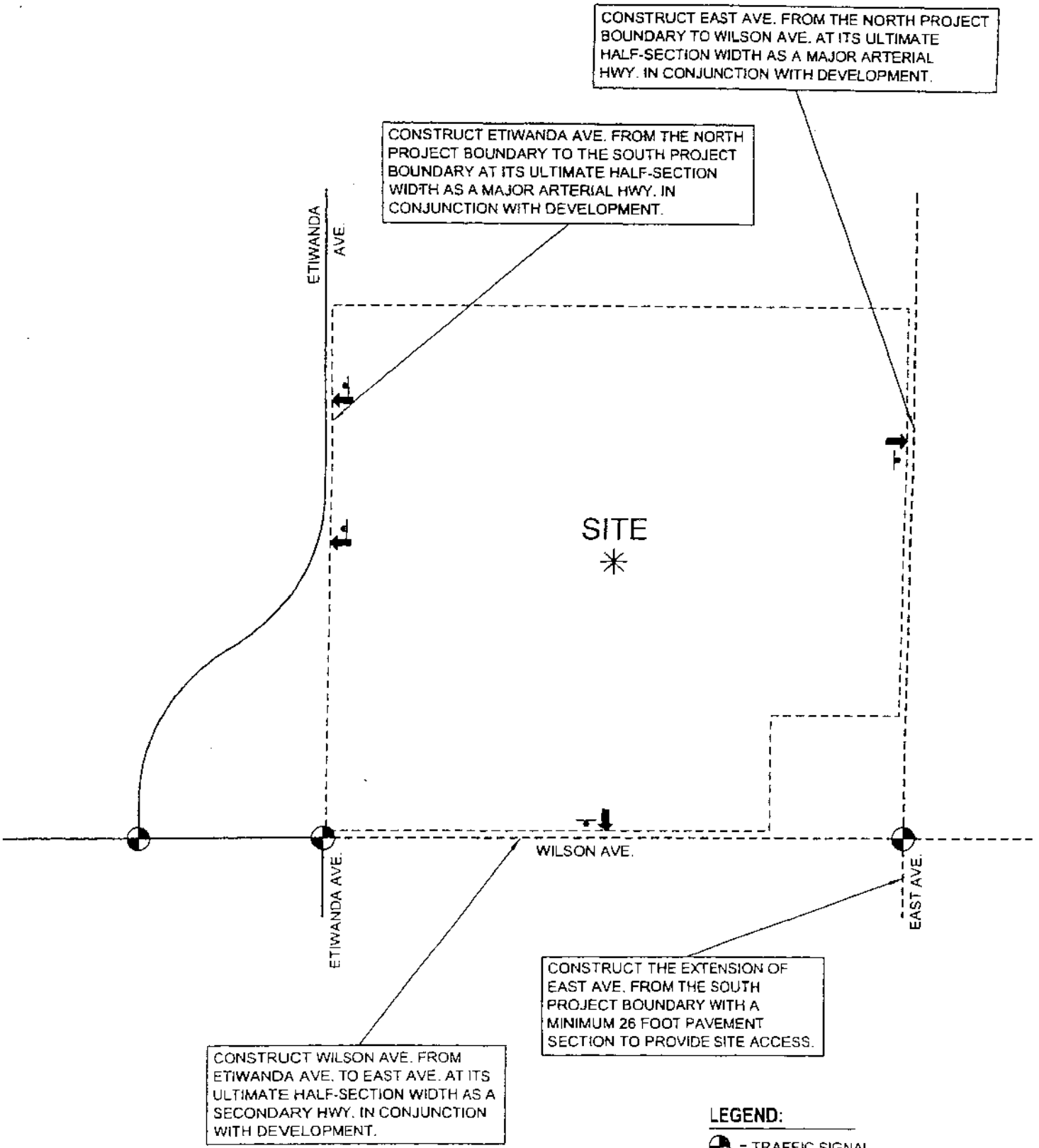
As development in the area occurs, transit agencies should consider expanding service within the area.

b. On-Site

No on-site recommendations at this time.

EXHIBIT 7-A

CIRCULATION RECOMMENDATIONS



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ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

RK engineering group, inc.

APPENDIX A

ADT GROWTH INCREMENT CALCULATIONS, PEAK HOUR DIRECTIONAL GROWTH INCREMENT CALCULATIONS, AND FUTURE PEAK HOUR INTERSECTION TURNING MOVEMENT CALCULATIONS

ETIWANDA AVE. - WEST / WILSON AVE.

AM PEAK HOUR	PM PEAK HOUR
EXISTING TURNING MOVEMENT VOLUMES: 2001 4 0 170 < v > 1 ^ ^ 72 41 > < 35 0 v v 0 < ^ > 0 0 0	EXISTING TURNING MOVEMENT VOLUMES: 2001 5 0 107 < v > 4 ^ ^ 119 32 > < 52 0 v v 0 < ^ > 0 0 0
EXISTING COUNT YEAR. 2001 174 73 v ^ 39 < IN = 323 < 107 42 > OUT = 323 > 211 v ^ 0 0	EXISTING COUNT YEAR: 2001 112 123 v ^ 57 < IN = 319 < 171 36 > OUT = 319 > 139 v ^ 0 0
EXISTING MODEL YEAR: 1994 0 0 v ^ 0 < IN = 0 < 0 0 > OUT = 0 > 0 v ^ 0 0	EXISTING MODEL YEAR: 1994 0 0 v ^ 0 < IN = 0 < 0 0 > OUT = 0 > 0 v ^ 0 0
FUTURE MODEL YEAR: 2020 66 34 v ^ 19 < IN = 138 < 53 18 > OUT = 137 > 84 v ^ 0 0	FUTURE MODEL YEAR: 2020 41 214 v ^ 43 < IN = 1279 < 256 982 > OUT = 1280 > 1023 v ^ 0 0
RAW GROWTH: 1994 TO 2020 66 34 v ^ 19 < < 53 18 > > 84 v ^ 0 0	RAW GROWTH: 1994 TO 2020 41 214 v ^ 43 < < 256 982 > > 1023 v ^ 0 0
ADJUSTED GROWTH: 1994 TO 2020 -100 MINIMUM GROWTH % 66 34 v ^ 19 < < 53 18 > > 84 v ^ 0 0	ADJUSTED GROWTH: 1994 TO 2020 -100 MINIMUM GROWTH % 41 214 v ^ 43 < < 256 982 > > 1023 v ^ 0 0
PRORATED GROWTH: 2001 TO 2020 19 YEARS 50 20 v ^ 10 < < 40 10 > > 60 v ^ 0 0	PRORATED GROWTH: 2001 TO 2020 19 YEARS 30 160 v ^ 30 < < 190 720 > > 750 v ^ 0 0
NEW PROJECTED VOLUMES 2020 220 90 v ^ 50 < < 150 50 > > 270 v ^ 0 0	NEW PROJECTED VOLUMES: 2020 140 280 v ^ 90 < < 360 760 > > 890 v ^ 0 0
INTERIM YEAR GROWTH 2001 TO 2004 3 YEARS 10 0 v ^ 0 < < 10 0 > > 10 v ^ 0 0	INTERIM YEAR GROWTH 2001 TO 2004 3 YEARS 0 30 v ^ 0 < < 30 110 > > 120 v ^ 0 0
INITIAL INTERIM VOLUMES 2004 180 70 v ^ 40 < IN = 340 < 120 40 > OUT = 330 > 220 v ^ 0 0	INITIAL INTERIM VOLUMES. 2004 110 150 v ^ 60 < IN = 460 < 200 150 > OUT = 470 > 260 v ^ 0 0
BALANCED INTERIM VOLUMES. 2004 180 70 v ^ 40 < IN = 340 < 120 40 > OUT = 330 > 220 v ^ 0 0	BALANCED INTERIM VOLUMES: 2004 110 150 v ^ 60 < IN = 460 < 200 150 > OUT = 480 > 270 v ^ 0 0

ETIWANDA AVE. - WEST / WILSON AVE.

STARTING POINT TURNING MOVEMENT DERIVATION (BASE YEAR VOLUMES) AT LOCATIONS WITHOUT EXISTING COUNTS

AM PEAK HOUR

NORTHBOUND APPROACH:

NL< = NL / (NL + 2* NT + NR)
= 50 / 50 + 2* 90 + 270
= 0.10

NT^ = 2* NT / (NL + 2* NT + NR)
= 2* 90 / 50 + 2* 90 + 270
= 0.36

NR> = NR / (NL + 2* NT + NR)
= 270 / 50 + 2* 90 + 270
= 0.54

SOUTHBOUND APPROACH:

SL> = SL / (SL + 2* ST + SR)
= 270 / 270 + 2* 0 + 50
= 0.84

STv = 2* ST / (SL + 2* ST + SR)
= 2* 0 / 270 + 2* 0 + 50
= 0.00

SR< = SR / (SL + 2* ST + SR)
= 0 / 270 + 2* 0 + 50
= 0.16

EASTBOUND APPROACH:

EL^ = EL / (EL + 2* ET + ER)
= 90 / 90 + 2* 270 + 0
= 0.14

ET> = 2* ET / (EL + 2* ET + ER)
= 2* 270 / 90 + 2* 270 + 0
= 0.86

ERv = ER / (EL + 2* ET + ER)
= 0 / 90 + 2* 270 + 0
= 0.00

WESTBOUND APPROACH:

WLv = WL / (WL + 2* WT + WR)
= 0 / 0 + 2* 50 + 90
= 0.00

WT< = 2* WT / (WL + 2* WT + WR)
= 2* 50 / 0 + 2* 50 + 90
= 0.53

WR^ = WR / (WL + 2* WT + WR)
= 90 / 0 + 2* 50 + 90
= 0.47

ESTIMATED PERCENTAGES

16% 0% 84%
< v >
14% ^ 1.00 ^ 47%
86% > 1.00 1.00 > 53%
0% v 1.00 v 0%
< v >
10% 36% 54%

PM PEAK HOUR

NORTHBOUND APPROACH:

NL< = NL / (NL + 2* NT + NR)
= 90 / 90 + 2* 280 + 890
= 0.06

NT^ = 2* NT / (NL + 2* NT + NR)
= 2* 280 / 90 + 2* 280 + 890
= 0.36

NR> = NR / (NL + 2* NT + NR)
= 890 / 90 + 2* 280 + 890
= 0.58

SOUTHBOUND APPROACH:

SL> = SL / (SL + 2* ST + SR)
= 890 / 890 + 2* 0 + 90
= 0.91

STv = 2* ST / (SL + 2* ST + SR)
= 2* 0 / 890 + 2* 0 + 90
= 0.00

SR< = SR / (SL + 2* ST + SR)
= 0 / 890 + 2* 0 + 90
= 0.09

EASTBOUND APPROACH:

EL^ = EL / (EL + 2* ET + ER)
= 280 / 280 + 2* 890 + 0
= 0.14

ET> = 2* ET / (EL + 2* ET + ER)
= 2* 890 / 280 + 2* 890 + 0
= 0.86

ERv = ER / (EL + 2* ET + ER)
= 0 / 280 + 2* 890 + 0
= 0.00

WESTBOUND APPROACH:

WLv = WL / (WL + 2* WT + WR)
= 0 / 0 + 2* 90 + 280
= 0.00

WT< = 2* WT / (WL + 2* WT + WR)
= 2* 90 / 0 + 2* 90 + 280
= 0.39

WR^ = WR / (WL + 2* WT + WR)
= 280 / 0 + 2* 90 + 280
= 0.61

ESTIMATED PROPORTIONS:

9% 0% 91%
< v >
14% ^ 1.00 ^ 61%
86% > 1.00 1.00 > 39%
0% v 1.00 v 0%
< v >
6% 36% 58%

ETIWANDA AVE. - WEST / WILSON AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

YEAR 2020 TRAFFIC CONDITIONS									
AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	APPROACH	FUTURE YEAR TOTAL	APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	APPROACH	FUTURE YEAR TOTAL
NORTH	LEFT	10	SOUTH LEG		NORTH	LEFT	6	SOUTH LEG	
BOUND	THRU	36	IN ...	0	BOUND	THRU	36	IN ...	0
	RIGHT	54	OUT ...	0		RIGHT	58	OUT ...	0
SOUTH	LEFT	84	NORTH LEG		SOUTH	LEFT	91	NORTH LEG	
BOUND	THRU	0	IN ...	220	BOUND	THRU	0	IN ...	140
	RIGHT	16	OUT ...	90		RIGHT	9	OUT ...	280
EAST	LEFT	14	WEST LEG		EAST	LEFT	14	WEST LEG	
BOUND	THRU	86	IN ...	50	BOUND	THRU	86	IN ...	760
	RIGHT	0	OUT ...	50		RIGHT	0	OUT ...	90
WEST	LEFT	0	EAST LEG		WEST	LEFT	0	EAST LEG	
BOUND	THRU	53	IN ...	150	BOUND	THRU	39	IN ...	360
	RIGHT	47	OUT ...	270		RIGHT	61	OUT ...	890

YEAR 2020 TRAFFIC CONDITIONS									
AM PEAK HOUR RESULTS					PM PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	10	0	NORTH LEG	NORTH	LEFT	6	0	NORTH LEG
BOUND	THRU	36	0	RATIO 7.3%	BOUND	THRU	36	0	RATIO 9.9%
	RIGHT	54	0	ADT 4,300		RIGHT	58	0	ADT 4,300
SOUTH	LEFT	84	221	SOUTH LEG	SOUTH	LEFT	91	142	SOUTH LEG
BOUND	THRU	0	0	RATIO #DIV/0!	BOUND	THRU	0	0	RATIO #DIV/0!
	RIGHT	16	5	ADT 0		RIGHT	9	2	ADT 0
EAST	LEFT	14	2	EAST LEG	EAST	LEFT	14	33	EAST LEG
BOUND	THRU	86	49	RATIO 4.9%	BOUND	THRU	86	748	RATIO 14.9%
	RIGHT	0	0	ADT 8,200		RIGHT	0	0	ADT 8,200
WEST	LEFT	0	0	WEST LEG	WEST	LEFT	0	0	WEST LEG
BOUND	THRU	53	45	RATIO 2.4%	BOUND	THRU	39	88	RATIO 20.7%
	RIGHT	47	88	ADT 4,200		RIGHT	61	247	ADT 4,200

Modified by: COMSIS Corp. (M. Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

ETIWANDA AVE. - WEST / WILSON AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	INITIAL TURN PROPORTION	APPROACH	INTERIM YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	INTERIM YEAR TOTAL
NORTH	LEFT	10	SOUTH LEG		NORTH	LEFT	6	SOUTH LEG	
BOUND	THRU	36	IN ...	0	BOUND	THRU	38	IN ...	0
	RIGHT	54	OUT ...	0		RIGHT	58	OUT ...	0
SOUTH	LEFT	84	NORTH LEG		SOUTH	LEFT	91	NORTH LEG	
BOUND	THRU	0	IN ...	180	BOUND	THRU	0	IN ...	110
	RIGHT	16	OUT ...	70		RIGHT	9	OUT ...	150
EAST	LEFT	14	WEST LEG		EAST	LEFT	14	WEST LEG	
BOUND	THRU	86	IN ...	40	BOUND	THRU	86	IN ...	150
	RIGHT	0	OUT ...	40		RIGHT	0	OUT ...	80
WEST	LEFT	0	EAST LEG		WEST	LEFT	0	EAST LEG	
BOUND	THRU	53	IN ...	120	BOUND	THRU	39	IN ...	200
	RIGHT	47	OUT ...	220		RIGHT	61	OUT ...	270

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR RESULTS					PM PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	INITIAL TURN PROPORTION	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	INITIAL TURN PROPORTION	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	10	0	NORTH LEG	NORTH	LEFT	6	0	NORTH LEG
BOUND	THRU	36	0	RATIO 8.2%	BOUND	THRU	36	0	RATIO 8.7%
	RIGHT	54	0	ADT 3,100		RIGHT	58	0	ADT 3,100
SOUTH	LEFT	84	181	SOUTH LEG	SOUTH	LEFT	91	117	SOUTH LEG
BOUND	THRU	0	0	RATIO #DIV/0!	BOUND	THRU	0	0	RATIO #DIV/0!
	RIGHT	16	4	ADT 0		RIGHT	9	3	ADT 0
EAST	LEFT	14	2	EAST LEG	EAST	LEFT	14	9	EAST LEG
BOUND	THRU	86	39	RATIO 7.4%	BOUND	THRU	86	153	RATIO 10.6%
	RIGHT	0	0	ADT 4,400		RIGHT	0	0	ADT 4,400
WEST	LEFT	0	0	WEST LEG	WEST	LEFT	0	0	WEST LEG
BOUND	THRU	53	36	RATIO 5.1%	BOUND	THRU	39	57	RATIO 13.9%
	RIGHT	47	68	ADT 1,600		RIGHT	61	141	ADT 1,600

Modified by: COMSIS Corp (M. Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

ETIWANDA AVE. - EAST / WILSON AVE.

AM PEAK HOUR	PM PEAK HOUR
EXISTING TURNING MOVEMENT VOLUMES: 2001 0 0 0 < v > 0 ^ ^ 0 0 > < 0 210 v v 0 < ^ > 107 0 0	EXISTING TURNING MOVEMENT VOLUMES: 2001 0 0 0 < v > 0 ^ ^ 0 0 > < 0 122 v v 0 < ^ > 169 0 0
EXISTING COUNT YEAR: 2001 0 0 v ^ 107 < IN = 317 < 0 210 > OUT = 317 > 0 v ^ 210 107	EXISTING COUNT YEAR: 2001 0 0 v ^ 169 < IN = 291 < 0 122 > OUT = 291 > 0 v ^ 122 169
EXISTING MODEL YEAR: 1994 0 0 v ^ 0 < IN = 0 < 0 0 > OUT = 0 > 0 v ^ 0 0	EXISTING MODEL YEAR: 1994 0 0 v ^ 0 < IN = 0 < 0 0 > OUT = 0 > 0 v ^ 0 0
FUTURE MODEL YEAR: 2020 0 0 v ^ 53 < IN = 165 < 43 84 > OUT = 166 > 44 v ^ 69 39	FUTURE MODEL YEAR: 2020 0 0 v ^ 256 < IN = 1373 < 111 1023 > OUT = 1373 > 1044 v ^ 73 238
RAW GROWTH: 1994 TO 2020 0 0 v ^ 53 < < 43 84 > > 44 v ^ 69 39	RAW GROWTH: 1994 TO 2020 0 0 v ^ 256 < < 111 1023 > > 1044 v ^ 73 238
ADJUSTED GROWTH: 1994 TO 2020 -100 MINIMUM GROWTH % 0 0 v ^ 53 < < 43 84 > > 44 v ^ 69 39	ADJUSTED GROWTH: 1994 TO 2020 -100 MINIMUM GROWTH % 0 0 v ^ 256 < < 111 1023 > > 1044 v ^ 73 238
PRORATED GROWTH: 2001 TO 2020 19 YEARS 0 0 v ^ 40 < < 30 60 > > 30 v ^ 50 30	PRORATED GROWTH: 2001 TO 2020 19 YEARS 0 0 v ^ 190 < < 80 750 > > 760 v ^ 50 170
NEW PROJECTED VOLUMES: 2020 0 0 v ^ 150 < < 30 270 > > 30 v ^ 260 140	NEW PROJECTED VOLUMES: 2020 0 0 v ^ 360 < < 80 870 > > 760 v ^ 170 340
INTERIM YEAR GROWTH: 2001 TO 2004 3 YEARS 0 0 v ^ 10 < < 0 10 > > 0 v ^ 10 0	INTERIM YEAR GROWTH: 2001 TO 2004 3 YEARS 0 0 v ^ 30 < < 10 120 > > 120 v ^ 10 30
INITIAL INTERIM VOLUMES: 2004 0 0 v ^ 120 < IN = 330 < 0 220 > OUT = 340 > 0 v ^ 220 110	INITIAL INTERIM VOLUMES: 2004 0 0 v ^ 200 < IN = 450 < 10 240 > OUT = 450 > 120 v ^ 130 200
BALANCED INTERIM VOLUMES: 2004 0 0 v ^ 120 < IN = 340 < 0 230 > OUT = 340 > 0 v ^ 220 110	BALANCED INTERIM VOLUMES: 2004 0 0 v ^ 200 < IN = 450 < 10 240 > OUT = 450 > 120 v ^ 130 200

ETIWANDA AVE. - EAST / WILSON AVE.

STARTING POINT TURNING MOVEMENT DERIVATION (BASE YEAR VOLUMES) AT LOCATIONS WITHOUT EXISTING COUNTS

AM PEAK HOUR

NORTHBOUND APPROACH:

NL< = NL / (NL + 2* NT + NR)
= 150 / 150 + 2* 0 + 30
= 0.83

NT^ = 2* NT / (NL + 2* NT + NR)
= 2* 0 / 150 + 2* 0 + 30
= 0.00

NR> = NR / (NL + 2* NT + NR)
= 30 / 150 + 2* 0 + 30
= 0.17

SOUTHBOUND APPROACH:

SL> = SL / (SL + 2* ST + SR)
= 30 / 30 + 2* 260 + 150
= 0.04

STv = 2* ST / (SL + 2* ST + SR)
= 2* 260 / 30 + 2* 260 + 150
= 0.74

SR< = SR / (SL + 2* ST + SR)
= 260 / 30 + 2* 260 + 150
= 0.21

EASTBOUND APPROACH:

EL^ = EL / (EL + 2* ET + ER)
= 0 / 0 + 2* 30 + 260
= 0.00

ET> = 2* ET / (EL + 2* ET + ER)
= 2* 30 / 0 + 2* 30 + 260
= 0.19

ERv = ER / (EL + 2* ET + ER)
= 260 / 0 + 2* 30 + 260
= 0.81

WESTBOUND APPROACH:

WLv = WL / (WL + 2* WT + WR)
= 260 / 260 + 2* 150 + 0
= 0.46

WT< = 2* WT / (WL + 2* WT + WR)
= 2* 150 / 260 + 2* 150 + 0
= 0.54

WR^ = WR / (WL + 2* WT + WR)
= 0 / 260 + 2* 150 + 0
= 0.00

ESTIMATED PERCENTAGES

21% 74% 4%
< v >

0% ^ 1.00 ^ 0%
19% > 1.00 1.00 > 54%
81% v 1.00 v 46%

< v >
83% 0% 17%

PM PEAK HOUR

NORTHBOUND APPROACH:

NL< = NL / (NL + 2* NT + NR)
= 360 / 360 + 2* 0 + 760
= 0.32

NT^ = 2* NT / (NL + 2* NT + NR)
= 2* 0 / 360 + 2* 0 + 760
= 0.00

NR> = NR / (NL + 2* NT + NR)
= 760 / 360 + 2* 0 + 760
= 0.68

SOUTHBOUND APPROACH:

SL> = SL / (SL + 2* ST + SR)
= 760 / 760 + 2* 170 + 360
= 0.52

STv = 2* ST / (SL + 2* ST + SR)
= 2* 170 / 760 + 2* 170 + 360
= 0.23

SR< = SR / (SL + 2* ST + SR)
= 170 / 760 + 2* 170 + 360
= 0.25

EASTBOUND APPROACH:

EL^ = EL / (EL + 2* ET + ER)
= 0 / 0 + 2* 760 + 170
= 0.00

ET> = 2* ET / (EL + 2* ET + ER)
= 2* 760 / 0 + 2* 760 + 170
= 0.90

ERv = ER / (EL + 2* ET + ER)
= 170 / 0 + 2* 760 + 170
= 0.10

WESTBOUND APPROACH:

WLv = WL / (WL + 2* WT + WR)
= 170 / 170 + 2* 360 + 0
= 0.19

WT< = 2* WT / (WL + 2* WT + WR)
= 2* 360 / 170 + 2* 360 + 0
= 0.81

WR^ = WR / (WL + 2* WT + WR)
= 0 / 170 + 2* 360 + 0
= 0.00

ESTIMATED PROPORTIONS:

25% 23% 52%
< v >

0% ^ 1.00 ^ 0%
90% > 1.00 1.00 > 81%
10% v 1.00 v 19%

< v >
32% 0% 68%

EAST AVE./ WILSON AVE.

AM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:
2001

			0	0	0			
			<	v	>			
0	^					^		0
0	>					<		0
0	v					v		0
			<	^	>			
			0	0	0			

EXISTING COUNT YEAR:
2001

				0	0			
				v	^			
0	<	IN	=	0	<	0		
0	>	OUT	=	0	>	0		
				v	^			
				0	0			

EXISTING MODEL YEAR:
1994

				0	0			
				v	^			
0	<	IN	=	0	<	0		
0	>	OUT	=	0	>	0		
				v	^			
				0	0			

FUTURE MODEL YEAR:
2020

				0	0			
				v	^			
43	<	IN	=	1579	<	1405		
44	>	OUT	=	1579	>	169		
				v	^			
				1367	131			

RAW GROWTH: 1994 TO 2020

				0	0			
				v	^			
43	<					<		1405
44	>					>		169
				v	^			
				1367	131			

ADJUSTED GROWTH: 1994 TO 2020
-100 MINIMUM GROWTH %

				0	0			
				v	^			
43	<					<		1405
44	>					>		169
				v	^			
				1367	131			

PRORATED GROWTH: 2001 TO 2020
19 YEARS

				0	0			
				v	^			
30	<					<		1030
30	>					>		120
				v	^			
				1000	100			

NEW PROJECTED VOLUMES 2020

				0	0			
				v	^			
30	<					<		1030
30	>					>		120
				v	^			
				1000	100			

INTERIM YEAR GROWTH: 2001 TO 2004
3 YEARS

				0	0			
				v	^			
0	<					<		160
0	>					>		20
				v	^			
				160	20			

INITIAL INTERIM VOLUMES:
2004

				0	0			
				v	^			
0	<	IN	=	180	<	160		
0	>	OUT	=	180	>	20		
				v	^			
				160	20			

BALANCED INTERIM VOLUMES:
2004

				0	0			
				v	^			
0	<	IN	=	180	<	160		
0	>	OUT	=	180	>	20		
				v	^			
				160	20			

PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:
2001

			0	0	0			
			<	v	>			
0	^					^		0
0	>					<		0
0	v					v		0
			<	^	>			
			0	0	0			

EXISTING COUNT YEAR:
2001

				0	0			
				v	^			
0	<	IN	=	0	<	0		
0	>	OUT	=	0	>	0		
				v	^			
				0	0			

EXISTING MODEL YEAR:
1994

				0	0			
				v	^			
0	<	IN	=	0	<	0		
0	>	OUT	=	0	>	0		
				v	^			
				0	0			

FUTURE MODEL YEAR:
2020

				0	0			
				v	^			
111	<	IN	=	1559	<	361		
1044	>	OUT	=	1559	>	1198		
				v	^			
				250	155			

RAW GROWTH: 1994 TO 2020

				0	0			
				v	^			
111	<					<		361
1044	>					>		1198
				v	^			
				250	155			

ADJUSTED GROWTH: 1994 TO 2020
-100 MINIMUM GROWTH %

				0	0			
				v	^			
111	<					<		361
1044	>					>		1198
				v	^			
				250	155			

PRORATED GROWTH: 2001 TO 2020
19 YEARS

				0	0			
				v	^			
80	<					<		260
760	>					>		880
				v	^			
				180	110			

NEW PROJECTED VOLUMES: 2020

				0	0			
				v	^			
80	<					<		260
760	>					>		880
				v	^			
				180	110			

INTERIM YEAR GROWTH: 2001 TO 2004
3 YEARS

				0	0			
				v	^			
10	<					<		40
120	>					>		140
				v	^			
				30	20			

INITIAL INTERIM VOLUMES:
2004

				0	0			
				v	^			
10	<	IN	=	180	<	40		
120	>	OUT	=	180	>	140		
				v	^			
				30	20			

BALANCED INTERIM VOLUMES:
2004

				0	0			
				v	^			
10	<	IN	=	180	<	40		
120	>	OUT	=	180	>	140		
				v	^			
				30	20			

EAST AVE./ WILSON AVE.

STARTING POINT TURNING MOVEMENT DERIVATION (BASE YEAR VOLUMES) AT LOCATIONS WITHOUT EXISTING COUNTS

AM PEAK HOUR

NORTHBOUND APPROACH:

NL< = NL / (NL + 2* NT + NR)
= 30 / 30 + 2* 0 + 120
= 0.20

NT^ = 2* NT / (NL + 2* NT + NR)
= 2* 0 / 30 + 2* 0 + 120
= 0.00

NR> = NR / (NL + 2* NT + NR)
= 120 / 30 + 2* 0 + 120
= 0.80

SOUTHBOUND APPROACH:

SL> = SL / (SL + 2* ST + SR)
= 120 / 120 + 2* 1000 + 30
= 0.06

STv = 2* ST / (SL + 2* ST + SR)
= 2* 1000 / 120 + 2* 1000 + 30
= 0.93

SR< = SR / (SL + 2* ST + SR)
= 1000 / 120 + 2* 1000 + 30
= 0.01

EASTBOUND APPROACH:

EL^ = EL / (EL + 2* ET + ER)
= 0 / 0 + 2* 120 + 1000
= 0.00

ET> = 2* ET / (EL + 2* ET + ER)
= 2* 120 / 0 + 2* 120 + 1000
= 0.19

ERv = ER / (EL + 2* ET + ER)
= 1000 / 0 + 2* 120 + 1000
= 0.81

WESTBOUND APPROACH:

WLv = WL / (WL + 2* WT + WR)
= 1000 / 1000 + 2* 30 + 0
= 0.94

WT< = 2* WT / (WL + 2* WT + WR)
= 2* 30 / 1000 + 2* 30 + 0
= 0.06

WR^ = WR / (WL + 2* WT + WR)
= 0 / 1000 + 2* 30 + 0
= 0.00

ESTIMATED PERCENTAGES

1% 93% 6%
< v >
0% ^ 1.00 ^ 0%
19% > 1.00 1.00 > 6%
81% v 1.00 v 94%
< v >
20% 0% 80%

PM PEAK HOUR

NORTHBOUND APPROACH:

NL< = NL / (NL + 2* NT + NR)
= 80 / 80 + 2* 0 + 880
= 0.08

NT^ = 2* NT / (NL + 2* NT + NR)
= 2* 0 / 80 + 2* 0 + 880
= 0.00

NR> = NR / (NL + 2* NT + NR)
= 880 / 80 + 2* 0 + 880
= 0.92

SOUTHBOUND APPROACH:

SL> = SL / (SL + 2* ST + SR)
= 880 / 880 + 2* 180 + 80
= 0.67

STv = 2* ST / (SL + 2* ST + SR)
= 2* 180 / 880 + 2* 180 + 80
= 0.27

SR< = SR / (SL + 2* ST + SR)
= 180 / 880 + 2* 180 + 80
= 0.06

EASTBOUND APPROACH:

EL^ = EL / (EL + 2* ET + ER)
= 0 / 0 + 2* 880 + 180
= 0.00

ET> = 2* ET / (EL + 2* ET + ER)
= 2* 880 / 0 + 2* 880 + 180
= 0.91

ERv = ER / (EL + 2* ET + ER)
= 180 / 0 + 2* 880 + 180
= 0.09

WESTBOUND APPROACH:

WLv = WL / (WL + 2* WT + WR)
= 180 / 180 + 2* 80 + 0
= 0.53

WT< = 2* WT / (WL + 2* WT + WR)
= 2* 80 / 180 + 2* 80 + 0
= 0.47

WR^ = WR / (WL + 2* WT + WR)
= 0 / 180 + 2* 80 + 0
= 0.00

ESTIMATED PROPORTIONS.

6% 27% 67%
< v >
0% ^ 1.00 ^ 0%
91% > 1.00 1.00 > 47%
9% v 1.00 v 53%
< v >
8% 0% 92%

ETIWANDA AVE. - EAST / WILSON AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

YEAR 2020 TRAFFIC CONDITIONS									
AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	APPROACH	FUTURE YEAR TOTAL	APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	APPROACH	FUTURE YEAR TOTAL
NORTH	LEFT	83	SOUTH LEG		NORTH	LEFT	32	SOUTH LEG	
BOUND	THRU	0	IN ...	140	BOUND	THRU	0	IN ...	340
	RIGHT	17	OUT ...	260		RIGHT	68	OUT ...	170
SOUTH	LEFT	4	NORTH LEG		SOUTH	LEFT	52	NORTH LEG	
BOUND	THRU	74	IN ...	0	BOUND	THRU	23	IN ...	0
	RIGHT	21	OUT ...	0		RIGHT	25	OUT ...	0
EAST	LEFT	0	WEST LEG		EAST	LEFT	0	WEST LEG	
BOUND	THRU	19	IN ...	270	BOUND	THRU	90	IN ...	870
	RIGHT	81	OUT ...	150		RIGHT	10	OUT ...	360
WEST	LEFT	46	EAST LEG		WEST	LEFT	19	EAST LEG	
BOUND	THRU	54	IN ...	30	BOUND	THRU	81	IN ...	80
	RIGHT	0	OUT ...	30		RIGHT	0	OUT ...	760

YEAR 2020 TRAFFIC CONDITIONS									
AM PEAK HOUR RESULTS					PM PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	83	133	NORTH LEG	NORTH	LEFT	32	281	NORTH LEG
BOUND	THRU	0	0	RATIO #DIV/0!	BOUND	THRU	0	0	RATIO #DIV/0!
	RIGHT	17	9	ADT 0		RIGHT	68	71	ADT 0
SOUTH	LEFT	4	0	SOUTH LEG	SOUTH	LEFT	52	0	SOUTH LEG
BOUND	THRU	74	0	RATIO 6.7%	BOUND	THRU	23	0	RATIO 8.7%
	RIGHT	21	0	ADT 6,000		RIGHT	25	0	ADT 6,000
EAST	LEFT	0	0	EAST LEG	EAST	LEFT	0	0	EAST LEG
BOUND	THRU	19	21	RATIO 1.5%	BOUND	THRU	90	689	RATIO 21.1%
	RIGHT	81	247	ADT 4,000		RIGHT	10	165	ADT 4,000
WEST	LEFT	46	13	WEST LEG	WEST	LEFT	19	5	WEST LEG
BOUND	THRU	54	17	RATIO 5.1%	BOUND	THRU	81	79	RATIO 14.8%
	RIGHT	0	0	ADT 8,200		RIGHT	0	0	ADT 8,200

Modified by: COMSIS Corp. (M. Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

ETIWANDA AVE. - EAST / WILSON AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	INITIAL TURN PROPORTION	APPROACH	INTERIM YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	INTERIM YEAR TOTAL
NORTH BOUND	LEFT	83	SOUTH LEG IN ...	110	NORTH BOUND	LEFT	32	SOUTH LEG IN ...	200
	THRU	0				THRU	0		
	RIGHT	17	OUT ...	220		RIGHT	68	OUT ...	130
SOUTH BOUND	LEFT	4	NORTH LEG IN ...	0	SOUTH BOUND	LEFT	52	NORTH LEG IN ...	0
	THRU	74				THRU	23		
	RIGHT	21	OUT ...	0		RIGHT	25	OUT ...	0
EAST BOUND	LEFT	0	WEST LEG IN ...	230	EAST BOUND	LEFT	0	WEST LEG IN ...	240
	THRU	19				THRU	90		
	RIGHT	81	OUT ...	120		RIGHT	10	OUT ...	200
WEST BOUND	LEFT	46	EAST LEG IN ...	0	WEST BOUND	LEFT	19	EAST LEG IN ...	10
	THRU	54				THRU	81		
	RIGHT	0	OUT ...	0		RIGHT	0	OUT ...	120

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR RESULTS					PM PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	INITIAL TURN PROPORTION	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	INITIAL TURN PROPORTION	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH BOUND	LEFT	83	120	NORTH LEG	NORTH BOUND	LEFT	32	191	NORTH LEG
	THRU	0	0	RATIO #DIV/0!		THRU	0	0	RATIO #DIV/0!
	RIGHT	17	0	ADT 0		RIGHT	68	19	ADT 0
SOUTH BOUND	LEFT	4	0	SOUTH LEG	SOUTH BOUND	LEFT	52	0	SOUTH LEG
	THRU	74	0	RATIO 7.6%		THRU	23	0	RATIO 7.6%
	RIGHT	21	0	ADT 4,500		RIGHT	25	0	ADT 4,500
EAST BOUND	LEFT	0	0	EAST LEG	EAST BOUND	LEFT	0	0	EAST LEG
	THRU	19	0	RATIO 0.0%		THRU	90	101	RATIO 21.7%
	RIGHT	81	220	ADT 600		RIGHT	10	129	ADT 600
WEST BOUND	LEFT	46	0	WEST LEG	WEST BOUND	LEFT	19	1	WEST LEG
	THRU	54	0	RATIO 7.7%		THRU	81	9	RATIO 9.8%
	RIGHT	0	0	ADT 4,400		RIGHT	0	0	ADT 4,400

Modified by: COMSIS Corp (M. Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

ETIWANDA AVE. / SUMMIT AVE.

AM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2001

		16	265	55	
		<	v	>	
9	^			^	47
85	>			<	94
274	v			v	241
		<	^	>	
		197	92	159	

EXISTING COUNT YEAR:

2001

			336	148	
			v	^	
307	<	IN =	1534	<	382
368	>	OUT =	1534	>	299
			v	^	
			780	448	

EXISTING MODEL YEAR:

1994

			11	6	
			v	^	
0	<	IN =	18	<	1
0	>	OUT =	18	>	0
			v	^	
			11	6	

FUTURE MODEL YEAR:

2020

			55	60	
			v	^	
491	<	IN =	1073	<	579
272	>	OUT =	1073	>	61
			v	^	
			461	167	

RAW GROWTH: 1994 TO 2020

			44	54	
			v	^	
491	<			<	578
272	>			>	60
			v	^	
			450	161	

ADJUSTED GROWTH: 1994 TO 2020

-100 MINIMUM GROWTH %

			44	54	
			v	^	
491	<			<	578
272	>			>	60
			v	^	
			450	161	

PRORATED GROWTH: 2001 TO 2020

19 YEARS

			30	40	
			v	^	
360	<			<	420
200	>			>	40
			v	^	
			330	120	

NEW PROJECTED VOLUMES: 2020

			370	190	
			v	^	
670	<			<	800
570	>			>	340
			v	^	
			1110	570	

INTERIM YEAR GROWTH: 2001 TO 2004

3 YEARS

			0	10	
			v	^	
60	<			<	70
30	>			>	10
			v	^	
			50	20	

INITIAL INTERIM VOLUMES:

2004

			340	160	
			v	^	
370	<	IN =	1660	<	450
400	>	OUT =	1670	>	310
			v	^	
			830	470	

BALANCED INTERIM VOLUMES:

2004

			340	160	
			v	^	
370	<	IN =	1660	<	450
400	>	OUT =	1670	>	310
			v	^	
			830	470	

PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2001

		6	134	14	
		<	v	>	
5	^			^	24
22	>			<	15
106	v			v	132
		<	^	>	
		111	170	169	

EXISTING COUNT YEAR:

2001

			154	199	
			v	^	
132	<	IN =	928	<	171
133	>	OUT =	928	>	225
			v	^	
			372	470	

EXISTING MODEL YEAR:

1994

			9	12	
			v	^	
0	<	IN =	21	<	1
0	>	OUT =	21	>	0
			v	^	
			8	12	

FUTURE MODEL YEAR:

2020

			28	209	
			v	^	
383	<	IN =	1313	<	183
356	>	OUT =	1313	>	397
			v	^	
			324	745	

RAW GROWTH: 1994 TO 2020

			20	196	
			v	^	
383	<			<	183
356	>			>	397
			v	^	
			316	733	

ADJUSTED GROWTH: 1994 TO 2020

-100 MINIMUM GROWTH %

			20	196	
			v	^	
383	<			<	183
356	>			>	397
			v	^	
			316	733	

PRORATED GROWTH: 2001 TO 2020

19 YEARS

			10	140	
			v	^	
280	<			<	130
260	>			>	290
			v	^	
			230	540	

NEW PROJECTED VOLUMES: 2020

			160	340	
			v	^	
410	<			<	300
390	>			>	520
			v	^	
			600	1010	

INTERIM YEAR GROWTH: 2001 TO 2004

3 YEARS

			0	20	
			v	^	
40	<			<	20
40	>			>	50
			v	^	
			40	90	

INITIAL INTERIM VOLUMES:

2004

			150	220	
			v	^	
170	<	IN =	1070	<	190
170	>	OUT =	1080	>	280
			v	^	
			410	560	

BALANCED INTERIM VOLUMES:

2004

			150	220	
			v	^	
170	<	IN =	1080	<	190
170	>	OUT =	1080	>	280
			v	^	
			410	570	

ETIWANDA AVE. / SUMMIT AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

YEAR 2020 TRAFFIC CONDITIONS									
AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	FUTURE YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	FUTURE YEAR TOTAL
NORTH	LEFT	197	SOUTH LEG		NORTH	LEFT	111	SOUTH LEG	
BOUND	THRU	92	IN ...	570	BOUND	THRU	170	IN ...	1,010
	RIGHT	159	OUT ...	1,110		RIGHT	189	OUT ...	600
SOUTH	LEFT	55	NORTH LEG		SOUTH	LEFT	14	NORTH LEG	
BOUND	THRU	265	IN ...	370	BOUND	THRU	134	IN ...	160
	RIGHT	16	OUT ...	190		RIGHT	6	OUT ...	340
EAST	LEFT	9	WEST LEG		EAST	LEFT	5	WEST LEG	
BOUND	THRU	85	IN ...	570	BOUND	THRU	22	IN ...	390
	RIGHT	274	OUT ...	670		RIGHT	106	OUT ...	410
WEST	LEFT	241	EAST LEG		WEST	LEFT	132	EAST LEG	
BOUND	THRU	94	IN ...	800	BOUND	THRU	15	IN ...	300
	RIGHT	47	OUT ...	340		RIGHT	24	OUT ...	520

YEAR 2020 TRAFFIC CONDITIONS									
AM PEAK HOUR RESULTS					PM PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	197	335	NORTH LEG	NORTH	LEFT	111	341	NORTH LEG
BOUND	THRU	92	89	RATIO 0.8%	BOUND	THRU	170	276	RATIO 0.7%
	RIGHT	159	147	ADT 67,500		RIGHT	189	401	ADT 67,500
SOUTH	LEFT	55	59	SOUTH LEG	SOUTH	LEFT	14	22	SOUTH LEG
BOUND	THRU	265	279	RATIO 2.4%	BOUND	THRU	134	125	RATIO 2.3%
	RIGHT	16	32	ADT 69,600		RIGHT	6	14	ADT 69,600
EAST	LEFT	9	15	EAST LEG	EAST	LEFT	5	17	EAST LEG
BOUND	THRU	85	134	RATIO 7.8%	BOUND	THRU	22	97	RATIO 5.6%
	RIGHT	274	421	ADT 14,700		RIGHT	106	277	ADT 14,700
WEST	LEFT	241	410	WEST LEG	WEST	LEFT	132	199	WEST LEG
BOUND	THRU	94	303	RATIO 8.1%	BOUND	THRU	15	55	RATIO 5.2%
	RIGHT	47	86	ADT 15,300		RIGHT	24	47	ADT 15,300

Modified by: COMSIS Corp. (M. Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

ETIWANDA AVE. / SUMMIT AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	INTERIM YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	INTERIM YEAR TOTAL
NORTH	LEFT	197	SOUTH LEG		NORTH	LEFT	111	SOUTH LEG	
BOUND	THRU	92	IN ...	470	BOUND	THRU	170	IN ...	570
	RIGHT	159	OUT ...	830		RIGHT	189	OUT ...	410
SOUTH	LEFT	55	NORTH LEG		SOUTH	LEFT	14	NORTH LEG	
BOUND	THRU	265	IN ...	340	BOUND	THRU	134	IN ...	150
	RIGHT	16	OUT ...	160		RIGHT	6	OUT ...	220
EAST	LEFT	9	WEST LEG		EAST	LEFT	5	WEST LEG	
BOUND	THRU	85	IN ...	400	BOUND	THRU	22	IN ...	170
	RIGHT	274	OUT ...	370		RIGHT	106	OUT ...	170
WEST	LEFT	241	EAST LEG		WEST	LEFT	132	EAST LEG	
BOUND	THRU	94	IN ...	450	BOUND	THRU	15	IN ...	190
	RIGHT	47	OUT ...	310		RIGHT	24	OUT ...	280

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR RESULTS					PM PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	197	224	NORTH LEG	NORTH	LEFT	111	145	NORTH LEG
BOUND	THRU	92	93	RATIO 1.0%	BOUND	THRU	170	189	RATIO 0.7%
	RIGHT	159	156	ADT 49,500		RIGHT	189	236	ADT 49,500
SOUTH	LEFT	55	58	SOUTH LEG	SOUTH	LEFT	14	14	SOUTH LEG
BOUND	THRU	265	265	RATIO 2.8%	BOUND	THRU	134	129	RATIO 2.1%
	RIGHT	16	19	ADT 45,900		RIGHT	6	6	ADT 45,900
EAST	LEFT	9	10	EAST LEG	EAST	LEFT	5	6	EAST LEG
BOUND	THRU	85	96	RATIO 6.5%	BOUND	THRU	22	30	RATIO 4.0%
	RIGHT	274	296	ADT 11,700		RIGHT	106	134	ADT 11,700
WEST	LEFT	241	269	WEST LEG	WEST	LEFT	132	146	WEST LEG
BOUND	THRU	94	127	RATIO 7.0%	BOUND	THRU	15	18	RATIO 3.1%
	RIGHT	47	57	ADT 11,100		RIGHT	24	25	ADT 11,100

Modified by: COMSIS Corp. (M. Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

ETIWANDA AVE. / HIGHLAND AVE.

AM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2001

			467	309	41			
			<	v	>			
240	^					^		21
438	>					<		265
150	v					v		35
			<	^	>			
			50	194	19			

EXISTING COUNT YEAR:

2001

				817	455			
				v	^			
		782	<	IN	=	2229	<	321
		828	>	OUT	=	2229	>	498
				v	^			
				494	263			

EXISTING MODEL YEAR:

1994

				11	6			
				v	^			
		212	<	IN	=	485	<	182
		249	>	OUT	=	485	>	122
				v	^			
				145	43			

FUTURE MODEL YEAR:

2020

				461	167			
				v	^			
		1431	<	IN	=	2229	<	1420
		117	>	OUT	=	2230	>	141
				v	^			
				491	232			

RAW GROWTH: 1994 TO 2020

				450	161			
				v	^			
		1218	<				<	1238
		-132	>				>	19
				v	^			
				347	189			

ADJUSTED GROWTH: 1994 TO 2020

-100 MINIMUM GROWTH %

				450	161			
				v	^			
		1218	<				<	1238
		-132	>				>	19
				v	^			
				347	189			

PRORATED GROWTH: 2001 TO 2020

19 YEARS

				330	120			
				v	^			
		890	<				<	900
		-100	>				>	10
				v	^			
				250	140			

NEW PROJECTED VOLUMES: 2020

				1150	580			
				v	^			
		1670	<				<	1220
		730	>				>	510
				v	^			
				740	400			

INTERIM YEAR GROWTH: 2001 TO 2004

3 YEARS

				50	20			
				v	^			
		140	<				<	140
		-20	>				>	0
				v	^			
				40	20			

INITIAL INTERIM VOLUMES

2004

				870	480			
				v	^			
		920	<	IN	=	2420	<	460
		810	>	OUT	=	2430	>	500
				v	^			
				530	280			

BALANCED INTERIM VOLUMES:

2004

				870	480			
				v	^			
		920	<	IN	=	2420	<	460
		810	>	OUT	=	2430	>	500
				v	^			
				530	280			

PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2001

			177	164	17			
			<	v	>			
289	^					^		29
120	>					<		105
58	v					v		8
			<	^	>			
			84	154	16			

EXISTING COUNT YEAR:

2001

				358	472			
				v	^			
		367	<	IN	=	1214	<	143
		459	>	OUT	=	1214	>	153
				v	^			
				222	254			

EXISTING MODEL YEAR:

1994

				8	12			
				v	^			
		317	<	IN	=	645	<	166
		388	>	OUT	=	645	>	256
				v	^			
				60	171			

FUTURE MODEL YEAR:

2020

				324	745			
				v	^			
		215	<	IN	=	1857	<	234
		815	>	OUT	=	1857	>	557
				v	^			
				339	484			

RAW GROWTH: 1994 TO 2020

				316	733			
				v	^			
		-102	<				<	67
		515	>				>	302
				v	^			
				279	313			

ADJUSTED GROWTH: 1994 TO 2020

-100 MINIMUM GROWTH %

				316	733			
				v	^			
		-102	<				<	67
		515	>				>	302
				v	^			
				279	313			

PRORATED GROWTH: 2001 TO 2020

19 YEARS

				230	540			
				v	^			
		-70	<				<	50
		380	>				>	220
				v	^			
				200	230			

NEW PROJECTED VOLUMES: 2020

				590	1010			
				v	^			
		300	<				<	190
		840	>				>	370
				v	^			
				420	480			

INTERIM YEAR GROWTH: 2001 TO 2004

3 YEARS

				40	90			
				v	^			
		-10	<				<	10
		60	>				>	30
				v	^			
				30	40			

INITIAL INTERIM VOLUMES:

2004

				400	560			
				v	^			
		360	<	IN	=	1360	<	150
		520	>	OUT	=	1350	>	180
				v	^			
				250	290			

BALANCED INTERIM VOLUMES:

2004

				400	560			
				v	^			
		360	<	IN	=	1360	<	150
		520	>	OUT	=	1350	>	180
				v	^			
				250	290			

ETIWANDA AVE. / HIGHLAND AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

YEAR 2020 TRAFFIC CONDITIONS									
AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	FUTURE YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	FUTURE YEAR TOTAL
NORTH	LEFT	50	SOUTH LEG		NORTH	LEFT	84	SOUTH LEG	
BOUND	THRU	194	IN ...	400	BOUND	THRU	154	IN ...	480
	RIGHT	19	OUT ...	740		RIGHT	16	OUT ...	420
SOUTH	LEFT	41	NORTH LEG		SOUTH	LEFT	17	NORTH LEG	
BOUND	THRU	309	IN ...	1,150	BOUND	THRU	164	IN ...	590
	RIGHT	467	OUT ...	580		RIGHT	177	OUT ...	1,010
EAST	LEFT	240	WEST LEG		EAST	LEFT	289	WEST LEG	
BOUND	THRU	438	IN ...	730	BOUND	THRU	120	IN ...	840
	RIGHT	150	OUT ...	1,670		RIGHT	50	OUT ...	300
WEST	LEFT	35	EAST LEG		WEST	LEFT	8	EAST LEG	
BOUND	THRU	265	IN ...	1,220	BOUND	THRU	106	IN ...	190
	RIGHT	21	OUT ...	510		RIGHT	29	OUT ...	370

YEAR 2020 TRAFFIC CONDITIONS									
AM PEAK HOUR RESULTS					PM PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	50	69	NORTH LEG	NORTH	LEFT	84	53	NORTH LEG
BOUND	THRU	194	298	RATIO 2.6%	BOUND	THRU	154	384	RATIO 2.4%
	RIGHT	19	33	ADT 67,500		RIGHT	16	45	ADT 67,500
SOUTH	LEFT	41	68	SOUTH LEG	SOUTH	LEFT	17	71	SOUTH LEG
BOUND	THRU	309	465	RATIO 1.8%	BOUND	THRU	164	351	RATIO 1.3%
	RIGHT	467	616	ADT 69,600		RIGHT	177	163	ADT 69,600
EAST	LEFT	240	196	EAST LEG	EAST	LEFT	289	535	EAST LEG
BOUND	THRU	438	409	RATIO 11.8%	BOUND	THRU	120	254	RATIO 3.8%
	RIGHT	150	127	ADT 14,700		RIGHT	50	54	ADT 14,700
WEST	LEFT	35	148	WEST LEG	WEST	LEFT	8	15	WEST LEG
BOUND	THRU	265	985	RATIO 15.7%	BOUND	THRU	106	84	RATIO 7.5%
	RIGHT	21	86	ADT 15,300		RIGHT	29	91	ADT 15,300

Modified by: COMSIS Corp (M Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

ETIWANDA AVE. / HIGHLAND AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	INTERIM YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	INTERIM YEAR TOTAL
NORTH	LEFT	50	SOUTH LEG		NORTH	LEFT	84	SOUTH LEG	
BOUND	THRU	194	IN ...	280	BOUND	THRU	154	IN ...	290
	RIGHT	19	OUT ...	530		RIGHT	16	OUT ...	250
SOUTH	LEFT	41	NORTH LEG		SOUTH	LEFT	17	NORTH LEG	
BOUND	THRU	309	IN ...	870	BOUND	THRU	164	IN ...	400
	RIGHT	467	OUT ...	480		RIGHT	177	OUT ...	560
EAST	LEFT	240	WEST LEG		EAST	LEFT	289	WEST LEG	
BOUND	THRU	438	IN ...	810	BOUND	THRU	120	IN ...	520
	RIGHT	150	OUT ...	920		RIGHT	50	OUT ...	360
WEST	LEFT	35	EAST LEG		WEST	LEFT	8	EAST LEG	
BOUND	THRU	265	IN ...	460	BOUND	THRU	106	IN ...	150
	RIGHT	21	OUT ...	500		RIGHT	29	OUT ...	180

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR RESULTS					PM PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	50	51	NORTH LEG	NORTH	LEFT	84	77	NORTH LEG
BOUND	THRU	194	210	RATIO 2.7%	BOUND	THRU	154	191	RATIO 1.9%
	RIGHT	19	21	ADT 49,500		RIGHT	16	20	ADT 49,500
SOUTH	LEFT	41	46	SOUTH LEG	SOUTH	LEFT	17	23	SOUTH LEG
BOUND	THRU	309	336	RATIO 1.8%	BOUND	THRU	164	192	RATIO 1.2%
	RIGHT	467	491	ADT 45,900		RIGHT	177	181	ADT 45,900
EAST	LEFT	240	238	EAST LEG	EAST	LEFT	289	331	EAST LEG
BOUND	THRU	438	433	RATIO 8.2%	BOUND	THRU	120	137	RATIO 2.8%
	RIGHT	150	143	ADT 11,700		RIGHT	50	49	ADT 11,700
WEST	LEFT	35	52	WEST LEG	WEST	LEFT	8	9	WEST LEG
BOUND	THRU	265	378	RATIO 15.6%	BOUND	THRU	106	102	RATIO 7.9%
	RIGHT	21	32	ADT 11,100		RIGHT	29	38	ADT 11,100

Modified by: COMSIS Corp. (M. Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

EAST AVE./ WILSON AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

YEAR 2020 TRAFFIC CONDITIONS									
AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	APPROACH	FUTURE YEAR TOTAL	APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	APPROACH	FUTURE YEAR TOTAL
NORTH	LEFT	20	SOUTH LEG		NORTH	LEFT	8	SOUTH LEG	
BOUND	THRU	0	IN ...	100	BOUND	THRU	0	IN ...	110
	RIGHT	80	OUT ...	1,000		RIGHT	92	OUT ...	180
SOUTH	LEFT	6	NORTH LEG		SOUTH	LEFT	67	NORTH LEG	
BOUND	THRU	93	IN ...	0	BOUND	THRU	27	IN ...	0
	RIGHT	1	OUT ...	0		RIGHT	6	OUT ...	0
EAST	LEFT	0	WEST LEG		EAST	LEFT	0	WEST LEG	
BOUND	THRU	19	IN ...	30	BOUND	THRU	91	IN ...	760
	RIGHT	81	OUT ...	30		RIGHT	9	OUT ...	80
WEST	LEFT	94	EAST LEG		WEST	LEFT	53	EAST LEG	
BOUND	THRU	6	IN ...	1,030	BOUND	THRU	47	IN ...	260
	RIGHT	0	OUT ...	120		RIGHT	0	OUT ...	880

YEAR 2020 TRAFFIC CONDITIONS									
AM PEAK HOUR RESULTS					PM PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	20	3	NORTH LEG	NORTH	LEFT	8	1	NORTH LEG
BOUND	THRU	0	0	RATIO #DIV/0!	BOUND	THRU	0	0	RATIO #DIV/0!
	RIGHT	80	106	ADT 0		RIGHT	92	113	ADT 0
SOUTH	LEFT	6	0	SOUTH LEG	SOUTH	LEFT	67	0	SOUTH LEG
BOUND	THRU	93	0	RATIO 17.1%	BOUND	THRU	27	0	RATIO 4.5%
	RIGHT	1	0	ADT 6,500		RIGHT	6	0	ADT 6,500
EAST	LEFT	0	0	EAST LEG	EAST	LEFT	0	0	EAST LEG
BOUND	THRU	19	14	RATIO 11.5%	BOUND	THRU	91	767	RATIO 11.4%
	RIGHT	81	17	ADT 9,800		RIGHT	9	21	ADT 9,600
WEST	LEFT	94	983	WEST LEG	WEST	LEFT	53	159	WEST LEG
BOUND	THRU	6	27	RATIO 1.5%	BOUND	THRU	47	79	RATIO 21.7%
	RIGHT	0	0	ADT 4,000		RIGHT	0	0	ADT 4,000

Modified by: COMSIS Corp. (M. Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

EAST AVE./ WILSON AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	INITIAL TURN PROPORTION	APPROACH	INTERIM YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	INTERIM YEAR TOTAL
NORTH	LEFT	20	SOUTH LEG		NORTH	LEFT	8	SOUTH LEG	
BOUND	THRU	0	IN ...	20	BOUND	THRU	0	IN ...	20
	RIGHT	80	OUT ...	160		RIGHT	92	OUT ...	30
SOUTH	LEFT	6	NORTH LEG		SOUTH	LEFT	67	NORTH LEG	
BOUND	THRU	93	IN ...	0	BOUND	THRU	27	IN ...	0
	RIGHT	1	OUT ...	0		RIGHT	6	OUT ...	0
EAST	LEFT	0	WEST LEG		EAST	LEFT	0	WEST LEG	
BOUND	THRU	19	IN ...	0	BOUND	THRU	91	IN ...	120
	RIGHT	81	OUT ...	0		RIGHT	9	OUT ...	10
WEST	LEFT	94	EAST LEG		WEST	LEFT	53	EAST LEG	
BOUND	THRU	6	IN ...	160	BOUND	THRU	47	IN ...	40
	RIGHT	0	OUT ...	20		RIGHT	0	OUT ...	140

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR RESULTS					PM PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	INITIAL TURN PROPORTION	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	INITIAL TURN PROPORTION	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	20	0	NORTH LEG	NORTH	LEFT	8	0	NORTH LEG
BOUND	THRU	0	0	RATIO #DIV/0!	BOUND	THRU	0	0	RATIO #DIV/0!
	RIGHT	80	20	ADT 0		RIGHT	92	20	ADT 0
SOUTH	LEFT	6	0	SOUTH LEG	SOUTH	LEFT	67	0	SOUTH LEG
BOUND	THRU	93	0	RATIO 11.3%	BOUND	THRU	27	0	RATIO 3.2%
	RIGHT	1	0	ADT 1,600		RIGHT	6	0	ADT 1,600
EAST	LEFT	0	0	EAST LEG	EAST	LEFT	0	0	EAST LEG
BOUND	THRU	19	0	RATIO 11.3%	BOUND	THRU	91	120	RATIO 11.0%
	RIGHT	81	0	ADT 1,600		RIGHT	9	3	ADT 1,600
WEST	LEFT	94	160	WEST LEG	WEST	LEFT	53	27	WEST LEG
BOUND	THRU	6	0	RATIO 0.0%	BOUND	THRU	47	10	RATIO 22.2%
	RIGHT	0	0	ADT 600		RIGHT	0	0	ADT 600

Modified by: COMSIS Corp. (M. Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

EAST AVE. / SUMMIT AVE.

AM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2001

			83	39	45		
			<	v	>		
	79	^				^	46
	146	>				<	220
	60	v				v	142
			<	^	>		
			68	40	126		

EXISTING COUNT YEAR:

2001

				167	165		
				v	^		
	371	<	IN =	1096	<		408
	287	>	OUT =	1096	>		319
				v	^		
				241	234		

EXISTING MODEL YEAR:

1994

				0	0		
				v	^		
	1	<	IN =	9	<		8
	0	>	OUT =	5	>		4
				v	^		
				0	0		

FUTURE MODEL YEAR:

2020

				1367	131		
				v	^		
	579	<	IN =	2277	<		682
	61	>	OUT =	2277	>		142
				v	^		
				1425	166		

RAW GROWTH: 1994 TO 2020

				1367	131		
				v	^		
	578	<			<		674
	60	>			>		138
				v	^		
				1425	166		

ADJUSTED GROWTH: 1994 TO 2020

-100 MINIMUM GROWTH %

				1367	131		
				v	^		
	578	<			<		674
	60	>			>		138
				v	^		
				1425	166		

PRORATED GROWTH: 2001 TO 2020

19 YEARS

				1000	100		
				v	^		
	420	<			<		490
	40	>			>		100
				v	^		
				1040	120		

NEW PROJECTED VOLUMES: 2020

				1170	270		
				v	^		
	790	<			<		900
	330	>			>		420
				v	^		
				1280	350		

INTERIM YEAR GROWTH: 2001 TO 2004

3 YEARS

				160	20		
				v	^		
	70	<			<		80
	10	>			>		20
				v	^		
				160	20		

INITIAL INTERIM VOLUMES:

2004

				330	190		
				v	^		
	440	<	IN =	1370	<		490
	300	>	OUT =	1370	>		340
				v	^		
				400	250		

BALANCED INTERIM VOLUMES:

2004

				330	190		
				v	^		
	440	<	IN =	1370	<		490
	300	>	OUT =	1370	>		340
				v	^		
				400	250		

PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2001

			20	10	4		
			<	v	>		
	8	^				^	2
	177	>				<	135
	28	v				v	30
			<	^	>		
			35	12	46		

EXISTING COUNT YEAR:

2001

				34	22		
				v	^		
	191	<	IN =	510	<		168
	213	>	OUT =	510	>		229
				v	^		
				68	95		

EXISTING MODEL YEAR:

1994

				0	0		
				v	^		
	0	<	IN =	16	<		0
	0	>	OUT =	5	>		0
				v	^		
				5	16		

FUTURE MODEL YEAR:

2020

				250	155		
				v	^		
	183	<	IN =	1437	<		280
	397	>	OUT =	1437	>		805
				v	^		
				294	510		

RAW GROWTH: 1994 TO 2020

				250	155		
				v	^		
	183	<			<		280
	397	>			>		805
				v	^		
				289	494		

ADJUSTED GROWTH: 1994 TO 2020

-100 MINIMUM GROWTH %

				250	155		
				v	^		
	183	<			<		280
	397	>			>		805
				v	^		
				289	494		

PRORATED GROWTH: 2001 TO 2020

19 YEARS

				180	110		
				v	^		
	130	<			<		200
	290	>			>		590
				v	^		
				210	360		

NEW PROJECTED VOLUMES: 2020

				210	130		
				v	^		
	320	<			<		370
	500	>			>		820
				v	^		
				280	460		

INTERIM YEAR GROWTH: 2001 TO 2004

3 YEARS

				30	20		
				v	^		
	20	<			<		30
	50	>			>		90
				v	^		
				30	60		

INITIAL INTERIM VOLUMES:

2004

				60	40		
				v	^		
	210	<	IN =	680	<		200
	260	>	OUT =	670	>		320
				v	^		
				100	160		

BALANCED INTERIM VOLUMES:

2004

				60	40		
				v	^		
	210	<	IN =	680	<		200
	260	>	OUT =	670	>		320
				v	^		
				100	160		

EAST AVE. / SUMMIT AVE.

STARTING POINT TURNING MOVEMENT DERIVATION (BASE YEAR VOLUMES) AT LOCATIONS WITHOUT EXISTING COUNTS

AM PEAK HOUR

NORTHBOUND APPROACH:

NL< = NL / (NL + 2* NT + NR)
= 790 / 790 + 2* 270 + 420
= 0.45

NT^ = 2* NT / (NL + 2* NT + NR)
= 2* 270 / 790 + 2* 270 + 420
= 0.31

NR> = NR / (NL + 2* NT + NR)
= 420 / 790 + 2* 270 + 420
= 0.24

SOUTHBOUND APPROACH:

SL> = SL / (SL + 2* ST + SR)
= 420 / 420 + 2* 1280 + 790
= 0.11

STv = 2* ST / (SL + 2* ST + SR)
= 2* 1280 / 420 + 2* 1280 + 790
= 0.68

SR< = SR / (SL + 2* ST + SR)
= 1280 / 420 + 2* 1280 + 790
= 0.21

EASTBOUND APPROACH:

EL^ = EL / (EL + 2* ET + ER)
= 270 / 270 + 2* 420 + 1280
= 0.11

ET> = 2* ET / (EL + 2* ET + ER)
= 2* 420 / 270 + 2* 420 + 1280
= 0.35

ERv = ER / (EL + 2* ET + ER)
= 1280 / 270 + 2* 420 + 1280
= 0.54

WESTBOUND APPROACH:

WLv = WL / (WL + 2* WT + WR)
= 1280 / 1280 + 2* 790 + 270
= 0.41

WT< = 2* WT / (WL + 2* WT + WR)
= 2* 790 / 1280 + 2* 790 + 270
= 0.50

WR^ = WR / (WL + 2* WT + WR)
= 270 / 1280 + 2* 790 + 270
= 0.09

ESTIMATED PERCENTAGES

21% 68% 11%
< v >
11% ^ 1.00 ^ 9%
35% > 1.00 1.00 > 50%
54% v 1.00 v 41%
< v >
45% 31% 24%

PM PEAK HOUR

NORTHBOUND APPROACH:

NL< = NL / (NL + 2* NT + NR)
= 320 / 320 + 2* 130 + 820
= 0.23

NT^ = 2* NT / (NL + 2* NT + NR)
= 2* 130 / 320 + 2* 130 + 820
= 0.19

NR> = NR / (NL + 2* NT + NR)
= 820 / 320 + 2* 130 + 820
= 0.59

SOUTHBOUND APPROACH:

SL> = SL / (SL + 2* ST + SR)
= 820 / 820 + 2* 280 + 320
= 0.48

STv = 2* ST / (SL + 2* ST + SR)
= 2* 280 / 820 + 2* 280 + 320
= 0.33

SR< = SR / (SL + 2* ST + SR)
= 280 / 820 + 2* 280 + 320
= 0.19

EASTBOUND APPROACH:

EL^ = EL / (EL + 2* ET + ER)
= 130 / 130 + 2* 820 + 280
= 0.06

ET> = 2* ET / (EL + 2* ET + ER)
= 2* 820 / 130 + 2* 820 + 280
= 0.80

ERv = ER / (EL + 2* ET + ER)
= 280 / 130 + 2* 820 + 280
= 0.14

WESTBOUND APPROACH:

WLv = WL / (WL + 2* WT + WR)
= 280 / 280 + 2* 320 + 130
= 0.27

WT< = 2* WT / (WL + 2* WT + WR)
= 2* 320 / 280 + 2* 320 + 130
= 0.61

WR^ = WR / (WL + 2* WT + WR)
= 130 / 280 + 2* 320 + 130
= 0.12

ESTIMATED PROPORTIONS:

19% 33% 48%
< v >
6% ^ 1.00 ^ 12%
80% > 1.00 1.00 > 61%
14% v 1.00 v 27%
< v >
23% 19% 59%

EAST AVE. / SUMMIT AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

YEAR 2020 TRAFFIC CONDITIONS

AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	APPROACH	FUTURE YEAR TOTAL	APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	APPROACH	FUTURE YEAR TOTAL
NORTH	LEFT	45	SOUTH LEG		NORTH	LEFT	23	SOUTH LEG	
BOUND	THRU	31	IN ...	350	BOUND	THRU	19	IN ...	460
	RIGHT	24	OUT ...	1,280		RIGHT	59	OUT ...	280
SOUTH	LEFT	11	NORTH LEG		SOUTH	LEFT	48	NORTH LEG	
BOUND	THRU	68	IN ...	1,170	BOUND	THRU	33	IN ...	210
	RIGHT	21	OUT ...	270		RIGHT	19	OUT ...	130
EAST	LEFT	11	WEST LEG		EAST	LEFT	6	WEST LEG	
BOUND	THRU	35	IN ...	330	BOUND	THRU	80	IN ...	500
	RIGHT	54	OUT ...	790		RIGHT	14	OUT ...	320
WEST	LEFT	41	EAST LEG		WEST	LEFT	27	EAST LEG	
BOUND	THRU	50	IN ...	900	BOUND	THRU	61	IN ...	370
	RIGHT	9	OUT ...	420		RIGHT	12	OUT ...	820

YEAR 2020 TRAFFIC CONDITIONS

AM PEAK HOUR RESULTS						PM PEAK HOUR RESULTS					
APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP		APPROACH	TURNING MOVEMENT	INTIAL TURN PROPORTION	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP	
NORTH	LEFT	45	128	NORTH LEG		NORTH	LEFT	23	87	NORTH LEG	
BOUND	THRU	31	123	RATIO	22.2%	BOUND	THRU	19	68	RATIO	5.3%
	RIGHT	24	101	ADT	6,500		RIGHT	59	308	ADT	6,500
SOUTH	LEFT	11	180	SOUTH LEG		SOUTH	LEFT	48	105	SOUTH LEG	
BOUND	THRU	68	766	RATIO	16.3%	BOUND	THRU	33	76	RATIO	7.4%
	RIGHT	21	228	ADT	10,000		RIGHT	19	30	ADT	10,000
EAST	LEFT	11	43	EAST LEG		EAST	LEFT	6	22	EAST LEG	
BOUND	THRU	35	140	RATIO	12.3%	BOUND	THRU	80	407	RATIO	11.0%
	RIGHT	54	149	ADT	10,800		RIGHT	14	74	ADT	10,800
WEST	LEFT	41	365	WEST LEG		WEST	LEFT	27	130	WEST LEG	
BOUND	THRU	50	434	RATIO	13.2%	BOUND	THRU	61	203	RATIO	9.7%
	RIGHT	9	104	ADT	8,500		RIGHT	12	40	ADT	8,500

Modified by: COMSIS Corp. (M Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

EAST AVE. / SUMMIT AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	INITIAL TURN PROPORTION	APPROACH	INTERIM YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	INTERIM YEAR TOTAL
NORTH	LEFT	45	SOUTH LEG		NORTH	LEFT	23	SOUTH LEG	
BOUND	THRU	31	IN ...	250	BOUND	THRU	19	IN ...	160
	RIGHT	24	OUT ...	400		RIGHT	59	OUT ...	100
SOUTH	LEFT	11	NORTH LEG		SOUTH	LEFT	48	NORTH LEG	
BOUND	THRU	68	IN ...	330	BOUND	THRU	33	IN ...	80
	RIGHT	21	OUT ...	190		RIGHT	19	OUT ...	40
EAST	LEFT	11	WEST LEG		EAST	LEFT	6	WEST LEG	
BOUND	THRU	35	IN ...	300	BOUND	THRU	80	IN ...	260
	RIGHT	54	OUT ...	440		RIGHT	14	OUT ...	210
WEST	LEFT	41	EAST LEG		WEST	LEFT	27	EAST LEG	
BOUND	THRU	50	IN ...	490	BOUND	THRU	61	IN ...	200
	RIGHT	9	OUT ...	340		RIGHT	12	OUT ...	320

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR RESULTS					PM PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	INITIAL TURN PROPORTION	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	INITIAL TURN PROPORTION	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	45	83	NORTH LEG	NORTH	LEFT	23	53	NORTH LEG
BOUND	THRU	31	81	RATIO 32.5%	BOUND	THRU	19	18	RATIO 6.2%
	RIGHT	24	86	ADT 1,600		RIGHT	59	87	ADT 1,600
SOUTH	LEFT	11	82	SOUTH LEG	SOUTH	LEFT	48	25	SOUTH LEG
BOUND	THRU	68	168	RATIO 20.3%	BOUND	THRU	33	19	RATIO 8.1%
	RIGHT	21	80	ADT 3,200		RIGHT	19	15	ADT 3,200
EAST	LEFT	11	41	EAST LEG	EAST	LEFT	6	10	EAST LEG
BOUND	THRU	35	172	RATIO 14.3%	BOUND	THRU	80	207	RATIO 8.9%
	RIGHT	54	87	ADT 5,800		RIGHT	14	38	ADT 5,800
WEST	LEFT	41	145	WEST LEG	WEST	LEFT	27	43	WEST LEG
BOUND	THRU	50	277	RATIO 13.7%	BOUND	THRU	61	142	RATIO 8.6%
	RIGHT	9	68	ADT 5,400		RIGHT	12	12	ADT 5,400

Modified by: COMSIS Corp. (M. Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

EAST AVE. / VICTORIA AVE.

AM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2001

			57	55	34		
			<	v	>		
	17	^				^	101
	56	>				<	98
	22	v				v	53
			<	^	>		
			50	143	49		

EXISTING COUNT YEAR:

2001

				146	261		
				v	^		
	197	<	IN =	727	<		244
	95	>	OUT =	727	>		139
				v	^		
				130	242		

EXISTING MODEL YEAR:

1994

				166	125		
				v	^		
	24	<	IN =	299	<		12
	16	>	OUT =	299	>		1
				v	^		
				148	105		

FUTURE MODEL YEAR:

2020

				123	143		
				v	^		
	572	<	IN =	1364	<		442
	87	>	OUT =	1363	>		196
				v	^		
				453	713		

RAW GROWTH: 1994 TO 2020

				-44	18		
				v	^		
	548	<			<		431
	71	>			>		195
				v	^		
				305	608		

ADJUSTED GROWTH: 1994 TO 2020

-100 MINIMUM GROWTH %

				-44	18		
				v	^		
	548	<			<		431
	71	>			>		195
				v	^		
				305	608		

PRORATED GROWTH: 2001 TO 2020

19 YEARS

				-30	10		
				v	^		
	400	<			<		310
	50	>			>		140
				v	^		
				220	440		

NEW PROJECTED VOLUMES: 2020

				120	270		
				v	^		
	600	<			<		550
	150	>			>		280
				v	^		
				350	680		

INTERIM YEAR GROWTH 2001 TO 2004

3 YEARS

				0	0		
				v	^		
	60	<			<		50
	10	>			>		20
				v	^		
				30	70		

INITIAL INTERIM VOLUMES:

2004

				150	260		
				v	^		
	260	<	IN =	860	<		290
	110	>	OUT =	840	>		160
				v	^		
				160	310		

BALANCED INTERIM VOLUMES

2004

				150	270		
				v	^		
	270	<	IN =	860	<		290
	110	>	OUT =	860	>		160
				v	^		
				160	310		

PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2001

			36	90	59		
			<	v	>		
	5	^				^	54
	61	>				<	86
	30	v				v	53
			<	^	>		
			38	187	92		

EXISTING COUNT YEAR:

2001

				185	246		
				v	^		
	160	<	IN =	791	<		193
	96	>	OUT =	791	>		212
				v	^		
				173	317		

EXISTING MODEL YEAR:

1994

				162	193		
				v	^		
	23	<	IN =	370	<		3
	36	>	OUT =	371	>		32
				v	^		
				123	169		

FUTURE MODEL YEAR:

2020

				478	370		
				v	^		
	252	<	IN =	2253	<		424
	554	>	OUT =	2253	>		608
				v	^		
				1023	797		

RAW GROWTH: 1994 TO 2020

				316	177		
				v	^		
	229	<			<		421
	518	>			>		576
				v	^		
				900	627		

ADJUSTED GROWTH: 1994 TO 2020

-100 MINIMUM GROWTH %

				316	177		
				v	^		
	229	<			<		421
	518	>			>		576
				v	^		
				900	627		

PRORATED GROWTH: 2001 TO 2020

19 YEARS

				230	130		
				v	^		
	170	<			<		310
	380	>			>		420
				v	^		
				660	460		

NEW PROJECTED VOLUMES: 2020

				420	380		
				v	^		
	330	<			<		500
	480	>			>		630
				v	^		
				830	780		

INTERIM YEAR GROWTH 2001 TO 2004

3 YEARS

				40	20		
				v	^		
	30	<			<		50
	60	>			>		70
				v	^		
				100	70		

INITIAL INTERIM VOLUMES:

2004

				230	270		
				v	^		
	190	<	IN =	1020	<		240
	160	>	OUT =	1010	>		280
				v	^		
				270	390		

BALANCED INTERIM VOLUMES

2004

				230	270		
				v	^		
	190	<	IN =	1020	<		240
	160	>	OUT =	1010	>		280
				v	^		
				270	390		

EAST AVE. / VICTORIA AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

YEAR 2020 TRAFFIC CONDITIONS									
AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	FUTURE YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	FUTURE YEAR TOTAL
NORTH	LEFT	50	SOUTH LEG		NORTH	LEFT	38	SOUTH LEG	
BOUND	THRU	143	IN ...	680	BOUND	THRU	187	IN ...	780
	RIGHT	49	OUT ...	350		RIGHT	92	OUT ...	830
SOUTH	LEFT	34	NORTH LEG		SOUTH	LEFT	59	NORTH LEG	
BOUND	THRU	55	IN ...	120	BOUND	THRU	90	IN ...	420
	RIGHT	57	OUT ...	270		RIGHT	36	OUT ...	380
EAST	LEFT	17	WEST LEG		EAST	LEFT	5	WEST LEG	
BOUND	THRU	56	IN ...	150	BOUND	THRU	61	IN ...	480
	RIGHT	22	OUT ...	600		RIGHT	30	OUT ...	330
WEST	LEFT	53	EAST LEG		WEST	LEFT	53	EAST LEG	
BOUND	THRU	90	IN ...	550	BOUND	THRU	86	IN ...	500
	RIGHT	101	OUT ...	280		RIGHT	54	OUT ...	630

YEAR 2020 TRAFFIC CONDITIONS									
AM PEAK HOUR RESULTS					PM PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	FUTURE YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	50	297	NORTH LEG	NORTH	LEFT	38	122	NORTH LEG
BOUND	THRU	143	195	RATIO 4.8%	BOUND	THRU	187	317	RATIO 9.9%
	RIGHT	49	188	ADT 8,100		RIGHT	92	336	ADT 8,100
SOUTH	LEFT	34	17	SOUTH LEG	SOUTH	LEFT	59	80	SOUTH LEG
BOUND	THRU	55	60	RATIO 6.1%	BOUND	THRU	90	286	RATIO 9.4%
	RIGHT	57	43	ADT 17,000		RIGHT	36	43	ADT 17,000
EAST	LEFT	17	8	EAST LEG	EAST	LEFT	5	8	EAST LEG
BOUND	THRU	56	75	RATIO 8.0%	BOUND	THRU	61	214	RATIO 10.8%
	RIGHT	22	67	ADT 10,400		RIGHT	30	255	ADT 10,400
WEST	LEFT	53	223	WEST LEG	WEST	LEFT	53	279	WEST LEG
BOUND	THRU	90	260	RATIO 8.9%	BOUND	THRU	86	165	RATIO 9.6%
	RIGHT	101	87	ADT 8,400		RIGHT	54	55	ADT 8,400

Modified by: COMSIS Corp. (M. Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

EAST AVE. / VICTORIA AVE.

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR INPUT DATA					PM PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	INTERIM YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	INTERIM YEAR TOTAL
NORTH	LEFT	50	SOUTH LEG		NORTH	LEFT	38	SOUTH LEG	
BOUND	THRU	143	IN ...	310	BOUND	THRU	187	IN ...	390
	RIGHT	49	OUT ...	160		RIGHT	92	OUT ...	270
SOUTH	LEFT	34	NORTH LEG		SOUTH	LEFT	59	NORTH LEG	
BOUND	THRU	55	IN ...	150	BOUND	THRU	90	IN ...	230
	RIGHT	57	OUT ...	270		RIGHT	36	OUT ...	270
EAST	LEFT	17	WEST LEG		EAST	LEFT	5	WEST LEG	
BOUND	THRU	56	IN ...	110	BOUND	THRU	61	IN ...	150
	RIGHT	22	OUT ...	270		RIGHT	30	OUT ...	190
WEST	LEFT	53	EAST LEG		WEST	LEFT	53	EAST LEG	
BOUND	THRU	90	IN ...	290	BOUND	THRU	86	IN ...	240
	RIGHT	101	OUT ...	160		RIGHT	54	OUT ...	280

INTERIM YEAR 2004 TRAFFIC CONDITIONS									
AM PEAK HOUR RESULTS					PM PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	INTERIM YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	50	84	NORTH LEG	NORTH	LEFT	38	51	NORTH LEG
BOUND	THRU	143	160	RATIO 5.9%	BOUND	THRU	187	210	RATIO 7.0%
	RIGHT	49	66	ADT 7,100		RIGHT	92	125	ADT 7,100
SOUTH	LEFT	34	30	SOUTH LEG	SOUTH	LEFT	59	63	SOUTH LEG
BOUND	THRU	55	58	RATIO 6.2%	BOUND	THRU	90	127	RATIO 8.6%
	RIGHT	57	62	ADT 7,600		RIGHT	36	38	ADT 7,600
EAST	LEFT	17	16	EAST LEG	EAST	LEFT	5	6	EAST LEG
BOUND	THRU	56	64	RATIO 7.8%	BOUND	THRU	61	92	RATIO 8.9%
	RIGHT	22	30	ADT 5,800		RIGHT	30	60	ADT 5,800
WEST	LEFT	53	72	WEST LEG	WEST	LEFT	53	83	WEST LEG
BOUND	THRU	90	125	RATIO 9.5%	BOUND	THRU	86	101	RATIO 8.7%
	RIGHT	101	94	ADT 4,000		RIGHT	54	53	ADT 4,000

Modified by: COMSIS Corp. (M. Roskin) 4/8/86

Modified by: FHWA 12/21/87

Modified by: RKJK 3/1/99

INTERSECTION	LEG	CTP 1994 ADT	EXISTING 2001 ADT	CTP 2020 ADT	NEW 2020 ADT	INTERIM 2004 ADT
Etiwanda Ave. - (West) / Wilson Ave.	North	-	2,800	2,000	4,300	3,100
	South	-	-		-	-
	East	-	3,700	6,200	8,200	4,400
	West	-	1,100	4,200	4,200	1,600
Etiwanda Ave.- (East) / Wilson Ave.	North	-	-		-	-
	South	-	4,200	2,400	6,000	4,500
	East	-	-	5,500	4,000	600
	West	-	3,700	6,200	8,200	4,400
Etiwanda Ave. / Summit Ave.	North	200	4,200	1,700	5,300	4,400
	South	200	10,100	8,400	16,100	11,100
	East	-	4,800	5,100	8,500	5,400
	West	-	3,200	7,900	9,000	4,100
Etiwanda Ave. / Highland Ave.	North	200	10,100	8,400	16,100	11,100
	South	2,100	5,700	9,600	11,200	6,600
	East	3,800	3,600	8,300	6,900	4,100
	West	5,500	9,900	9,700	13,000	10,400
East Ave. / Wilson Ave.	North	-	-		-	-
	South	-	700	7,900	6,500	1,600
	East	-	-	13,400	9,800	1,600
	West	-	-	5,500	4,000	600
East Ave. / Summit Ave.	North	-	700	7,900	6,500	1,600
	South	200	2,000	11,200	10,000	3,200
	East	200	4,800	8,400	10,800	5,800
	West	-	4,800	5,100	8,500	5,400
East Ave. / Victoria Ave.	North	3,800	5,200	7,200	7,700	5,600
	South	3,200	5,900	18,000	16,700	7,600
	East	400	4,900	7,800	10,300	5,700
	West	700	3,100	7,900	8,400	4,000

APPENDIX B

TRAFFIC COUNT DATA

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: W. ETIWANDA AVE. DATE: 12/18/01 CITY: RANCHO CUCAMONGA

E-W STREET: WILSON AVE.(W) DAY: TUESDAY PROJECT# 0090001A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:				1		1	1	2			2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM				39		1	0	8			16	9	73
7:15 AM				45		1	0	10			8	15	79
7:30 AM				48		1	1	9			8	17	84
7:45 AM				39		2	0	14			9	22	86
8:00 AM				38		0	0	8			10	18	74
8:15 AM				26		2	0	9			9	14	60
8:30 AM				19		0	0	11			6	9	45
8:45 AM				18		0	0	6			7	8	39
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	0	0	272	0	7	1	75	0	0	73	112	540

AM Peak Hr Begins at 715 AM

PEAK													
VOLUMES =	0	0	0	170	0	4	1	41	0	0	35	72	323

ADDITIONS: 3-WAY STOP, SOUTH, EAST & WEST

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: W. ETIWANDA AVE. DATE: 12/18/01 CITY: RANCHO CUCAMONGA

E-W STREET: WILSON AVE.(W) DAY: TUESDAY PROJECT# 0090001P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:				1		1	1	2			2	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM				25		2	0	5			7	20	59
3:15 PM				31		1	1	7			12	18	70
3:30 PM				25		0	0	9			15	30	79
3:45 PM				22		3	2	11			14	25	77
4:00 PM				27		1	1	9			17	37	92
4:15 PM				28		0	0	7			12	24	71
4:30 PM				30		1	1	5			9	33	79
4:45 PM				25		0	0	3			10	31	69
5:00 PM													
5:15 PM													
5:30 PM													
5:45 PM													
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	0	0	0	213	0	8	5	56	0	0	96	218	596
PM Peak Hr Begins at				345	PM								
PEAK VOLUMES =	0	0	0	107	0	5	4	32	0	0	52	119	319

ADDITIONS: 3-WAY STOP, SOUTH, EAST & WEST

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: E. ETIWANDA AVE. DATE: 12/18/01 CITY: RANCHO CUCAMONGA

E-W STREET: WILSON AVE. E DAY: TUESDAY PROJECT# 0090002A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1								1				
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	27								54				81
7:15 AM	26								49				75
7:30 AM	29								56				85
7:45 AM	25								51				76
8:00 AM	21								44				65
8:15 AM	19								32				51
8:30 AM	21								35				56
8:45 AM	13								27				40
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	181	0	0	0	0	0	0	0	348	0	0	0	529

AM Peak Hr Begins at 700 AM

PEAK													
VOLUMES =	107	0	0	0	0	0	0	0	210	0	0	0	317

ADDITIONS:

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: E. ETIWANDA AVE. DATE: 12/18/01 CITY: RANCHO CUCAMONGA

E-W STREET: WILSON AVE. E DAY: TUESDAY PROJECT# 0090002P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1								1				
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	29								34				63
4:15 PM	33								39				72
4:30 PM	44								31				75
4:45 PM	39								28				67
5:00 PM	47								24				71
5:15 PM	39								33				72
5:30 PM	44								37				81
5:45 PM	34								27				61
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	309	0	0	0	0	0	0	0	253	0	0	0	562
PM Peak Hr Begins at				445	PM								
PEAK VOLUMES =	169	0	0	0	0	0	0	0	122	0	0	0	291

ADDITIONS:

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: ETIWANDA AVE. DATE: 12/12/01 CITY: RANCHO CUCAMONGA

E-W STREET: SUMMIT AVE. DAY: WEDNESDAY PROJECT# 0090003A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	30	28	83	26	63	0	2	12	37	79	15	19	394
7:15 AM	36	22	30	12	59	2	2	11	42	75	13	12	316
7:30 AM	70	16	17	13	80	11	1	33	93	48	35	5	422
7:45 AM	61	26	29	4	63	3	4	29	102	39	31	11	402
8:00 AM	32	37	22	8	40	0	0	13	35	40	5	1	233
8:15 AM	20	27	25	1	35	4	0	5	25	31	7	3	183
8:30 AM	14	20	22	3	46	0	1	3	20	34	3	2	168
8:45 AM	16	14	10	3	26	1	1	4	15	22	1	2	115
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	NL 279	NT 190	NR 238	SL 70	ST 412	SR 21	EL 11	ET 110	ER 369	WL 368	WT 110	WR 55	TOTAL 2233

AM Peak Hr Begins at 700 AM

PEAK VOLUMES =	197	92	159	55	265	16	9	85	274	241	94	47	1534

ADDITIONS: 4-WAY STOP

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: ETIWANDA AVE. DATE: 12/12/01 CITY: RANCHO CUCAMONGA

E-W STREET: SUMMIT AVE. DAY: WEDNESDAY PROJECT# 0090003P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	27	27	51	5	42	1	2	5	31	38	3	5	237
4:15 PM	23	33	42	6	34	0	1	7	28	35	4	9	222
4:30 PM	29	46	60	3	31	2	3	3	30	29	2	4	242
4:45 PM	25	42	48	4	29	3	0	8	25	32	3	6	225
5:00 PM	34	49	39	1	40	1	1	4	23	36	6	5	239
5:15 PM	26	45	43	4	37	0	2	1	21	28	5	4	216
5:30 PM	28	41	36	6	34	1	1	2	17	31	7	8	212
5:45 PM	21	38	32	5	30	1	2	1	12	33	4	5	184
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	213	321	351	34	277	9	12	31	187	262	34	46	1777
PM Peak Hr Begins at				415	PM								
PEAK VOLUMES =	111	170	189	14	134	6	5	22	106	132	15	24	928

ADDITIONS: 4-WAY STOP

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: ETIWANDA AVE. DATE: 12/12/01 CITY: RANCHO CUCAMONGA

E-W STREET: HIGHLAND AVE. DAY: WEDNESDAY PROJECT# 0090004A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	1	1	1	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	15	56	2	13	68	91	75	63	14	4	31	5	437
7:15 AM	9	39	10	9	75	112	42	106	25	6	50	7	490
7:30 AM	14	54	5	12	80	120	45	142	46	9	78	3	608
7:45 AM	12	45	2	7	86	144	78	127	65	16	106	6	694
8:00 AM	26	33	4	4	49	66	61	31	54	4	34	2	368
8:15 AM	30	29	2	5	37	55	43	19	41	2	16	4	283
8:30 AM	18	21	3	3	40	63	22	20	23	3	11	6	233
8:45 AM	11	24	1	4	31	37	17	23	11	1	9	5	174
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	NL 135	NT 301	NR 29	SL 57	ST 466	SR 688	EL 383	ET 531	ER 279	WL 45	WT 335	WR 38	TOTAL 3287
AM Peak Hr Begins at					700 AM								
PEAK VOLUMES =	50	194	19	41	309	467	240	438	150	35	265	21	2229

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: ETIWANDA AVE. DATE: 12/12/01 CITY: RANCHO CUCAMONGA

E-W STREET: HIGHLAND AVE. DAY: WEDNESDAY PROJECT# 0090004P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	1	1	1	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	19	30	4	6	44	52	67	32	16	3	33	5	311
4:15 PM	16	36	3	4	42	46	59	23	11	2	28	8	278
4:30 PM	21	53	6	3	38	41	75	26	9	2	25	6	305
4:45 PM	28	35	3	4	40	38	88	39	14	1	20	10	320
5:00 PM	23	44	4	5	46	45	54	25	10	0	29	12	297
5:15 PM	17	38	5	3	36	44	78	28	8	4	23	7	291
5:30 PM	19	41	3	4	34	39	71	31	13	3	27	6	291
5:45 PM	20	34	5	2	38	26	60	24	11	2	21	6	249
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	163	311	33	31	318	331	552	228	92	17	206	60	2342
PM Peak Hr Begins at				400	PM								
PEAK VOLUMES =	84	154	16	17	164	177	289	120	50	8	106	29	1214

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: EAST AVE. DATE: 12/12/01 CITY: RANCHO CUCAMONGA

E-W STREET: SUMMIT AVE. DAY: WEDNESDAY PROJECT# 0090005A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	11	16	26	23	12	38	44	64	3	28	60	21	346
7:15 AM	7	18	32	16	21	34	21	35	10	57	58	18	327
7:30 AM	22	4	30	5	5	9	9	16	25	34	49	4	212
7:45 AM	28	2	38	1	1	2	5	33	22	23	53	3	211
8:00 AM	3	0	5	2	0	3	5	27	8	6	24	1	84
8:15 AM	6	1	8	0	3	2	3	21	2	8	37	2	93
8:30 AM	4	2	3	2	1	2	5	15	7	7	31	2	81
8:45 AM	5	1	9	1	5	0	3	17	4	9	23	1	78
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL VOLUMES =	86	44	151	50	48	90	95	228	81	172	335	52	1432
AM Peak Hr Begins at				700 AM									
PEAK VOLUMES =	68	40	126	45	39	83	79	148	60	142	220	46	1096

ADDITIONS: 4-WAY STOP
ETIWANDA EDUCATION CENTER LOCATED ON N/E CORNER. EAST AVE. IS AN

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: EAST AVE. DATE: 12/12/01 CITY: RANCHO CUCAMONGA

E-W STREET: SUMMIT AVE. DAY: WEDNESDAY PROJECT# 0090005P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	8	4	11	1	1	5	1	49	8	6	39	1	134
4:15 PM	9	3	10	2	3	4	1	35	6	7	34	0	114
4:30 PM	10	3	19	1	2	5	4	50	5	8	27	1	135
4:45 PM	8	2	8	0	4	6	2	43	9	9	36	0	127
5:00 PM	9	1	24	2	1	8	1	29	2	6	33	2	118
5:15 PM	6	0	7	0	1	4	0	41	1	6	31	0	97
5:30 PM	11	1	10	1	0	3	1	38	7	7	28	1	108
5:45 PM	7	2	6	1	2	6	5	42	4	4	32	0	111
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	68	16	95	8	14	41	15	327	42	53	260	5	944
PM Peak Hr Begins at				400	PM								
PEAK VOLUMES =	35	12	48	4	10	20	8	177	28	30	136	2	510

ADDITIONS: 4-WAY STOP
ETIWANDA EDUCATION CENTER LOCATED ON N/E CORNER. EAST AVE. IS AN OFFSET INTERSECTION.

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: EAST AVE. DATE: 12/13/01 CITY: RANCHO CUCAMONGA

E-W STREET: VICTORIA ST. DAY: THURSDAY PROJECT# 0090007A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	1	1	1	1	0	1	1	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	5	17	6	3	11	5	2	10	3	5	10	10	87
7:15 AM	2	19	10	2	8	6	0	9	1	11	16	13	97
7:30 AM	7	28	8	4	7	14	0	16	7	13	12	17	133
7:45 AM	11	51	9	5	10	11	5	14	5	17	13	22	173
8:00 AM	13	46	10	7	16	10	8	24	6	14	26	28	208
8:15 AM	16	32	13	9	10	17	3	10	3	10	27	34	184
8:30 AM	10	14	17	13	19	19	1	8	8	12	24	17	162
8:45 AM	8	17	14	8	17	13	2	16	2	8	20	12	137
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	72	224	87	51	98	95	21	107	35	90	148	153	1181
AM Peak Hr Begins at					745 AM								
PEAK VOLUMES =	50	143	49	34	55	57	17	56	22	53	90	101	727

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: EAST AVE. DATE: 12/13/01 CITY: RANCHO CUCAMONGA

E-W STREET: VICTORIA ST. DAY: THURSDAY PROJECT# 0090007P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOT
LANES:	1	2	1	1	1	1	1	1	0	1	1	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	3	31	14	5	17	8	0	12	5	10	13	8	126
4:15 PM	2	36	26	14	12	6	0	19	7	13	27	13	175
4:30 PM	6	40	20	11	16	9	1	16	9	18	21	10	177
4:45 PM	8	32	17	10	19	3	2	13	11	19	19	14	167
5:00 PM	5	54	15	9	24	7	1	18	8	15	24	17	197
5:15 PM	11	43	28	13	18	5	3	15	7	9	22	15	189
5:30 PM	13	49	22	16	26	11	0	12	5	13	17	10	194
5:45 PM	9	41	27	21	22	13	1	16	10	16	23	12	211
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL VOLUMES =	NL 57	NT 326	NR 169	SL 99	ST 154	SR 62	EL 8	ET 121	ER 62	WL 113	WT 166	WR 99	TOTAL 1436
PM Peak Hr Begins at				500	PM								
PEAK VOLUMES =	38	187	92	59	90	36	5	61	30	53	86	54	791

ADDITIONS: SIGNALIZED

Filename: WETWIL

Location: ETIWANDA AVE. (WEST) / WILSON AVE.

Turning Movement Counts Per CMP Requirements

	Northbound			Southbound			Eastbound			Westbound		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
AM Peak Hour	######	######	######	190	0	6	1	55	0	0	41	83
Peak Hour Factor	#DIV/0!			0.90			0.75			0.86		
PM Peak Hour	######	######	######	123	0	18	5	47	0	0	72	144
Peak Hour Factor	#DIV/0!			0.86			0.77			0.81		

Input Data Below

MORNING

		Northbound (^)				Southbound (v)				Eastbound (->)				Westbound (<-)			
from	to	LT	Th	RT	Total	LT	Th	RT	Total	LT	Th	RT	Total	LT	Th	RT	Total
7:00	7:15	0	0	0	0	39	0	1	40	0	8	0	8	0	16	9	25
7:15	7:30	0	0	0	0	45	0	1	46	0	10	0	10	0	8	15	23
7:30	7:45	0	0	0	0	48	0	1	49	1	9	0	10	0	8	17	25
7:45	8:00	0	0	0	0	39	0	2	41	0	14	0	14	0	9	22	31
8:00	8:15	0	0	0	0	38	0	0	38	0	8	0	8	0	10	18	28
8:15	8:30	0	0	0	0	26	0	2	28	0	9	0	9	0	9	14	23
8:30	8:45	0	0	0	0	19	0	0	19	0	11	0	11	0	6	9	15
8:45	9:00	0	0	0	0	18	0	0	18	0	6	0	6	0	7	8	15
PEAK HOUR																	
7:15	8:15	0	0	0	0	170	0	4	49	1	41	0	14	0	35	72	31
approach:		<-	0 ->			<-	174 ->			<-	42 ->			<-	107 ->		
depart:		<-	73 ->			<-	0 ->			<-	211 ->			<-	39 ->		

CMP Calculations	NB	SB	EB	WB
Peak Hour By Approach				
7:00-8:00	0	176	42	104
7:15-8:15	0	174	42	107
7:30-8:30	0	156	41	107
7:45-8:45	0	126	42	97
8:00-9:00	0	103	34	81
Maximum Peak Hour by Approach	0	176	42	107
Peak 15-Min by Approach	0	49	14	31
4 * Peak 15-min. by Approach	0	196	56	124
PHF for each Approach	#DIV/0!	0.90	0.75	0.86

Peak Hour	Northbound			Southbound			Eastbound			Westbound		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00-8:00	0	0	0	171	0	5	1	41	0	0	0	0
7:15-8:15	0	0	0	0	0	0	0	0	0	0	35	72
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	0
7:45-8:45	0	0	0	0	0	0	0	0	0	0	0	0
8:00-9:00	0	0	0	0	0	0	0	0	0	0	0	0
Totals	0	0	0	171	0	5	1	41	0	0	35	72
PHF Applied	#DIV/0!	#DIV/0!	#DIV/0!	190	0	6	1	55	0	0	41	83

EVENING

		Northbound (^)				Southbound (v)				Eastbound (->)				Westbound (<-)			
from	to	LT	Th	RT	Total	LT	Th	RT	Total	LT	Th	RT	Total	LT	Th	RT	Total
4:00	4:15	0	0	0	0	25	0	2	27	0	5	0	5	0	7	20	27
4:15	4:30	0	0	0	0	31	0	1	32	1	7	0	8	0	12	18	30
4:30	4:45	0	0	0	0	25	0	10	35	0	9	0	9	0	15	30	45
4:45	5:00	0	0	0	0	22	0	3	25	2	11	0	13	0	14	25	39
5:00	5:15	0	0	0	0	27	0	1	28	1	9	0	10	0	17	37	54
5:15	5:30	0	0	0	0	28	0	0	28	0	7	0	7	0	12	24	36
5:30	5:45	0	0	0	0	30	0	1	31	1	5	0	6	0	9	33	42
5:45	6:00	0	0	0	0	25	0	0	25	0	3	0	3	0	10	31	41
PEAK HOUR																	
4:30	5:30	0	0	0	0	102	0	14	35	3	36	0	13	0	58	115	54
approach:		<-	0 ->			<-	116 ->			<-	39 ->			<-	174 ->		
depart:		<-	119 ->			<-	0 ->			<-	138 ->			<-	72 ->		

CMP Calculations	NB	SB	EB	WB
Peak Hour By Approach				
4:00-5:00	0	119	35	141
4:15-5:15	0	120	40	168
4:30-5:30	0	116	39	174
4:45-5:45	0	112	36	171
5:00-6:00	0	112	26	173
Maximum Peak Hour by Approach	0	120	40	174
Peak 15-Min by Approach	0	35	13	54
4 * Peak 15-min. by Approach	0	140	52	216
PHF for Peak 15-min interval	#DIV/0!	0.86	0.77	0.81

Peak 15-Minute	Northbound			Southbound			Eastbound			Westbound		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
4:00-5:00	0	0	0	0	0	0	0	0	0	0	0	0
4:15-5:15	0	0	0	105	0	15	4	36	0	0	0	0
4:30-5:30	0	0	0	0	0	0	0	0	0	0	58	116
4:45-5:45	0	0	0	0	0	0	0	0	0	0	0	0
5:00-6:00	0	0	0	0	0	0	0	0	0	0	0	0
Totals	0	0	0	105	0	15	4	36	0	0	58	116
PHF Applied	#DIV/0!	#DIV/0!	#DIV/0!	123	0	18	5	47	0	0	72	144

Filename: EASSUM

Location: EAST AVE. / SUMMIT AVE.

Turning Movement Counts Per CMP Requirements

	Northbound			Southbound			Eastbound			Westbound		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
AM Peak Hour	79	46	146	79	68	145	122	229	93	185	287	60
Peak Hour Factor	0.86			0.57			0.65			0.77		
PM Peak Hour	46	12	78	6	12	27	9	196	31	33	149	2
Peak Hour Factor	0.78			0.86			0.90			0.91		

Input Data Below

MORNING

		Northbound				Southbound				Eastbound				Westbound			
from	to	LT	Th	RT	Total	LT	Th	RT	Total	LT	Th	RT	Total	LT	Th	RT	Total
7:00	7:15	11	16	25	53	23	12	38	73	44	64	3	111	78	60	21	109
7:15	7:30	7	15	32	57	16	21	34	71	21	35	10	66	57	58	18	133
7:30	7:45	22	4	30	56	5	5	9	19	9	16	25	50	34	49	4	87
7:45	8:00	28	2	38	68	1	1	2	4	5	33	22	60	23	53	3	79
8:00	8:15	3	0	5	8	2	0	3	5	5	27	8	40	6	24	1	31
8:15	8:30	8	1	6	15	0	3	2	5	3	21	2	26	8	37	2	47
8:30	8:45	4	2	3	9	2	1	2	5	5	15	7	27	7	31	2	40
8:45	9:00	5	1	9	15	1	5	0	6	3	17	4	24	9	23	1	33
PEAK HOUR																	
7:00	8:00	68	40	126	68	45	39	83	73	79	148	60	111	142	220	46	133
approach:		<—	234 —>			<—	167 —>			<—	287 —>			<—	408 —>		
depart:		<—	165 —>			<—	241 —>			<—	319 —>			<—	371 —>		

CMP Calculations	NB	SB	EB	WB
Peak Hour By Approach				
7:00-8:00	234	167	287	408
7:15-8:15	189	99	216	330
7:30-8:30	147	33	176	244
7:45-8:45	100	19	153	197
8:00-9:00	47	21	117	151
Maximum Peak Hour by Approach	234	167	287	408
Peak 15-Min. by Approach	68	73	111	133
4 * Peak 15-min. by Approach	272	292	444	532
PHF for each Approach	0.86	0.57	0.65	0.77

Peak Hour	Northbound			Southbound			Eastbound			Westbound		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00-8:00	68	40	126	45	39	83	79	148	60	142	220	46
7:15-8:15	0	0	0	0	0	0	0	0	0	0	0	0
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	0
7:45-8:45	0	0	0	0	0	0	0	0	0	0	0	0
8:00-9:00	0	0	0	0	0	0	0	0	0	0	0	0
Totals	68	40	126	45	39	83	79	148	60	142	220	46
PHF Applied	79	46	146	79	68	145	122	229	93	185	287	60

EVENING

		Northbound				Southbound				Eastbound				Westbound			
from	to	LT	Th	RT	Total	LT	Th	RT	Total	LT	Th	RT	Total	LT	Th	RT	Total
4:00	4:15	8	4	11	23	1	1	5	7	1	49	8	58	6	39	1	46
4:15	4:30	9	3	10	22	2	3	4	9	1	35	6	42	7	34	0	41
4:30	4:45	10	3	19	32	1	2	5	8	4	50	5	59	8	27	1	36
4:45	5:00	8	2	8	18	0	4	6	10	2	43	9	54	9	36	0	45
5:00	5:15	9	1	24	34	2	1	8	11	1	29	2	32	6	33	2	41
5:15	5:30	6	0	7	13	0	1	4	5	0	41	1	42	6	31	0	37
5:30	5:45	11	1	10	22	1	0	3	4	1	38	7	46	7	28	1	36
5:45	6:00	7	2	8	15	1	2	6	9	5	42	4	51	4	32	0	36
PEAK HOUR																	
4:00	5:00	35	12	48	34	4	10	20	11	8	177	28	59	30	136	2	46
approach		<—	95 —>			<—	34 —>			<—	213 —>			<—	168 —>		
depart		<—	22 —>			<—	68 —>			<—	229 —>			<—	191 —>		

CMP Calculations	NB	SB	EB	WB
Peak Hour By Approach				
4:00-5:00	95	34	213	168
4:15-5:15	106	38	187	163
4:30-5:30	97	34	187	159
4:45-5:45	87	30	174	159
5:00-6:00	84	29	171	150
Maximum Peak Hour by Approach	106	38	213	168
Peak 15-Min. by Approach	34	11	59	46
4 * Peak 15-min. by Approach	136	44	236	184
PHF for Peak 15-min interval	0.78	0.86	0.90	0.91

Peak 15-Minute	Northbound			Southbound			Eastbound			Westbound		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
4:00-5:00	0	0	0	0	0	0	8	177	28	30	136	2
4:15-5:15	36	9	61	5	10	23	0	0	0	0	0	0
4:30-5:30	0	0	0	0	0	0	0	0	0	0	0	0
4:45-5:45	0	0	0	0	0	0	0	0	0	0	0	0
5:00-6:00	0	0	0	0	0	0	0	0	0	0	0	0
Totals	36	9	61	5	10	23	8	177	28	30	136	2
PHF Applied	46	12	78	6	12	27	9	196	31	33	149	2

Filename: EASVIC

Location: EAST AVE. / VICTORIA ST.

Turning Movement Counts Per CMP Requirements

	Northbound			Southbound			Eastbound			Westbound		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
AM Peak Hour	55	183	47	48	80	76	24	96	32	62	105	118
Peak Hour Factor	0.86			0.77			0.66			0.86		
PM Peak Hour	40	198	98	71	109	44	4	68	36	69	97	58
Peak Hour Factor	0.94			0.83			0.97			0.94		

Input Data Below

MORNING

		^ Northbound				v Southbound				--> Eastbound				<-- Westbound			
from	to	LT	Th	RT	Total	LT	Th	RT	Total	LT	Th	RT	Total	LT	Th	RT	Total
7:00	7:15	5	17	6	28	3	11	5	19	2	10	3	15	5	10	10	25
7:15	7:30	2	19	10	31	2	5	6	16	0	9	1	10	11	16	13	40
7:30	7:45	7	28	8	43	4	7	14	25	0	16	7	23	13	12	17	42
7:45	8:00	11	51	9	71	5	10	11	26	5	14	5	24	17	13	22	52
8:00	8:15	13	46	10	69	7	16	10	33	6	24	8	38	14	26	28	68
8:15	8:30	16	32	13	61	9	10	17	36	3	10	3	16	10	27	34	71
8:30	8:45	10	14	17	41	13	19	19	51	1	5	8	17	12	24	17	53
8:45	9:00	8	17	14	39	8	17	13	38	2	16	2	20	8	20	12	40
PEAK HOUR																	
7:45	8:45	50	143	49	71	34	55	57	51	17	56	22	38	53	90	101	71
approach		<--	242 -->			<--	146 -->			<--	95 -->			<--	244 -->		
depart		<--	261 -->			<--	130 -->			<--	139 -->			<--	197 -->		

CMP Calculations	NB	SB	EB	WB
Peak Hour By Approach				
7:00-8:00	173	86	72	159
7:15-8:15	214	100	95	202
7:30-8:30	244	120	101	233
7:45-8:45	242	146	95	244
8:00-9:00	210	158	91	232
Maximum Peak Hour by Approach	244	158	101	244
Peak 15-Min. by Approach	71	51	38	71
4 * Peak 15-min. by Approach	284	204	152	284
PHF for each Approach	0.86	0.77	0.66	0.86

Peak Hour	Northbound			Southbound			Eastbound			Westbound		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00-8:00	0	0	0	0	0	0	0	0	0	0	0	0
7:15-8:15	0	0	0	0	0	0	0	0	0	0	0	0
7:30-8:30	47	157	40	0	0	0	16	64	21	0	0	0
7:45-8:45	0	0	0	0	0	0	0	0	0	53	90	101
8:00-9:00	0	0	0	37	62	59	0	0	0	0	0	0
Totals	47	157	40	37	62	59	16	64	21	53	90	101
PHF Applied	55	183	47	48	80	76	24	96	32	62	105	118

EVENING

		^ Northbound				v Southbound				--> Eastbound				<-- Westbound			
from	to	LT	Th	RT	Total	LT	Th	RT	Total	LT	Th	RT	Total	LT	Th	RT	Total
4:00	4:15	3	31	14	48	5	17	8	30	0	12	5	17	10	13	8	31
4:15	4:30	2	36	28	64	14	12	6	32	0	19	7	26	13	27	13	53
4:30	4:45	6	40	20	66	11	16	9	36	1	16	9	26	18	21	10	49
4:45	5:00	8	32	17	57	10	19	3	32	2	13	11	26	19	19	14	52
5:00	5:15	5	54	15	74	9	24	7	40	1	18	8	27	15	24	17	56
5:15	5:30	11	43	28	82	13	18	5	36	3	15	7	25	9	22	15	46
5:30	5:45	13	49	22	84	16	28	11	53	0	12	5	17	13	17	10	40
5:45	6:00	9	41	27	77	21	22	13	56	1	16	10	27	16	23	12	51
PEAK HOUR																	
5:00	6:00	38	187	92	84	59	90	36	56	5	61	30	27	53	86	54	56
approach		<--	317 -->			<--	185 -->			<--	96 -->			<--	193 -->		
depart		<--	246 -->			<--	173 -->			<--	212 -->			<--	160 -->		

CMP Calculations	NB	SB	EB	WB
Peak Hour By Approach				
4:00-5:00	235	130	95	185
4:15-5:15	261	140	105	210
4:30-5:30	279	144	104	203
4:45-5:45	297	161	95	194
5:00-6:00	317	185	96	193
Maximum Peak Hour by Approach	317	185	105	210
Peak 15-Min. by Approach	84	56	27	56
4 * Peak 15-min. by Approach	336	224	108	224
PHF for Peak 15-min interval	0.94	0.83	0.97	0.94

Peak 15-Minute	Northbound			Southbound			Eastbound			Westbound		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
4:00-5:00	0	0	0	0	0	0	0	0	0	0	0	0
4:15-5:15	0	0	0	0	0	0	4	66	35	65	91	54
4:30-5:30	0	0	0	0	0	0	0	0	0	0	0	0
4:45-5:45	0	0	0	0	0	0	0	0	0	0	0	0
5:00-6:00	38	187	92	59	90	36	0	0	0	0	0	0
Totals	38	187	92	59	90	36	4	66	35	65	91	54
PHF Applied	40	198	98	71	109	44	4	68	36	69	97	58

APPENDIX C

EXISTING CONDITIONS INTERSECTION ANALYSIS

Default Scenario Mon Jan 7, 2002 11:36:54 Page 2-1

Etiwanda Properties
Existing Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 Etiwanda Ave. - West (NS) / Wilson Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 0.290
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 9.1
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	170	0	4	1	41	0	0	35	72
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	170	0	4	1	41	0	0	35	72
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.90	0.90	0.90	0.75	0.75	0.75	0.86	0.86	0.86
PHF Volume:	0	0	0	189	0	4	1	55	0	0	41	84
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	189	0	4	1	55	0	0	41	84
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	189	0	4	1	55	0	0	41	84
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	651	0	827	597	1303	0	0	684	790
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.29	xxxx	0.01	0.00	0.04	xxxx	xxxx	0.06	0.11
Crit Moves:				****				****				****
Delay/Veh:	0.0	0.0	0.0	10.2	0.0	6.9	8.5	8.2	0.0	0.0	8.1	7.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	10.2	0.0	6.9	8.5	8.2	0.0	0.0	8.1	7.6
LOS by Move:	*	*	*	B	*	A	A	A	*	*	A	A
ApproachDel:	xxxxxx			10.2			8.2			7.8		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			10.2			8.2			7.8		
LOS by Appr:	*			B			A			A		

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Default Scenario Mon Jan 7, 2002 11:36:54 Page 3-1

Etiwanda Properties
Existing Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 1.417
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 161.0
Optimal Cycle: 0 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	197	92	159	55	265	16	9	85	274	241	94	47
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	197	92	159	55	265	16	9	85	274	241	94	47
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.79	0.79	0.79	0.81	0.81	0.81	0.68	0.68	0.68	0.85	0.85	0.85
PHF Volume:	249	116	201	68	327	20	13	125	403	284	111	55
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	249	116	201	68	327	20	13	125	403	284	111	55
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	249	116	201	68	327	20	13	125	403	284	111	55
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.44	0.21	0.35	0.16	0.79	0.05	0.02	0.23	0.75	0.63	0.25	0.12
Final Sat.:	176	82	142	65	311	19	10	96	308	248	97	48
Capacity Analysis Module:												
Vol/Sat:	1.42	1.42	1.42	1.05	1.05	1.05	1.31	1.31	1.31	1.15	1.15	1.15
Crit Moves:	****			****					****	****		
Delay/Veh:	226.6	227	226.6	90.5	90.5	90.5	179.3	179	179.3	121.1	121	121.1
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	226.6	227	226.6	90.5	90.5	90.5	179.3	179	179.3	121.1	121	121.1
LOS by Move:	F	F	F	F	F	F	F	F	F	F	F	F
ApproachDel:	226.6			90.5			179.3			121.1		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	226.6			90.5			179.3			121.1		
LOS by Appr:	F			F			F			F		

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Default Scenario Mon Jan 7, 2002 11:36:54 Page 4-1

Etiwanda Properties
Existing Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Base Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec): 130 Critical Vol./Cap. (X): 0.982
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 57.8
Optimal Cycle: 130 Level Of Service: E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	1	0 1	1 0	0	1 0
Volume Module:												
Base Vol:	50	194	19	41	309	467	240	438	150	35	265	21
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	50	194	19	41	309	467	240	438	150	35	265	21
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.86	0.86	0.86	0.77	0.77	0.77	0.63	0.63	0.63
PHF Volume:	56	216	21	48	359	543	312	569	195	56	421	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	56	216	21	48	359	543	312	569	195	56	421	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	56	216	21	48	359	543	312	569	195	56	421	33
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.91	0.09	1.00	0.40	0.60	1.00	1.00	1.00	1.00	0.93	0.07
Final Sat.:	1700	1639	161	1700	717	1083	1700	1800	1800	1700	1668	132
Capacity Analysis Module:												
Vol/Sat:	0.03	0.13	0.13	0.03	0.50	0.50	0.18	0.32	0.11	0.03	0.25	0.25
Crit Moves:					****		****				****	
Green/Cycle:	0.51	0.51	0.51	0.51	0.51	0.51	0.19	0.37	0.37	0.08	0.26	0.26
Volume/Cap:	0.06	0.26	0.26	0.05	0.98	0.98	0.98	0.86	0.30	0.42	0.98	0.98
Delay/Veh:	16.1	18.1	18.1	16.1	56.5	56.5	98.2	49.4	29.5	59.5	85.1	85.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	16.1	18.1	18.1	16.1	56.5	56.5	98.2	49.4	29.5	59.5	85.1	85.1
DesignQueue:	2	8	1	2	15	22	19	28	9	4	24	2

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Default Scenario Mon Jan 7, 2002 11:36:54 Page 5-1

Etiwanda Properties
Existing Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 1.063
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 50.6
Optimal Cycle: 0 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	68	40	126	45	39	83	79	148	60	142	220	46
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	40	126	45	39	83	79	148	60	142	220	46
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.57	0.57	0.57	0.65	0.65	0.65	0.77	0.77	0.77
PHF Volume:	79	47	147	79	68	146	122	228	92	184	286	60
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	79	47	147	79	68	146	122	228	92	184	286	60
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	79	47	147	79	68	146	122	228	92	184	286	60
Saturation Flow Module:												
Adjustmeut:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.29	0.17	0.54	0.27	0.23	0.50	0.27	0.52	0.21	0.35	0.54	0.11
Final Sat.:	127	75	236	119	103	220	134	251	102	174	269	56
Capacity Analysis Module:												
Vol/Sat:	0.62	0.62	0.62	0.66	0.66	0.66	0.91	0.91	0.91	1.06	1.06	1.06
Crit Moves:		****			****			****			****	
Delay/Veh:	21.5	21.5	21.5	23.1	23.1	23.1	45.9	45.9	45.9	84.7	84.7	84.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.5	21.5	21.5	23.1	23.1	23.1	45.9	45.9	45.9	84.7	84.7	84.7
LOS by Move:	C	C	C	C	C	C	E	E	E	F	F	F
ApproachDel:		21.5			23.1			45.9			84.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		21.5			23.1			45.9			84.7	
LOS by Appr:		C			C			E			F	

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Default Scenario Mon Jan 7, 2002 11:36:54 Page 6-1

Etiwanda Properties
Existing Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Base Volume Alternative)

Intersection #7 East Ave. (NS) / Victoria St. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.153
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 13.1
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	16	16	10	16	16	21	21	21	21	21	21
Lanes:	1 0	2 0	1	1 0	1 0	1	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	50	143	49	34	55	57	17	56	22	53	90	101
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	50	143	49	34	55	57	17	56	22	53	90	101
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.77	0.77	0.77	0.66	0.66	0.66	0.86	0.86	0.86
PHF Volume:	58	166	57	44	71	74	26	85	33	62	105	117
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	58	166	57	44	71	74	26	85	33	62	105	117
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	58	166	57	44	71	74	26	85	33	62	105	117
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.72	0.28	1.00	1.00	1.00
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	1292	508	1700	1800	1800
Capacity Analysis Module:												
Vol/Sat:	0.03	0.05	0.03	0.03	0.04	0.04	0.02	0.07	0.07	0.04	0.06	0.07
Crit Moves:		****		****				****				
Green/Cycle:	0.18	0.30	0.30	0.17	0.29	0.29	0.43	0.43	0.43	0.43	0.43	0.60
Volume/Cap:	0.19	0.15	0.10	0.15	0.14	0.14	0.04	0.15	0.15	0.08	0.14	0.11
Delay/Veh:	21.1	15.4	15.2	21.5	15.9	15.9	10.0	10.6	10.6	10.2	10.5	5.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.1	15.4	15.2	21.5	15.9	15.9	10.0	10.6	10.6	10.2	10.5	5.2
DesignQueue:	2	4	1	1	2	2	0	2	1	1	2	2

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Default Scenario Mon Jan 7, 2002 11:38:01 Page 2-1

Etiwanda Properties
Existing Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 Etiwanda Ave. - West (NS) / Wilson Ave. (EW)

Cycle (sec):	100	Critical Vol./Cap. (X):	0.198
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	8.4
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	107	0	5	4	32	0	0	52	119
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	107	0	5	4	32	0	0	52	119
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.86	0.86	0.86	0.77	0.77	0.77	0.81	0.81	0.81
PHF Volume:	0	0	0	124	0	6	5	42	0	0	64	147
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	124	0	6	5	42	0	0	64	147
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	124	0	6	5	42	0	0	64	147
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	628	0	791	605	1324	0	0	718	835
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.20	xxxx	0.01	0.01	0.03	xxxx	xxxx	0.09	0.18
Crit Moves:				****				****				****
Delay/Veh:	0.0	0.0	0.0	9.6	0.0	7.1	8.5	8.1	0.0	0.0	8.1	7.8
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	9.6	0.0	7.1	8.5	8.1	0.0	0.0	8.1	7.8
LOS by Move:	*	*	*	A	*	A	A	A	*	*	A	A
ApproachDel:	xxxxxx				9.5			8.2			7.9	
Delay Adj:	xxxxx				1.00			1.00			1.00	
ApprAdjDel:	xxxxxx				9.5			8.2			7.9	
LOS by Appr:	*				A			A			A	

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Default Scenario Mon Jan 7, 2002 11:38:01 Page 3-1

Etiwanda Properties
Existing Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 0.732
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 15.1
Optimal Cycle: 0 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	111	170	189	14	134	6	5	22	106	132	15	24
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	111	170	189	14	134	6	5,	22	106	132	15	24
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.83	0.83	0.83	0.94	0.94	0.94	0.90	0.90	0.90
PHF Volume:	123	189	210	17	161	7	5	23	113	147	17	27
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	123	189	210	17	161	7	5	23	113	147	17	27
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	123	189	210	17	161	7	5	23	113	147	17	27
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	I.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.24	0.36	0.40	0.09	0.87	0.04	0.04	0.16	0.80	0.77	0.09	0.14
Final Sat.:	169	258	287	55	524	23	22	95	456	425	48	77
Capacity Analysis Module:												
Vol/Sat:	0.73	0.73	0.73	0.31	0.31	0.31	0.25	0.25	0.25	0.35	0.35	0.35
Crit Moves:		****			****		****			****		
Delay/Veh:	19.3	19.3	19.3	10.8	10.8	10.8	10.1	10.1	10.1	11.6	11.6	11.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	19.3	I9.3	19.3	10.8	10.8	10.8	10.1	10.1	10.1	11.6	11.6	11.6
LOS by Move:	C	C	C	B	B	B	B	B	B	B	B	B
ApproachDel:		19.3			10.8			10.1			11.6	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		19.3			10.8			10.1			11.6	
LOS by Appr:		C			B			B			B	

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Default Scenario Mon Jan 7, 2002 15:32:49 Page 4-1

Etiwanda Properties
Existing Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Base Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.568
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 18.0
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1	1 0	0 1	0
Volume Module:												
Base Vol:	84	154	16	17	164	177	289	120	50	8	106	29
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	84	154	16	17	164	177	289	120	50	8	106	29
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.88	0.88	0.88	0.81	0.81	0.81	0.87	0.87	0.87
PHF Volume:	97	177	18	19	186	201	357	148	62	9	122	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	97	177	18	19	186	201	357	148	62	9	122	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	97	177	18	19	186	201	357	148	62	9	122	33
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.91	0.09	1.00	0.48	0.52	1.00	1.00	1.00	1.00	0.79	0.21
Final Sat.:	1700	1631	169	1700	866	934	1700	1800	1800	1700	1413	387
Capacity Analysis Module:												
Vol/Sat:	0.06	0.11	0.11	0.01	0.22	0.22	0.21	0.08	0.03	0.01	0.09	0.09
Crit Moves:					****		****				****	
Green/Cycle:	0.33	0.33	0.33	0.33	0.33	0.33	0.32	0.34	0.34	0.23	0.25	0.25
Volume/Cap:	0.17	0.33	0.33	0.03	0.65	0.65	0.65	0.24	0.10	0.02	0.34	0.34
Delay/Veh:	14.5	15.5	15.5	13.7	19.8	19.8	20.4	14.3	13.5	18.0	18.9	18.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.5	15.5	15.5	13.7	19.8	19.8	20.4	14.3	13.5	18.0	18.9	18.9
DesignQueue:	2	4	0	0	4	5	8	3	1	0	3	1

Default Scenario Mon Jan 7, 2002 11:38:01 Page 5-1

Etiwanda Properties
Existing Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 0.299
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 8.9
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	35	12	48	4	10	20	8	177	28	30	136	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	35	12	48	4	10	20	8	177	28	30	136	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.78	0.78	0.78	0.86	0.86	0.86	0.90	0.90	0.90	0.91	0.91	0.91
PHF Volume:	45	15	62	5	12	23	9	197	31	33	149	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	45	15	62	5	12	23	9	197	31	33	149	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	45	15	62	5	12	23	9	197	31	33	149	2
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.37	0.13	0.50	0.12	0.29	0.59	0.04	0.83	0.13	0.18	0.81	0.01
Final Sat.:	266	91	364	83	208	415	30	658	104	136	618	9
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	0.17	0.06	0.06	0.06	0.30	0.30	0.30	0.24	0.24	0.24
Crit Moves:		****				****		****			****	
Delay/Veh:	8.5	8.5	8.5	7.9	7.9	7.9	9.2	9.2	9.2	8.9	8.9	8.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.5	8.5	8.5	7.9	7.9	7.9	9.2	9.2	9.2	8.9	8.9	8.9
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.5			7.9			9.2			8.9	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.5			7.9			9.2			8.9	
LOS by Appr:		A			A			A			A	

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Default Scenario Mon Jan 7, 2002 11:38:01 Page 6-1

Etiwanda Properties
Existing Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Base Volume Alternative)

Intersection #7 East Ave. (NS) / Victoria St. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.166
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 14.2
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	16	16	10	16	16	21	21	21	21	21	21
Lanes:	1 0	2 0	1	1 0	1 0	1	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	38	187	92	59	90	36	5	61	30	53	86	54
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	38	187	92	59	90	36	5	61	30	53	86	54
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.83	0.83	0.83	0.97	0.97	0.97	0.94	0.94	0.94
PHF Volume:	40	199	98	71	108	43	5	63	31	56	91	57
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	40	199	98	71	108	43	5	63	31	56	91	57
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	40	199	98	71	108	43	5	63	31	56	91	57
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.67	0.33	1.00	1.00	1.00
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	1207	593	1700	1800	1800
Capacity Analysis Module:												
Vol/Sat:	0.02	0.06	0.05	0.04	0.06	0.02	0.00	0.05	0.05	0.03	0.05	0.03
Crit Moves:		****		****				****				
Green/Cycle:	0.21	0.31	0.31	0.24	0.34	0.34	0.35	0.35	0.35	0.35	0.35	0.59
Volume/Cap:	0.11	0.18	0.17	0.18	0.18	0.07	0.01	0.15	0.15	0.09	0.15	0.05
Delay/Veh:	19.2	15.1	15.1	18.4	14.1	13.5	12.7	13.5	13.5	13.2	13.5	5.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	19.2	15.1	15.1	18.4	14.1	13.5	12.7	13.5	13.5	13.2	13.5	5.3
DesignQueue:	1	5	2	2	2	1	0	1	1	1	2	1

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APPENDIX D

TRAFFIC SIGNAL WARRANTS

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic-See Note 2)

Major St: Etiwanda Ave. Minor St: Summit Ave. Year = OY W/O P

Volume = 15,600 Lanes= 1 Volume = 2,700 Lanes= 1 (one-way)

URBAN RURAL XX	Minimum Requirements EADT	
1. Minimum Vehicular Satisfied Not Satisfied XX	Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.		

Major Street		Minor Street		Urban	Rural	Urban	Rural
1	15,600	1	2,700	8,000	5,600 *	2,400	1,680 *
2 +		1		9,600	6,720	2,400	1,680
2 +		2 +		9,600	6,720	3,200	2,240
1		2 +		8,000	5,600	3,200	2,240

2. Interruption of Continuous traffic Satisfied Not Satisfied XX	Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.		

Major Street		Minor Street		Urban	Rural	Urban	Rural
1	15,600	1	2,700	12,000	8,400 *	1,200	850 *
2 +		1		14,400	10,080	1,200	850
2 +		2 +		14,000	10,080	1,600	1,120
1		2 +		12,000	8,400	1,600	1,120

3. Combination Satisfied Not Satisfied XX No one warrant satisfied but following warrants fulfilled 80% or more.. 100% 100% 1 2	2 Warrants	2 Warrants

NOTES: 1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be provided for the left-turn movement.

2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counTed.

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic-See Note 2)

Major St: East Ave. Minor St: Summit Ave. Year = OY W/ P

Volume = 5,700 Lanes= 1 Volume = 2,000 Lanes= 1 (one-way)

URBAN RURAL XX	Minimum Requirements EADT	
1. Minimum Vehicular Satisfied XX Not Satisfied	Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.		
Major Street 5,700 / Minor Street 2,000	Urban / Rural	Urban / Rural
1 / 1	8,000 / 5,600 *	2,400 / 1,680 *
2 + / 1	9,600 / 6,720	2,400 / 1,680
2 + / 2 +	9,600 / 6,720	3,200 / 2,240
1 / 2 +	8,000 / 5,600	3,200 / 2,240
2. Interruption of Continuous traffic Satisfied Not Satisfied XX	Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.		
Major Street 5,700 / Minor Street 2,000	Urban / Rural	Urban / Rural
1 / 1	12,000 / 8,400	1,200 / 850 *
2 + / 1	14,400 / 10,080	1,200 / 850
2 + / 2 +	14,000 / 10,080	1,600 / 1,120
1 / 2 +	12,000 / 8,400	1,600 / 1,120
3. Combination Satisfied Not Satisfied XX No one warrant satisfied but following warrants fulfilled 80% or more.. 100% 1 68% 2	2 Warrants	2 Warrants

NOTES: 1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be provided for the left-turn movement.

2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counTed.

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic-See Note 2)

Major St: Wilson Ave. Minor St: East Ave. Year = 2020 W/O P

Volume = 6,900 Lanes= 1 Volume = 3,250 Lanes= 1 (one-way)

URBAN RURAL XX		Minimum Requirements EADT	
1. Minimum Vehicular Satisfied XX Not Satisfied		Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.			
Major Street 6,900	Minor Street 3,250	Urban Rural	Urban Rural
1	1	8,000 5,600 *	2,400 1,680 *
2 +	1	9,600 6,720	2,400 1,680
2 +	2 +	9,600 6,720	3,200 2,240
1	2 +	8,000 5,600	3,200 2,240
2. Interruption of Continuous traffic Satisfied Not Satisfied XX		Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.			
Major Street 6,900	Minor Street 3,250	Urban Rural	Urban Rural
1	1	12,000 8,400	1,200 850 *
2 +	1	14,400 10,080	1,200 850
2 +	2 +	14,000 10,080	1,600 1,120
1	2 +	12,000 8,400	1,600 1,120
3. Combination Satisfied XX Not Satisfied No one warrant satisfied but following warrants fulfilled 80% or more.. 100% 82% 1 2		2 Warrants	2 Warrants

NOTES: 1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be provided for the left-turn movement.

2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counTed.

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic-See Note 2)

Major St: Etiwanda Ave.-East Minor St: Wilson Ave. Year = 2020 W/ P

Volume = 7,000 Lanes= 1 Volume = 3,600 Lanes= 1 (one-way)

URBAN	RURAL XX	Minimum Requirements EADT	
1. Minimum Vehicular Satisfied XX Not Satisfied		Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.			
Major Street 7,000	Minor Street 3,600	Urban / Rural	Urban / Rural
1	1	8,000 / 5,600 *	2,400 / 1,680 *
2 +	1	9,600 / 6,720	2,400 / 1,680
2 +	2 +	9,600 / 6,720	3,200 / 2,240
1	2 +	8,000 / 5,600	3,200 / 2,240
2. Interruption of Continuous traffic Satisfied Not Satisfied XX		Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.			
Major Street 7,000	Minor Street 3,600	Urban / Rural	Urban / Rural
1	1	12,000 / 8,400	1,200 / 850 *
2 +	1	14,400 / 10,080	1,200 / 850
2 +	2 +	14,000 / 10,080	1,600 / 1,120
1	2 +	12,000 / 8,400	1,600 / 1,120
3. Combination Satisfied Not Satisfied XX No one warrant satisfied but following warrants fulfilled 80% or more.. 100% 1 83% 2		2 Warrants	2 Warrants

NOTES: 1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be provided for the left-turn movement.

2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counTed.

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic-See Note 2)

Major St: Etiwanda Ave.-West Minor St: Wilson Ave. Year = 2020 W/ P

Volume = 7,050 Lanes= 2 Volume = 2,650 Lanes= 2 (one-way)

URBAN RURAL XX	Minimum Requirements EADT	
1. Minimum Vehicular Satisfied Not Satisfied XX	Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	8,000 / 5,600	2,400 / 1,680
2 + / 1	9,600 / 6,720	2,400 / 1,680
2 + (7,050) / 2 + (2,650)	9,600 / 6,720 *	3,200 / 2,240 *
1 / 2 +	8,000 / 5,600	3,200 / 2,240
2. Interruption of Continuous traffic Satisfied Not Satisfied XX	Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	12,000 / 8,400	1,200 / 850
2 + / 1	14,400 / 10,080	1,200 / 850
2 + (7,050) / 2 + (2,650)	14,000 / 10,080	1,600 / 1,120 *
1 / 2 +	12,000 / 8,400	1,600 / 1,120
3. Combination Satisfied Not Satisfied XX No one warrant satisfied but following warrants fulfilled 80% or more.. 100% 70% 1 2	2 Warrants	2 Warrants

NOTES: 1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be provided for the left-turn movement.

2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counTed.

APPENDIX E

OPENING YEAR (2004) CONDITIONS INTERSECTION ANALYSIS WITHOUT PROJECT (WITHOUT IMPROVEMENTS)

Default Scenario Mon Jan 7, 2002 14:36:05 Page 2-1

Etiwanda Properties
Opening Year (2004) Without Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Etiwanda Ave. - West (NS) / Wilson Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 0.308
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 9.2
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	181	0	4	2	39	0	0	36	68
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	181	0	4	2	39	0	0	36	68
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	181	0	4	2	39	0	0	36	68
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.90	0.90	0.90	0.75	0.75	0.75	0.86	0.86	0.86
PHF Volume:	0	0	0	201	0	4	3	52	0	0	42	79
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	201	0	4	3	52	0	0	42	79
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	201	0	4	3	52	0	0	42	79
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	653	0	830	593	1293	0	0	678	783
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.31	xxxx	0.01	0.00	0.04	xxxx	xxxx	0.06	0.10
Crit Moves:				****				****				****
Delay/Veh:	0.0	0.0	0.0	10.4	0.0	6.9	8.6	8.3	0.0	0.0	8.1	7.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	10.4	0.0	6.9	8.6	8.3	0.0	0.0	8.1	7.6
LOS by Move:	*	*	*	B	*	A	A	A	*	*	A	A
ApproachDel:	xxxxxx			10.4			8.3			7.8		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			10.4			8.3			7.8		
LOS by Appr:	*			B			A			A		

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Default Scenario          Mon Jan 7, 2002 14:36:05                  Page 7-1
------------------------------------------------------------------------------
                          Etiwanda Properties
                Opening Year (2004) Without Project Conditions
                             AM Peak Hour
------------------------------------------------------------------------------
                     Level Of Service Computation Report
           1997 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #107 Etiwanda Ave. - East (NS) / Wilson Ave. (EW)
******************************************************************************
Average Delay (sec/veh):      0.0           Worst Case Level Of Service:      A
******************************************************************************
Approach:       North Bound      South Bound      East Bound      West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  0  0    0  0  0  0  0    0  0  0  0  1    0  0  1! 0  0
-------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     120    0    0     0    0    0     0    0  220     0    0    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  120    0    0     0    0    0     0    0  220     0    0    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:  120    0    0     0    0    0     0    0  220     0    0    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.95 0.95 0.95  0.95 0.95 0.95  0.95 0.95 0.95  0.95 0.95 0.95
PHF Volume:   126    0    0     0    0    0     0    0  232     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:   126    0    0     0    0    0     0    0  232     0    0    0
Critical Gap Module:
Critical Gp:  6.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
-------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:    0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:    0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:      0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
-------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:          0.0            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:            A                *                *                *

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Default Scenario Mon Jan 7, 2002 14:36:05 Page 3-1

Etiwanda Properties
Opening Year (2004) Without Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 1.500
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 205.3
Optimal Cycle: 0 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1! 0	0	0	1! 0	0	0	1! 0	0	0	1! 0
Volume Module:												
Base Vol:	224	93	156	58	265	19	10	96	296	269	127	57
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	224	93	156	58	265	19	10	96	296	269	127	57
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	224	93	156	58	265	19	10	96	296	269	127	57
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.79	0.79	0.79	0.81	0.81	0.81	0.68	0.68	0.68	0.85	0.85	0.85
PHF Volume:	284	118	197	72	327	23	15	141	435	316	149	67
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	284	118	197	72	327	23	15	141	435	316	149	67
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	284	118	197	72	327	23	15	141	435	316	149	67
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.47	0.20	0.33	0.17	0.77	0.06	0.02	0.24	0.74	0.59	0.28	0.13
Final Sat.:	189	78	132	67	306	22	10	99	305	233	110	49
Capacity Analysis Module:												
Vol/Sat:	1.50	1.50	1.50	1.07	1.07	1.07	1.43	1.43	1.43	1.36	1.36	1.36
Crit Moves:		****			****			****			****	
Delay/Veh:	261.5	261	261.5	96.0	96.0	96.0	229.2	229	229.2	202.2	202	202.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	261.5	261	261.5	96.0	96.0	96.0	229.2	229	229.2	202.2	202	202.2
LOS by Move:	F	F	F	F	F	F	F	F	F	F	F	F
ApproachDel:	261.5			96.0			229.2			202.2		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	261.5			96.0			229.2			202.2		
LOS by Appr:	F			F			F			F		

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Default Scenario Mon Jan 7, 2002 14:36:05 Page 4-1

Etiwanda Properties
Opening Year (2004) Without Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec): 130 Critical Vol./Cap. (X): 1.130
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 86.2
Optimal Cycle: 130 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1	0 0	1 0	1	0 0	1 0	1	0 1	0 1	1	0 0	1 0
Volume Module:												
Base Vol:	51	210	21	46	336	491	238	433	143	52	378	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	51	210	21	46	336	491	238	433	143	52	378	32
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	51	210	21	46	336	491	238	433	143	52	378	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.86	0.86	0.86	0.77	0.77	0.77	0.63	0.63	0.63
PHF Volume:	57	233	23	53	391	571	309	562	186	83	600	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	57	233	23	53	391	571	309	562	186	83	600	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	57	233	23	53	391	571	309	562	186	83	600	51
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.91	0.09	1.00	0.41	0.59	1.00	1.00	1.00	1.00	0.92	0.08
Final Sat.:	1700	1636	164	1700	731	1069	1700	1800	1800	1700	1660	140
Capacity Analysis Module:												
Vol/Sat:	0.03	0.14	0.14	0.03	0.53	0.53	0.18	0.31	0.10	0.05	0.36	0.36
Crit Moves:					****		****				****	
Green/Cycle:	0.47	0.47	0.47	0.47	0.47	0.47	0.16	0.40	0.40	0.08	0.32	0.32
Volume/Cap:	0.07	0.30	0.30	0.07	1.13	1.13	1.13	0.77	0.26	0.63	1.13	1.13
Delay/Veh:	18.7	21.3	21.3	18.7	107	107.4	148.5	38.7	25.9	67.8	123	122.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	18.7	21.3	21.3	18.7	107	107.4	148.5	38.7	25.9	67.8	123	122.8
DesignQueue:	2	9	1	2	17	25	20	26	8	6	32	3

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Default Scenario Fri Jun 14, 2002 10:31:17 Page 2-1

Etiwanda Properties
Opening Year (2004) Without Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

Intersection #108 East Ave. (NS) / Wilson Ave. (EW)

Average Delay (sec/veh): 0.0 Worst Case Level Of Service:

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	0	0	0	0	0	0	0	0	0
Critical Gap Module:												
Critical Gp:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FollowUpTim:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capacity Module:												
Cnflict Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Potent Cap.:	0	0	0	0	0	0	0	0	0	0	0	0
Move Cap.:	1	1	1	1	1	1	1	1	1	1	1	1
Level Of Service Module:												
Stopped Del:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS by Move:												
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	0	0	0	0	0	0	0	0	0	0	0	0
Shrd StpDel:	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Shared LOS:												
ApproachDel:		0.0			0.0			0.0			0.0	
ApproachLOS:												

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Default Scenario Mon Jun 17, 2002 15:29:17 Page 2-1

Etiwanda Properties
Opening Year (2004) Without Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 1.836
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 202.1
Optimal Cycle: 0 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	83	81	106	42	87	47	41	172	87	198	384	68
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	83	81	106	42	87	47	41	172	87	198	384	68
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	83	81	106	42	87	47	41	172	87	198	384	68
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.57	0.57	0.57	0.65	0.65	0.65	0.77	0.77	0.77
PHF Volume:	97	94	123	74	153	82	63	265	134	257	499	88
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	97	94	123	74	153	82	63	265	134	257	499	88
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	97	94	123	74	153	82	63	265	134	257	499	88
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.33	0.30	0.39	0.24	0.49	0.27	0.14	0.57	0.29	0.30	0.60	0.10
Final Sat.:	131	128	168	101	209	113	64	267	135	140	272	48
Capacity Analysis Module:												
Vol/Sat:	0.73	0.73	0.73	0.73	0.73	0.73	0.99	0.99	0.99	1.84	1.84	1.84
Crit Moves:		****			****				****		****	
Delay/Veh:	30.0	30.0	30.0	29.8	29.8	29.8	66.6	66.6	66.6	403.3	403	403.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.0	30.0	30.0	29.8	29.8	29.8	66.6	66.6	66.6	403.3	403	403.3
LOS by Move:	D	D	D	D	D	D	F	F	F	F	F	F
ApproachDel:		30.0			29.8			66.6			403.3	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		30.0			29.8			66.6			403.3	
LOS by Appr:		D			D			F			F	

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Default Scenario Mon Jan 7, 2002 14:36:05 Page 6-1

Etiwanda Properties
Opening Year (2004) Without Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #7 East Ave. (NS) / Victoria St. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.200
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 13.8
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	16	16	10	16	16	21	21	21	21	21	21
Lanes:	1 0	2 0	1	1 0	1 0	1	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	84	160	66	30	58	62	16	64	30	72	125	94
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	84	160	66	30	58	62	16	64	30	72	125	94
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	84	160	66	30	58	62	16	64	30	72	125	94
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.77	0.77	0.77	0.66	0.66	0.66	0.86	0.86	0.86
PHF Volume:	98	186	77	39	75	81	24	97	45	84	145	109
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	98	186	77	39	75	81	24	97	45	84	145	109
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	98	186	77	39	75	81	24	97	45	84	145	109
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.68	0.32	1.00	1.00	1.00
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	1226	574	1700	1800	1800
Capacity Analysis Module:												
Vol/Sat:	0.06	0.05	0.04	0.02	0.04	0.04	0.01	0.08	0.08	0.05	0.08	0.06
Crit Moves:	****				****						****	
Green/Cycle:	0.26	0.33	0.33	0.20	0.27	0.27	0.37	0.37	0.37	0.37	0.37	0.57
Volume/Cap:	0.22	0.16	0.13	0.11	0.16	0.17	0.04	0.21	0.21	0.13	0.22	0.11
Delay/Veh:	17.5	14.4	14.3	19.6	17.0	17.1	12.1	13.1	13.1	12.6	13.1	5.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	17.5	14.4	14.3	19.6	17.0	17.1	12.1	13.1	13.1	12.6	13.1	5.8
DesignQueue:	2	4	2	1	2	2	1	2	1	2	3	2

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Default Scenario Mon Jan 7, 2002 15:40:59 Page 2-1

Etiwanda Properties
Opening Year (2004) Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Etiwanda Ave. - West (NS) / Wilson Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 0.238
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 9.1
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1	0 0	0 1	1	0 2	0 0	0	0 1	1 0
Volume Module:												
Base Vol:	0	0	0	117	0	3	9	153	0	0	57	141
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	117	0	3	9	153	0	0	57	141
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	117	0	3	9	153	0	0	57	141
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.86	0.86	0.86	0.77	0.77	0.77	0.81	0.81	0.81
PHF Volume:	0	0	0	136	0	3	12	199	0	0	70	174
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	136	0	3	12	199	0	0	70	174
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	136	0	3	12	199	0	0	70	174
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	572	0	703	591	1292	0	0	682	787
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.24	xxxx	0.00	0.02	0.15	xxxx	xxxx	0.10	0.22
Crit Moves:				****				****				****
Delay/Veh:	0.0	0.0	0.0	10.5	0.0	7.5	8.7	9.1	0.0	0.0	8.4	8.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	10.5	0.0	7.5	8.7	9.1	0.0	0.0	8.4	8.3
LOS by Move:	*	*	*	B	*	A	A	A	*	*	A	A
ApproachDel:	xxxxxx			10.4			9.0			8.4		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			10.4			9.0			8.4		
LOS by Appr:	*			B			A			A		

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Default Scenario Mon Jan 7, 2002 15:40:59 Page 7-1

Etiwanda Properties
Opening Year (2004) Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

Intersection #107 Etiwanda Ave. - East (NS) / Wilson Ave. (EW)

Average Delay (sec/veh): 10.9 Worst Case Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1!	0	0	0 0 0	0	0	0 0 0	1	0	0 1	0	0 0
Volume Module:												
Base Vol:	191	0	19	0	0	0	0	101	129	1	9	0
Growth Adj:	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00
Initial Bse:	191	0	19	0	0	0	0	101	129	1	9	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	191	0	19	0	0	0	0	101	129	1	9	0
User Adj:	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00
PHF Adj:	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00
PHF Volume:	191	0	19	0	0	0	0	101	129	1	9	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	191	0	19	0	0	0	0	101	129	1	9	0
Critical Gap Module:												
Critical Gp:	6.4 xxxx		6.2	xxxxx xxxx		xxxxx	xxxxx xxxx		xxxxx	4.1 xxxx		xxxxx
FollowUpTim:	3.5 xxxx		3.3	xxxxx xxxx		xxxxx	xxxxx xxxx		xxxxx	2.2 xxxx		xxxxx
Capacity Module:												
Cnflict Vol:	177 xxxx		166	xxxx xxxx		xxxxx	xxxx xxxx		xxxxx	230 xxxx		xxxxx
Potent Cap.:	818 xxxx		884	xxxx xxxx		xxxxx	xxxx xxxx		xxxxx	1350 xxxx		xxxxx
Move Cap.:	817 xxxx		884	xxxx xxxx		xxxxx	xxxx xxxx		xxxxx	1350 xxxx		xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx xxxx		xxxxx	xxxxx xxxx		xxxxx	xxxxx xxxx		xxxxx	7.7 xxxx		xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT - LTR	-	RT	LT - LTR	-	RT	LT - LTR	-	RT	LT - LTR	-	RT
Shared Cap.:	xxxx 823		xxxxx	xxxx xxxx		xxxxx	xxxx xxxx		xxxxx	xxxx xxxx		xxxxx
Shrd StpDel:	xxxxx 10.9		xxxxx	xxxxx xxxx		xxxxx	xxxxx xxxx		xxxxx	7.7 xxxx		xxxxx
Shared LOS:	* B		*	*	*	*	*	*	*	A	*	*
ApproachDel:	10.9			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

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Default Scenario Mon Jan 7, 2002 15:40:59 Page 3-1

Etiwanda Properties
Opening Year (2004) Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 0.923
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 26.4
Optimal Cycle: 0 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	145	189	236	14	129	6	6	30	134	146	18	25
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	145	189	236	14	129	6	6	30	134	146	18	25
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	145	189	236	14	129	6	6	30	134	146	18	25
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.83	0.83	0.83	0.94	0.94	0.94	0.90	0.90	0.90
PHF Volume:	161	210	262	17	155	7	6	32	143	162	20	28
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	161	210	262	17	155	7	6	32	143	162	20	28
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	161	210	262	17	155	7	6	32	143	162	20	28
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.25	0.33	0.42	0.09	0.87	0.04	0.03	0.18	0.79	0.77	0.10	0.13
Final Sat.:	175	228	284	52	480	22	20	99	442	408	50	70
Capacity Analysis Module:												
Vol/Sat:	0.92	0.92	0.92	0.32	0.32	0.32	0.32	0.32	0.32	0.40	0.40	0.40
Crit Moves:		****			****		****					****
Delay/Veh:	39.2	39.2	39.2	11.7	11.7	11.7	11.6	11.6	11.6	13.3	13.3	13.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	39.2	39.2	39.2	11.7	11.7	11.7	11.6	11.6	11.6	13.3	13.3	13.3
LOS by Move:	E	E	E	B	B	B	B	B	B	B	B	B
ApproachDel:		39.2			11.7			11.6			13.3	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		39.2			11.7			11.6			13.3	
LOS by Appr:		E			B			B			B	

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Default Scenario Mon Jan 7, 2002 15:40:59 Page 4-1

Etiwanda Properties
Opening Year (2004) Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.628
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 19.6
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1	0 0	1 0	1	0 0	1 0	1	0 1	0 1	1	0 0	1 0
Volume Module:												
Base Vol:	77	191	20	23	192	181	331	137	49	9	102	38
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	77	191	20	23	192	181	331	137	49	9	102	38
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	77	191	20	23	192	181	331	137	49	9	102	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.88	0.88	0.88	0.81	0.81	0.81	0.87	0.87	0.87
PHF Volume:	89	220	23	26	218	206	409	169	60	10	117	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	89	220	23	26	218	206	409	169	60	10	117	44
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	89	220	23	26	218	206	409	169	60	10	117	44
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.91	0.09	1.00	0.51	0.49	1.00	1.00	1.00	1.00	0.73	0.27
Final Sat.:	1700	1629	171	1700	927	873	1700	1800	1800	1700	1311	489
Capacity Analysis Module:												
Vol/Sat:	0.05	0.13	0.13	0.02	0.24	0.24	0.24	0.09	0.03	0.01	0.09	0.09
Crit Moves:					****		****				****	
Green/Cycle:	0.32	0.32	0.32	0.32	0.32	0.32	0.33	0.35	0.35	0.23	0.25	0.25
Volume/Cap:	0.16	0.42	0.42	0.05	0.73	0.73	0.73	0.27	0.10	0.03	0.36	0.36
Delay/Veh:	14.7	16.4	16.4	14.1	22.8	22.8	22.8	14.4	13.3	17.9	19.0	19.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.7	16.4	16.4	14.1	22.8	22.8	22.8	14.4	13.3	17.9	19.0	19.0
DesignQueue:	2	5	1	1	5	5	10	4	1	0	3	1

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Default Scenario Fri Jun 14, 2002 15:27:49 Page 2-1

Etiwanda Properties
Opening Year (2004) Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 0.396
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 10.4
Optimal Cycle: 0 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	53	18	107	14	10	12	10	207	38	49	163	22
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	53	18	107	14	10	12	10	207	38	49	163	22
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	53	18	107	14	10	12	10	207	38	49	163	22
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.78	0.78	0.78	0.86	0.86	0.86	0.90	0.90	0.90	0.91	0.91	0.91
PHF Volume:	68	23	137	16	12	14	11	230	42	54	179	24
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	68	23	137	16	12	14	11	230	42	54	179	24
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	68	23	137	16	12	14	11	230	42	54	179	24
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.30	0.10	0.60	0.39	0.28	0.33	0.04	0.81	0.15	0.21	0.70	0.09
Final Sat.:	203	69	409	230	164	197	28	581	107	147	488	66
Capacity Analysis Module:												
Vol/Sat:	0.34	0.34	0.34	0.07	0.07	0.07	0.40	0.40	0.40	0.37	0.37	0.37
Crit Moves:			****		****			****			****	
Delay/Veh:	10.1	10.1	10.1	8.7	8.7	8.7	10.7	10.7	10.7	10.5	10.5	10.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.1	10.1	10.1	8.7	8.7	8.7	10.7	10.7	10.7	10.5	10.5	10.5
LOS by Move:	B	B	B	A	A	A	B	B	B	B	B	B
ApproachDel:		10.1			8.7			10.7			10.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		10.1			8.7			10.7			10.5	
LOS by Appr:		B			A			B			B	

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Default Scenario Fri Jun 14, 2002 15:27:49 Page 3-1

Etiwanda Properties
Opening Year (2004) Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

Intersection #108 East Ave. (NS) / Wilson Ave. (EW)

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	0	0	0	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Critical Gap Module:																				
Critical Gp:	6.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx
FollowUpTim:	3.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx
Capacity Module:																				
Cnflict Vol:	0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx
Potent Cap.:	0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx
Move Cap.:	0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx
Level Of Service Module:																				
Stopped Del:	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	0	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	0.0			xxxxxx			xxxxxx			xxxxxx										
ApproachLOS:	A			*			*			*										

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Default Scenario Mon Jan 7, 2002 15:40:59 Page 6-1

Etiwanda Properties
Opening Year (2004) Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #7 East Ave. (NS) / Victoria St. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.227
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 14.1
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	16	16	10	16	16	21	21	21	21	21	21
Lanes:	1 0	2 0	1	1 0	1 0	1	1 0	0 1	0	1 0	1 0	I
Volume Module:												
Base Vol:	51	210	125	63	127	38	6	92	60	83	101	53
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	51	210	125	63	127	38	6	92	60	83	101	53
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	51	210	125	63	127	38	6	92	60	83	101	53
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.83	0.83	0.83	0.97	0.97	0.97	0.94	0.94	0.94
PHF Volume:	54	223	133	76	153	46	6	95	62	88	107	56
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	54	223	133	76	153	46	6	95	62	88	107	56
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	54	223	133	76	153	46	6	95	62	88	107	56
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.61	0.39	1.00	1.00	1.00
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	1089	711	1700	1800	1800
Capacity Analysis Module:												
Vol/Sat:	0.03	0.06	0.07	0.04	0.09	0.03	0.00	0.09	0.09	0.05	0.06	0.03
Crit Moves:	****				****			****				
Green/Cycle:	0.17	0.33	0.33	0.20	0.36	0.36	0.37	0.37	0.37	0.37	0.37	0.57
Volume/Cap:	0.19	0.19	0.23	0.22	0.23	0.07	0.01	0.23	0.23	0.14	0.16	0.05
Delay/Veh:	21.9	14.6	14.9	20.2	13.5	12.6	11.9	13.2	13.2	12.6	12.7	5.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.9	14.6	14.9	20.2	13.5	12.6	11.9	13.2	13.2	12.6	12.7	5.6
DesignQueue:	2	5	3	2	3	1	0	2	1	2	2	1

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APPENDIX F

OPENING YEAR (2004) CONDITIONS INTERSECTION ANALYSIS WITH PROJECT (WITHOUT IMPROVEMENTS)

Default Scenario Mon Jan 7, 2002 15:54:42 Page 2-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Etiwanda Ave. - West (NS) / Wilson Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 0.387
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 9.9
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	181	0	4	2	39	0	0	36	68
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	181	0	4	2	39	0	0	36	68
Added Vol:	0	0	0	40	0	20	7	6	0	0	18	14
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	221	0	24	9	45	0	0	54	82
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.90	0.90	0.90	0.75	0.75	0.75	0.86	0.86	0.86
PHF Volume:	0	0	0	246	0	27	12	60	0	0	63	95
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	246	0	27	12	60	0	0	63	95
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	246	0	27	12	60	0	0	63	95
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	634	0	800	562	1220	0	0	648	743
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.39	xxxx	0.03	0.02	0.05	xxxx	xxxx	0.10	0.13
Crit Moves:				****				****				****
Delay/Veh:	0.0	0.0	0.0	11.6	0.0	7.2	9.0	8.6	0.0	0.0	8.6	8.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	11.6	0.0	7.2	9.0	8.6	0.0	0.0	8.6	8.0
LOS by Move:	*	*	*	B	*	A	A	A	*	*	A	A
ApproachDel:	xxxxxx			11.2			8.7			8.2		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			11.2			8.7			8.2		
LOS by Appr:	*			B			A			A		

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Default Scenario Mon Jan 7, 2002 15:54:42 Page 7-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #107 Etiwanda Ave. - East (NS) / Wilson Ave. (EW)

****

Average Delay (sec/veh): 10.9 Worst Case Level Of Service: B

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module:												
Base Vol:	120	0	0	0	0	0	0	0	220	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	120	0	0	0	0	0	0	0	220	0	0	0
Added Vol:	14	0	10	0	0	0	0	6	40	30	18	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	134	0	10	0	0	0	0	6	260	30	18	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	141	0	11	0	0	0	0	6	274	32	19	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	141	0	11	0	0	0	0	6	274	32	19	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	225	xxxx	143	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	280	xxxx	xxxxx
Potent Cap.:	767	xxxx	910	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1294	xxxx	xxxxx
Move Cap.:	753	xxxx	910	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1294	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	762	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	10.9	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	*	*	*	A	*	*
ApproachDel:		10.9			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		B			*			*			*	

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Default Scenario Mon Jan 7, 2002 15:54:42 Page 3-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 1.566
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 225.5
Optimal Cycle: 0 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	224	93	156	58	265	19	10	96	296	269	127	57
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	224	93	156	58	265	19	10	96	296	269	127	57
Added Vol:	0	20	0	0	60	2	1	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	224	113	156	58	325	21	11	96	296	269	127	57
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.79	0.79	0.79	0.81	0.81	0.81	0.68	0.68	0.68	0.85	0.85	0.85
PHF Volume:	284	143	197	72	401	26	16	141	435	316	149	67
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	284	143	197	72	401	26	16	141	435	316	149	67
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	284	143	197	72	401	26	16	141	435	316	149	67
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.45	0.23	0.32	0.14	0.81	0.05	0.03	0.24	0.73	0.59	0.28	0.13
Final Sat.:	181	91	126	57	317	20	11	99	304	233	110	49
Capacity Analysis Module:												
Vol/Sat:	1.57	1.57	1.57	1.26	1.26	1.26	1.43	1.43	1.43	1.36	1.36	1.36
Crit Moves:		****			****			****			****	
Delay/Veh:	288.9	289	288.9	164.7	165	164.7	230.8	231	230.8	202.2	202	202.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	288.9	289	288.9	164.7	165	164.7	230.8	231	230.8	202.2	202	202.2
LOS by Move:	F	F	F	F	F	F	F	F	F	F	F	F
ApproachDel:	288.9			164.7			230.8			202.2		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	288.9			164.7			230.8			202.2		
LOS by Appr:	F			F			F			F		

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Default Scenario Mon Jan 7, 2002 15:54:42 Page 4-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec): 130 Critical Vol./Cap. (X): 1.180
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 99.3
Optimal Cycle: 130 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1	0 0	1 0	1	0 0	1 0	1	0 1	0 1	1	0 0	1 0
Volume Module:												
Base Vol:	51	210	21	46	336	491	238	433	143	52	378	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	51	210	21	46	336	491	238	433	143	52	378	32
Added Vol:	0	9	0	0	26	34	12	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	51	219	21	46	362	525	250	433	143	52	378	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.86	0.86	0.86	0.77	0.77	0.77	0.63	0.63	0.63
PHF Volume:	57	243	23	53	421	610	325	562	186	83	600	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	57	243	23	53	421	610	325	562	186	83	600	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	57	243	23	53	421	610	325	562	186	83	600	51
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.91	0.09	1.00	0.41	0.59	1.00	1.00	1.00	1.00	0.92	0.08
Final Sat.:	1700	1643	157	1700	735	1065	1700	1800	1800	1700	1660	140
Capacity Analysis Module:												
Vol/Sat:	0.03	0.15	0.15	0.03	0.57	0.57	0.19	0.31	0.10	0.05	0.36	0.36
Crit Moves:					****		****				****	
Green/Cycle:	0.49	0.49	0.49	0.49	0.49	0.49	0.16	0.39	0.39	0.08	0.31	0.31
Volume/Cap:	0.07	0.31	0.31	0.06	1.18	1.18	1.18	0.80	0.26	0.63	1.18	1.18
Delay/Veh:	17.8	20.4	20.4	17.8	126	126.2	166.5	41.4	27.1	67.8	144	143.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	17.8	20.4	20.4	17.8	126	126.2	166.5	41.4	27.1	67.8	144	143.7
DesignQueue:	2	9	1	2	18	26	21	27	8	6	33	3

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Default Scenario Fri Jun 14, 2002 15:14:35 Page 3-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #108 East Ave. (NS) / Wilson Ave. (EW)

****

Average Delay (sec/veh): 8.7 Worst Case Level Of Service: A

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1	0 0	0	0 0	1 0	0	0 0	0 0	1	0 0	0 0	0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	21	10	0	0	30	0	0	0	62	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	21	10	0	0	30	0	0	0	62	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	22	11	0	0	32	0	0	0	65	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	22	11	0	0	32	0	0	0	65	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	32	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	32	xxxx	xxxx	xxxxx
Potent Cap.:	1594	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1048	xxxx	xxxx	xxxxx
Move Cap.:	1594	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1048	xxxx	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	8.7	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	A	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	A	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			8.7			xxxxxx		
ApproachLOS:	*			*			A			*		

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Default Scenario Fri Jun 14, 2002 11:14:09 Page 2-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 2.094
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 265.8
Optimal Cycle: 0 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	83	81	106	42	87	47	41	172	87	198	384	68
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	83	81	106	42	87	47	41	172	87	198	384	68
Added Vol:	0	16	0	46	46	0	0	0	0	0	0	16
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	83	97	106	88	133	47	41	172	87	198	384	84
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.57	0.57	0.57	0.65	0.65	0.65	0.77	0.77	0.77
PHF Volume:	97	113	123	154	233	82	63	265	134	257	499	109
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	97	113	123	154	233	82	63	265	134	257	499	109
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	97	113	123	154	233	82	63	265	134	257	499	109
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.29	0.34	0.37	0.33	0.50	0.17	0.14	0.57	0.29	0.30	0.58	0.12
Final Sat.:	117	136	149	136	206	73	57	240	122	123	238	52
Capacity Analysis Module:												
Vol/Sat:	0.83	0.83	0.83	1.14	1.14	1.14	1.10	1.10	1.10	2.09	2.09	2.09
Crit Moves:		****			****			****				****
Delay/Veh:	42.7	42.7	42.7	115.3	115	115.3	103.2	103	103.2	520.1	520	520.1
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	42.7	42.7	42.7	115.3	115	115.3	103.2	103	103.2	520.1	520	520.1
LOS by Move:	E	E	E	F	F	F	F	F	F	F	F	F
ApproachDel:		42.7			115.3			103.2			520.1	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		42.7			115.3			103.2			520.1	
LOS by Appr:		E			F			F			F	

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Default Scenario Mon Jan 7, 2002 15:54:42 Page 6-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #7 East Ave. (NS) / Victoria St. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.223
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 14.1
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	16	16	10	16	16	21	21	21	21	21	21
Lanes:	1 0	2 0	1	1 0	1 0	1	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	84	160	66	30	58	62	16	64	30	72	125	94
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	84	160	66	30	58	62	16	64	30	72	125	94
Added Vol:	0	10	0	18	28	0	0	0	0	0	0	6
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	84	170	66	48	86	62	16	64	30	72	125	100
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.77	0.77	0.77	0.66	0.66	0.66	0.86	0.86	0.86
PHF Volume:	98	198	77	62	112	81	24	97	45	84	145	116
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	98	198	77	62	112	81	24	97	45	84	145	116
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	98	198	77	62	112	81	24	97	45	84	145	116
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.68	0.32	1.00	1.00	1.00
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	1226	574	1700	1800	1800
Capacity Analysis Module:												
Vol/Sat:	0.06	0.05	0.04	0.04	0.06	0.04	0.01	0.08	0.08	0.05	0.08	0.06
Crit Moves:	****				****						****	
Green/Cycle:	0.26	0.33	0.33	0.21	0.28	0.28	0.36	0.36	0.36	0.36	0.36	0.57
Volume/Cap:	0.22	0.17	0.13	0.18	0.22	0.16	0.04	0.22	0.22	0.14	0.22	0.11
Delay/Veh:	17.8	14.3	14.1	19.8	16.9	16.5	12.4	13.4	13.4	12.9	13.4	6.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	17.8	14.3	14.1	19.8	16.9	16.5	12.4	13.4	13.4	12.9	13.4	6.0
DesignQueue:	2	4	2	2	3	2	1	2	1	2	3	2

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Default Scenario Mon Jan 7, 2002 15:10:57 Page 2-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Etiwanda Ave. - West (NS) / Wilson Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 0.312
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 9.9
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1	0 0	0 1	1	0 2	0 0	0	0 1	1 0
Volume Module:												
Base Vol:	0	0	0	117	0	3	9	153	0	0	57	141
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	117	0	3	9	153	0	0	57	141
Added Vol:	0	0	0	26	0	13	23	21	0	0	12	47
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	143	0	16	32	174	0	0	69	188
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.86	0.86	0.86	0.77	0.77	0.77	0.81	0.81	0.81
PHF Volume:	0	0	0	166	0	19	42	226	0	0	85	232
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	166	0	19	42	226	0	0	85	232
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	166	0	19	42	226	0	0	85	232
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	545	0	659	559	1216	0	0	648	744
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.31	xxxx	0.03	0.07	0.19	xxxx	xxxx	0.13	0.31
Crit Moves:				****				****				****
Delay/Veh:	0.0	0.0	0.0	11.6	0.0	8.0	9.4	9.7	0.0	0.0	8.9	9.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	11.6	0.0	8.0	9.4	9.7	0.0	0.0	8.9	9.4
LOS by Move:	*	*	*	B	*	A	A	A	*	*	A	A
ApproachDel:	xxxxxx			11.2			9.6			9.2		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			11.2			9.6			9.2		
LOS by Appr:	*			B			A			A		

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Default Scenario Mon Jan 7, 2002 15:10:57 Page 7-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

Intersection #107 Etiwanda Ave. - East (NS) / Wilson Ave. (EW)

Average Delay (sec/veh): 12.9 Worst Case Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1!	0	0	0 0	0	0 0	0 0	0	1 0	0 1	0	0 0
Volume Module:												
Base Vol:	191	0	19	0	0	0	0	101	129	1	9	0
Growth Adj:	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00
Initial Bse:	191	0	19	0	0	0	0	101	129	1	9	0
Added Vol:	47	0	35	0	0	0	0	21	26	19	12	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	238	0	54	0	0	0	0	122	155	20	21	0
User Adj:	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00
PHF Adj:	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00 1.00	1.00	1.00
PHF Volume:	238	0	54	0	0	0	0	122	155	20	21	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	238	0	54	0	0	0	0	122	155	20	21	0
Critical Gap Module:												
Critical Gp:	6.4 xxxx		6.2	xxxxx xxxx		xxxxx	xxxxx xxxx		xxxxx	4.1 xxxx		xxxxx
FollowUpTim:	3.5 xxxx		3.3	xxxxx xxxx		xxxxx	xxxxx xxxx		xxxxx	2.2 xxxx		xxxxx
Capacity Module:												
Cnflict Vol:	261 xxxx		200	xxxx xxxx		xxxxx	xxxx xxxx		xxxxx	277 xxxx		xxxxx
Potent Cap.:	733 xxxx		847	xxxx xxxx		xxxxx	xxxx xxxx		xxxxx	1298 xxxx		xxxxx
Move Cap.:	724 xxxx		847	xxxx xxxx		xxxxx	xxxx xxxx		xxxxx	1298 xxxx		xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx xxxx		xxxxx	xxxxx xxxx		xxxxx	xxxxx xxxx		xxxxx	7.8 xxxx		xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT - LTR		- RT	LT - LTR		- RT	LT - LTR		- RT	LT - LTR		- RT
Shared Cap.:	xxxx 744		xxxxx	xxxx xxxx		xxxxx	xxxx xxxx		xxxxx	xxxx xxxx		xxxxx
Shrd StpDel:	xxxxx 12.9		xxxxx	xxxxx xxxx		xxxxx	xxxxx xxxx		xxxxx	7.8 xxxx		xxxxx
Shared LOS:	*	B	*	*	*	*	*	*	*	A	*	*
ApproachDel:	12.9			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

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Default Scenario Mon Jan 7, 2002 15:10:57 Page 3-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec):	100	Critical Vol./Cap. (X):	1.066
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	46.9
Optimal Cycle:	0	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	145	189	236	14	129	6	6	30	134	146	18	25
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	145	189	236	14	129	6	6	30	134	146	18	25
Added Vol:	0	70	0	0	39	1	2	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	145	259	236	14	168	7	8	30	134	146	18	25
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.83	0.83	0.83	0.94	0.94	0.94	0.90	0.90	0.90
PHF Volume:	161	288	262	17	202	8	9	32	143	162	20	28
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	161	288	262	17	202	8	9	32	143	162	20	28
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	161	288	262	17	202	8	9	32	143	162	20	28
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.23	0.40	0.37	0.07	0.89	0.04	0.05	0.17	0.78	0.77	0.10	0.13
Final Sat.:	151	270	246	41	493	21	25	95	423	398	49	68
Capacity Analysis Module:												
Vol/Sat:	1.07	1.07	1.07	0.41	0.41	0.41	0.34	0.34	0.34	0.41	0.41	0.41
Crit Moves:	****				****		****			****		
Delay/Veh:	76.3	76.3	76.3	13.3	13.3	13.3	12.3	12.3	12.3	14.1	14.1	14.1
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	76.3	76.3	76.3	13.3	13.3	13.3	12.3	12.3	12.3	14.1	14.1	14.1
LOS by Move:	F	F	F	B	B	B	B	B	B	B	B	B
ApproachDel:		76.3			13.3			12.3			14.1	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		76.3			13.3			12.3			14.1	
LOS by Appr:		F			B			B			B	

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Default Scenario Mon Jan 7, 2002 15:10:57 Page 4-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.688
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 22.3
Optimal Cycle: 60 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1	1 0	0 1	0
Volume Module:												
Base Vol:	77	191	20	23	192	181	331	137	49	9	102	38
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	77	191	20	23	192	181	331	137	49	9	102	38
Added Vol:	0	30	0	0	17	22	40	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	77	221	20	23	209	203	371	137	49	9	102	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.88	0.88	0.88	0.81	0.81	0.81	0.87	0.87	0.87
PHF Volume:	89	254	23	26	238	231	458	169	60	10	117	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	89	254	23	26	238	231	458	169	60	10	117	44
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	89	254	23	26	238	231	458	169	60	10	117	44
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.92	0.08	1.00	0.51	0.49	1.00	1.00	1.00	1.00	0.73	0.27
Final Sat.:	1700	1651	149	1700	913	887	1700	1800	1800	1700	1311	489
Capacity Analysis Module:												
Vol/Sat:	0.05	0.15	0.15	0.02	0.26	0.26	0.27	0.09	0.03	0.01	0.09	0.09
Crit Moves:					****		****				****	
Green/Cycle:	0.32	0.32	0.32	0.32	0.32	0.32	0.33	0.35	0.35	0.23	0.25	0.25
Volume/Cap:	0.16	0.48	0.48	0.05	0.81	0.81	0.81	0.27	0.10	0.03	0.36	0.36
Delay/Veh:	14.8	17.1	17.1	14.2	27.6	27.6	27.3	14.3	13.2	17.8	19.0	19.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.8	17.1	17.1	14.2	27.6	27.6	27.3	14.3	13.2	17.8	19.0	19.0
DesignQueue:	2	6	1	1	6	6	11	4	1	0	3	1

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Default Scenario Fri Jun 14, 2002 14:56:38 Page 3-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

Intersection #108 East Ave. (NS) / Wilson Ave. (EW)

Average Delay (sec/veh): 8.5 Worst Case Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1	0 0	0	0 0	1 0	0	0 0	0 0	1	0 0	0 0	0
Volume Module:												
Base Vol:	10	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
Initial Bse:	10	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	72	35	0	0	19	0	0	0	40	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	82	35	0	0	19	0	0	0	40	0	0	0
User Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
PHF Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
PHF Volume:	82	35	0	0	19	0	0	0	40	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	82	35	0	0	19	0	0	0	40	0	0	0
Critical Gap Module:												
Critical Gp:	4.1 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.2	xxxxx	xxxx	xxxxx	
FollowUpTim:	2.2 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	
Capacity Module:												
Cnflict Vol:	19 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	19	xxxx	xxxx	xxxxx	
Potent Cap.:	1611 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1065	xxxx	xxxx	xxxxx	
Move Cap.:	1611 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1065	xxxx	xxxx	xxxxx	
Level Of Service Module:												
Stopped Del:	7.2 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	8.5	xxxxx	xxxx	xxxxx	
LOS by Move:	A *	*	*	*	*	*	*	A	*	*	*	
Movement:	LT - LTR	- RT	LT - LTR	- RT	LT - LTR	- RT	LT - LTR	- RT	LT - LTR	- RT		
Shared Cap.:	xxxx xxxx	xxxxx	xxxx xxxx	xxxxx	xxxx xxxx	xxxxx	xxxx xxxx	xxxxx	xxxx xxxx	xxxxx		
Shrd StpDel:	7.4 xxxx	xxxxx	xxxxx xxxx	xxxxx	xxxxx xxxx	xxxxx	xxxxx xxxx	xxxxx	xxxxx xxxx	xxxxx		
Shared LOS:	A *	*	*	*	*	*	*	*	*	*		
ApproachDel:	xxxxxx		xxxxxx		8.5		xxxxxx					
ApproachLOS:	*		*		A		*					

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Default Scenario Fri Jun 14, 2002 15:07:25 Page 2-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 0.495
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 12.4
Optimal Cycle: 0 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	53	18	107	14	10	12	10	207	38	49	163	22
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	53	18	107	14	10	12	10	207	38	49	163	22
Added Vol:	0	54	0	30	30	0	0	0	0	0	0	54
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	53	72	107	44	40	12	10	207	38	49	163	76
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.78	0.78	0.78	0.86	0.86	0.86	0.90	0.90	0.90	0.91	0.91	0.91
PHF Volume:	68	92	137	51	47	14	11	230	42	54	179	84
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	68	92	137	51	47	14	11	230	42	54	179	84
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	68	92	137	51	47	14	11	230	42	54	179	84
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.23	0.31	0.46	0.46	0.42	0.12	0.04	0.81	0.15	0.17	0.57	0.26
Final Sat.:	142	193	287	243	221	66	25	507	93	109	361	169
Capacity Analysis Module:												
Vol/Sat:	0.48	0.48	0.48	0.21	0.21	0.21	0.45	0.45	0.45	0.50	0.50	0.50
Crit Mpves:		****		****				****		****		
Delay/Veh:	12.7	12.7	12.7	10.3	10.3	10.3	12.4	12.4	12.4	12.9	12.9	12.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.7	12.7	12.7	10.3	10.3	10.3	12.4	12.4	12.4	12.9	12.9	12.9
LOS by Move:	B	B	B	B	B	B	B	B	B	B	B	B
ApproachDel:		12.7			10.3			12.4			12.9	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		12.7			10.3			12.4			12.9	
LOS by Appr:		B			B			B			B	

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Default Scenario Mon Jan 7, 2002 15:10:57 Page 6-1

Etiwanda Properties
Opening Year (2004) With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #7 East Ave. (NS) / Victoria St. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.240
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 14.1
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	16	16	10	16	16	21	21	21	21	21	21
Lanes:	1 0	2 0	1	1 0	1 0	1	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	51	210	125	63	127	38	6	92	60	83	101	53
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	51	210	125	63	127	38	6	92	60	83	101	53
Added Vol:	0	33	0	12	18	0	0	0	0	0	0	21
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	51	243	125	75	145	38	6	92	60	83	101	74
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.83	0.83	0.83	0.97	0.97	0.97	0.94	0.94	0.94
PHF Volume:	54	259	133	90	175	46	6	95	62	88	107	79
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	54	259	133	90	175	46	6	95	62	88	107	79
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	54	259	133	90	175	46	6	95	62	88	107	79
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.61	0.39	1.00	1.00	1.00
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	1089	711	1700	1800	1800
Capacity Analysis Module:												
Vol/Sat:	0.03	0.07	0.07	0.05	0.10	0.03	0.00	0.09	0.09	0.05	0.06	0.04
Crit Moves:	****				****			****				
Green/Cycle:	0.17	0.34	0.34	0.21	0.38	0.38	0.35	0.35	0.35	0.35	0.35	0.56
Volume/Cap:	0.19	0.21	0.22	0.25	0.25	0.07	0.01	0.25	0.25	0.15	0.17	0.08
Delay/Veh:	21.9	14.2	14.4	20.1	12.8	11.7	12.7	14.1	14.1	13.5	13.6	6.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.9	14.2	14.4	20.1	12.8	11.7	12.7	14.1	14.1	13.5	13.6	6.1
DesignQueue:	2	6	3	2	4	1	0	2	1	2	2	1

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APPENDIX G

OPENING YEAR (2004) CONDITIONS INTERSECTION ANALYSIS WITH PROJECT (WITH IMPROVEMENTS)

Default Scenario Tue Jan 8, 2002 14:53:32 Page 2-1

Etiwanda Properties
Opening Year (2004) With Project Conditions (With Improvements)
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.735
Loss Time (sec): 4 (Y+R = 3 sec) Average Delay (sec/veh): 15.3
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	224	93	156	58	265	19	10	96	296	269	127	57
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	224	93	156	58	265	19	10	96	296	269	127	57
Added Vol:	0	20	0	0	60	2	1	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	224	113	156	58	325	21	11	96	296	269	127	57
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.79	0.79	0.79	0.81	0.81	0.81	0.68	0.68	0.68	0.85	0.85	0.85
PHF Volume:	284	143	197	72	401	26	16	141	435	316	149	67
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	284	143	197	72	401	26	16	141	435	316	149	67
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	284	143	197	72	401	26	16	141	435	316	149	67
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	0.47	0.22	0.31	0.15	0.80	0.05	0.03	0.24	0.73	0.61	0.27	0.12
Final Sat.:	797	402	555	256	1436	93	49	428	1320	1033	488	219
Capacity Analysis Module:												
Vol/Sat:	0.36	0.36	0.36	0.28	0.28	0.28	0.33	0.33	0.33	0.31	0.31	0.31
Crit Moves:		****						****				
Green/Cycle:	0.48	0.48	0.48	0.48	0.48	0.48	0.45	0.45	0.45	0.45	0.45	0.45
Volume/Cap:	0.73	0.73	0.73	0.58	0.58	0.58	0.73	0.73	0.73	0.68	0.68	0.68
Delay/Veh:	15.7	15.7	15.7	12.0	12.0	12.0	17.1	17.1	17.1	15.6	15.6	15.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.7	15.7	15.7	12.0	12.0	12.0	17.1	17.1	17.1	15.6	15.6	15.6
DesignQueue:	5	3	4	1	7	0	0	3	9	6	3	1

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Default Scenario Thu Jan 10, 2002 16:27:15 Page 3-1

Etiwanda Properties
Opening Year (2004) With Project Conditions (With Improvements)
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec):	130	Critical Vol./Cap. (X):	0.935
Loss Time (sec):	6 (Y+R = 3 sec)	Average Delay (sec/veh):	46.8
Optimal Cycle:	130	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1 0	0 1	0	1 0	1 0	1	1 0	1 0	1	1 0	0 1	0
Volume Module:												
Base Vol:	51	210	21	46	336	491	238	433	143	52	378	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	51	210	21	46	336	491	238	433	143	52	378	32
Added Vol:	0	9	0	0	26	34	12	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	51	219	21	46	362	525	250	433	143	52	378	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.86	0.86	0.86	0.77	0.77	0.77	0.63	0.63	0.63
PHF Volume:	57	243	23	53	421	610	325	562	186	83	600	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	57	243	23	53	421	610	325	562	186	83	600	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	57	243	23	53	421	610	325	562	186	83	600	51
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.91	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.08
Final Sat.:	1700	1643	157	1700	1800	1800	1700	1800	1800	1700	1660	140
Capacity Analysis Module:												
Vol/Sat:	0.03	0.15	0.15	0.03	0.23	0.34	0.19	0.31	0.10	0.05	0.36	0.36
Crit Moves:						****	****				****	
Green/Cycle:	0.36	0.36	0.36	0.36	0.36	0.36	0.20	0.51	0.51	0.08	0.39	0.39
Volume/Cap:	0.09	0.41	0.41	0.09	0.64	0.93	0.93	0.61	0.20	0.63	0.93	0.93
Delay/Veh:	27.4	31.4	31.4	27.3	36.7	60.7	82.8	23.5	17.2	67.8	58.1	58.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	27.4	31.4	31.4	27.3	36.7	60.7	82.8	23.5	17.2	67.8	58.1	58.1
DesignQueue:	3	12	1	2	21	31	20	21	7	6	29	2

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Default Scenario Fri Jun 14, 2002 15:54:41 Page 2-1

Etiwanda Properties
Opening Year (2004) With Project Conditions (With Improvements)
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.809
Loss Time (sec): 4 (Y+R = 3 sec) Average Delay (sec/veh): 15.8
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	83	81	106	42	87	47	41	172	87	198	384	68
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	83	81	106	42	87	47	41	172	87	198	384	68
Added Vol:	0	16	0	46	46	0	0	0	0	0	0	16
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	83	97	106	88	133	47	41	172	87	198	384	84
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.57	0.57	0.57	0.65	0.65	0.65	0.77	0.77	0.77
PHF Volume:	97	113	123	154	233	82	63	265	134	257	499	109
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	97	113	123	154	233	82	63	265	134	257	499	109
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	97	113	123	154	233	82	63	265	134	257	499	109
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	0.30	0.33	0.37	0.34	0.49	0.17	0.14	0.57	0.29	0.31	0.57	0.12
Final Sat.:	514	600	656	580	876	310	244	1024	518	526	1020	223
Capacity Analysis Module:												
Vol/Sat:	0.19	0.19	0.19	0.27	0.27	0.27	0.26	0.26	0.26	0.49	0.49	0.49
Crit Moves:					****						****	
Green/Cycle:	0.33	0.33	0.33	0.33	0.33	0.33	0.60	0.60	0.60	0.60	0.60	0.60
Volume/Cap:	0.57	0.57	0.57	0.81	0.81	0.81	0.43	0.43	0.43	0.81	0.81	0.81
Delay/Veh:	18.0	18.0	18.0	26.7	26.7	26.7	6.6	6.6	6.6	13.9	13.9	13.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	18.0	18.0	18.0	26.7	26.7	26.7	6.6	6.6	6.6	13.9	13.9	13.9
DesignQueue:	2	3	3	4	6	2	1	4	2	4	7	2

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Default Scenario Tue Jan 8, 2002 14:53:53 Page 2-1

Etiwanda Properties
Opening Year (2004) With Project Conditions (With Improvements)
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.560
Loss Time (sec): 4 (Y+R = 3 sec) Average Delay (sec/veh): 9.5
Optimal Cycle: 60 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	145	189	236	14	129	6	6	30	134	146	18	25
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	145	189	236	14	129	6	6	30	134	146	18	25
Added Vol:	0	70	0	0	39	1	2	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	145	259	236	14	168	7	8	30	134	146	18	25
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.83	0.83	0.83	0.94	0.94	0.94	0.90	0.90	0.90
PHF Volume:	161	288	262	17	202	8	9	32	143	162	20	28
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	161	288	262	17	202	8	9	32	143	162	20	28
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	161	288	262	17	202	8	9	32	143	162	20	28
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	0.24	0.40	0.36	0.08	0.88	0.04	0.05	0.17	0.78	0.78	0.09	0.13
Final Sat.:	402	719	655	133	1593	66	83	313	1398	1330	164	228
Capacity Analysis Module:												
Vol/Sat:	0.40	0.40	0.40	0.13	0.13	0.13	0.10	0.10	0.10	0.12	0.12	0.12
Crit Moves:		****									****	
Green/Cycle:	0.68	0.68	0.68	0.68	0.68	0.68	0.25	0.25	0.25	0.25	0.25	0.25
Volume/Cap:	0.59	0.59	0.59	0.19	0.19	0.19	0.41	0.41	0.41	0.49	0.49	0.49
Delay/Veh:	5.8	5.8	5.8	3.5	3.5	3.5	19.4	19.4	19.4	20.1	20.1	20.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	5.8	5.8	5.8	3.5	3.5	3.5	19.4	19.4	19.4	20.1	20.1	20.1
DesignQueue:	2	3	3	0	2	0	0	1	4	4	1	1

Default Scenario Thu Jan 10, 2002 16:25:42 Page 3-1

Etiwanda Properties
Opening Year (2004) With Project Conditions (With Improvements)
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.570
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 18.6
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1	0 0	1 0	1	0 1	0 1	1	0 1	0 1	1	0 0	1 0
Volume Module:												
Base Vol:	77	191	20	23	192	181	331	137	49	9	102	38
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	77	191	20	23	192	181	331	137	49	9	102	38
Added Vol:	0	30	0	0	17	22	40	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	77	221	20	23	209	203	371	137	49	9	102	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.88	0.88	0.88	0.81	0.81	0.81	0.87	0.87	0.87
PHF Volume:	89	254	23	26	238	231	458	169	60	10	117	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	89	254	23	26	238	231	458	169	60	10	117	44
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	89	254	23	26	238	231	458	169	60	10	117	44
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.92	0.08	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.27
Final Sat.:	1700	1651	149	1700	1800	1800	1700	1800	1800	1700	1311	489
Capacity Analysis Module:												
Vol/Sat:	0.05	0.15	0.15	0.02	0.13	0.13	0.27	0.09	0.03	0.01	0.09	0.09
Crit Moves:		****					****				****	
Green/Cycle:	0.25	0.25	0.25	0.25	0.25	0.25	0.40	0.39	0.39	0.26	0.25	0.25
Volume/Cap:	0.21	0.62	0.62	0.06	0.53	0.51	0.67	0.24	0.09	0.02	0.36	0.36
Delay/Veh:	18.0	22.5	22.5	17.2	20.6	20.4	17.5	12.5	11.6	16.6	19.0	19.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	18.0	22.5	22.5	17.2	20.6	20.4	17.5	12.5	11.6	16.6	19.0	19.0
DesignQueue:	2	7	1	1	6	6	10	4	1	0	3	1

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Default Scenario Fri Jun 14, 2002 16:02:27 Page 2-1

Etiwanda Properties
Opening Year (2004) With Project Conditions (With Improvements)
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.370
Loss Time (sec): 4 (Y+R = 3 sec) Average Delay (sec/veh): 10.3
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	53	18	107	14	10	12	10	207	38	49	163	22
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	53	18	107	14	10	12	10	207	38	49	163	22
Added Vol:	0	54	0	30	30	0	0	0	0	0	0	54
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	53	72	107	44	40	12	10	207	38	49	163	76
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.78	0.78	0.78	0.86	0.86	0.86	0.90	0.90	0.90	0.91	0.91	0.91
PHF Volume:	68	92	137	51	47	14	11	230	42	54	179	84
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	68	92	137	51	47	14	11	230	42	54	179	84
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	68	92	137	51	47	14	11	230	42	54	179	84
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	0.24	0.31	0.45	0.47	0.41	0.12	0.04	0.81	0.15	0.18	0.56	0.26
Final Sat.:	406	551	819	803	730	219	70	1458	268	303	1009	470
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	0.17	0.06	0.06	0.06	0.16	0.16	0.16	0.18	0.18	0.18
Crit Moves:		****									****	
Green/Cycle:	0.45	0.45	0.45	0.45	0.45	0.45	0.48	0.48	0.48	0.48	0.48	0.48
Volume/Cap:	0.37	0.37	0.37	0.14	0.14	0.14	0.33	0.33	0.33	0.37	0.37	0.37
Delay/Veh:	11.1	11.1	11.1	9.7	9.7	9.7	9.8	9.8	9.8	10.1	10.1	10.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.1	11.1	11.1	9.7	9.7	9.7	9.8	9.8	9.8	10.1	10.1	10.1
DesignQueue:	1	2	3	1	1	0	0	4	1	1	3	2

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APPENDIX H

YEAR 2020 CONDITIONS INTERSECTION ANALYSIS WITHOUT PROJECT
(WITHOUT IMPROVEMENTS)

Default Scenario Mon Jan 7, 2002 16:05:22 Page 2-1

Etiwanda Properties
Year 2020 Without Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Etiwanda Ave. - West (NS) / Wilson Ave. (EW)

Cycle (sec):	100	Critical Vol./Cap. (X):	0.360
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	9.7
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	221	0	5	2	49	0	0	45	88
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	221	0	5	2	49	0	0	45	88
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	221	0	5	2	49	0	0	45	88
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	233	0	5	2	52	0	0	47	93
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	233	0	5	2	52	0	0	47	93
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	233	0	5	2	52	0	0	47	93
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	647	0	819	576	1252	0	0	664	764
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.36	xxxx	0.01	0.00	0.04	xxxx	xxxx	0.07	0.12
Crit Moves:				****				****				****
Delay/Veh:	0.0	0.0	0.0	11.1	0.0	7.0	8.7	8.4	0.0	0.0	8.3	7.8
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	11.1	0.0	7.0	8.7	8.4	0.0	0.0	8.3	7.8
LOS by Move:	*	*	*	B	*	A	A	A	*	*	A	A
ApproachDel:	xxxxxx				11.0			8.4			8.0	
Delay Adj:	xxxxx				1.00			1.00			1.00	
ApprAdjDel:	xxxxxx				11.0			8.4			8.0	
LOS by Appr:	*				B			A			A	

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Default Scenario Mon Jan 7, 2002 16:05:22 Page 7-1

Etiwanda Properties
Year 2020 Without Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #107 Etiwanda Ave. - East (NS) / Wilson Ave. (EW)

****

Average Delay (sec/veh): 10.6 Worst Case Level Of Service: B

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module:												
Base Vol:	133	0	9	0	0	0	0	21	247	13	17	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	133	0	9	0	0	0	0	21	247	13	17	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	133	0	9	0	0	0	0	21	247	13	17	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	140	0	9	0	0	0	0	22	260	14	18	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	140	0	9	0	0	0	0	22	260	14	18	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	197	xxxx	152	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	282	xxxx	xxxxx
Potent Cap.:	796	xxxx	899	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1292	xxxx	xxxxx
Move Cap.:	789	xxxx	899	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1292	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	796	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	10.6	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	*	*	*	A	*	*
ApproachDel:		10.6		xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:		B		*			*			*		

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Default Scenario Mon Jan 7, 2002 16:05:22 Page 3-1

Etiwanda Properties
Year 2020 Without Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec):	100	Critical Vol./Cap. (X):	2.132	
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	321.7	
Optimal Cycle:	0	Level Of Service:	F	

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	335	89	147	59	279	32	15	134	421	410	303	86
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	335	89	147	59	279	32	15	134	421	410	303	86
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	335	89	147	59	279	32	15	134	421	410	303	86
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	353	94	155	62	294	34	16	141	443	432	319	91
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	353	94	155	62	294	34	16	141	443	432	319	91
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	353	94	155	62	294	34	16	141	443	432	319	91
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.59	0.15	0.26	0.16	0.75	0.09	0.03	0.23	0.74	0.51	0.38	0.11
Final Sat.:	233	62	102	63	299	34	11	98	307	202	150	42
Capacity Analysis Module:												
Vol/Sat:	1.51	1.51	1.51	0.98	0.98	0.98	1.44	1.44	1.44	2.13	2.13	2.13
Crit Moves:	****				****		****				****	
Delay/Veh:	266.3	266	266.3	72.3	72.3	72.3	235.5	236	235.5	538.3	538	538.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	266.3	266	266.3	72.3	72.3	72.3	235.5	236	235.5	538.3	538	538.3
LOS by Move:	F	F	F	F	F	F	F	F	F	F	F	F
ApproachDel:	266.3			72.3			235.5			538.3		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	266.3			72.3			235.5			538.3		
LOS by Appr:	F			F			F			F		

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Default Scenario Mon Jan 7, 2002 16:05:22 Page 4-1

Etiwanda Properties
Year 2020 Without Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec): 130 Critical Vol./Cap. (X): 1.447
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 178.0
Optimal Cycle: 130 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	1	0 1	1 0	0	1 0
Volume Module:												
Base Vol:	69	298	33	68	465	616	196	409	127	148	985	86
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	69	298	33	68	465	616	196	409	127	148	985	86
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	69	298	33	68	465	616	196	409	127	148	985	86
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	73	314	35	72	489	648	206	431	134	156	1037	91
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	73	314	35	72	489	648	206	431	134	156	1037	91
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	73	314	35	72	489	648	206	431	134	156	1037	91
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.90	0.10	1.00	0.43	0.57	1.00	1.00	1.00	1.00	0.92	0.08
Final Sat.:	1700	1621	179	1700	774	1026	1700	1800	1800	1700	1655	145
Capacity Analysis Module:												
Vol/Sat:	0.04	0.19	0.19	0.04	0.63	0.63	0.12	0.24	0.07	0.09	0.63	0.63
Crit Moves:					****		****				****	
Green/Cycle:	0.44	0.44	0.44	0.44	0.44	0.44	0.08	0.37	0.37	0.14	0.43	0.43
Volume/Cap:	0.10	0.44	0.44	0.10	1.45	1.45	1.45	0.64	0.20	0.64	1.45	1.45
Delay/Veh:	21.6	25.9	25.9	21.6	245	244.7	295.4	35.6	27.7	58.2	245	245.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.6	25.9	25.9	21.6	245	244.7	295.4	35.6	27.7	58.2	245	245.1
DesignQueue:	3	13	1	3	24	31	14	21	6	10	50	4

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Default Scenario Mon Jan 7, 2002 16:05:22 Page 8-1

Etiwanda Properties
Year 2020 Without Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

Intersection #108 East Ave. (NS) / Wilson Ave. (EW)

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1!	0 0		0 0 1!	0 0		0 0 0	1 0		0 1	0 0 0	
Volume Module:												
Base Vol:	3	0	106	0	0	0	0	14	17	983	27	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	3	0	106	0	0	0	0	14	17	983	27	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	3	0	106	0	0	0	0	14	17	983	27	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	3	0	112	0	0	0	0	15	18	1035	28	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	3	0	112	0	0	0	0	15	18	1035	28	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	2122	xxxx	24	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	33	xxxx	xxxxx
Potent Cap.:	56	xxxx	1059	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1592	xxxx	xxxxx
Move Cap.:	0	xxxx	1059	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1592	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	0	xxxxx	xxxx	0	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	11.3	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	B	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	F			*			*			*		

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Default Scenario Mon Jan 7, 2002 16:05:22 Page 5-1

Etiwanda Properties
Year 2020 Without Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

Cycle (sec):	100	Critical Vol./Cap. (X):	2.897
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	578.1
Optimal Cycle:	0	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	128	123	101	180	766	228	43	140	149	365	434	104
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	128	123	101	180	766	228	43	140	149	365	434	104
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	128	123	101	180	766	228	43	140	149	365	434	104
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	135	129	106	189	806	240	45	147	157	384	457	109
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	135	129	106	189	806	240	45	147	157	384	457	109
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	135	129	106	189	806	240	45	147	157	384	457	109
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.36	0.35	0.29	0.15	0.66	0.19	0.13	0.42	0.45	0.40	0.48	0.12
Final Sat.:	150	144	119	65	278	83	53	174	185	170	203	49
Capacity Analysis Module:												
Vol/Sat:	0.90	0.90	0.90	2.90	2.90	2.90	0.85	0.85	0.85	2.25	2.25	2.25
Crit Moves:		****			****		****				****	
Delay/Veh:	50.9	50.9	50.9	877.8	878	877.8	42.9	42.9	42.9	590.8	591	590.8
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	50.9	50.9	50.9	877.8	878	877.8	42.9	42.9	42.9	590.8	591	590.8
LOS by Move:	F	F	F	F	F	F	E	E	E	F	F	F
ApproachDel:		50.9			877.8			42.9			590.8	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		50.9			877.8			42.9			590.8	
LOS by Appr:		F			F			E			F	

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Default Scenario Mon Jan 7, 2002 16:05:22 Page 6-1

Etiwanda Properties
Year 2020 Without Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #7 East Ave. (NS) / Victoria St. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.412
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 16.0
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	16	16	10	16	16	21	21	21	21	21	21
Lanes:	1 0	2 0	1	1 0	1 0	1	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	297	195	188	17	60	43	8	75	67	223	260	67
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	297	195	188	17	60	43	8	75	67	223	260	67
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	297	195	188	17	60	43	8	75	67	223	260	67
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	313	205	198	18	63	45	8	79	71	235	274	71
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	313	205	198	18	63	45	8	79	71	235	274	71
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	313	205	198	18	63	45	8	79	71	235	274	71
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.53	0.47	1.00	1.00	1.00
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	951	849	1700	1800	1800
Capacity Analysis Module:												
Vol/Sat:	0.18	0.06	0.11	0.01	0.04	0.03	0.00	0.08	0.08	0.14	0.15	0.04
Crit Moves:	****				****						****	
Green/Cycle:	0.28	0.34	0.34	0.21	0.27	0.27	0.35	0.35	0.35	0.35	0.35	0.56
Volume/Cap:	0.65	0.17	0.32	0.05	0.13	0.09	0.01	0.24	0.24	0.39	0.43	0.07
Delay/Veh:	22.0	14.0	15.1	18.9	16.8	16.6	12.7	14.0	14.0	15.1	15.4	6.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	22.0	14.0	15.1	18.9	16.8	16.6	12.7	14.0	14.0	15.1	15.4	6.0
DesignQueue:	8	5	4	0	2	1	0	2	2	5	6	1

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Default Scenario Mon Jan 7, 2002 16:05:49 Page 2-1

Etiwanda Properties
Year 2020 Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Etiwanda Ave. - West (NS) / Wilson Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 0.650
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 15.7
Optimal Cycle: 0 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0 0	0	1 0	0 0	1	1 0	2 0	0	0 0	1 1	0
Volume Module:												
Base Vol:	0	0	0	142	0	2	33	748	0	0	88	247
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	142	0	2	33	748	0	0	88	247
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	142	0	2	33	748	0	0	88	247
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	149	0	2	35	787	0	0	93	260
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	149	0	2	35	787	0	0	93	260
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	149	0	2	35	787	0	0	93	260
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	464	0	542	552	1212	0	0	569	645
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.32	xxxx	0.00	0.06	0.65	xxxx	xxxx	0.16	0.40
Crit Moves:				****				****				****
Delay/Veh:	0.0	0.0	0.0	13.3	0.0	8.9	9.5	18.5	0.0	0.0	9.9	11.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	13.3	0.0	8.9	9.5	18.5	0.0	0.0	9.9	11.4
LOS by Move:	*	*	*	B	*	A	A	C	*	*	A	B
ApproachDel:	xxxxxx			13.3			18.1			11.0		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			13.3			18.1			11.0		
LOS by Appr:	*			B			C			B		

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Default Scenario Mon Jan 7, 2002 16:05:49 Page 7-1

Etiwanda Properties
Year 2020 Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

Intersection #107 Etiwanda Ave. - East (NS) / Wilson Ave. (EW)

Average Delay (sec/veh): 136.0 Worst Case Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1!	0 0		0 0 0	0 0		0 0 0	1 0		0 1	0 0 0	
Volume Module:												
Base Vol:	281	0	71	0	0	0	0	689	165	5	79	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	281	0	71	0	0	0	0	689	165	5	79	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	281	0	71	0	0	0	0	689	165	5	79	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	296	0	75	0	0	0	0	725	174	5	83	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	296	0	75	0	0	0	0	725	174	5	83	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	906	xxxx	812	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	899	xxxx	xxxxx
Potent Cap.:	309	xxxx	382	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	764	xxxx	xxxxx
Move Cap.:	308	xxxx	382	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	764	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.7	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	320	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	136	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.7	xxxx	xxxxx
Shared LOS:	*	F	*	*	*	*	*	*	*	A	*	*
ApproachDel:		136.0			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		F			*			*			*	

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Default Scenario Mon Jan 7, 2002 16:05:49 Page 3-1

Etiwanda Properties
Year 2020 Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 1.960
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 258.3
Optimal Cycle: 0 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	341	276	401	22	125	14	17	97	277	199	55	47
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	341	276	401	22	125	14	17	97	277	199	55	47
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	341	276	401	22	125	14	17	97	277	199	55	47
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	359	291	422	23	132	15	18	102	292	209	58	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	359	291	422	23	132	15	18	102	292	209	58	49
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	359	291	422	23	132	15	18	102	292	209	58	49
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.33	0.27	0.40	0.14	0.77	0.09	0.04	0.25	0.71	0.66	0.18	0.16
Final Sat.:	183	148	215	58	329	37	23	131	373	314	87	74
Capacity Analysis Module:												
Vol/Sat:	1.96	1.96	1.96	0.40	0.40	0.40	0.78	0.78	0.78	0.67	0.67	0.67
Crit Moves:			****	****					****		****	
Delay/Veh:	454.5	455	454.5	15.2	15.2	15.2	28.7	28.7	28.7	22.9	22.9	22.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	454.5	455	454.5	15.2	15.2	15.2	28.7	28.7	28.7	22.9	22.9	22.9
LOS by Move:	F	F	F	C	C	C	D	D	D	C	C	C
ApproachDel:	454.5			15.2			28.7			22.9		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	454.5			15.2			28.7			22.9		
LOS by Appr:	F			C			D			C		

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Default Scenario Mon Jan 7, 2002 16:05:49 Page 4-1

Etiwanda Properties
Year 2020 Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec): 80 Critical Vol./Cap. (X): 0.794
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 29.3
Optimal Cycle: 80 Level Of Service: C

Approach:	North Bound			South Bound			East Bound				West Bound			
Movement:	L	T	R	L	T	R	L	T	R		L	T	R	
Control:	Permitted			Permitted			Protected				Protected			
Rights:	Include			Include			Include				Include			
Min. Green:	15	15	15	15	15	15	10	15	15		10	15	15	
Lanes:	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0
Volume Module:														
Base Vol:	53	384	45	71	351	163	535	254	54		15	84	91	
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	53	384	45	71	351	163	535	254	54		15	84	91	
Added Vol:	0	0	0	0	0	0	0	0	0		0	0	0	
PasserByVol:	0	0	0	0	0	0	0	0	0		0	0	0	
Initial Fut:	53	384	45	71	351	163	535	254	54		15	84	91	
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	56	404	47	75	369	172	563	267	57		16	88	96	
Reduct Vol:	0	0	0	0	0	0	0	0	0		0	0	0	
Reduced Vol:	56	404	47	75	369	172	563	267	57		16	88	96	
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	56	404	47	75	369	172	563	267	57		16	88	96	
Saturation Flow Module:														
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800		1800	1800	1800	
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00		0.94	1.00	1.00	
Lanes:	1.00	0.90	0.10	1.00	0.68	0.32	1.00	1.00	1.00		1.00	0.48	0.52	
Final Sat.:	1700	1611	189	1700	1229	571	1700	1800	1800		1700	864	936	
Capacity Analysis Module:														
Vol/Sat:	0.03	0.25	0.25	0.04	0.30	0.30	0.33	0.15	0.03		0.01	0.10	0.10	
Crit Moves:					****		****					****		
Green/Cycle:	0.35	0.35	0.35	0.35	0.35	0.35	0.39	0.34	0.34		0.23	0.19	0.19	
Volume/Cap:	0.09	0.72	0.72	0.13	0.86	0.86	0.86	0.43	0.09		0.04	0.55	0.55	
Delay/Veh:	17.5	26.4	26.4	17.7	35.3	35.3	33.3	20.7	17.8		24.0	31.3	31.3	
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	17.5	26.4	26.4	17.7	35.3	35.3	33.3	20.7	17.8		24.0	31.3	31.3	
DesignQueue:	2	12	1	2	12	5	17	8	2		1	3	4	

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Default Scenario Mon Jan 7, 2002 16:05:49 Page 8-1

Etiwanda Properties
Year 2020 Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

Intersection #108 East Ave. (NS) / Wilson Ave. (EW)

Average Delay (sec/veh): 19.1 Worst Case Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module:												
Base Vol:	1	0	113	0	0	0	0	767	21	159	79	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	0	113	0	0	0	0	767	21	159	79	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	0	113	0	0	0	0	767	21	159	79	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	1	0	119	0	0	0	0	807	22	167	83	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	0	119	0	0	0	0	807	22	167	83	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1236	xxxx	818	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	829	xxxx	xxxxx
Potent Cap.:	196	xxxx	379	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	811	xxxx	xxxxx
Move Cap.:	162	xxxx	379	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	811	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.4	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	374	xxxxx	xxxx	0	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	19.1	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	10.6	xxxx	xxxxx
Shared LOS:	*	C	*	*	*	*	*	*	*	B	*	*
ApproachDel:		19.1			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		C			*			*			*	

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Default Scenario Mon Jan 7, 2002 16:05:49 Page 5-1

Etiwanda Properties
Year 2020 Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

****

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

****

Cycle (sec): 100 Critical Vol./Cap. (X): 1.149
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 74.1
Optimal Cycle: 0 Level Of Service: F

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	87	68	308	105	76	30	22	407	74	130	203	40
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	87	68	308	105	76	30	22	407	74	130	203	40
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	87	68	308	105	76	30	22	407	74	130	203	40
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	92	72	324	111	80	32	23	428	78	137	214	42
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	92	72	324	111	80	32	23	428	78	137	214	42
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	92	72	324	111	80	32	23	428	78	137	214	42
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.19	0.15	0.66	0.50	0.36	0.14	0.04	0.81	0.15	0.35	0.54	0.11
Final Sat.:	90	70	318	196	142	56	20	373	68	154	241	47
Capacity Analysis Module:												
Vol/Sat:	1.02	1.02	1.02	0.56	0.56	0.56	1.15	1.15	1.15	0.89	0.89	0.89
Crit Moves:		****			****				****		****	
Delay/Veh:	73.8	73.8	73.8	22.1	22.1	22.1	116.1	116	116.1	47.4	47.4	47.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	73.8	73.8	73.8	22.1	22.1	22.1	116.1	116	116.1	47.4	47.4	47.4
LOS by Move:	F	F	F	C	C	C	F	F	F	E	E	E
ApproachDel:		73.8			22.1			116.1			47.4	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		73.8			22.1			116.1			47.4	
LOS by Appr:		F			C			F			E	

****

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Default Scenario Mon Jan 7, 2002 16:05:49 Page 6-1

Etiwanda Properties
Year 2020 Without Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #7 East Ave. (NS) / Victoria St. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.581
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 17.0
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	16	16	10	16	16	21	21	21	21	21	21
Lanes:	1 0	2 0	1	1 0	1 0	1	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	122	317	336	80	296	43	8	214	255	279	165	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	122	317	336	80	296	43	8	214	255	279	165	55
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	122	317	336	80	296	43	8	214	255	279	165	55
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	128	334	354	84	312	45	8	225	268	294	174	58
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	128	334	354	84	312	45	8	225	268	294	174	58
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	128	334	354	84	312	45	8	225	268	294	174	58
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.46	0.54	1.00	1.00	1.00
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	821	979	1700	1800	1800
Capacity Analysis Module:												
Vol/Sat:	0.08	0.09	0.20	0.05	0.17	0.03	0.00	0.27	0.27	0.17	0.10	0.03
Crit Moves:	****				****			****				
Green/Cycle:	0.17	0.28	0.28	0.17	0.28	0.28	0.45	0.45	0.45	0.45	0.45	0.62
Volume/Cap:	0.45	0.33	0.71	0.29	0.61	0.09	0.01	0.61	0.61	0.38	0.21	0.05
Delay/Veh:	23.7	17.5	24.2	22.1	20.8	15.9	9.1	13.9	13.9	11.3	10.2	4.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	23.7	17.5	24.2	22.1	20.8	15.9	9.1	13.9	13.9	11.3	10.2	4.4
DesignQueue:	4	8	9	2	8	1	0	4	5	6	3	1

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APPENDIX I

YEAR 2020 CONDITIONS INTERSECTION ANALYSIS WITH PROJECT
(WITHOUT IMPROVEMENTS)

Default Scenario Thu Jan 3, 2002 11:53:57 Page 3-1

Etiwanda Properties
Year 2020 With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Etiwanda Ave. - West (NS) / Wilson Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 0.435
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 10.4
Optimal Cycle: 0 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	221	0	5	2	49	0	0	45	88
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	221	0	5	2	49	0	0	45	88
Added Vol:	0	0	0	40	0	20	7	6	0	0	18	14
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	261	0	25	9	55	0	0	63	102
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	275	0	26	9	58	0	0	66	107
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	275	0	26	9	58	0	0	66	107
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	275	0	26	9	58	0	0	66	107
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	632	0	794	548	1189	0	0	637	728
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.43	xxxx	0.03	0.02	0.05	xxxx	xxxx	0.10	0.15
Crit Moves:				****				****				****
Delay/Veh:	0.0	0.0	0.0	12.4	0.0	7.2	9.1	8.7	0.0	0.0	8.7	8.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	12.4	0.0	7.2	9.1	8.7	0.0	0.0	8.7	8.2
LOS by Move:	*	*	*	B	*	A	A	A	*	*	A	A
ApproachDel:	xxxxxx			11.9			8.8			8.4		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			11.9			8.8			8.4		
LOS by Appr:	*			B			A			A		

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Default Scenario Thu Jan 3, 2002 15:12:28 Page 7-1

Etiwanda Properties
Year 2020 With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

Intersection #107 Etiwanda Ave. - East (NS) / Wilson Ave. (EW)

Average Delay (sec/veh): 12.0 Worst Case Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1!	0	0	0 0 0	0	0	0 0 0	1	0	0 1 0	0	0
Volume Module:												
Base Vol:	133	0	9	0	0	0	0	21	247	13	17	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	133	0	9	0	0	0	0	21	247	13	17	0
Added Vol:	14	0	10	0	0	0	0	6	40	30	18	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	147	0	19	0	0	0	0	27	287	43	35	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	155	0	20	0	0	0	0	28	302	45	37	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	155	0	20	0	0	0	0	28	302	45	37	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	307	xxxx	179	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	331	xxxx	xxxxx
Potent Cap.:	689	xxxx	869	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1240	xxxx	xxxxx
Move Cap.:	670	xxxx	869	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1240	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	688	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	12.0	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	*	*	*	A	*	*
ApproachDel:		12.0			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		B			*			*			*	

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Default Scenario Thu Jan 3, 2002 11:53:57 Page 4-1

Etiwanda Properties
Year 2020 With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 2.140
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 332.1
Optimal Cycle: 0 Level Of Service: F

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Stop Sign						Stop Sign						Stop Sign						Stop Sign					
Rights:	Include						Include						Include						Include					
Min. Green:	0		0		0		0		0		0		0		0		0		0		0		0	
Lanes:	0	0	1!	0	0		0	0	1!	0	0		0	0	1!	0	0		0	0	1!	0	0	
Volume Module:																								
Base Vol:	335		89		147		59		279		32		15		134		421		410		303		86	
Growth Adj:	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	335		89		147		59		279		32		15		134		421		410		303		86	
Added Vol:	0		20		0		0		60		2		1		0		0		0		0		0	
PasserByVol:	0		0		0		0		0		0		0		0		0		0		0		0	
Initial Fut:	335		109		147		59		339		34		16		134		421		410		303		86	
User Adj:	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	0.95		0.95		0.95		0.95		0.95		0.95		0.95		0.95		0.95		0.95		0.95		0.95	
PHF Volume:	353		115		155		62		357		36		17		141		443		432		319		91	
Reduct Vol:	0		0		0		0		0		0		0		0		0		0		0		0	
Reduced Vol:	353		115		155		62		357		36		17		141		443		432		319		91	
PCE Adj:	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
MLF Adj:	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Final Vol.:	353		115		155		62		357		36		17		141		443		432		319		91	
Saturation Flow Module:																								
Adjustment:	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Lanes:	0.57		0.18		0.25		0.14		0.78		0.08		0.03		0.23		0.74		0.51		0.38		0.11	
Final Sat.:	224		73		98		54		310		31		12		97		306		202		149		42	
Capacity Analysis Module:																								
Vol/Sat:	1.57		1.57		1.57		1.15		1.15		1.15		1.45		1.45		1.45		2.14		2.14		2.14	
Crit Moves:			****						****		****										****			
Delay/Veh:	291.7		292		291.7		122.3		122		122.3		239.2		239		239.2		541.9		542		541.9	
Delay Adj:	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
AdjDel/Veh:	291.7		292		291.7		122.3		122		122.3		239.2		239		239.2		541.9		542		541.9	
LOS by Move:	F		F		F		F		F		F		F		F		F		F		F		F	
ApproachDel:			291.7						122.3						239.2						541.9			
Delay Adj:			1.00						1.00						1.00						1.00			
ApprAdjDel:			291.7						122.3						239.2						541.9			
LOS by Appr:			F						F						F						F			

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Default Scenario Fri Jan 4, 2002 09:55:35 Page 5-1

Etiwanda Properties
Year 2020 With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec): 130 Critical Vol./Cap. (X): 1.491
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 192.4
Optimal Cycle: 130 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1	1 0	0 1	0
Volume Module:												
Base Vol:	69	298	33	68	465	616	196	409	127	148	985	86
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	69	298	33	68	465	616	196	409	127	148	985	86
Added Vol:	0	9	0	0	26	34	12	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	69	307	33	68	491	650	208	409	127	148	985	86
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	73	323	35	72	517	684	219	431	134	156	1037	91
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	73	323	35	72	517	684	219	431	134	156	1037	91
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	73	323	35	72	517	684	219	431	134	156	1037	91
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.90	0.10	1.00	0.43	0.57	1.00	1.00	1.00	1.00	0.92	0.08
Final Sat.:	1700	1625	175	1700	775	1025	1700	1800	1800	1700	1655	145
Capacity Analysis Module:												
Vol/Sat:	0.04	0.20	0.20	0.04	0.67	0.67	0.13	0.24	0.07	0.09	0.63	0.63
Crit Moves:					****		****				****	
Green/Cycle:	0.45	0.45	0.45	0.45	0.45	0.45	0.09	0.37	0.37	0.14	0.42	0.42
Volume/Cap:	0.10	0.44	0.44	0.09	1.49	1.49	1.49	0.65	0.20	0.65	1.49	1.49
Delay/Veh:	20.8	25.2	25.2	20.8	264	263.5	312.9	36.7	28.4	59.2	266	265.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	20.8	25.2	25.2	20.8	264	263.5	312.9	36.7	28.4	59.2	266	265.7
DesignQueue:	3	14	1	3	25	33	15	21	6	10	51	4

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Default Scenario Thu Jan 3, 2002 11:53:57 Page 8-1

Etiwanda Properties
Year 2020 With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #108 East Ave. (NS) / Wilson Ave. (EW)

****

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	3	0	106	0	0	0	0	I4	17	983	27	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	3	0	106	0	0	0	0	14	17	983	27	0
Added Vol:	13	7	0	10	20	0	0	24	38	0	8	3
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	16	7	106	10	20	0	0	38	55	983	35	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	17	7	112	11	21	0	0	40	58	1035	37	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	17	7	112	11	21	0	0	40	58	1035	37	3
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	2187	2178	69	2236	2206	xxxxx	xxxx	xxxx	xxxxx	98	xxxx	xxxxx
Potent Cap.:	33	47	1000	31	45	xxxxx	xxxx	xxxx	xxxxx	1508	xxxx	xxxxx
Move Cap.:	0	0	1000	0	0	xxxxx	xxxx	xxxx	xxxxx	1508	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	0	xxxxx	0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	F			F			*			*		

Default Scenario Thu Jan 3, 2002 11:53:57 Page 6-1

Etiwanda Properties
Year 2020 With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 3.082
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 624.3
Optimal Cycle: 0 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	128	123	101	180	766	228	43	140	149	365	434	104
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	128	123	101	180	766	228	43	140	149	365	434	104
Added Vol:	0	16	0	12	46	0	0	0	0	0	0	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	128	139	101	192	812	228	43	140	149	365	434	108
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	135	146	106	202	855	240	45	147	157	384	457	114
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	135	146	106	202	855	240	45	147	157	384	457	114
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	135	146	106	202	855	240	45	147	157	384	457	114
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.35	0.38	0.27	0.16	0.66	0.18	0.13	0.42	0.45	0.40	0.48	0.12
Final Sat.:	144	156	113	66	277	78	53	172	183	168	199	50
Capacity Analysis Module:												
Vol/Sat:	0.94	0.94	0.94	3.08	3.08	3.08	0.86	0.86	0.86	2.29	2.29	2.29
Crit Moves:			****			****			****	****		
Delay/Veh:	59.0	59.0	59.0	961.1	961	961.1	44.5	44.5	44.5	608.3	608	608.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	59.0	59.0	59.0	961.1	961	961.1	44.5	44.5	44.5	608.3	608	608.3
LOS by Move:	F	F	F	F	F	F	E	E	E	F	F	F
ApproachDel:	59.0			961.1			44.5			608.3		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	59.0			961.1			44.5			608.3		
LOS by Appr:	F			F			E			F		

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Default Scenario Fri Jan 4, 2002 09:55:35 Page 7-1

Etiwanda Properties
Year 2020 With Project Conditions
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #7 East Ave. (NS) / Victoria St. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.430
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 16.0
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	16	16	10	16	16	21	21	21	21	21	21
Lanes:	1 0	2 0	1	1 0	1 0	1	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	297	195	188	17	60	43	8	75	67	223	260	67
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	297	195	188	17	60	43	8	75	67	223	260	67
Added Vol:	0	10	0	18	28	0	0	0	0	0	0	6
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	297	205	188	35	88	43	8	75	67	223	260	73
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	313	216	198	37	93	45	8	79	71	235	274	77
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	313	216	198	37	93	45	8	79	71	235	274	77
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	313	216	198	37	93	45	8	79	71	235	274	77
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.53	0.47	1.00	1.00	1.00
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	951	849	1700	1800	1800
Capacity Analysis Module:												
Vol/Sat:	0.18	0.06	0.11	0.02	0.05	0.03	0.00	0.08	0.08	0.14	0.15	0.04
Crit Moves:	****				****						****	
Green/Cycle:	0.28	0.34	0.34	0.21	0.27	0.27	0.35	0.35	0.35	0.35	0.35	0.56
Volume/Cap:	0.65	0.18	0.32	0.10	0.19	0.09	0.01	0.24	0.24	0.39	0.43	0.08
Delay/Veh:	22.0	14.0	15.1	19.2	17.2	16.6	12.7	14.0	14.0	15.1	15.4	6.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	22.0	14.0	15.1	19.2	17.2	16.6	12.7	14.0	14.0	15.1	15.4	6.1
DesignQueue:	8	5	4	1	2	1	0	2	2	5	6	1

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Default Scenario Thu Jan 3, 2002 11:52:17 Page 3-1

Etiwanda Properties
Year 2020 With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Etiwanda Ave. - West (NS) / Wilson Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 0.705
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 17.9
Optimal Cycle: 0 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	142	0	2	33	748	0	0	88	247
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	142	0	2	33	748	0	0	88	247
Added Vol:	0	0	0	26	0	13	23	21	0	0	12	47
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	168	0	15	56	769	0	0	100	294
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	177	0	16	59	809	0	0	105	309
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	177	0	16	59	809	0	0	105	309
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	177	0	16	59	809	0	0	105	309
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	452	0	525	525	1149	0	0	545	618
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.39	xxxx	0.03	0.11	0.70	xxxx	xxxx	0.19	0.50
Crit Moves:				****				****				****
Delay/Veh:	0.0	0.0	0.0	14.8	0.0	9.3	10.2	22.0	0.0	0.0	10.5	13.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	14.8	0.0	9.3	10.2	22.0	0.0	0.0	10.5	13.6
LOS by Move:	*	*	*	B	*	A	B	C	*	*	B	B
ApproachDel:	xxxxxx			14.3			21.2			12.8		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			14.3			21.2			12.8		
LOS by Appr:	*			B			C			B		

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Default Scenario Thu Jan 3, 2002 15:13:36 Page 7-1

Etiwanda Properties
Year 2020 With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

Intersection #107 Etiwanda Ave. - East (NS) / Wilson Ave. (EW)

Average Delay (sec/veh): 318.3 Worst Case Level Of Service: F

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Stop Sign						Stop Sign						Uncontrolled						Uncontrolled					
Rights:	Include						Include						Include						Include					
Lanes:	0	0	1!	0	0		0	0	0	0	0		0	0	0	1	0		0	1	0	0	0	
Volume Module:																								
Base Vol:	281	0	71				0	0	0				0	689	165				5	79	0			
Growth Adj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
Initial Bse:	281	0	71				0	0	0				0	689	165				5	79	0			
Added Vol:	47	0	35				0	0	0				0	21	26				19	12	0			
PasserByVol:	0	0	0				0	0	0				0	0	0				0	0	0			
Initial Fut:	328	0	106				0	0	0				0	710	191				24	91	0			
User Adj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
PHF Adj:	0.95	0.95	0.95				0.95	0.95	0.95				0.95	0.95	0.95				0.95	0.95	0.95			
PHF Volume:	345	0	112				0	0	0				0	747	201				25	96	0			
Reduct Vol:	0	0	0				0	0	0				0	0	0				0	0	0			
Final Vol.:	345	0	112				0	0	0				0	747	201				25	96	0			
Critical Gap Module:																								
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				4.1	xxxx	xxxxx									
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				2.2	xxxx	xxxxx									
Capacity Module:																								
Cnflict Vol:	994	xxxx	848	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				948	xxxx	xxxxx									
Potent Cap.:	274	xxxx	364	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				732	xxxx	xxxxx									
Move Cap.:	267	xxxx	364	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				732	xxxx	xxxxx									
Level Of Service Module:																								
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				9.9	xxxx	xxxxx									
LOS by Move:	*	*	*	*	*	*	*	*	*				A	*	*									
Movement:	LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT	
Shared Cap.:	xxxx	285	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx									
Shrd StpDel:	xxxxx	318	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				10.1	xxxx	xxxxx									
Shared LOS:	*	F	*	*	*	*	*	*	*				B	*	*									
ApproachDel:	318.3			xxxxxx			xxxxxx						xxxxxx											
ApproachLOS:	F			*			*						*											

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Default Scenario Thu Jan 3, 2002 11:52:17 Page 4-1

Etiwanda Properties
Year 2020 With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 2.178
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 315.0
Optimal Cycle: 0 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	341	276	401	22	125	14	17	97	277	199	55	47
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	341	276	401	22	125	14	17	97	277	199	55	47
Added Vol:	0	70	0	0	39	1	2	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	341	346	401	22	164	15	19	97	277	199	55	47
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	359	364	422	23	173	16	20	102	292	209	58	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	359	364	422	23	173	16	20	102	292	209	58	49
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	359	364	422	23	173	16	20	102	292	209	58	49
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.31	0.32	0.37	0.11	0.82	0.07	0.05	0.25	0.70	0.66	0.18	0.16
Final Sat.:	165	167	194	46	345	32	25	126	359	303	84	72
Capacity Analysis Module:												
Vol/Sat:	2.18	2.18	2.18	0.50	0.50	0.50	0.81	0.81	0.81	0.69	0.69	0.69
Crit Moves:	****				****		****				****	
Delay/Veh:	552.4	552	552.4	17.6	17.6	17.6	32.1	32.1	32.1	24.7	24.7	24.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	552.4	552	552.4	17.6	17.6	17.6	32.1	32.1	32.1	24.7	24.7	24.7
LOS by Move:	F	F	F	C	C	C	D	D	D	C	C	C
ApproachDel:	552.4			17.6			32.1			24.7		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	552.4			17.6			32.1			24.7		
LOS by Appr:	F			C			D			C		

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Default Scenario Mon Jan 7, 2002 16:02:23 Page 5-1

Etiwanda Properties
Year 2020 With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec): 80 Critical Vol./Cap. (X): 0.845
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 34.2
Optimal Cycle: 80 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	1	0 1	1 0	0	1 0
Volume Module:												
Base Vol:	53	384	45	71	351	163	535	254	54	15	84	91
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	53	384	45	71	351	163	535	254	54	15	84	91
Added Vol:	0	30	0	0	17	22	40	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	53	414	45	71	368	185	575	254	54	15	84	91
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	56	436	47	75	387	195	605	267	57	16	88	96
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	56	436	47	75	387	195	605	267	57	16	88	96
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	56	436	47	75	387	195	605	267	57	16	88	96
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.90	0.10	1.00	0.67	0.33	1.00	1.00	1.00	1.00	0.48	0.52
Final Sat.:	1700	1624	176	1700	1198	602	1700	1800	1800	1700	864	936
Capacity Analysis Module:												
Vol/Sat:	0.03	0.27	0.27	0.04	0.32	0.32	0.36	0.15	0.03	0.01	0.10	0.10
Crit Moves:					****		****				****	
Green/Cycle:	0.35	0.35	0.35	0.35	0.35	0.35	0.39	0.34	0.34	0.23	0.19	0.19
Volume/Cap:	0.09	0.76	0.76	0.13	0.92	0.92	0.92	0.43	0.09	0.04	0.55	0.55
Delay/Veh:	17.5	28.6	28.6	17.7	43.9	43.9	41.8	20.7	17.8	24.0	31.3	31.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	17.5	28.6	28.6	17.7	43.9	43.9	41.8	20.7	17.8	24.0	31.3	31.3
DesignQueue:	2	13	1	2	12	6	18	8	2	1	3	4

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Default Scenario Thu Jan 3, 2002 11:52:17 Page 8-1

Etiwanda Properties
Year 2020 With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Unsignalized Method (Future Volume Alternative)

Intersection #108 East Ave. (NS) / Wilson Ave. (EW)

Average Delay (sec/veh): 110.0 Worst Case Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 1	0 0	0	0 0	0 1	0	0 0	1! 0	0
Volume Module:												
Base Vol:	1	0	113	0	0	0	0	767	21	159	79	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	0	113	0	0	0	0	767	21	159	79	0
Added Vol:	44	23	0	6	13	0	0	16	24	0	28	11
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	45	23	113	6	13	0	0	783	45	159	107	11
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	47	24	119	6	14	0	0	824	47	167	113	12
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	47	24	119	6	14	0	0	824	47	167	113	12
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1308	1307	848	1373	1325	xxxxx	xxxx	xxxx	xxxxx	872	xxxx	xxxxx
Potent Cap.:	138	161	364	124	157	xxxxx	xxxx	xxxx	xxxxx	782	xxxx	xxxxx
Move Cap.:	103	123	364	59	120	xxxxx	xxxx	xxxx	xxxxx	782	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	194	xxxxx	90	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	110	xxxxx	55.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	F	*	F	*	*	*	*	*	*	*	*
ApproachDel:	110.0			55.9			xxxxxx			xxxxxx		
ApproachLOS:	F			F			*			*		

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Default Scenario Thu Jan 3, 2002 11:52:17 Page 6-1

Etiwanda Properties
Year 2020 With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 100 Critical Vol./Cap. (X): 1.199
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 100.9
Optimal Cycle: 0 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	87	68	308	105	76	30	22	407	74	130	203	40
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	87	68	308	105	76	30	22	407	74	130	203	40
Added Vol:	0	54	0	8	30	0	0	0	0	0	0	14
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	87	122	308	113	106	30	22	407	74	130	203	54
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	92	128	324	119	112	32	23	428	78	137	214	57
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	92	128	324	119	112	32	23	428	78	137	214	57
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	92	128	324	119	112	32	23	428	78	137	214	57
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.17	0.24	0.59	0.45	0.43	0.12	0.04	0.81	0.15	0.34	0.52	0.14
Final Sat.:	77	107	271	179	168	47	19	357	65	145	226	60
Capacity Analysis Module:												
Vol/Sat:	1.20	1.20	1.20	0.67	0.67	0.67	1.20	1.20	1.20	0.94	0.94	0.94
Crit Moves:	****			****				****			****	
Delay/Veh:	133.5	134	133.5	27.6	27.6	27.6	135.9	136	135.9	59.1	59.1	59.1
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	133.5	134	133.5	27.6	27.6	27.6	135.9	136	135.9	59.1	59.1	59.1
LOS by Move:	F	F	F	D	D	D	F	F	F	F	F	F
ApproachDel:	133.5			27.6			135.9			59.1		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	133.5			27.6			135.9			59.1		
LOS by Appr:	F			D			F			F		

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Default Scenario Fri Jan 4, 2002 09:58:00 Page 7-1

Etiwanda Properties
Year 2020 With Project Conditions
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #7 East Ave. (NS) / Victoria St. (EW)

Cycle (sec):	60	Critical Vol./Cap. (X):	0.593
Loss Time (sec):	6 (Y+R = 3 sec)	Average Delay (sec/veh):	17.0
Optimal Cycle:	60	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	16	16	10	16	16	21	21	21	21	21	21
Lanes:	1 0	2 0	1	1 0	1 0	1	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	122	317	336	80	296	43	8	214	255	279	165	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	122	317	336	80	296	43	8	214	255	279	165	55
Added Vol:	0	33	0	12	18	0	0	0	0	0	0	21
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	122	350	336	92	314	43	8	214	255	279	165	76
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	128	368	354	97	331	45	8	225	268	294	174	80
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	128	368	354	97	331	45	8	225	268	294	174	80
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	128	368	354	97	331	45	8	225	268	294	174	80
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.46	0.54	1.00	1.00	1.00
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	821	979	1700	1800	1800
Capacity Analysis Module:												
Vol/Sat:	0.08	0.10	0.20	0.06	0.18	0.03	0.00	0.27	0.27	0.17	0.10	0.04
Crit Moves:	****				****			****				
Green/Cycle:	0.17	0.28	0.28	0.18	0.29	0.29	0.44	0.44	0.44	0.44	0.44	0.62
Volume/Cap:	0.45	0.36	0.69	0.32	0.62	0.09	0.01	0.62	0.62	0.39	0.22	0.07
Delay/Veh:	23.7	17.4	23.3	22.2	20.6	15.4	9.5	14.6	14.6	11.7	10.6	4.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	23.7	17.4	23.3	22.2	20.6	15.4	9.5	14.6	14.6	11.7	10.6	4.6
DesignQueue:	4	9	9	3	8	1	0	5	5	6	3	1

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APPENDIX J

YEAR 2020 CONDITIONS INTERSECTION ANALYSIS WITH PROJECT
(WITH IMPROVEMENTS)

Default Scenario Tue Jan 8, 2002 11:33:25 Page 2-1

Etiwanda Properties
Year 2020 With Project Conditions (With Improvements)
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #1 Etiwanda Ave. - West (NS) / Wilson Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.237
Loss Time (sec): 4 (Y+R = 3 sec) Average Delay (sec/veh): 9.9
Optimal Cycle: 60 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	221	0	5	2	49	0	0	45	88
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	221	0	5	2	49	0	0	45	88
Added Vol:	0	0	0	40	0	20	7	6	0	0	18	14
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	261	0	25	9	55	0	0	63	102
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	275	0	26	9	58	0	0	66	107
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	275	0	26	9	58	0	0	66	107
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	275	0	26	9	58	0	0	66	107
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1700	0	1800	1700	3600	0	0	1800	1800
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.16	0.00	0.01	0.01	0.02	0.00	0.00	0.04	0.06
Crit Moves:				****								****
Green/Cycle:	0.00	0.00	0.00	0.68	0.00	0.68	0.25	0.25	0.00	0.00	0.25	0.25
Volume/Cap:	0.00	0.00	0.00	0.24	0.00	0.02	0.02	0.06	0.00	0.00	0.15	0.24
Delay/Veh:	0.0	0.0	0.0	3.7	0.0	3.1	16.9	17.1	0.0	0.0	17.5	18.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	3.7	0.0	3.1	16.9	17.1	0.0	0.0	17.5	18.0
DesignQueue:	0	0	0	3	0	0	0	1	0	0	2	3

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Default Scenario Tue Jan 8, 2002 12:33:04 Page 7-1

Etiwanda Properties
Year 2020 With Project Conditions (With Improvements)
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #107 Etiwanda Ave. - East (NS) / Wilson Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.306
Loss Time (sec): 4 (Y+R = 3 sec) Average Delay (sec/veh): 8.6
Optimal Cycle: 60 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	0	0	0	0	15	15	15	15	0
Lanes:	0 0	1! 0	0	0 0	0 0	0	0 0	0 1	0	0 1	0 0	0
Volume Module:												
Base Vol:	133	0	9	0	0	0	0	21	247	13	17	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	133	0	9	0	0	0	0	21	247	13	17	0
Added Vol:	14	0	10	0	0	0	0	6	40	30	18	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	147	0	19	0	0	0	0	27	287	43	35	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	155	0	20	0	0	0	0	28	302	45	37	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	155	0	20	0	0	0	0	28	302	45	37	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	155	0	20	0	0	0	0	28	302	45	37	0
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	0.89	0.00	0.11	0.00	0.00	0.00	0.00	0.09	0.91	0.57	0.43	0.00
Final Sat.:	1515	0	196	0	0	0	0	155	1645	961	782	0
Capacity Analysis Module:												
Vol/Sat:	0.10	0.00	0.10	0.00	0.00	0.00	0.00	0.18	0.18	0.05	0.05	0.00
Crit Moves:	****							****				
Green/Cycle:	0.33	0.00	0.33	0.00	0.00	0.00	0.00	0.60	0.60	0.60	0.60	0.00
Volume/Cap:	0.31	0.00	0.31	0.00	0.00	0.00	0.00	0.31	0.31	0.08	0.08	0.00
Delay/Veh:	15.1	0.0	15.1	0.0	0.0	0.0	0.0	6.0	6.0	5.1	5.1	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.1	0.0	15.1	0.0	0.0	0.0	0.0	6.0	6.0	5.1	5.1	0.0
DesignQueue:	4	0	0	0	0	0	0	0	4	1	0	0

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Default Scenario Tue Jan 8, 2002 11:33:25 Page 3-1

Etiwanda Properties
Year 2020 With Project Conditions (With Improvements)
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec):	72	Critical Vol./Cap. (X):	0.888
Loss Time (sec):	4 (Y+R = 3 sec)	Average Delay (sec/veh):	22.9
Optimal Cycle:	72	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	335	89	147	59	279	32	15	134	421	410	303	86
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	335	89	147	59	279	32	15	134	421	410	303	86
Added Vol:	0	20	0	0	60	2	1	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	335	109	147	59	339	34	16	134	421	410	303	86
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	353	115	155	62	357	36	17	141	443	432	319	91
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	353	115	155	62	357	36	17	141	443	432	319	91
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	353	115	155	62	357	36	17	141	443	432	319	91
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	0.58	0.18	0.24	0.14	0.78	0.08	0.03	0.23	0.74	0.53	0.37	0.10
Final Sat.:	987	321	433	244	1401	141	50	422	1325	897	663	188
Capacity Analysis Module:												
Vol/Sat:	0.36	0.36	0.36	0.25	0.25	0.25	0.33	0.33	0.33	0.48	0.48	0.48
Crit Moves:		****									****	
Green/Cycle:	0.40	0.40	0.40	0.40	0.40	0.40	0.54	0.54	0.54	0.54	0.54	0.54
Volume/Cap:	0.89	0.89	0.89	0.63	0.63	0.63	0.62	0.62	0.62	0.89	0.89	0.89
Delay/Veh:	33.2	33.2	33.2	19.1	19.1	19.1	12.5	12.5	12.5	24.8	24.8	24.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	33.2	33.2	33.2	19.1	19.1	19.1	12.5	12.5	12.5	24.8	24.8	24.8
DesignQueue:	9	3	4	2	9	1	0	3	9	9	7	2

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Default Scenario Thu Jan 10, 2002 16:37:51 Page 4-1

Etiwanda Properties
Year 2020 With Project Conditions (With Improvements)
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec): 81 Critical Vol./Cap. (X): 0.888
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 29.8
Optimal Cycle: 81 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1	0 0	1 0	1	0 1	0 1	1	0 1	0 1	1	0 1	1 0
Volume Module:												
Base Vol:	69	298	33	68	465	616	196	409	127	148	985	86
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	69	298	33	68	465	616	196	409	127	148	985	86
Added Vol:	0	9	0	0	26	34	12	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	69	307	33	68	491	650	208	409	127	148	985	86
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	73	323	35	72	517	684	219	431	134	156	1037	91
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	73	323	35	72	517	684	219	431	134	156	1037	91
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	73	323	35	72	517	684	219	431	134	156	1037	91
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.90	0.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.84	0.16
Final Sat.:	1700	1625	175	1700	1800	1800	1700	1800	1800	1700	3311	289
Capacity Analysis Module:												
Vol/Sat:	0.04	0.20	0.20	0.04	0.29	0.38	0.13	0.24	0.07	0.09	0.31	0.31
Crit Moves:						****	****				****	
Green/Cycle:	0.43	0.43	0.43	0.43	0.43	0.43	0.15	0.37	0.37	0.12	0.35	0.35
Volume/Cap:	0.10	0.46	0.46	0.10	0.67	0.89	0.89	0.64	0.20	0.74	0.89	0.89
Delay/Veh:	13.9	17.0	17.0	13.9	20.9	33.6	63.8	22.9	17.3	47.5	32.7	32.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	13.9	17.0	17.0	13.9	20.9	33.6	63.8	22.9	17.3	47.5	32.7	32.7
DesignQueue:	2	9	1	2	14	19	9	13	4	6	33	3

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Default Scenario Tue Jan 8, 2002 12:42:42 Page 8-1

Etiwanda Properties
Year 2020 With Project Conditions (With Improvements)
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #108 East Ave. (NS) / Wilson Ave. (EW)

Cycle (sec): 85 Critical Vol./Cap. (X): 0.718
Loss Time (sec): 4 (Y+R = 3 sec) Average Delay (sec/veh): 10.8
Optimal Cycle: 85 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Lanes:	0	0	1! 0	0	0	0 1	0	0	0	1	0	0 1 0
Volume Module:												
Base Vol:	3	0	106	0	0	0	0	14	17	983	27	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	3	0	106	0	0	0	0	14	17	983	27	0
Added Vol:	13	7	0	10	20	0	0	24	38	0	8	3
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	16	7	106	10	20	0	0	38	55	983	35	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	17	7	112	11	21	0	0	40	58	1035	37	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	17	7	112	11	21	0	0	40	58	1035	37	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	17	7	112	11	21	0	0	40	58	1035	37	3
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	0.13	0.05	0.82	0.35	0.65	0.00	1.00	0.41	0.59	1.00	0.92	0.08
Final Sat.:	222	97	1468	588	1177	0	1700	735	1065	1700	1658	142
Capacity Analysis Module:												
Vol/Sat:	0.08	0.08	0.08	0.02	0.02	0.00	0.00	0.05	0.05	0.61	0.02	0.02
Crit Moves:		****								****		
Green/Cycle:	0.18	0.18	0.18	0.18	0.18	0.00	0.00	0.78	0.78	0.78	0.78	0.78
Volume/Cap:	0.43	0.43	0.43	0.10	0.10	0.00	0.00	0.07	0.07	0.78	0.03	0.03
Delay/Veh:	32.1	32.1	32.1	29.5	29.5	0.0	0.0	2.3	2.3	8.6	2.2	2.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	32.1	32.1	32.1	29.5	29.5	0.0	0.0	2.3	2.3	8.6	2.2	2.2
DesignQueue:	1	0	4	0	1	0	0	0	1	13	0	0

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Default Scenario Wed Jan 9, 2002 11:06:52 Page 5-1

Etiwanda Properties
Year 2020 With Project Conditions (With Improvements)
AM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.786
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 29.3
Optimal Cycle: 60 Level Of Service: C

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Permitted						Permitted						Protected						Protected					
Rights:	Include						Include						Include						Include					
Min. Green:	15		15		15		15		15		15		10		15		15		10		15		15	
Lanes:	0	1	0	1	0		0	1	0	1	0		1	0	0	1	0		1	0	0	1	0	
Volume Module:																								
Base Vol:	128	123	101				180	766	228				43	140	149				365	434	104			
Growth Adj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
Initial Bse:	128	123	101				180	766	228				43	140	149				365	434	104			
Added Vol:	0	16	0				12	46	0				0	0	0				0	0	4			
PasserByVol:	0	0	0				0	0	0				0	0	0				0	0	0			
Initial Fut:	128	139	101				192	812	228				43	140	149				365	434	108			
User Adj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
PHF Adj:	0.95	0.95	0.95				0.95	0.95	0.95				0.95	0.95	0.95				0.95	0.95	0.95			
PHF Volume:	135	146	106				202	855	240				45	147	157				384	457	114			
Reduct Vol:	0	0	0				0	0	0				0	0	0				0	0	0			
Reduced Vol:	135	146	106				202	855	240				45	147	157				384	457	114			
PCE Adj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
MLF Adj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
Final Vol.:	135	146	106				202	855	240				45	147	157				384	457	114			
Saturation Flow Module:																								
Sat/Lane:	1800	1800	1800				1800	1800	1800				1800	1800	1800				1800	1800	1800			
Adjustment:	0.94	1.00	1.00				0.94	1.00	1.00				0.94	1.00	1.00				0.94	1.00	1.00			
Lanes:	0.72	0.74	0.54				0.33	1.30	0.37				1.00	0.48	0.52				1.00	0.80	0.20			
Final Sat.:	1227	1333	968				556	2351	660				1700	872	928				1700	1441	359			
Capacity Analysis Module:																								
Vol/Sat:	0.11	0.11	0.11				0.36	0.36	0.36				0.03	0.17	0.17				0.23	0.32	0.32			
Crit Moves:								****					****							****				
Green/Cycle:	0.39	0.39	0.39				0.39	0.39	0.39				0.17	0.25	0.25				0.26	0.34	0.34			
Volume/Cap:	0.28	0.28	0.28				0.93	0.93	0.93				0.16	0.68	0.68				0.88	0.93	0.93			
Delay/Veh:	12.6	12.6	12.6				28.4	28.4	28.4				21.7	24.4	24.4				38.9	39.5	39.5			
User DelAdj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
AdjDel/Veh:	12.6	12.6	12.6				28.4	28.4	28.4				21.7	24.4	24.4				38.9	39.5	39.5			
DesignQueue:	3	3	2				4	19	5				1	4	4				10	11	3			

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Default Scenario Tue Jan 8, 2002 11:33:49 Page 2-1

Etiwanda Properties
Year 2020 With Project Conditions (With Improvements)
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #1 Etiwanda Ave. - West (NS) / Wilson Ave. (EW)

Cycle (sec):	60	Critical Vol./Cap. (X):	0.352
Loss Time (sec):	4 (Y+R = 3 sec)	Average Delay (sec/veh):	6.5
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	142	0	2	33	748	0	0	88	247
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	142	0	2	33	748	0	0	88	247
Added Vol:	0	0	0	26	0	13	23	21	0	0	12	47
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	168	0	15	56	769	0	0	100	294
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	177	0	16	59	809	0	0	105	309
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	177	0	16	59	809	0	0	105	309
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	177	0	16	59	809	0	0	105	309
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1700	0	1800	1700	3600	0	0	1800	1800
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.10	0.00	0.01	0.03	0.22	0.00	0.00	0.06	0.17
Crit Moves:				****				****				
Green/Cycle:	0.00	0.00	0.00	0.30	0.00	0.30	0.64	0.64	0.00	0.00	0.64	0.64
Volume/Cap:	0.00	0.00	0.00	0.35	0.00	0.03	0.05	0.35	0.00	0.00	0.09	0.27
Delay/Veh:	0.0	0.0	0.0	17.1	0.0	15.1	4.1	5.2	0.0	0.0	4.2	4.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	17.1	0.0	15.1	4.1	5.2	0.0	0.0	4.2	4.8
DesignQueue:	0	0	0	4	0	0	1	10	0	0	1	4

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Default Scenario Tue Jan 8, 2002 12:32:28 Page 7-1

Etiwanda Properties
Year 2020 With Project Conditions (With Improvements)
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #107 Etiwanda Ave. - East (NS) / Wilson Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.849
Loss Time (sec): 4 (Y+R = 3 sec) Average Delay (sec/veh): 19.3
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	0	0	0	0	15	15	15	15	0
Lanes:	0	0	1! 0	0	0	0	0	0	0	1	0	0	1	0	0	0
Volume Module:												
Base Vol:	281	0	71	0	0	0	0	689	165	5	79	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	281	0	71	0	0	0	0	689	165	5	79	0
Added Vol:	47	0	35	0	0	0	0	21	26	19	12	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	328	0	106	0	0	0	0	710	191	24	91	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	345	0	112	0	0	0	0	747	201	25	96	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	345	0	112	0	0	0	0	747	201	25	96	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	345	0	112	0	0	0	0	747	201	25	96	0
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	0.77	0.00	0.23	0.00	0.00	0.00	0.00	0.79	0.21	0.22	0.78	0.00
Final Sat.:	1302	0	421	0	0	0	0	1418	382	371	1407	0
Capacity Analysis Module:												
Vol/Sat:	0.27	0.00	0.27	0.00	0.00	0.00	0.00	0.53	0.53	0.07	0.07	0.00
Crit Moves:	****							****				
Green/Cycle:	0.31	0.00	0.31	0.00	0.00	0.00	0.00	0.62	0.62	0.62	0.62	0.00
Volume/Cap:	0.85	0.00	0.85	0.00	0.00	0.00	0.00	0.85	0.85	0.11	0.11	0.00
Delay/Veh:	31.4	0.0	31.4	0.0	0.0	0.0	0.0	15.4	15.4	4.7	4.7	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	31.4	0.0	31.4	0.0	0.0	0.0	0.0	15.4	15.4	4.7	4.7	0.0
DesignQueue:	8	0	3	0	0	0	0	11	3	0	1	0

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Default Scenario Tue Jan 8, 2002 11:33:49 Page 3-1

Etiwanda Properties
Year 2020 With Project Conditions (With Improvements)
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 95 Critical Vol./Cap. (X): 0.917
Loss Time (sec): 4 (Y+R = 3 sec) Average Delay (sec/veh): 30.1
Optimal Cycle: 95 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	341	276	401	22	125	14	17	97	277	199	55	47
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	341	276	401	22	125	14	17	97	277	199	55	47
Added Vol:	0	70	0	0	39	1	2	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	341	346	401	22	164	15	19	97	277	199	55	47
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	359	364	422	23	173	16	20	102	292	209	58	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	359	364	422	23	173	16	20	102	292	209	58	49
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	359	364	422	23	173	16	20	102	292	209	58	49
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	0.33	0.31	0.36	0.12	0.81	0.07	0.05	0.25	0.70	0.67	0.18	0.15
Final Sat.:	554	562	651	196	1459	133	87	443	1265	1145	317	271
Capacity Analysis Module:												
Vol/Sat:	0.65	0.65	0.65	0.12	0.12	0.12	0.23	0.23	0.23	0.18	0.18	0.18
Crit Moves:		****						****				
Green/Cycle:	0.71	0.71	0.71	0.71	0.71	0.71	0.25	0.25	0.25	0.25	0.25	0.25
Volume/Cap:	0.92	0.92	0.92	0.17	0.17	0.17	0.92	0.92	0.92	0.73	0.73	0.73
Delay/Veh:	22.4	22.4	22.4	4.7	4.7	4.7	58.1	58.1	58.1	38.7	38.7	38.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	22.4	22.4	22.4	4.7	4.7	4.7	58.1	58.1	58.1	38.7	38.7	38.7
DesignQueue:	7	7	8	0	3	0	1	4	12	9	2	2

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Default Scenario Thu Jan 10, 2002 16:38:25 Page 4-1

Etiwanda Properties
Year 2020 With Project Conditions (With Improvements)
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.748
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 32.8
Optimal Cycle: 60 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1 0	0 1	0	1 0	1 0	1	1 0	1 0	1	1 0	1 1	0
Volume Module:												
Base Vol:	53	384	45	71	351	163	535	254	54	15	84	91
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	53	384	45	71	351	163	535	254	54	15	84	91
Added Vol:	0	30	0	0	17	22	40	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	53	414	45	71	368	185	575	254	54	15	84	91
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	56	436	47	75	387	195	605	267	57	16	88	96
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	56	436	47	75	387	195	605	267	57	16	88	96
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	56	436	47	75	387	195	605	267	57	16	88	96
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.90	0.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Sat.:	1700	1624	176	1700	1800	1800	1700	1800	1800	1700	1800	1800
Capacity Analysis Module:												
Vol/Sat:	0.03	0.27	0.27	0.04	0.22	0.11	0.36	0.15	0.03	0.01	0.05	0.05
Crit Moves:		****					****				****	
Green/Cycle:	0.28	0.28	0.28	0.28	0.28	0.28	0.37	0.37	0.37	0.25	0.25	0.25
Volume/Cap:	0.12	0.96	0.96	0.16	0.77	0.39	0.96	0.40	0.08	0.04	0.20	0.21
Delay/Veh:	16.2	51.5	51.5	16.4	27.0	18.0	44.8	14.3	12.3	17.1	17.9	17.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	16.2	51.5	51.5	16.4	27.0	18.0	44.8	14.3	12.3	17.1	17.9	17.9
DesignQueue:	1	11	1	2	10	5	14	6	1	0	2	2

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Default Scenario Tue Jan 8, 2002 15:24:19 Page 8-1

Etiwanda Properties
Year 2020 With Project Conditions (With Improvements)
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #108 East Ave. (NS) / Wilson Ave. (EW)

Cycle (sec):	85	Critical Vol./Cap. (X):	0.621
Loss Time (sec):	4 (Y+R = 3 sec)	Average Delay (sec/veh):	9.1
Optimal Cycle:	85	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Lanes:	0 0	1! 0	0	0 1	0 0	0	1 0	0 1	0	1 0	0 1	0
Volume Module:												
Base Vol:	1	0	113	0	0	0	0	767	21	159	79	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	0	113	0	0	0	0	767	21	159	79	0
Added Vol:	44	23	0	6	13	0	0	16	24	0	28	11
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	45	23	113	6	13	0	0	783	45	159	107	11
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	47	24	119	6	14	0	0	824	47	167	113	12
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	47	24	119	6	14	0	0	824	47	167	113	12
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	47	24	119	6	14	0	0	824	47	167	113	12
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	0.26	0.12	0.62	0.33	0.67	0.00	1.00	0.95	0.05	1.00	0.91	0.09
Final Sat.:	441	225	1108	558	1209	0	1700	1702	98	1700	1632	168
Capacity Analysis Module:												
Vol/Sat:	0.11	0.11	0.11	0.01	0.01	0.00	0.00	0.48	0.48	0.10	0.07	0.07
Crit Moves:		****						****				
Green/Cycle:	0.18	0.18	0.18	0.18	0.18	0.00	0.00	0.78	0.78	0.78	0.78	0.78
Volume/Cap:	0.61	0.61	0.61	0.06	0.06	0.00	0.00	0.62	0.62	0.13	0.09	0.09
Delay/Veh:	35.7	35.7	35.7	29.2	29.2	0.0	0.0	5.0	5.0	2.4	2.3	2.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	35.7	35.7	35.7	29.2	29.2	0.0	0.0	5.0	5.0	2.4	2.3	2.3
DesignQueue:	2	1	5	0	1	0	0	10	1	2	1	0

Default Scenario Wed Jan 9, 2002 11:08:11 Page 5-1

Etiwanda Properties
Year 2020 With Project Conditions (With Improvements)
PM Peak Hour

Level Of Service Computation Report
1997 HCM Operations Method (Future Volume Alternative)

Intersection #5 East Ave. (NS) / Summit Ave. (EW)

Cycle (sec): 60 Critical Vol./Cap. (X): 0.602
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 17.0
Optimal Cycle: 60 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	0 1	0	1 0	0 1	0	1 0	1	0	0 1 0	1	0	0 1 0
Volume Module:												
Base Vol:	87	68	308	105	76	30	22	407	74	130	203	40
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	87	68	308	105	76	30	22	407	74	130	203	40
Added Vol:	0	54	0	8	30	0	0	0	0	0	0	14
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	87	122	308	113	106	30	22	407	74	130	203	54
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	92	128	324	119	112	32	23	428	78	137	214	57
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	92	128	324	119	112	32	23	428	78	137	214	57
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	92	128	324	119	112	32	23	428	78	137	214	57
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	0.43	0.57	1.00	0.94	0.83	0.23	1.00	0.85	0.15	1.00	0.79	0.21
Final Sat.:	731	1026	1800	1591	1493	422	1700	1523	277	1700	1422	378
Capacity Analysis Module:												
Vol/Sat:	0.13	0.13	0.18	0.07	0.07	0.07	0.01	0.28	0.28	0.08	0.15	0.15
Crit Moves:			****					****		****		
Green/Cycle:	0.29	0.29	0.29	0.29	0.29	0.29	0.25	0.45	0.45	0.17	0.37	0.37
Volume/Cap:	0.44	0.44	0.63	0.26	0.26	0.26	0.06	0.63	0.63	0.48	0.41	0.41
Delay/Veh:	17.7	17.7	20.1	16.7	16.7	16.7	17.4	14.4	14.4	24.0	14.5	14.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	17.7	17.7	20.1	16.7	16.7	16.7	17.4	14.4	14.4	24.0	14.5	14.5
DesignQueue:	2	3	8	3	3	1	1	8	2	4	5	1

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APPENDIX K

PRELIMINARY CONSTRUCTION COST ESTIMATES FOR CMP

PRELIMINARY CONSTRUCTION COST ESTIMATES FOR CONGESTION MANAGEMENT PLAN

FREEWAY WIDENING	
1. Add one lane each direction in the median (Work including Excavation, Concrete barrier, upgrade existing draining system and construct shoulder)	
Asphalt Concrete Pavement	
46' wide median	$1,800,000/mile
30' wide median	$1,750,000/mile
22' wide median	$1,700,000/mile
Portland Cement Concrete Pavement	
46' wide median	$2,200,000/mile
30' wide median	$2,150,000/mile
22' wide median	$2,100,000/mile
2. Add one outside lane each direction (Work include earthwork, modify existing drainage system, construct AC shoulder section, AC dike and Metal Beam Guard Rail)	
Asphalt Concrete Pavement	$2,100,000/mile
Portland Cement Concrete Pavement	$2,400,000/mile
3. Add one Auxiliary Lane (Work include earthwork, modify existing drainage system, construct AC shoulder section)	
Asphalt Concrete Pavement	$1,200,000/mile
Portland Cement Concrete Pavement	$1,400,000/mile
4. Widening Existing UC structure	$110/SQ FT

WIDEN CONVENTIONAL HIGHWAY	
1. Add one outside lane (Work include earthwork, modify existing drainage system and construct AC shoulder section)	

PRELIMINARY CONSTRUCTION COST ESTIMATES FOR CONGESTION MANAGEMENT PLAN

Asphalt Concrete Pavement	$1,000,000/mile
2. Add one outside lane each direction (Work include earthwork, modify existing drainage system and construct AC shoulder section)	
Asphalt Concrete Pavement	$2,000,000/mile
With Median Concrete Barrier	$2,200,000/mile
With Median Double Thrie Beam Barrier	$2,300,000/mile
LOCAL INTERCHANGE IMPROVEMENTS	
1. New Interchange	
Urban Interchange	$10,000,000 to $17,000,000
Partial-Cloverleaf Interchange (Work include new OC structure, earthwork, signal)	$6,000,000
Diamond Interchange (Work include new OC structure, earthwork, signal)	$5,000,000
2. Reconstruct Existing Interchange	
Realign and widen existing ramps (to 2 lanes)	$750,000/Each ramp
Construct Loop on-ramps (Does not include realigning existing ramp)	$700,000/Each ramp
Upgrade existing Diamond IC to Partial-Cloverleaf	$6,000,000
3. Improve Existing Interchange	
Widen ramps (From one to two lanes)	$350,000/Each ramp
Widen existing OC structure	$110/SQ FT
Signalize ramp intersection	$90,000/location
Upgrade existing signal at ramp terminal	$75,000/Intersection
Upgrade existing signal at ramp terminal (Add lights only)	$25,000/Each
4. Ramp Metering System	$60,000/Each location

PRELIMINARY CONSTRUCTION COST ESTIMATES FOR CONGESTION MANAGEMENT PLAN

INTERSECTION IMPROVEMENTS	
1. Signalization of local intersection (with some roadwork)	$250,000
2. Upgrade existing intersection signalization	$75,000
3. Upgrade existing Traffic Controller/Assembles	$40,000/Each
4. Install new signal	$90,000/location
5. Add signal heads	$25,000/Intersection
6. Construct left-turn lane (240' long)	$50,000/Each location
7. Street widening (12' wide) (Pavement only)	$180,000/mile
8. Curb and gutter (Type A2-8)	$15/LF

OTHER IMPROVEMENTS	
1. Construct new OC structure (Does not include roadway work)	$100/SQ FT
2. Construct Retaining Walls (Type 1)	$285/LF (H=8') $360/LF (H=10') $460/LF (H=12') $560/LF (H=14')
3. Construct Soundwall	$1,000,000/mile (H=12')
4. Traffic Management Plan	10% of total construction costs

NOTE: This cost estimate does not include the following items:

1. R/W engineering, appraisal, acquisition and utilities relocation costs.
2. Minor items and supplemental work (10%).
3. Mobilization (10%).
4. Contingencies (25%).
5. Landscaping costs.

Draft
Environmental Impact Report

City of Rancho Cucamonga
Tentative Tract Map Number 16072
(State Clearinghouse 2002091053)

Volume III
Technical Appendices

November 2003

VOLUME III
Technical Appendices
for
DRAFT
Environmental Impact Report
Rancho Cucamonga Tentative Tract Map Number 16072

Prepared for:

City of Rancho Cucamonga
Community Development Department
10500 Civic Center Drive
Rancho Cucamonga, CA 91729

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San Bernardino, CA 92408
909.884.2255

Contact: Thomas J. McGill, Ph.D., Project Director
Patricia Gallagher, Project Manager

November 25, 2003

LIST OF APPENDICES

Volume III

AIR QUALITY IMPACT ANALYSIS REPORT
TENTATIVE TRACT MAP No. 16072

Prepared for:

City of Rancho Cucamonga
10500 Civic Center Drive
Rancho Cucamonga, CA 91730

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Regional Manager

October 21, 2002

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF EXHIBITS

APPENDICES

SECTION 1 – INTRODUCTION AND SUMMARY

Purpose and Methods of Analysis

The following air quality assessment was prepared to evaluate whether the expected criteria air pollutant emissions generated as a result of the proposed project would cause significant impacts to air resources in the project area. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000 et seq.). The methodology follows the "CEQA Air Quality Handbook" prepared by the South Coast Air Quality Management District (SCAQMD) for quantification of emissions and evaluation of potential impacts to air resources. As recommended by SCAQMD staff, URBEMIS 2001 (version 6.2.1) and EMFAC2001 (version 2.08), computer programs developed and approved by the California Air Resources Control Board, were used to quantify project-related emissions.

EXECUTIVE SUMMARY

Site Location

The proposed project is located in the City of Rancho Cucamonga, north of Wilson Avenue (formerly 24th Street), between East Avenue and Etiwanda Avenue.

Development Description

The proposed project (Tentative Tract No. 16072) is a residential development of 359 single-family homes on a site totaling approximately 151 acres. The project will have direct access on Wilson Avenue, East Avenue, and Etiwanda Avenue. Existing and proposed zoning is L, VL, and FZ (Low, Very Low Density Residential, and Fault Zone within the Etiwanda North Specific Plan). The current City of Rancho Cucamonga General Plan Land Use designation for the project site is L, VL, and FZ (Low, Very Low Density Residential, and Fault Zone within the Etiwanda North Specific Plan). In addition to the project described above, an additional 17 single-family homes on a 10-acre site at the northwest corner of East Avenue and Wilson Avenue may also be built. Although this parcel is currently not a part of the project at this time, it is possible that it could be added to the project in the future. For analysis purposes, this study looks at both Tentative Tract No. 16072 and the additional 17 single-family homes on the 10-acre parcel described above for a total of 376 single-family homes and a disturbance of 161 acres. Existing zoning and the general plan land use designation for the 10-acre parcel at the northwest corner of East Avenue and Wilson Avenue is Low Density Residential within the Etiwanda North Specific Plan.

Findings

The study found that emissions of nitrogen oxides (NOx), particulate matter smaller than 10 microns in diameter (PM_{10}), and reactive organic compounds (ROC) also known as hydrocarbons are above the SCAQMD suggested significance thresholds during construction. With mitigation measures in place NOx and ROC remain above the SCAQMD suggested significance thresholds during construction. Carbon monoxide (CO), NOx, and ROC are above the SCAQMD suggested significance thresholds during project operation and remain above the thresholds after mitigation measures are implemented. Estimated opening year 1-hour and 8-hour average carbon monoxide (CO) concentrations from project operation in combination with other approved projects in the area and background concentrations are below the State and Federal ambient air standards. No CO hotspots are anticipated as a result of traffic generated emissions by the proposed project in combination with other anticipated development in the area. A health risk assessment shows that exposure to diesel exhaust from the potable water treatment plant is less than significant.

The following findings are supported with regard to this project:

- The project is not in compliance with the SCAQMD Air Quality Management Plan.
- The project-generated emissions may violate Federal or State ambient air quality standards.
- The project's contribution to cumulative impacts may be significant.
- The project will not expose sensitive receptors to substantial pollutant concentrations.
- Project-generated odors will not affect a substantial number of people.

Mitigation Measures

- The site shall be treated with water or other soil-stabilizing agents (approved by SCAQMD and RWQCB) daily to reduce PM_{10} emissions, in accordance with SCAQMD Rule 403.
- During construction, all haul roads shall be swept according to a schedule established by the City to reduce PM_{10} emissions associated with vehicle tracking of soil off-site. Timing may vary depending upon time of year of construction.
- Grading operations shall be suspended when wind speeds exceed 25 mph to minimize PM_{10} emissions from the site during such episodes.
- Chemical soil stabilizers (approved by SCAQMD and RWQCB) shall be applied to all inactive construction areas that remain inactive for 96 hours or more to reduce PM_{10} emissions.
- The construction contractor shall select the construction equipment used on-site based on low emission factors and high-energy efficiency. The construction contractor shall ensure the construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.
- The construction contractor shall utilize electric or clean alternative fuel powered equipment, where feasible.

- The construction contractor shall ensure that construction-grading plans include a statement that work crews will shut off equipment when not in use.
- The construction contractor shall use low VOC architectural coating during the construction phase of the project.
- During construction of the proposed improvements, temporary traffic control (e.g., flag person) will be provided during soil transport activities. Contractor will be advised not to idle trucks on site for more than ten minutes
- During construction of the proposed improvements, only low volatility paints and coatings as defined in SCAQMD Rule 1113 shall be used. All paints shall be applied using either high volume low pressure (HVLP) spray equipment or by hand application.
- The proposed project will participate in the cost of off-site traffic signal installation and synchronization through payment of the traffic signal fair-share mitigation fee. This fee will be collected and utilized by the City to install and synchronize traffic lights as needed to prevent congestion of traffic flow on East Avenue between Summit Avenue and the project boundary, and Etiwanda Avenue between Highland Avenue and the north terminus of Etiwanda Avenue.
- All appliances within the residential units of the project shall be energy-efficient as defined by SCAQMD.
- The project proponent shall contact local transit agencies to determine bus routing in the project area that can accommodate bus stops at the project access points and determine locations and feasibility of bus stop shelters provided at project proponent's expense.

Other mitigation measures were evaluated and determined to be infeasible to implement or have extremely small reductions in emissions combined with high costs to implement. Mitigation measures that were evaluated and rejected include implement shuttle services to retail services and food establishments during lunch hours, include satellite telecommunications center in the residential subdivision to facilitate people working from home, use of solar water heaters, use of fuel cells in the residential neighborhood to generate electricity locally, orient all single-family residential units to the north for natural cooling and include passive solar designs.

SECTION 2 – SETTING

Project Description

The proposed project is located in the City of Rancho Cucamonga, north of Wilson Avenue (formerly 24th Street), between East Avenue and Etiwanda Avenue (Exhibit 1). The proposed project (Tentative Tract No. 16072) is a residential development of 359 single-family homes on a site totaling approximately 151 acres (Exhibit 2). The project will have direct access on Wilson Avenue, East Avenue, and Etiwanda Avenue.

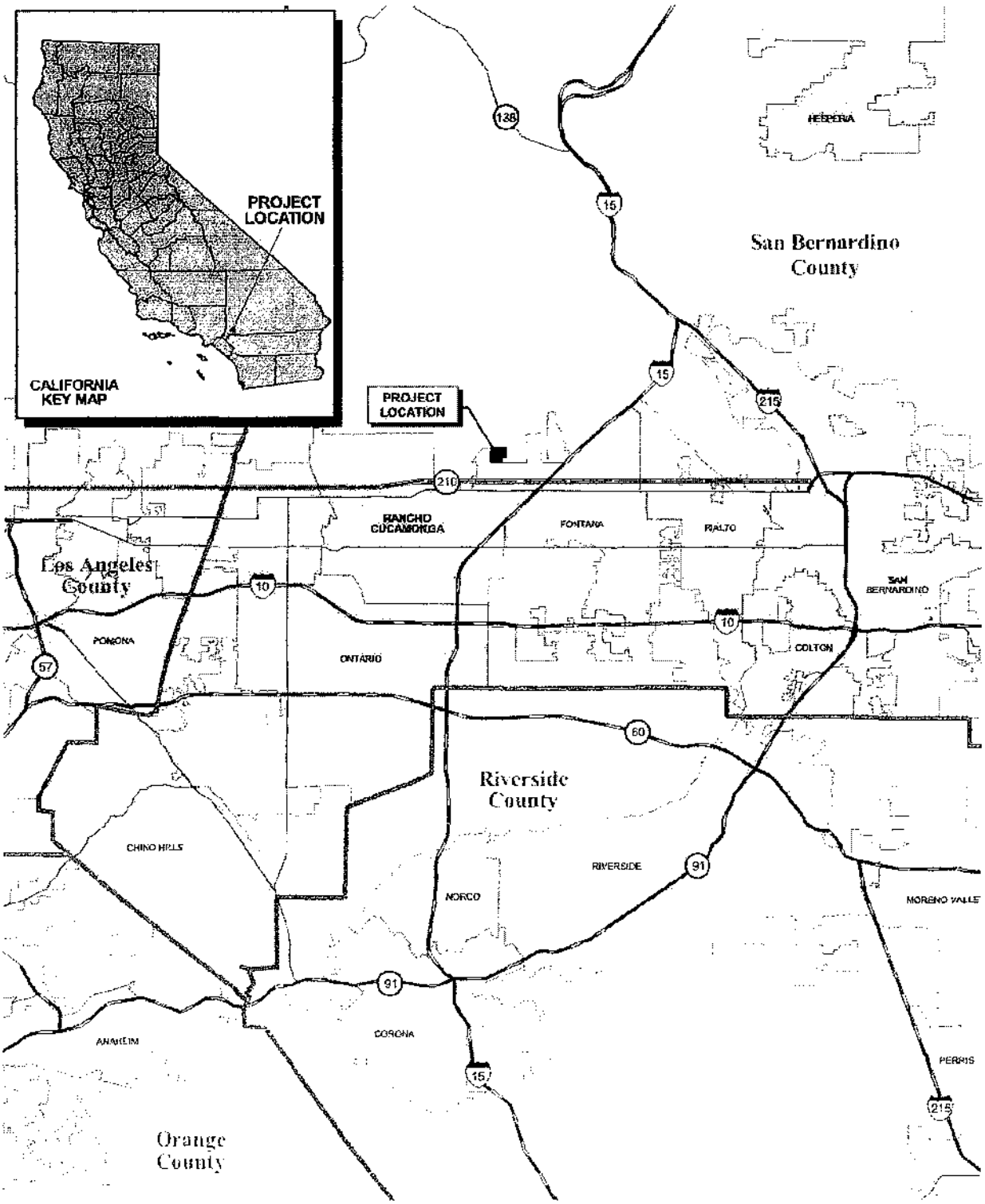
Existing and proposed zoning is Low Density Residential (less than two dwelling units per acre), Very Low Density Residential (2-4 dwelling units per acre), and Fault Zone (associated with the Red Hill Fault that bisects the project site) within the Etiwanda North Specific Plan. The current City of Rancho Cucamonga General Plan Land Use designation for the project site is also Low, Very Low Density Residential, and Fault Zone.

In addition to the project described above, an additional 17 single-family homes on a 10-acre site at the northwest corner of East Avenue and Wilson Avenue may also be built. Although this parcel is not a part of the project at this time, it is possible that it could be added to the project in the future. Existing zoning and the general plan land use designation for the 10-acre parcel at the northwest corner of East Avenue and Wilson Avenue is Low Density Residential (2-4 dwelling units per acre) within the Etiwanda North Specific Plan.

For analysis purposes, this study looks at a total of 376 single-family homes and a disturbance of 161 acres. The following summarizes salient project features with respect to evaluation of criteria air pollutant emissions.

- Grading of 161 acres during the initial development including a maximum of 41 acres per day being disurbed.
- A total of 376 single-family homes.
- Based on the project specific traffic study (RK Engineering Group 2002), the facility is assumed to generate 3,436 vehicle trip-ends per day.

The following provides a description of the regional and local conditions affecting air quality in the project area.



EXIHBIT 1
REGIONAL LOCATION MAP
Tentative Tract Map No. I6072
City of Rancho Cucamonga, California

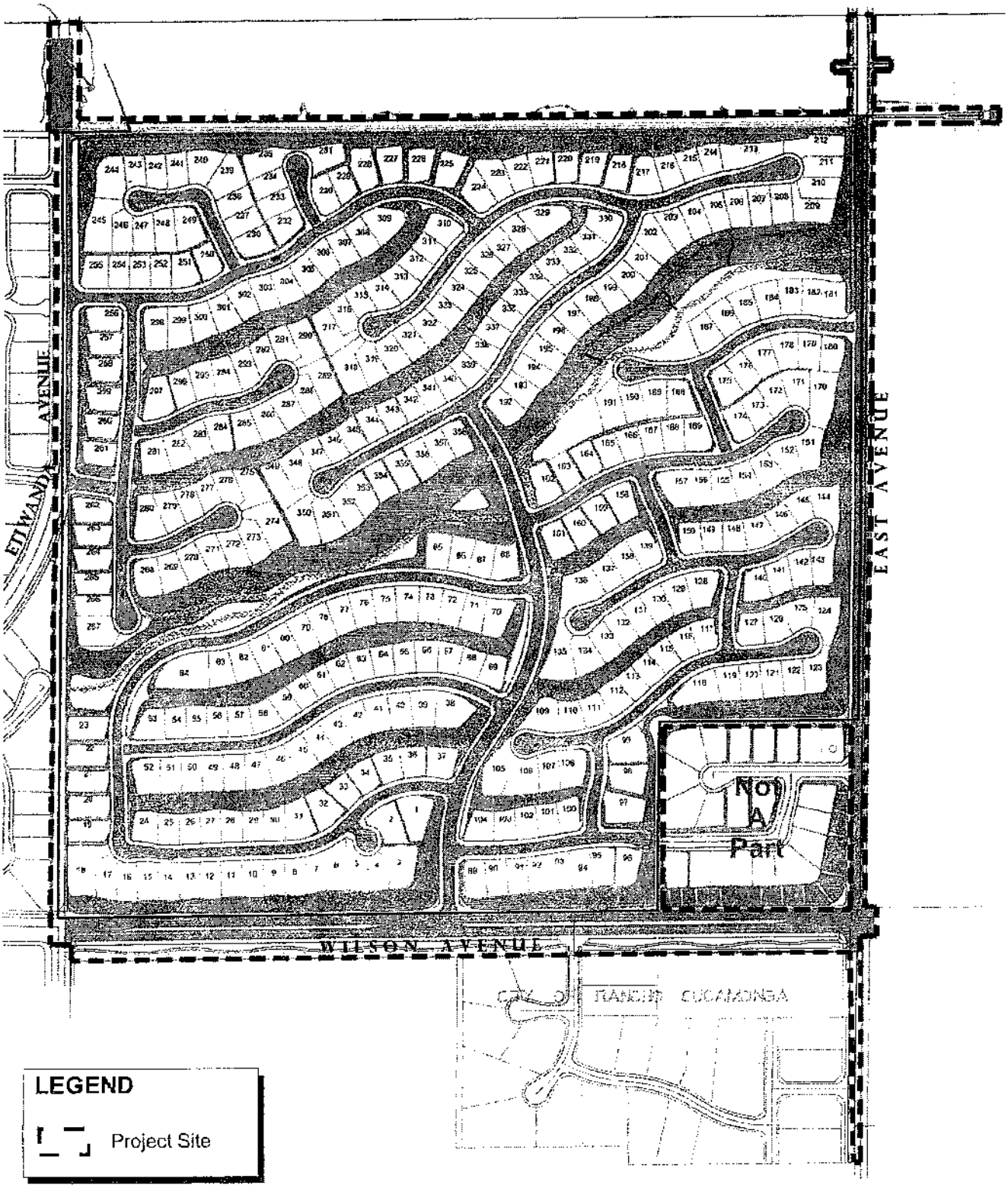


EXHIBIT 2
SITE PLAN
Tentative Tract Map No. 16072
City of Rancho Cucamonga, California

Physical Setting

The project site is located in the City of Rancho Cucamonga within the South Coast Air Basin (SCAB). The SCAB consists of Orange County, together with the coastal and mountain portions of Los Angeles, Riverside and San Bernardino counties. Regionally, the interaction of land (offshore) and sea (onshore) breezes control local wind patterns in the area. Daytime winds typically flow from the coast to the inland areas, while the pattern typically reverses in the evening, flowing from the inland areas to the ocean (SCAQMD, 1993). Air stagnation may occur during the early evening and early morning during periods of transition between day and nighttime flows. The region also experiences periods of hot, dry winds from the desert, known as Santa Ana winds. Locally, the prevailing wind is generally from northwest to southeast (Exhibit 3, Wind Rose).

Regional and local air quality within the SCAB is affected by topography, atmospheric inversions, and dominant onshore flows. Topographic features such as the San Gabriel and San Bernardino Mountains form natural barriers to the dispersion of air contaminants. The presence of atmospheric inversions limits the vertical dispersion of air pollutants. With an inversion, the temperature initially follows a normal pattern of decreasing temperature with increasing altitude, however, at some elevation, the trend reverses and temperature begins to increase as altitude increases. This transition to increasing temperature establishes the effective mixing height of the atmosphere and acts as a barrier to vertical dispersion of pollutants. Dominant onshore flow provides the driving mechanism for both air pollution transport and pollutant dispersion.

Air pollution generated in coastal areas is transported east to inland receptors by the onshore flow during the daytime until a natural barrier (the mountains) is confronted, limiting the horizontal dispersion of pollutants. The result is a gradual degradation of air quality from coastal areas to inland areas, which is most evident with the photochemical pollutants such as ozone. The greatest ozone problems are recorded at those South Coast Air Quality Management District (SCAQMD) monitoring stations located at the base of the San Gabriel and San Bernardino mountains ranging from the City of Santa Clarita, east to the City of San Bernardino.

The project site is within SCAQMD Source Receptor Area (SRA) 32. The air quality monitoring station for SRA 32 is in the City of Upland approximately 6.5 miles west of the project site. The most recent published data for SRA 32 is presented in Table I, Air Quality Monitoring Summary 1991-2001. This data shows that the baseline air quality conditions in the project area include occasional events of very unhealthful air. Even so, the frequency of smog alerts has dropped significantly in the last decade. The greatest recognized air quality problem in the SCAB is ozone. The yearly monitoring records document that prior to 1995, approximately one-third or more of the days each year experienced a violation of the state hourly ozone standard, with around ten days annually reaching first stage alert levels of 0.20 parts per million (ppm) for one hour. It is encouraging to note that ozone levels have dropped significantly in the last few years with less than one-eighth of the days each year experiencing a violation of the state hourly ozone standard in 2001. Locally, no first stage alert (0.20 ppm/hour) has been called by SCAQMD in over two years, and no second stage alert (0.35 ppm/hour) has been called by SCAQMD in the last ten years.

Although the overall air quality in SRA 32 is improving, one exception is the ambient concentrations of particulate matter smaller than 10 microns in diameter (PM_{10} and $PM_{2.5}$). Over the last decade the State air quality standard for PM_{10} has been consistently exceeded in the area. The 1997 Federal standards for $PM_{2.5}$ (annual arithmetic mean of 15 $\mu g/m^3$ and 24-hour average of 65 $\mu g/m^3$) were recently upheld by the U.S. Supreme Court in February 2001.SCAQMD monitoring data shows SRA 32 exceeding the federal annual and 24-hour standards since SCAQMD began monitoring $PM_{2.5}$ in 1999. Currently, there are no state standards established for $PM_{2.5}$. The sources contributing to particulate matter pollution include road dust, windblown dust, agriculture, construction, fireplaces and wood burning stoves, and vehicle exhaust.

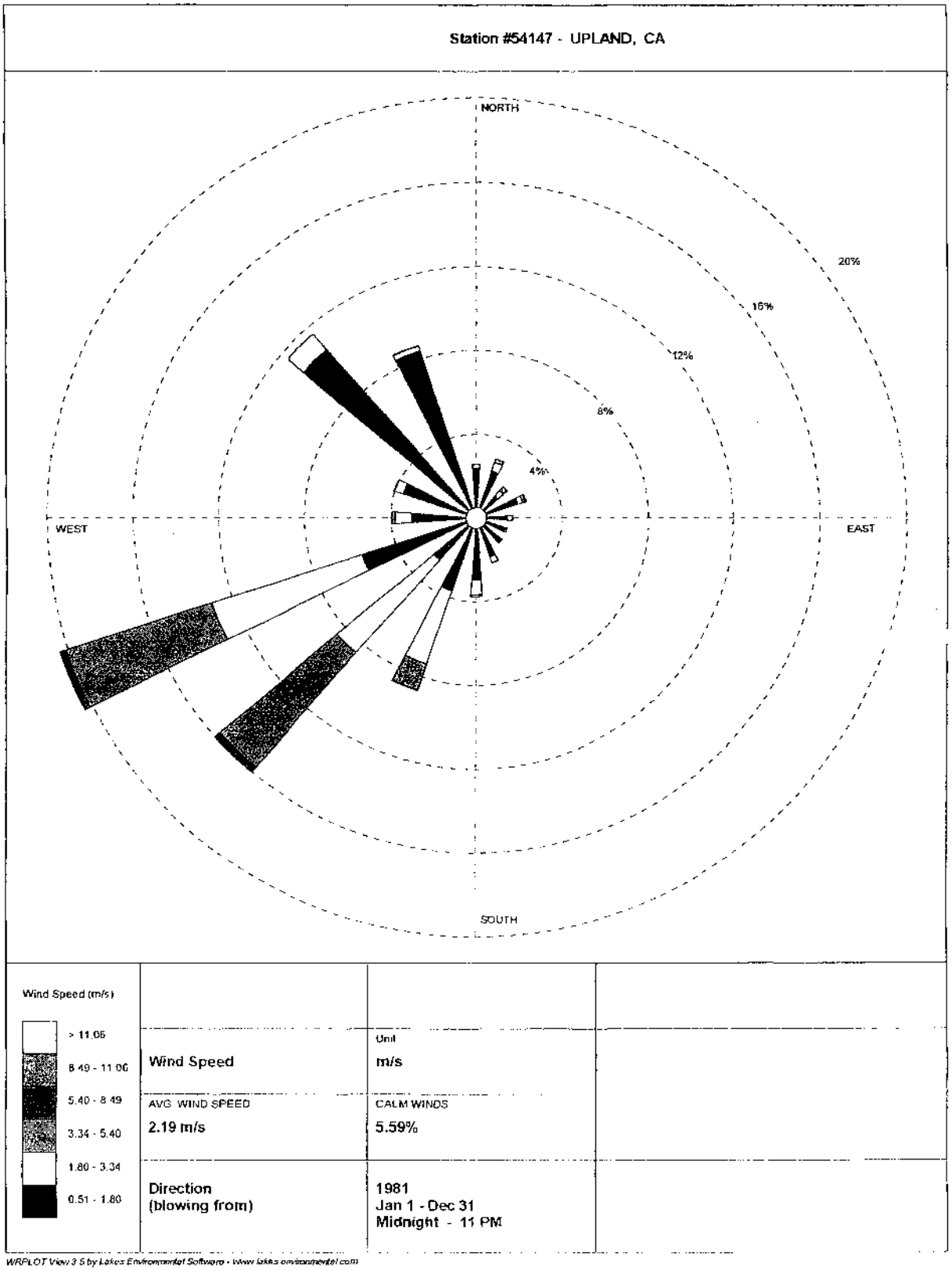
Regulatory Setting

The federal and state ambient air quality standards (AAQS) establish the context for the local air quality management plans. The state and federal AAQS are presented in Table 1.

The California Air Resources Board maintains records as to the attainment status of basins throughout the state, under both state and federal criteria. For 2001, that portion of the SCAB, within which the proposed project is located, was designated as a non-attainment area for ozone and PM_{10} under state standards, and as a non-attainment area for ozone, carbon monoxide, and PM_{10} under federal standards. The Air Quality Management Plan (AQMP) for the SCAB establishes a program of rules and regulations directed at attainment of the state and national air quality standards.

SCAQMD rules and regulations that apply to this project include SCAQMD Rule 403, which governs emissions of fugitive dust. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites. Rule 403 also requires projects that disturbs over 100 acres of soil or moves 10,000 yds^3/day of materials/day to submit to SCAQMD a Fugitive Dust Control Plan. If the entire site is mass graded in the initial phase of development as this air quality analysis assumes, then the project will be required to submit a formal Fugitive Dust Control Plan.

SCAQMD Rule 1108 governs the sale and use of asphalt and limits the VOC content in asphalt used in the South Coast Air Basin. Although this rule does not directly apply to the project, it does dictate the VOC content of asphalt available for use during the construction.
SCAQMD Rule 1113 governs the sale of architectural coatings and limits the VOC content in paints and paint solvents. Although this rule does not directly apply to the project, it does dictate the VOC content of paints available for use during the construction of the buildings.



Note: Data taken from the Upland monitoring station between January 1 through December 31, 1981. Direction of colored bars indicate the direction the wind is blowing from. Colors represent various wind speeds, and percentages marked on rings shows the percentage that the wind blows from that direction and at a particular wind speed.

EXHIBIT 3
WIND ROSE
Tentative Tract Map No. 16072
City of Rancho Cucamonga, California

Table 1
SOURCE RECEPTOR AREA 32
AIR QUALITY MONITORING SUMMARY- 1991-2001

	Pollutant/Standard Source: CARB 1/25/99	Monitoring Year										
		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
No. Days Exceeded	**Ozone [a]:**											
	California Standard:											
	1-Hour - 0.09 ppm	103[b]	136[b]	124[b]	116[b]	110[b]	87[b]	69[b]	60[b]	29[b]	48[b]	44[b]
	Federal Primary Standards:											
	1-Hour - 0.12 ppm	67[b]	81[b]	55[b]	79[b]	67[b]	35[b]	12[b]	30[b]	4[b]	7[b]	13[b]
	8-Hour - 0.08 ppm [a]							30[b]	40[b]	17[b]	27[b]	31[b]
	Max 1-Hour Conc. (ppm)	0.27[b]	0.28[b]	0.24[b]	0.25[b]	0.24[b]	0.22[b]	0.19[b]	0.21[b]	0.15[b]	0.15[b]	0.165[b]
	Max 8-Hour Conc. (ppm) [a]							0.13[b]	0.17[b]	0.12[b]	0.125[b]	0.136[b]
No. Days Exceeded	**Carbon Monoxide:**											
	California Standard:											
	1-Hour - 20 ppm	0[b]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]
	8-Hour - 9.0 ppm	0[b]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]
	Federal Primary Standards:											
	1-Hour - 35 ppm	0[b]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]
	8-Hour - 9.5 ppm	0[b]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]
	Max 1-Hour Conc. (ppm)	7.0[b]	7.0[c]	7.0[c]	9.0[c]	6.3[c]	6.0[c]	8.0[c]	6.0[c]	5.0[c]	5.0[c]	4.0[c]
	Max 8-Hour Conc. (ppm)	4.6[b]	5.9[c]	6.0[c]	6.5[c]	5.9[c]	4.6[c]	6.0[c]	4.6[c]	4.0[c]	4.3[c]	3.25[c]
No. Days Exceede	**Nitrogen Dioxide:**											
	California Standard:											
	1-Hour - 0.25 ppm	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
	Federal Standard:											
	Annual Standard - 0.053ppm	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]
	Max. 1-Hour Conc. (ppm)	0.21[b]	0.14[b]	0.15[b]	0.17[b]	0.20[b]	0.11[b]	0.14[b]	0.11[b]	0.13[b]	0.15[b]	0.13[b]
No. Days Exceeded	**Sulfur Dioxide:**											
	California Standards:											
	1-Hour – 0.25 ppm	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]
	24-Hour – 0.04 ppm	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]
	Federal Primary Standards:											
	24-Hour – 0.14 ppm	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]
	Annual Standard – 0.03 ppm	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]	No[c]
	Max. 1-Hour Conc. (ppm)	0.05[d]	0.02[d]	0.01[d]	0.03[d]	0.02[d]	0.01[d]	0.01[d]	0.02[d]	0.01[d]	0.02[d]	0.01[d]
	Max. 24-Hour Conc. (ppm)	0.01[d]	0.012[d]	0.001[d]	0.009[d]	0.010[d]	0.007[d]	0.001[d]	0.010[d]	0.010[d]	0.010[d]	0.010[d]
No. Days Exceeded	**Inhalable Particulates (PM_{10}):**											
	California Standards:											
	24-Hour - 50 $\mu g/m^3$	35[d]	31[c]	34[c]	38[c]	35[c]	35[c]	29[c]	28[c]	36[c]	31[c]	34[c]

	Annual Geometric Mean (µg/m^3)	57.7 [d]	48.9 [c]	46.3 [c]	52.7 [c]	50.6 [c]	48.2 [c]	47.6 [c]	41.3 [c]	54.3 [c]	47.1 [c]	43.8 [c]
No Days	Federal Primary Standards:											
	24-Hour – 150 µg/m^3	0 [d]	0 [d]	0 [d]	0 [d]	2 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]
	Annual Arithmetic Mean (µg/m^3)	63.1 [d]	56.1 [d]	57.1 [d]	60.0 [d]	61.0 [d]	55.1 [d]	53.7 [d]	50.2 [d]	60.2 [d]	52.6 [d]	60.5 [d]
	Max. 24-Hour Conc. (µg/m^3)	127 [d]	105 [d]	143 [d]	147 [d]	178 [d]	130 [d]	122 [d]	101 [d]	116 [d]	108 [d]	105 [d]
No Days Exceeded	**Inhalable Particulates ($PM_{2.5}$):**											
	Federal Primary Standards:											
	Annual Standard – 15µg/m^3									Yes [f]	Yes [f]	Yes [f]
	24-Hour – 65 µg/m^3									3 [e]	2 [e]	4 [e]
	Annual Arithmetic Mean (µg/m^3)									25.9 [e]	24.5 [e]	24.3 [e]
	Max. 24-Hour Conc. (µg/m^3)									98.0 [e]	72.9 [e]	74.6 [e]

Note: [a] 1997 is first year of SCAQMD records for federal 8-hour Ozone standard.
[b] Upland air monitoring station (SRA 32) data summaries for ozone, NO_2, and Ozone during all years, and CO in 1991.
[c] San Bernardino monitoring station (also in SRA 34 data summaries for CO during 1992 through 2001.
[d] Fontana air monitoring station (SRA 34) data summaries for SOx and PM-10 during all years
[e] Fontana monitoring station data summaries (SRA 34) for PM-2.5. 1999 is first year of SCAQMD records for federal 24-hour PM-2.5 standard.
[f] Exceedance of the Annual Standards are expressed as either Yes or No indicating whether or not the standard has been exceeded for that year.

SECTION 3 – EMISSIONS ESTIMATES

THRESHOLDS OF SIGNIFICANCE

Air quality impacts may be considered significant if:

- The project does not conform to the rules and regulations of the South Coast Air Quality Management District.
- Project-generated emissions contribute substantially to an existing or projected air quality violation of a federal or state ambient air quality standard.
- A project contributes a cumulatively considerable net increase of a criteria pollutant in a non-attainment area.
- Project-generated emissions expose sensitive receptors to substantial pollutant concentrations.
- The project creates objectionable odors affecting a substantial number of people.

IMPACTS

Air quality impacts can be described in a short-term and long-term perspective. Short-term impacts will occur during site grading and project construction. Long-term air quality impacts will occur once the project is in operation.

Short-term Impacts

Short-term impacts will include fugitive dust and other particulate matter, as well as exhaust emissions generated by earthmoving activities and operation of grading equipment during site preparation (demolition and grading). Short-term impacts will also include emissions generated during construction of the buildings as a result of operation of equipment, operation of personal vehicles by construction workers, electrical consumption, and coating and paint applications.

Assumptions relevant to model input for short-term emissions estimates are calculated assuming the entire tentative tract will be built in a single phase. They are as follows:

- Approximately 161 acres (151 acres in TTM 16072 plus 10 acres) will be graded during the initial phase of the development including a maximum of 41 acres per day being disturbed.
- Approximately 20,000 cubic yards of boulder sized rocks (15,000 cubic yards in TTM 16072 plus 1,0000 cubic yards on an additional 10 acres) and demolition material (approximately 4,000) will be exported off-site during grading. As a worst-case scenario,

as many as 55 heavy-duty truck trips per workday were assumed to transport the material off-site.

- Foundation construction of up to 376 single-family homes (359 homes in TTM 16072 plus 17 homes on ten acres) will entail placement of approximately 18,000 cubic yards of concrete. As a worst-case scenario, as many as 41 truckloads of concrete per day will be transported to the site during foundation construction.
- Approximately 33.5 acres of surface area will be covered in asphalt (32 acres in TTM 16072 plus 1.5 acres on the northwest corner of East Avenue and Wilson Avenue).

Short-term emissions were evaluated with the URBEMIS 2001 for Windows computer program. The URBEMIS 2001 model sets default values for worker trips and the use of asphalt and architectural coatings. Model inputs include the projected types of land uses and their square footage areas, the year in which construction is to begin, and the length of the construction period. For the purposes of this analysis as a worst-case scenario, construction is slated to begin in the year 2003 and the construction period is anticipated to require approximately 12 months. Table 2, Estimated Short-Term Emissions, summarize the results of these evaluations.

TABLE 2
ESTIMATED SHORT-TERM EMISSIONS

Pollution Source	NOx	CO	ROC	SOx	PM_{10}
Grading and Demolition	NG[1]	NG[1]	NG[1]	NG[1]	122.63
Mobile Grading Equipment	286.93	151.25[2]	26.20	41.72	41.77
Stationary Equipment	10.28	39.90[2]	12.60	0.15	0.60
Mobile Construction Equipment	97.96	39.32[2]	7.49	8.00	7.13
Commuting Traffic	9.86	18.71	6.97	NG[1]	1.89
Architectural Coatings	NG[1]	NG[1]	122.11	NG[1]	NG[1]
Asphalt Paving	NG[1]	NG[1]	8.34	NG[1]	NG[1]
Emissions Totals (lbs/day)	**405.03**	249.18	**183.71**	49.87	**174.02**
Emissions Totals (tons/quarter)[3]	**13.16**	8.10	**5.97**	1.62	5.65
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr

Notes:
[1] Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).
[2] CO emissions for mobile equipment were calculated from the CEQA Air Quality Handbook.
[3] Quarterly emission totals for all criteria pollutants reflect 65 workdays per quarter of construction activity.
Bold = Above SCAQMD Thresholds.
See Appendix B for model output report.

The URBEMIS 2001 model assumes all aspects of construction of the project is additive. In actuality, initial grading, subsequent structure installation, and the application of paints and coatings are typically phased over the construction period and are not strictly additive; though in some large-scale projects these phases may have overlap. Evaluation of the preceding tables indicates that projected NOx, ROC, and PM_{10} emissions are above the SCAQMD recommended daily thresholds and NOx and ROC are above the quarterly thresholds during construction of the first phase of the project. The primary sources of NOx emissions are trucks used for rock

removal and importation of concrete. The primary source of ROC emissions is the application of architectural coatings, and the primary source of PM_{10} is fugitive dust from earthmoving activities.

In an effort to reduce estimated short-term emissions of NOx, ROC, and PM_{10} emissions a range of reduction measures was considered. Effective emission reduction measures were narrowed to include properly maintaining mobile construction equipment (5% reduction of all mobile equipment emissions), provide temporary traffic control (e.g., flag person) during rock removal and concrete transport activities (5% reduction of all mobile equipment emissions), prohibit truck idling in excess of ten minutes (4% reduction of all mobile equipment emissions), apply low volatility paints as defined in SCAQMD Rule 1113 using either high volume low pressure (HVLP) spray equipment or by hand application (minimum of 65% reduction of architectural coating ROC emissions), and water all unpaved haul roads during construction three times a day (46% reduction in fugitive dust). These emission reduction measures are anticipated to reduce all criteria pollutant emissions from mobile grading and construction equipment by approximately 14 percent, architectural coatings application by 65 percent, and fugitive dust emissions by 46 percent. However, as shown in Table 3, even with these reductions the daily and quarterly emissions of NOx and ROC remain above the SCAQMD suggested thresholds.

TABLE 3
MITIGATED SHORT-TERM EMISSIONS

Pollution Source	NOx (Lbs/Day)	CO (Lbs/Day)	ROC (Lbs/Day)	SOx (Lbs/Day)	PM_{10} (Lbs/Day)
Maximum Daily Emissions[1] (lbs/day)	**351.15**	222.50	**99.62**	42.91	110.76
Emissions Totals[2] (tons/quarter)	**11.41**	7.23	**3.24**	1.39	3.60
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr

Note: NG designates criteria pollutants that have estimated negligible values.
Bold TYPE indicates emissions that are above the SCAQMD Thresholds.

Long-term Impacts

Long-term impacts for the proposed residential subdivision consist of mobile emissions and stationary emissions. Mobile emissions estimates are derived from motor vehicle traffic. Stationary emissions estimates are derived from the consumption of natural gas, electricity, the use of landscape equipment, and the storage and use of consumer products.

Based upon the project specific traffic study (RK Engineering Group, 2002), it is estimated that 3,436 vehicle trip-ends per day will be generated at build-out of Tentative Tract No. 16072. Using a trip generation rate of 9.57 daily trip-ends per household as was used in the traffic study, it is estimated that approximately 163 vehicle trip-ends per day will be generated at build out of the additional 10-acres at the northwest corner of East Avenue and Wilson Avneue, and a total of 3,599 vehicle trip-ends per day will be generated at buildout of both Tentative Tract No. 16072 and the 10-acre parcel. According to the CEQA Air Quality Handbook, Table A9-5-D, the

average work related round trip is 13.6 miles in San Bernardino County and the average non-work related round trip length is 7.9 miles. Assuming that four trip ends per household are work related, a project daily total of 37,005 vehicle miles daily is derived. Table 4, Composite Long-term Emissions, presents estimated emissions of each of the criteria pollutants as a result motor vehicle trips at project build-out in the year 2006 (See Appendix C).

Electric usage rates for single-family residential are presented in Table A9-11-A of the CEQA Air Quality Handbook. Table A9-11-B of the CEQA Air Quality Handbook lists the emission factors for each criteria pollutant from the consumption of electricity. Table 4, Composite Long-term Emissions, presents anticipated emissions of criteria pollutants from electrical consumption as a result of this project (376 homes) based on these CEQA Air Quality Handbook factors.

Natural gas consumed by water heaters and space heating in residential units of the proposed project will produce emissions of criteria air pollutants. The anticipated project emissions (376 homes) estimated by the URBEMIS 2001 for Windows computer program are listed in Table 4, Composite Long-term Emissions.

The URBEMIS 2001 for Windows computer program estimates emissions generated by landscape maintenance equipment as a result of fuel combustion and evaporation of unburned fuel. Equipment in this category includes lawn mowers, roto-tillers, shredders, blowers, trimmers, chain saws, and hedge trimmers used in commercial applications. These emission estimates are listed in Table 4, Composite Long-term Emissions.

Consumer product emissions are generated by a wide range of product categories, including air fresheners, automotive products, household cleaners, and personal care products. Emissions associated with these products primarily depend on the increased population associated with residential development. URBEMIS 2001 was used to estimate consumer product emissions for an increased population of 1,309 persons within the proposed residential development (376 homes) at build-out of the project (3.48 persons per residential unit as shown in the Rancho Cucamonga General Plan).

An estimate of the daily total long-term project emissions is derived by combining both mobile (vehicle traffic) and stationary emissions (electrical, natural gas and consumer product consumption; and landscape maintenance). Table 4, Composite Long-term Emissions, presents the estimated daily total emissions at project build out.

TABLE 4
COMPOSITE LONG-TERM EMISSIONS

Pollution Source	NOx (Lbs/Day)	CO (Lbs/Day)	ROC (Lbs/Day)	SOx (Lbs/Day)	PM_{10} (Lbs/Day)
Mobile Emissions	59.06	774.62	64.44	0.47	36.20
Electrical Consumption	0.87	1.16	0.06	0.70	0.23
Natural Gas Consumption	4.71	2.00	0.36	NG	0.01
Landscape Emissions	0.06	5.39	0.64	0.16	0.01
Consumer Products	NG	NG	22.38	NG	NG
Emissions Totals	**64.70**	**783.17**	**87.88**	1.33	36.45
SCAQMD Thresholds	55	550	55	150	150

Note: NG designates criteria pollutants that have estimated negligible values.

When unmitigated emissions projections are compared with the SCAQMD suggested thresholds for significance, it is shown that long-term emissions exceed the applicable thresholds for NOx, CO and ROC. The primary source of these emissions is mobile emissions from vehicle traffic. In an effort to reduce estimated NOx, CO and ROC emissions, a range of mitigation measures were considered. Mitigation measures for on-road mobile source emissions are listed in the CEQA Air Quality Handbook, Table 11-6a. These mitigation measures include synchronizing traffic lights on streets impacted by the project (reduction of 6% for all emissions) and construct on-site bus turnouts and/or bus stop shelters (reduction of 0.85% for all emissions). Stationary source mitigation measures are listed in the CEQA Air Quality Handbook, Table 11-7a and include the use of energy-efficient appliances (reduction of 3%for NOx and CO, 2.5% for ROC, and 6.5% for PM_{10}) and double-glass-paned windows (reduction of 4.5% for ROC and CO, 4% for NOx, and 2.5% for PM_{10}). Table 5 shows the estimated total mitigated long-term emissions. The specific details of each of these mitigation measures are listed on page 3-10.

TABLE 5
MITIGATED LONG-TERM EMISSIONS

Pollution Source	NOx (Lbs/Day)	CO (Lbs/Day)	ROC (Lbs/Day)	SOx (Lbs/Day)	PM_{10} (Lbs/Day)
Mobile Emissions	55.01	721.56	60.03	1.10	33.72
Electrical Consumption	0.85	1.11	0.06	0.70	0.22
Natural Gas Consumption	4.36	1.94	0.34	NG	0.01
Landscape Emissions	0.06	5.39	0.64	0.16	0.01
Consumer Products	NG	NG	22.38	NG	NG
Emissions Totals	**60.28**	**730.00**	**83.45**	1.33	33.96
SCAQMD Thresholds	55	550	55	150	150

Note: NG designates criteria pollutants that have estimated negligible values.

With mitigation measures incorporated into the project NOx, CO, and ROC emissions remain above the SCAQMD recommended threshold. However, further mitigation measures were not feasible and/or practical to implement.

CO Hotspots

Carbon Monoxide (CO) is a localized problem requiring additional analysis beyond total project emissions quantification. The SCAQMD recommends that projects with sensitive receptors or projects that could negatively impact levels of service (LOS) of existing roads use the screening procedures outlined in the SCAQMD CEQA Air Quality Handbook to determine the potential to create a CO hot spot. A CO hot spot is a localized concentration of CO that is above the State or Federal 1-hour or 8-hour ambient air standards. Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. The proposed project includes sensitive receptors and has the potential to negatively impact the LOS on adjacent roadways and therefore, requires a CO hotspot analysis.

The SCAQMD CEQA Air Quality Handbook recommends using CALINE4, the fourth generation California Line Source Roadway Dispersion Model developed by the California Department of Transportation (Caltrans), to estimate 1-hour CO concentrations from roadway traffic. Input data for this model includes meteorology, street network geometrics, traffic information, and emissions generation rates. Meteorological data required includes average temperatures, wind direction, sigma theta (standard deviation of wind direction), and wind speed. Street network geometrics require the use of an x,y coordinate system onto which the modeled roadways can be overlain in order to identify the relative location of traffic lanes to nearby receptors. Total traffic volume of the adjacent roadway segments was calculated using total projected volumes of generated from 376 homes combined with future traffic volumes for the year 2020 from the sub-regional travel demand model currently in use for long range planning in San Bernardino County. These calculations were estimated from intersection volumes found in the project specific traffic study for year 2020 (R K Engineering Group 2002) with traffic from the 17 homes (for a total of 376 homes) added to the roadway segments. Additional trips that may be generated from the 17 homes at the northwest corner of East Avenue and Wilson Avenue were added to the roadway network by using the PM peak hour generation rate (0.65 trip-ends in and 0.36 trip-ends out per residential unit) and project distribution of traffic used in the traffic study. Emission factors were calculated in grams/mile/vehicle using the EMFAC2001 computer model.

Roadway segments in this analysis include:

- East Ave. from Victoria St. to the north project boundary (future north terminus of East St.),
- Etiwanda Ave. from Highland Ave. to the north terminus of Etiwanda Ave.,
- Wilson Ave. from Day Creek Blvd. to Wardman Bullock Rd.,
- Proposed "A" St. from Wilson Ave. to the proposed north terminus within the project,
- Proposed "N" St. from East Ave. to the proposed west terminus within the project,
- Proposed "Q" St. and "U" St. from Etiwanda Ave. to the east terminuses within the project.

The PM peak hour traffic volumes were used in this analysis because they represent the highest traffic volumes. Receptor placement in the CALINE4 model also took into account the location to the roadway network in relation to the planned and existing residential developments.

The model procedure that was followed combined the results of the traffic analysis for year 2020 with traffic from 376 homes assuming very restrictive dispersion conditions in order to generate a worst-case impact assessment.

Output from the CALINE4 model is in 1-hour CO concentrations in parts per million (ppm) at the selected receptor locations shown in Exhibit 4. The predicted 1-hour CO concentrations were determined by adding the ambient background 1-hour CO concentrations to the model projected 1-hour CO concentration. The 8-hour CO concentration was estimated by multiplying the 1-hour model estimate by the persistence factor for the project area (0.6) and adding the ambient background 8-hour CO concentration. The results from this screening procedure are presented in Table 6. Assuming worst-case conditions, the estimated 1-hour and 8-hour average CO concentrations in combination with background concentrations are below the State and Federal ambient air quality standards. No CO hot spots are anticipated as a result of traffic generated emissions by the proposed project in combination with other anticipated development in the area.

Table 5
ESTIMATED CO CONCENTRATIONS

Receptor/ Closest Intersection	Number of Vehicles/hr[1]	Traffic Generated CO Concentration[2]	Distance to Intersection (Exhibit 4)	Background CO Concentration[3]	Estimated CO Concentration[4]	State Standards	Federal Standards
Worst Case 1-hour Average CO Concentrations							
Receptor 1 East Av./ Wilson Av.	1756	0.60 ppm	60 ft.	4.00 ppm	4.60 ppm	20 ppm	35 ppm
Receptor 2 East Av./ North Boundary APN 225-083-14.	1756	0.30 ppm	30 ft.t.	4.00 ppm	4.30 ppm	20 ppm	35 ppm
Receptor 3 East Av./Proposed "N"St.	1756	0.00 ppm	30 ft.	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 4 East Av./Proposed "N" St.	1756	0.00 ppm	30 ft..	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 5 Wilson Av./West Boundary APN 225-083-14	308	0.00 ppm	60 ft.	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 6 Wilson Av./Proposed "A"St.	308	0.00 ppm	60 ft..	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 7 Wilson Av./Proposed "A" St.	308	0.00 ppm	60 ft..	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 8 Wilson Av./Etiwanda Av.	308	0.20 ppm	60 ft.	4.00 ppm	4.20 ppm	20 ppm	35 ppm
Receptor 9 Etiwanda Av./Proposed "U" St.	296	0.50 ppm	30 ft.	4.00 ppm	4.50 ppm	20 ppm	35 ppm
Receptor 10 Etiwanda Av./Proposed "U" St.	296	0.40 ppm	30 ft.	4.00 ppm	4.40 ppm	20 ppm	35 ppm
Receptor 11 Etiwanda Av./Proposed "U" St..	296	0.30 ppm	35 ft.	4.00 ppm	4.30 ppm	20 ppm	35 ppm
Receptor 12 Etiwanda Av./Proposed "Q" St.	296	0.20 ppm	20 ft.	4.00 ppm	4.20 ppm	20 ppm	35 ppm
Receptor 13 Etiwanda Av./Proposed "Q" St.	2329	0.10 ppm	20 ft.	4.00 ppm	4.10 ppm	20 ppm	35 ppm
Receptor 14 Etiwanda Av./Proposed "Q" St.	2009	0.10 ppm	30 ft.	4.00 ppm	4.10 ppm	20 ppm	35 ppm
Worst Case 8-hour Average CO Concentrations							
Receptor 1 East Av./ Wilson Av.	406/943	0.36 ppm	60 ft.	3.25 ppm	3.61 ppm	9 ppm	9.5 ppm
Receptor 2 East Av./ North Boundary APN 225-083-14.	406/8	0.18 ppm	30 ft.t.	3.25 ppm	3.43 ppm	9 ppm	9.5 ppm
Receptor 3 East Av./Proposed "N"St.	53/53	0.00 ppm	30 ft.	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm
Receptor 4 East Av./Proposed "N" St.	1756	0.00 ppm	30 ft..	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm
Receptor 5 Wilson Av./West Boundary APN 225-083-14	308	0.00 ppm	60 ft.	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm

Receptor 6 Wilson Av./Proposed "A"St.	308	0.00 ppm	60 ft..	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm
Receptor 7 Wilson Av./Proposed "A" St.	308	0.00 ppm	60 ft..	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm
Receptor 8 Wilson Av./Etiwanda Av.	308	0.12 ppm	60 ft.	3.25 ppm	3.37 ppm	9 ppm	9.5 ppm
Receptor 9 Etiwanda Av./Proposed "U" St.	296	0.30 ppm	30 ft.	3.25 ppm	3.55 ppm	9 ppm	9.5 ppm
Receptor 10 Etiwanda Av./Proposed "U" St.	296	0.24 ppm	30 ft.	3.25 ppm	3.49 ppm	9 ppm	9.5 ppm
Receptor 11 Etiwanda Av./Proposed "U" St..	296	0.18 ppm	35 ft.	3.25 ppm	3.43 ppm	9 ppm	9.5 ppm
Receptor 12 Etiwanda Av./Proposed "Q" St.	296	0.12 ppm	20 ft.	3.25 ppm	3.37 ppm	9 ppm	9.5 ppm
Receptor 13 Etiwanda Av./Proposed "Q" St.	2329	0.06 ppm	20 ft.	3.25 ppm	3.31 ppm	9 ppm	9.5 ppm
Receptor 14 Etiwanda Av./Proposed "Q" St.	2009	0.06 ppm	30 ft.	3.25 ppm	3.31 ppm	9 ppm	9.5 ppm

Note:

APPENDIX A

USE OF URBEMIS 2001 FOR WINDOWS IN DETERMINING PROJECT EMISSIONS

USE OF URBEMIS 2001 IN DETERMINING PROJECT EMISSIONS

URBEMIS is a computer program that can be used to estimate emissions associated with land use development projects in California. URBEMIS, which stands for Urban Emissions Model, was originally created by the California Air Resources Board in the early 1980s. Since that time it has undergone several revisions.

This version (URBEMIS 2001 for Windows version 6.2.1), distributed in March 2002 in coordination with the California Air Pollution Control Officers' Association (CAPCOA), is the most current version of the URBEMIS software available at this time. Several changes in the use and defaults of URBEMIS 2001 for Windows were initiated to reflect specific conditions unique to this project. The following discussion summarizes model use and model default modifications.

Short-term Emissions: The model includes a default of 20 days for the application of architectural coatings. A total time of 20 days is unreasonable to paint 376 homes. For analysis purposes it is assumed that painting applications would be dispersed across the construction period after grading (approximately 60 days), foundation construction (approximately 25 days), and framing of the initial buildings (20 days) has occurred. Therefore the application of architectural coatings was increased to 260 days.

With the exception of construction worker commutes, the model does not estimate construction emissions of CO. All CO emission estimates for stationary and mobile equipment where calculated using Table A9-3-A and Table A9-8-A, respectively, from the SCAQMD CEQA Air Quality Handbook. Worksheets documenting these calculations are provided as part of Appendices B and C.

Long-term Emissions: The trip length was set at 13.6 miles (increased from the default of 10.3 miles) for work related trips, 7.9 miles (increase from the default of 4.87) for home to shop, and 7.9 miles (increase from the default of 6.02) for home to other to reflect the average roundtrip commute for San Bernardino County listed in the SCAQMD CEQA Air Quality Handbook.

APPENDIX B

URBEMIS 2001 FOR WINDOWS OUTPUT FILES FOR CONSTRUCTION RELATED EMISSIONS

Page: 1

URBEMIS 2001 For Windows 6.2.1

File Name: C:\Program Files\URBEMIS 2001 \Projects2k\TTM16072(Grading).urb
Project Name: TTM 16072 (Grading and Demolition)
Project Location: South Coast Air Basin (Los Angeles area)

DETAIL REPORT
(Pounds/Day - Summer)

Total Land Use Area to be Developed (Estimated): 161 acres
Retail/Office/Institutional Square Footage: 0
Single Family Units: Multi-family Units: 0

CONSTRUCTION EMISSION ESTIMATES

Source	ROG	NOx	CO	PM10	SO2
Demolition	-	-	-	1.68	-
Site Grading	0.00	0.00	-	120.95	0.00
Const. Worker Trips	4.75	6.72	12.75	1.29	-
Stationary Equip	0.00	0.00	-	0.00	0.00
Mobile Equip. - Gas	0.00	0.00	-	0.00	0.00
Mobile Equip. - Diesel	26.20	286.93	-	41.77	41.72
Architectural Coatings	0.00	-	-	-	-
Asphalt Offgassing	0.00	-	-	-	-
TOTALS (lbs/day, mitigated)	30.95	293.66	12.75	165.68	41.72

Construction-Related Mitigation Measures

Soil Erosion Measures: Water Exposed Surfaces 2x Per Day
Percent Reduction(ROG 0% NOx 0% CO 0% PM10 68% SO2 0%)
Implement Water/Paved Road Measures: Water All Haul Roads 2x Per Day
Percent Reduction(ROG 0% NOx 0% CO 0% PM10 3% SO2 0%)
Reduce Speeds on Unpaved Roads to 15 mph or less
Percent Reduction(ROG 0% NOx 0% CO 0% PM10 70% SO2 0%)

Changes made to the default values for Construction

The asphalt option switch changed from on to off.
The stationary equipment option switch changed from on to off.
The architectural coating option switch changed from on to off.
The demolition total width in total volume changed from to 40.
The demolition total length in total volume changed from to 10.
The demolition total height in total volume changed from to 10.
The demolition total width in maximum daily volume changed from to 40.
The demolition total length in maximum daily volume changed from to 10.
The demolition total height in maximum daily volume changed from to 10.
The demolition days required changed from 10 to 1.
The site grading max daily acreage estimate changed from to 41.
The site grading annual days earth moving changed from 250 to 65.
The worker average trip length changed from 10 to 13.6.
The worker construction year changed from 2002 to 2003.
The mobile diesel truck: off hwy total vehicles changed from to 1.
The mobile diesel truck: off hwy hours/day changed from 8 to 41.25.
The mobile diesel scraper total vehicles changed from to 5.

Page: 2

The mobile diesel wheeled dozer total vehicles changed from to 5.
The mobile diesel motor grader total vehicles changed from to 5.
The mobile diesel miscellaneous total vehicles changed from to 5.
Mitigation measure Soil Erosion Measures: Water Exposed Surfaces 2x Per Day:0
has been changed from off to on.
Mitigation measure Implement Water/Paved Road Measures: Water All Haul Roads 2x Per Day:0
has been changed from off to on.
Mitigation measure Reduce Speeds on Unpaved Roads to 15 mph or less: 0
has been changed from off to on.

Page: 1

URBEMIS 2001 For Windows 6.2.1

File Name: C:\Program Files\URBEMIS 2001\Projects2k\TTM16072(Construction).urb
Project Name: TTM16072(Short-term)
Project Location: South Coast Air Basin (Los Angeles area)

DETAIL REPORT
(Pounds/Day - Summer)

Total Land Use Area to be Developed (Estimated):
Retail/Office/Institutional Square Footage: 0
Single Family Units: 376 Multi-family Units: 0

CONSTRUCTION EMISSION ESTIMATES

Source	ROG	NOx	CO	PM10	SO2
Demolition	-	-	-	0.00	-
Site Grading	0.00	0.00	-	0.00	0.00
Const. Worker Trips	2.22	3.14	5.96	0.60	-
Stationary Equip	12.60	10.28	-	0.60	0.15
Mobile Equip. - Gas	0.00	0.00	-	0.00	0.00
Mobile Equip. - Diesel	7.49	97.96	-	7.13	8.00
Architectural Coatings	122.11	-	-	-	-
Asphalt Offgassing	8.34	-	-	-	-
TOTALS (lbs/day, mitigated)	152.76	111.37	5.96	8.33	8.15

Construction-Related Mitigation Measures

Architectural Coatings: Use Low VOC Coatings
Percent Reduction(ROG 5% NOx 0% CO 0% PM10 0% SO2 0%)
Asphalt Paving: Use Low VOC Asphalt
Percent Reduction(ROG 5% NOx 0% CO 0% PM10 0% SO2 0%)

Changes made to the default values for Construction

The demolition option switch changed from on to off.
The site grading option switch changed from on to off.
The construction year changed from 2002 to 2003.
The length of construction period changed from 250 to 365.
The demolition total width in total volume changed from to 40.
The demolition total length in total volume changed from to 10.
The demolition total height in total volume changed from to 10.
The demolition total width in maximum daily volume changed from to 40.
The demolition total length in maximum daily volume changed from to 10.
The demolition total height in maximum daily volume changed from to 10.
The demolition days required changed from 10 to 1.
The site grading max daily acreage estimate changed from to 41.

The site grading annual days earth moving changed from 250 to 65.
The worker average trip length changed from 10 to 13.6.
The worker construction year changed from 2002 to 2003.
The asphalt acres to be paved changed from 1 to 33.5.
The stationary equipment equipment units changed from 2 to 75.
The mobile diesel fork lift 175 HP total vehicles changed from to 1.
The mobile diesel truck: off hwy total vehicles changed from to 1.
The mobile diesel miscellaneous total vehicles changed from to 1.
The mobile diesel miscellaneous hours/day changed from 8 to 30.75.
The coatings number of days of painting changed from 20 to 260.
Mitigation measure Architectural Coatings: Use Low VOC Coatings: 5
has been changed from off to on.
Mitigation measure Asphalt Paving: Use Low VOC Asphalt: 5
has been changed from off to on.

CO EMISSIONS ESTIMATES FOR STATIONARY EQUIPMENT

Construction Period	Emission Factor[1] (pounds/Hp hour)	Horsepower Hours per Day[2]	Number of Pieces of Equipment[3]	Daily Emissions (pounds/day)
Grading	0.0019	280	0	0
Construction	0.0019	280	75	39.90

Notes:
1 Emission factor from SCAQMD CEQA Air Quality Handbook, Table A9-3-A.
2 Reflects power output for each piece of stationary equipment based upon an average power rating of 35 Hp and operating 8 hours per day.
3 Stationary equipment is not used during the grading phase. construction period activities will involve the use of welders, cutting torches, generators and concrete pumps.

CO EMISSIONS ESTIMATES FOR MOBILE EMISSION SOURCES

Equipment	Emission Factor[1] (pounds/hour)	Hours per day[2]	Daily Emissions (pounds/day)
Grading			
Scrapers	1.250	40	50.00
Dozers	NG	40	NG
Motor Graders	0.151	40	6.04
Off-Hwy Trucks	1.800	41.25[3]	74.25
Water Trucks	0.675	40	27.00
Total			151.25
Construction			
Cement Trucks[4]	0.675	30.75[5]	20.76
Fork Lifts (175 Hp)	0.520	8	4.16
Off-Hwy Trucks	1.800	8	14.40
Total			39.32

Notes:
1 Emission factor from SCAQMD CEQA Air Quality Handbook, Table A9-8-A.
2 Reflects daily total operation time for all pieces of equipment of applicable class.
3 Assumes 55 truckloads of orange trees being transported per day at 45 minutes per truckload (totaling 41.25 hours/day).
4 SCAQMD CEQA Air Quality Handbook, Table A9-8-A does not have emission factors for cement trucks or cranes. Therefore, emission factors for the miscellaneous category were applied.
5 Assumes 41 truckloads of concrete per day at 45 minutes per truckload (totaling 30.75 hours/day).

APPENDIX C

URBEMIS 2001 FOR WINDOWS OUTPUT FILES FOR OPERATION PHASE EMISSIONS

Page: 1

URBEMIS 2001 For Windows 6.2.1

File Name: C:\Program Files\URBEMIS 2001\Projects2k\TTM16072 (Long-term).urb
Project Name: TTM 16072 (Long-term)
Project Location: South Coast Air Basin (Los Angeles area)

DETAIL REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	PM10	SO2
Natural Gas	0.36	4.71	2.00	0.01	-
Wood Stoves - No summer emissions					
Fireplaces - No summer emissions					
Landscaping	0.64	0.06	5.39	0.01	0.16
Consumer Prdcts	22.38	-	-	-	-
TOTALS(lbs/day,unmitigated)	23.38	4.77	7.40	0.02	0.16

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	PM10	SO2
Single family housing	64.44	59.06	774.62	36.20	0.47
TOTAL EMISSIONS (lbs/day)	64.44	59.06	774.62	36.20	0.47

Includes correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES
Analysis Year: 2004 Temperature (F): 90 Season: Summer
EMFAC Version: EMFAC2001 (10/2001)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Single family housing	9.57 trips / dwelling units	376.00	3,599.00

Vehicle Assumptions:
Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	61.40	4.70	94.50	0.80
Light Truck < 3,750 lbs	9.30	11.00	88.90	0.10
Light Truck 3,751- 5,750	16.70	1.80	97.60	0.60
Med Truck 5,751- 8,500	7.20	12.50	79.20	8.30
Lite-Heavy 8,501-10,000	1.10	18.20	72.70	9.10
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.10	9.10	27.30	63.60
Heavy-Heavy 33,001-60,000	0.70	0.00	0.00	100.00
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.00	0.00	0.00	100.00
Motorcycle	1.40	90.90	9.10	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	0.70	0.00	100.00	0.00

Page: 2

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	13.6	7.9	7.9	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			

Changes made to the default values for Area

The consumer product persons per residential unit changed from 2.861 to 3.48.
Changes made to the default values for Operations

The operational emission year changed from 2002 to 2004.
The home based work selection item changed from 8 to 7.
The home based work urban trip length changed from 11.5 to 13.6.
The home based shopping selection item changed from 9 to 8.
The home based shopping urban trip length changed from 4.87 to 7.9.
The home based other selection item changed from 9 to 8.
The home based other urban trip length changed from 6.02 to 7.9.
The commercial based commute selection item changed from 9 to 8.
The commercial based non-work selection item changed from 9 to 8.
The commercial based customer selection item changed from 9 to 8.

APPENDIX D

ELECTRICITY USAGE EMISSIONS WORKSHEET

AIR QUALITY EMISSIONS WORKSHEET

Electricity Usage Emissions

Pollutant	Emission Factor[1] (lbs/megawatt hour)	Electric Use[2] (megawatt hours/day)	Total Emissions (pounds per day)
CO	0.20	5.8	1.16
ROC	0.01	5.8	0.06
NO_X	0.15[3]	5.8	0.87
SO_X	0.12	5.8	0.70
PM_{10}	0.04	5.8	0.23

Notes:
1 Emission factors from SCAQMD CEQA Air Quality Handbook, Table A9-11-B.
2 SCAQMD CEQA Air Quality Handbook, Table A9-11-A, conversion factors used to convert kilowatt-hours per year to megawatt-hours per day.
3 Emission factor for NOx is derived from SCAQMD Rule 1135 requiring SCE to emit no more than 0.15 pounds of NOx per Megawatt hour of electric power produced within the SCAB

APPENDIX E

CALINE 4 OUTPUT FILES

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL

PAGE 1

JOB: Tentative Tract No. 16072
RUN: Hour 1
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	518. (M)
BRG=	.0 DEGREES	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	10. DEGREES	TEMP=	4.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	*	798	-2520	798	-75	*	AG	888	10.8	.0	19.2
B. Link B	*	798	-75	798	258	*	AG	406	26.3	.0	13.2
C. Link C	*	798	258	798	515	*	AG	53	13.6	.0	13.2
D. Link D	*	798	515	798	642	*	AG	53	26.3	.0	13.2
E. Link E	*	798	642	798	797	*	AG	53	13.6	.0	13.2
F. Link F	*	0	-1584	0	-75	*	AG	1710	10.8	.0	23.4
G. Link G	*	0	-75	0	0	*	AG	655	26.3	.0	19.2
H. Link H	*	-252	0	-54	375	*	AG	533	13.6	.0	19.2
I. Link I	*	-54	375	0	450	*	AG	533	26.3	.0	19.2
J. Link J	*	0	450	0	685	*	AG	533	26.3	.0	19.2
K. Link K	*	0	685	0	797	*	AG	533	13.6	.0	19.2
L. Link L	*	-1224	0	75	0	*	AG	943	10.8	.0	23.4
M. Link M	*	75	0	315	0	*	AG	943	13.6	.0	23.4
N. Link N	*	315	0	873	0	*	AG	943	26.3	.0	23.4
O. Link O	*	873	0	2058	0	*	AG	1182	10.8	.0	23.4
P. Link P	*	390	0	390	75	*	AG	199	26.3	.0	13.2
Q. Link Q	*	798	590	723	590	*	AG	54	26.3	.0	10.8
R. Link R	*	0	450	75	450	*	AG	54	26.3	.0	13.2
S. Link S	*	0	633	75	633	*	AG	54	26.3	.0	10.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL

PAGE 2

JOB: Tentative Tract No. 16072
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	789	18	1.5
2. Recpt 2	789	174	1.5
3. Recpt 3	789	594	1.5
4. Recpt 4	789	602	1.5
5. Recpt 5	627	15	1.5
6. Recpt 6	400	15	1.5
7. Recpt 7	380	15	1.5
8. Recpt 8	12	15	1.5
9. Recpt 9	16	447	1.5
10. Recpt 10	16	465	1.5
11. Recpt 11	-20	468	1.5
12. Recpt 12	16	624	1.5
13. Recpt 13	16	639	1.5
14. Recpt 14	-18	633	1.5

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. Recpt 1	.6	.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
2. Recpt 2	.3	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. Recpt 5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
9. Recpt 9	.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.4
10. Recpt 10	.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3
11. Recpt 11	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2
12. Recpt 12	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13. Recpt 13	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

14. Recpt 14	*	.1	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL

PAGE 3

JOB: Tentative Tract No. 16072
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

		CONC/LINK (PPM)								
RECEPTOR	*	K	L	M	N	O	P	Q	R	S
1. Recpt 1	*	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. Recpt 2	*	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	*	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	*	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. Recpt 5	*	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	*	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	*	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	*	.0	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	*	.0	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 10	*	.0	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 11	*	.0	.0	.0	.0	.0	.0	.0	.0	.0
12. Recpt 12	*	.1	.0	.0	.0	.0	.0	.0	.0	.0
13. Recpt 13	*	.1	.0	.0	.0	.0	.0	.0	.0	.0
14. Recpt 14	*	.0	.0	.0	.0	.0	.0	.0	.0	.0

APPENDIX F

SCREEN3 OUTPUT FILES

10/21/02
14:47:39

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Rancho Cucamonga TT 16043

COMPLEX TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.694000E-04
STACK HT (M)	=	3.6600
STACK DIAMETER (M)	=	.0760
STACK VELOCITY (M/S)	=	18.3000
STACK GAS TEMP (K)	=	1231.0000
AMBIENT AIR TEMP (K)	=	293.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	URBAN

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = .197 M**4/S**3; MOM. FLUX = .115 M**4/S**2.

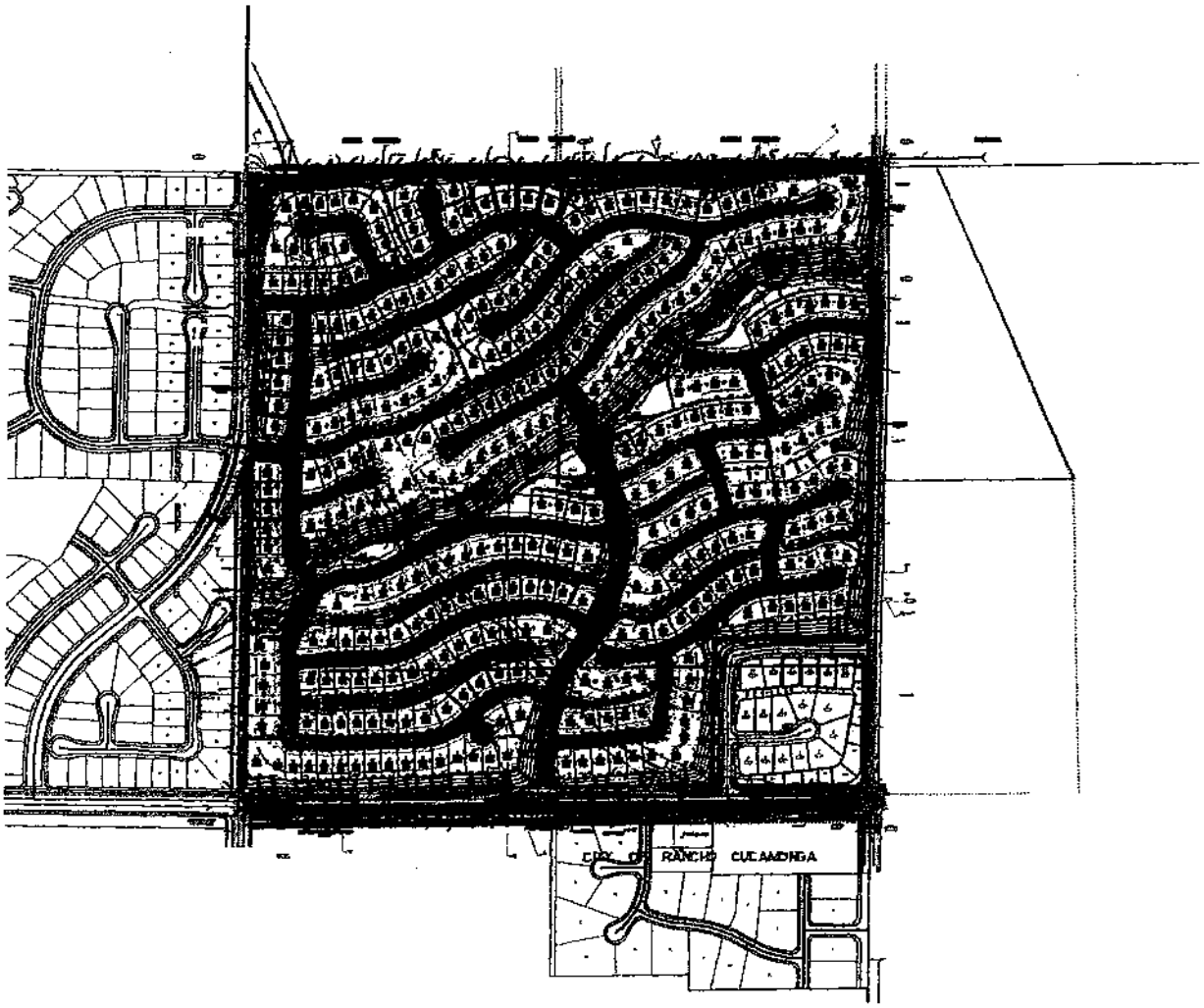
FINAL STABLE PLUME HEIGHT (M) = 16.4
DISTANCE TO FINAL RISE (M) = 200.2

			VALLEY 24-HR CALCS		**SIMPLE TERRAIN 24-HR CALCS**				
TERR HT (M)	DIST (M)	MAX 24-HR CONC (UG/M**3)	CONC (UG/M**3)	PLUME HT ABOVE STK BASE (M)	CONC (UG/M**3)	PLUME HT ABOVE STK HGT (M)	SC	U10M (M/S)	USTK (M/S)
6.	61.	.7952E-01	.6084E-02	9.4	.7952E-01	6.3	4	1.0	1.0
6.	80.	.5274E-01	.8056E-02	10.6	.5274E-01	6.3	4	1.0	1.0
6.	100.	.3624E-01	.7951E-02	11.7	.3624E-01	6.3	4	1.0	1.0
7.	120.	.2625E-01	.7077E-02	12.7	.2625E-01	6.3	4	1.0	1.0
7.	140.	.2201E-01	.6091E-02	13.7	.2201E-01	14.4	6	1.0	1.0
7.	160.	.2064E-01	.5201E-02	14.6	.2064E-01	14.4	6	1.0	1.0
8.	180.	.1899E-01	.4452E-02	15.5	.1899E-01	14.4	6	1.0	1.0
8.	200.	.1730E-01	.3834E-02	16.4	.1730E-01				

Appendix F
Acoustical Report

Appendix F
Acoustical Report

TENTATIVE TRACT MAP 16072
PRELIMINARY ACOUSTICAL REPORT
Rancho Cucamonga, California



RK engineering group, inc.

RK engineering group, inc.

transportation planning ▪ traffic engineering
acoustical / air quality studies

October 4, 2002

Mr. John Schafer
RICHLAND COMMUNITIES
3 Imperial Promenade, Suite 150
Santa Ana, CA 92707

Subject: TTM 16072 Preliminary Acoustical Study, Rancho Cucamonga

Dear Mr. Schafer:

RK ENGINEERING GROUP, INC. is pleased to provide RICHLAND COMMUNITIES with the attached preliminary acoustical report for proposed Tentative Tract 16072. The proposed project would consist of 359 lots, divided into a "North" and "South" phase. The proposed project would be located north of Wilson Avenue, between Etiwanda Avenue and East Avenue, in the City of Rancho Cucamonga. The objective of this acoustical study was to evaluate future noise impacts to the site from surrounding roadways. Based upon this evaluation the project is feasible from an acoustical standpoint, if the recommended mitigation measures included in this report are implemented.

RK ENGINEERING GROUP, INC. is pleased to have prepared the acoustical report for the proposed TTM 16072 project, and looks forward to assisting RICHLAND COMMUNITIES with future projects. If you have any questions regarding this report or need further analysis, please feel free to give us a call at (949) 474-0809.

Sincerely,

RK ENGINEERING GROUP, INC.

Mike Rosa
Engineering Technician

Robert Kahn, P.E.
Principal

RK:MR:kd/1255
JN:1058-02-01
Attachments

20201 s.w. birch street, suite 250
newport beach, california 92660
tel 949.474.0809 fax 949.474.0902

TTM 16072
PRELIMINARY ACOUSTICAL STUDY
RANCHO CUCAMONGA, CALIFORNIA

Prepared for:

RICHLAND COMMUNITIES
3 Imperial Promenade, Suite 150
Santa Ana, CA 92707

Prepared by:

RK ENGINEERING GROUP, INC.
20201 S.W. Birch Street, Suite 250
Newport Beach, CA 92660

Mike Rosa
Robert Kahn, P.E.

October 4, 2002

JN:1058-02-01
RK:MR:kd/1255

TABLE OF CONTENTS

APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

TTM 16072
PRELIMINARY ACOUSTICAL STUDY
RANCHO CUCAMONGA, CALIFORNIA

EXECUTIVE SUMMARY

A preliminary acoustical study has been completed to establish future exterior/interior noise exposure to the proposed project and determine any necessary mitigation measures needed to meet City of Rancho Cucamonga noise standards. The proposed site is located north of Wilson Avenue, between Etiwanda Avenue and East Avenue, as shown on Exhibit A. The results of this analysis indicate that future motor vehicle noise from Wilson Avenue, Etiwanda Avenue and East Avenue will be the principle source of community noise that will impact the project. However, these noise impacts can be adequately mitigated with the appropriate noise control measures recommended in this report.

The proposed project consists of 359 lots contained in a "North" and "South" phase. The site plan used for this analysis is shown on Exhibit B. It is necessary to note that the southeast corner contains a "Low Density Residential" project that is not a part of TTM 16072. This unrelated project, however, acts as a noise barrier, protecting portions of TTM 16072 from noise impacts emanating from Wilson Avenue and East Avenue.

On-Site Noise Exposure Analysis and Control

Based on roadway and site parameters (Table 1), the results of this study indicate that the projected exterior noise levels for a worst-case situation exceed the City of Rancho Cucamonga exterior noise standard of 60 dBA CNEL for residential uses. To reduce the projected exterior (backyard) noise levels to within acceptable levels, mitigation measures have been detailed in this report. Ultimately, noise control barriers (walls, berms or a combination of the two) will be necessary along the perimeter of portions of the proposed project. The interior noise exposure standard of 45 dBA CNEL will only be

EXHIBIT A

LOCATION MAP

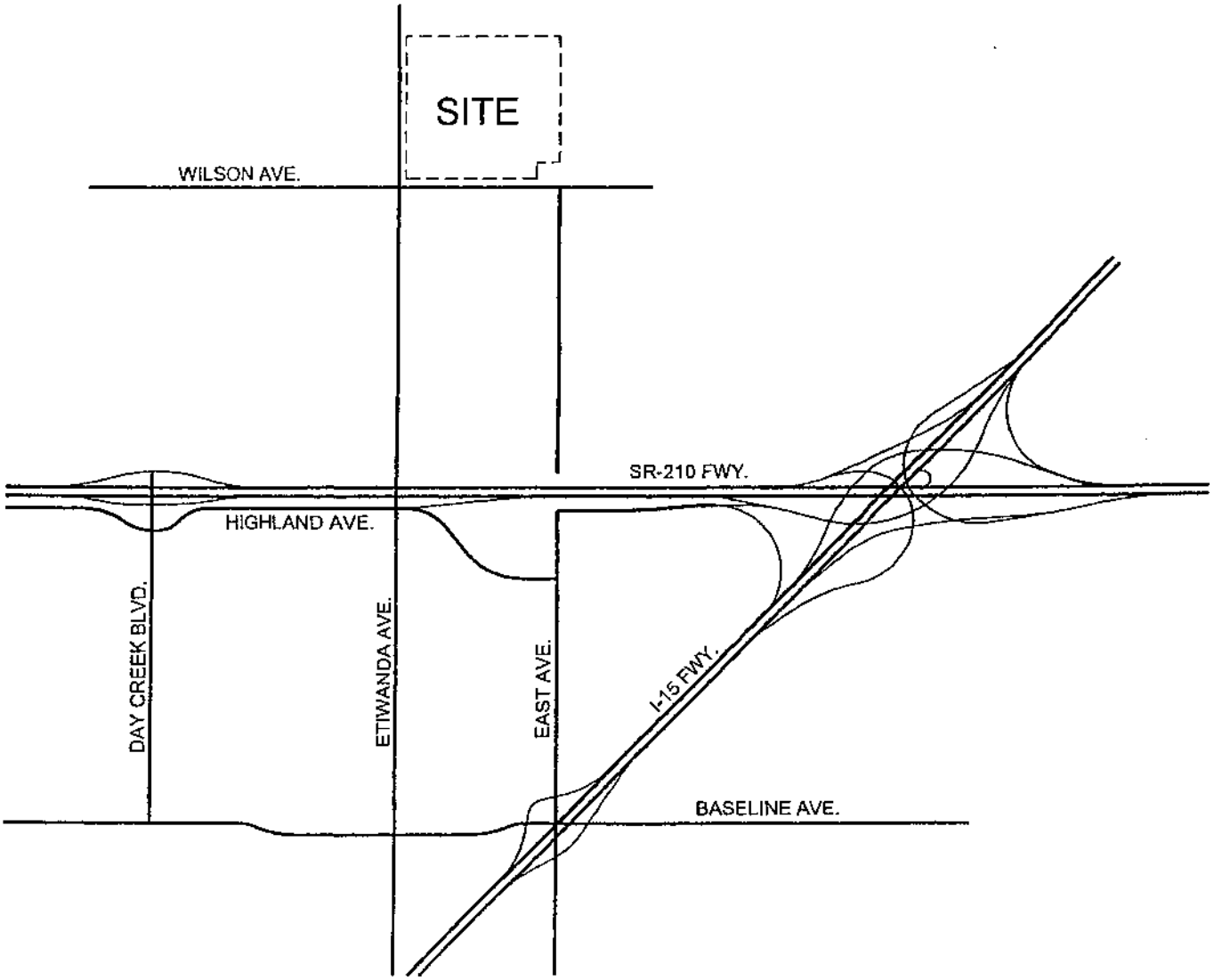


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EXHIBIT B
SITE PLAN

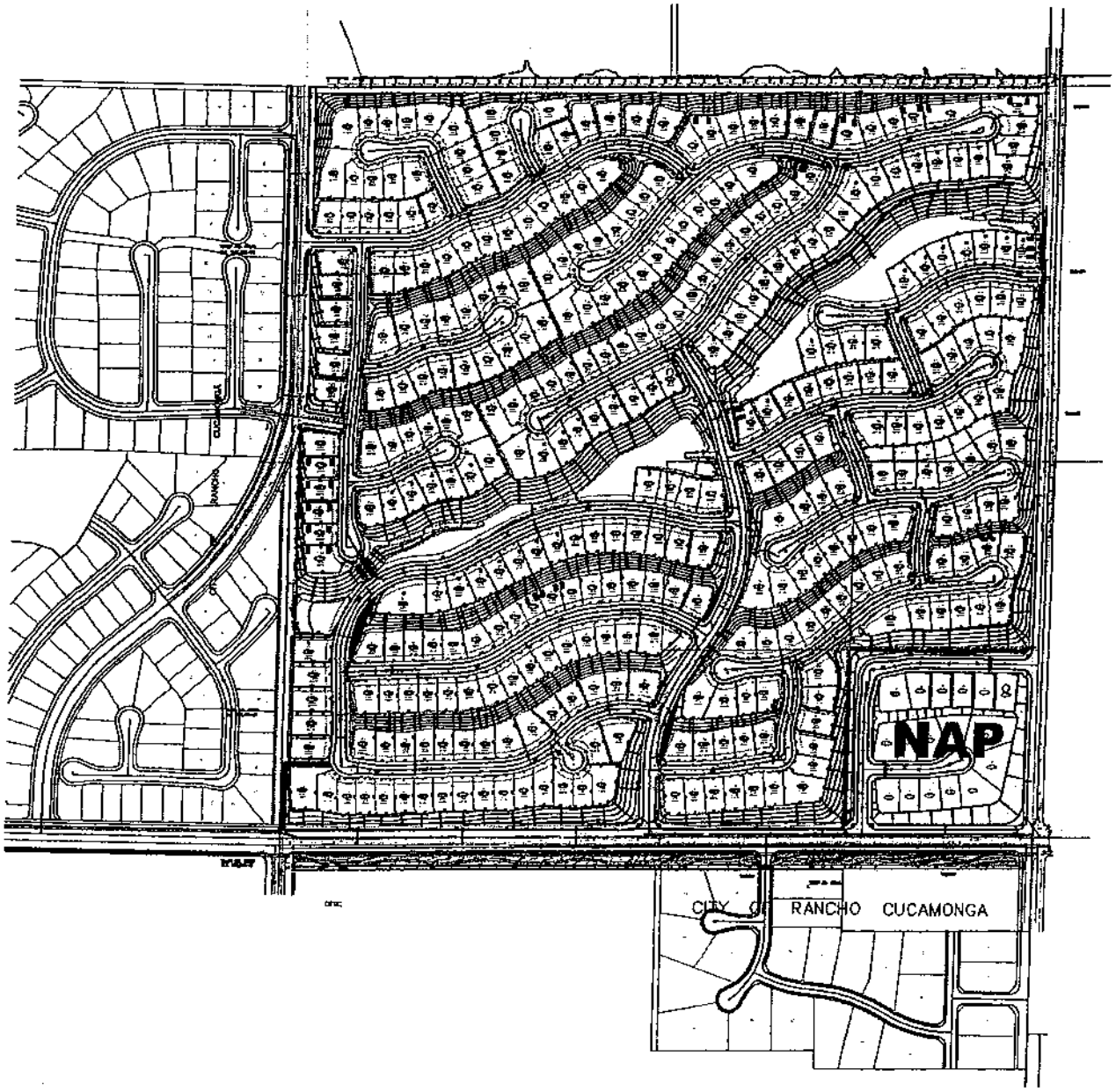

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TABLE 1

ROADWAY AND SITE PARAMETERS

Roadway	Lanes	Classification[1]	Buildout (ADT)[2]	Speed (MPH)
Wilson Avenue	4	Major Arterial	13,000	40
East Avenue	2	Collector	14,000	40
Etiwanda Avenue	2	Collector	8,000	40

ROADWAY HOURLY TRAFFIC FLOW DISTRIBUTION[3]

Motor Vehicle Type	Daytime (7 AM to 7 PM)	Evening (7 PM to 10 PM)	Night (10 PM to 7 AM)	Total % Traffic Flow
Automobiles	77.50	12.90	9.60	97.42
Medium Trucks	84.80	4.90	10.30	1.84
Heavy Trucks	86.50	2.70	10.80	0.74

[1] Roadway classification based upon typical cross sections as shown in the Rancho Cucamonga General Plan (see Appendix "D").
[2] ADT values provided by John Gillespie (City Traffic Engineer) on 10/01/02.
[3] Traffic Distribution values taken from Empire Lakes Preliminary Noise Study, by RKJK, dated 12/26/00.

met using a "windows closed" condition, which will require a means of mechanical ventilation (i.e. air conditioning), and upgraded windows for some lots. These measures are further detailed in the Summary of Recommendations section of this report.

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SUMMARY OF RECOMMENDATIONS

Exterior Area – Noise Exposure Control

For the proposed residential land use, the City of Rancho Cucamonga's noise standards limit livable exterior area's (backyards in this case) levels to 60 dBA CNEL. To accommodate this standard an acoustical study and design has been completed to offer a form of mitigation that will make the proposed project feasible, from an acoustical standpoint. It is important to note that while exterior mitigation (noise barriers) may have positive effects on interior areas, it is intended to satisfy exterior standards only. Interior mitigation measures will be discussed later in this section.

Table 2 shows the study's findings with regard to exterior areas while Exhibit C-1 graphically illustrates the positioning and minimum heights of the recommended noise barriers. Some lots along Wilson Avenue and East Avenue will require noise barriers of up to 6.5-feet in height to reduce exterior noise impacts to acceptable levels. Overall, noise barrier heights will range from 3.0-feet to 6.5-feet along subject roadways. The ends of these noise barriers will need to "wrap-around" to prevent flanking of noise into the exterior areas. Exhibit C-1 best details specific noise barrier heights and locations for the entire project.

A final acoustical study will need to be performed before building permits can be issued. The final study will confirm or revise the aforementioned mitigation measures based upon more complete information such as building setbacks, detailed building plans and precise grading plans. The information contained in this report should be sufficient to obtain Tentative Tract Map and Site Plan approval.

Noise Control Barrier Construction Materials

The designed noise screening will only be accomplished if the barrier's weight is at least 3.5 pound per square foot of face area and has no decorative cutouts or

TABLE 2

BUILDOUT EXTERIOR NOISE LEVELS (dBA CNEL)[1]

Lot Number	Unmitigated Noise Impacts dBA CNEL) at Façade From[2]			Total Combined Unmitigated Exterior Noise Level[3]	Mitigated Exterior Noise Level[4]	Minimum Required Barrier Height (in feet)[5]
	Wilson Avenue	East Avenue	Etiwanda Avenue			
17	64.7	-	-	64.7	59.7	4.5
18	63.6	-	66.6	68.4	59.7	6.0 / 6.5
19	-	-	67.3	67.3	59.5	6.0
89	65.8	-	-	65.8	59.5	5.5
125	-	66.7	-	66.7	59.2	6.0
181	-	67.3	-	67.3	59.0	6.5
213	-	67.0	-	67.0	59.0	6.5
256	-	-	64.4	64.4	55.6	3.0
262	-	-	64.3	64.3	59.2	5.0
268	-	-	64.7	64.7	59.5	4.5

[1] Exterior noise levels (dBA CNEL) calculated 5-feet in from propoerty line, perpendicular to subject roadway.
[2] In these columns, a "-" indicates there are no noise impacts from the corresponding roadway.
[3] All impacts listed in this column are from a single roadway except Lot 18 which is impacted by noise from Wilson Avenue and Etiwanda Avenue.
[4] Rancho Cucamonga exterior noise standards limit backyard noise levels to ≤ 60 dBA CNEL.
[5] See Exhibit C and the Summary of Recommendations section of this report for further details on mitigation.

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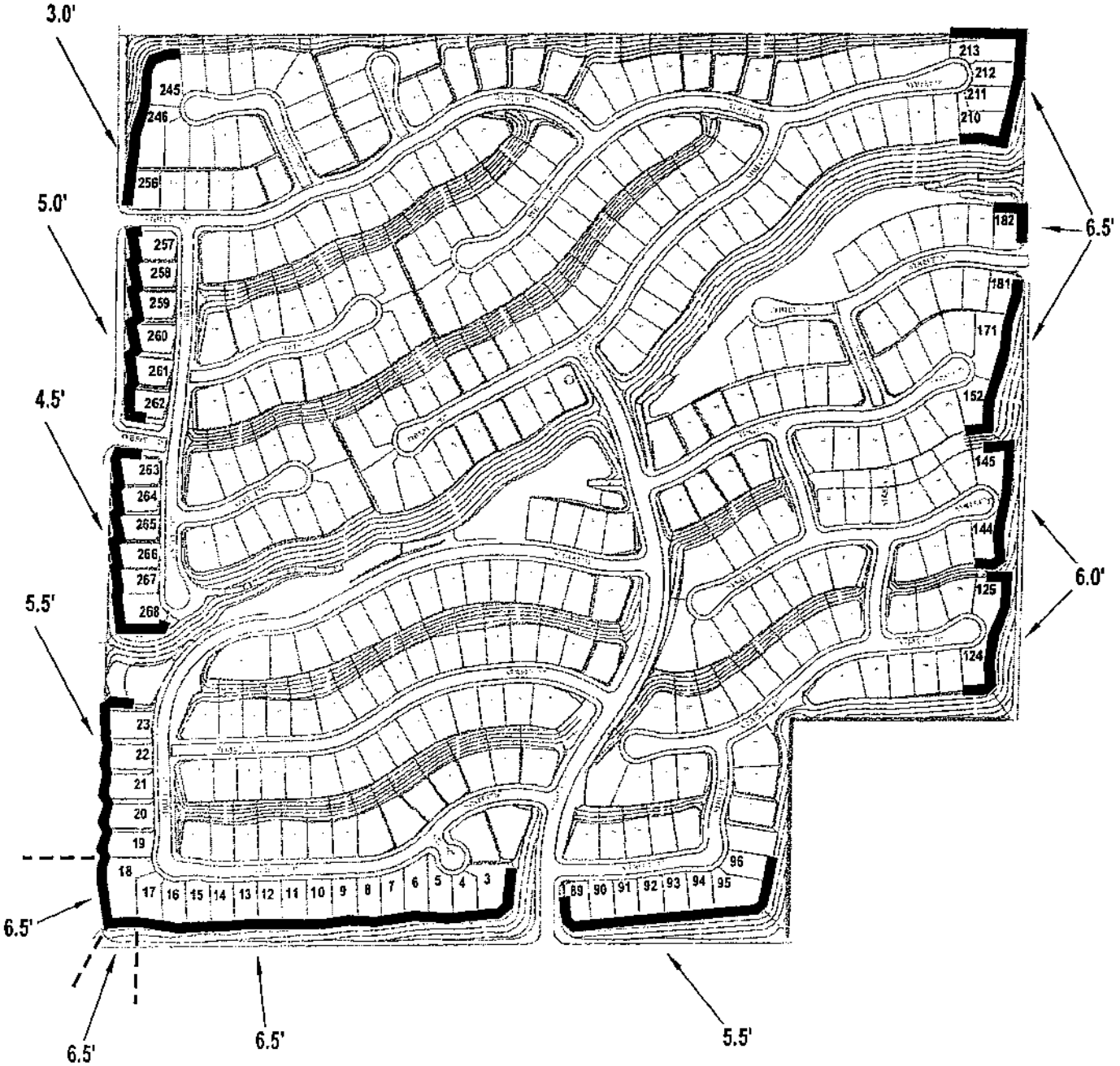
EXHIBIT C-1

SUMMARY OF RECOMMENDATIONS
BARRIER HEIGHTS



LEGEND:

■ = REQUIRED NOISE BARRIER LOCATION.

– – = CHANGE IN NOISE BARRIER MINIMUM HEIGHT.

N

line-of-site opening between the shielded areas and roadway. The recommended noise control barrier may be constructed using one, or any combination of, the following materials:

1. Masonry block;
2. Stucco veneer over wood framing (or foam core), or 1-inch thick tongue and groove wood of sufficient weight per square foot;
3. Glass (1/4-inch thick), or other transparent material with sufficient weight per square foot;
4. Earthen berm

The recommended barrier must present a solid face from top to bottom. Unnecessary openings or decorative cutouts should not be made. All gaps (except for weep holes) should be filled with grout.

Interior Area – Noise Exposure Control

For the proposed residential land use, the City of Rancho Cucamonga's noise standards limit livable interior areas' noise levels to 45 dBA CNEL. Preliminary information indicates the City's standard will be met using a "windows closed" condition, which will require a means of mechanical ventilation (i.e. air conditioning), and upgraded windows at some locations. Table 3 shows expected unmitigated and mitigated interior noise levels, while Exhibit C-2 details the lots requiring the "windows closed" condition for the entire project. It is expected that some locations' interior noise levels will not be acceptable even under the "windows closed" condition. For these lots upgraded windows will be necessary to further reduce noise impacts to the interior areas. None of the lots analyzed in this study appear to have noise impacts that cannot be mitigated in a cost-effective manner. Specific interior noise reduction values and more specific mitigation recommendations (STC ratings for windows) will be determined when the final acoustical study is performed with more detailed information.

TABLE 3

BUILDOUT INTERIOR NOISE LEVELS (dBA CNEL)[1]

Lot Number	Noise Level (dBA CNEL) at Façade[2]		Interior Noise Level with Windows Open (dBA CNEL)[3]		Interior Noise Level with Windows Closed (dBA CNEL)[4]		Required Interior NoiseReduction (dBA CNEL)[5]	
	Floor		Floor		Floor		Floor	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd
17	57.2	63.8	45.2	51.8	37.2	43.8	12.2	18.8
18[6]	57.8	66.9	45.8	54.9	37.8	46.9	12.8	21.9
19	57.0	65.2	45.0	53.2	37.0	45.2	12.0	20.2
89	57.6	64.7	45.6	52.7	37.6	44.7	12.6	19.7
125	57.5	65.5	45.5	53.5	37.5	45.5	12.5	20.5
181	58.0	66.0	46.0	54.0	38.0	46.0	13.0	21.0
213	58.4	65.7	46.4	53.7	38.4	45.7	13.4	20.7
256	59.9	63.3	47.9	51.3	39.9	43.3	14.9	18.3
262	57.5	63.2	45.5	51.2	37.5	43.2	12.5	18.2
268	56.1	63.4	44.1	51.4	36.1	43.4	11.1	18.4

[1] Includes sound attenuation provided by noise barrier, if applicable.

[2] Preliminary grading plans utilized for this analysis. All building facades calculated at 25-feet in from propoerty line.

[3] A minimum of 12 dBA noise reduction is assumed under a "windows open" condition.

[4] A minimum of 20 dBA noise reduction is assumed under a "windows closed" condition.

[5] Rancho Cucamonga noise standards limit interior noise levels to ≤ 45 dBA CNEL.

[6] All values in this row represent combined impacts from Wilson Avenue and Etiwanda Avenue. See dB addition calculations in Appendix "C" for specifics.

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EXHIBIT C-2

SUMMARY OF RECOMMENDATIONS
LOTS REQUIRING "WINDOWS CLOSED"

Unit Ventilation

With the operable door and window open, it is expected that the interior 45 dBA CNEL intrusion limit, for some lots paralleling the subject roadways, will be exceeded. Therefore, a "windows closed" condition is applicable to these lots to achieve the interior noise standard. This "windows closed" condition requires a means of mechanical ventilation. This mechanical ventilation system shall supply two (2) air changes per hour for each habitable room, with a minimum of 15 cubic feet per minute of outside air per occupant. The fresh air inlet duct shall be of sound attenuating construction and shall consist of a minimum of ten feet of straight or curved duct or six feet plus one sharp 90° bend. Exhibit D shows a typical attic vent acoustical baffle detail.

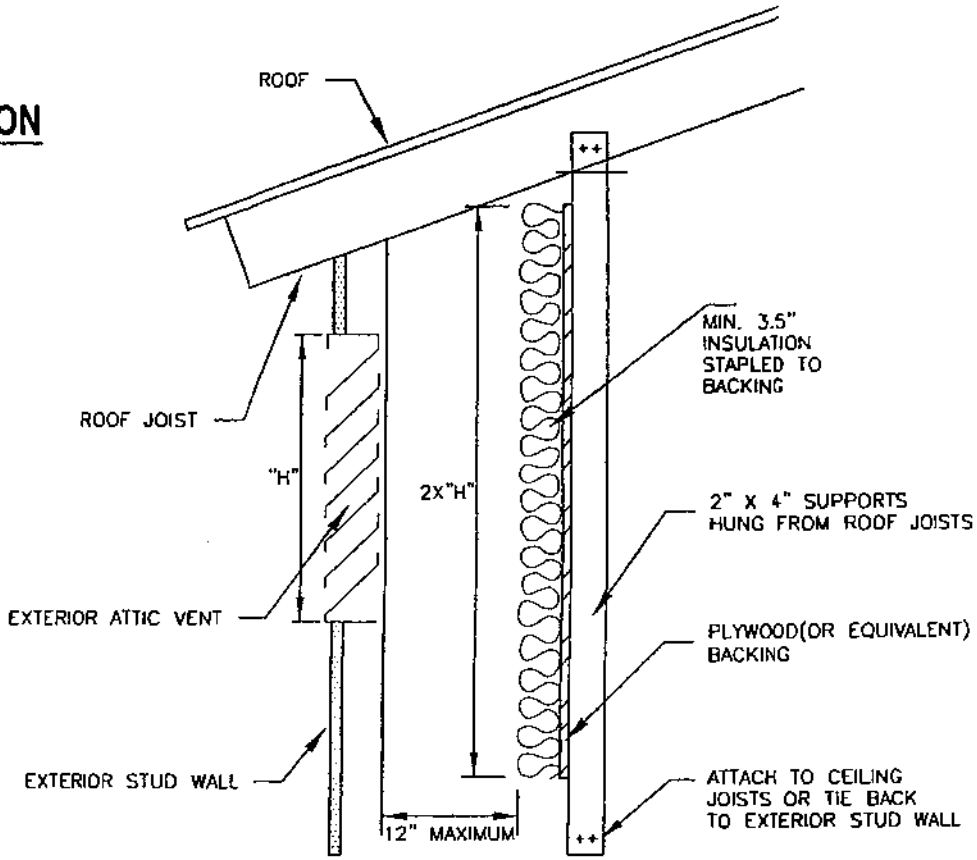
Building Shell Design

For some lots paralleling the subject roadways, interior noise exposure standards will only be met using a "windows closed" condition. For the "windows closed" condition, a means of mechanical ventilation is required to insure satisfactory sound and ventilation control. Exhibit C-2 shows specifically which lots require the "windows closed" condition. For proper acoustical performance, all exterior windows, doors and sliding glass doors must have a positive seal, and leaks and cracks must be kept down to a minimum.

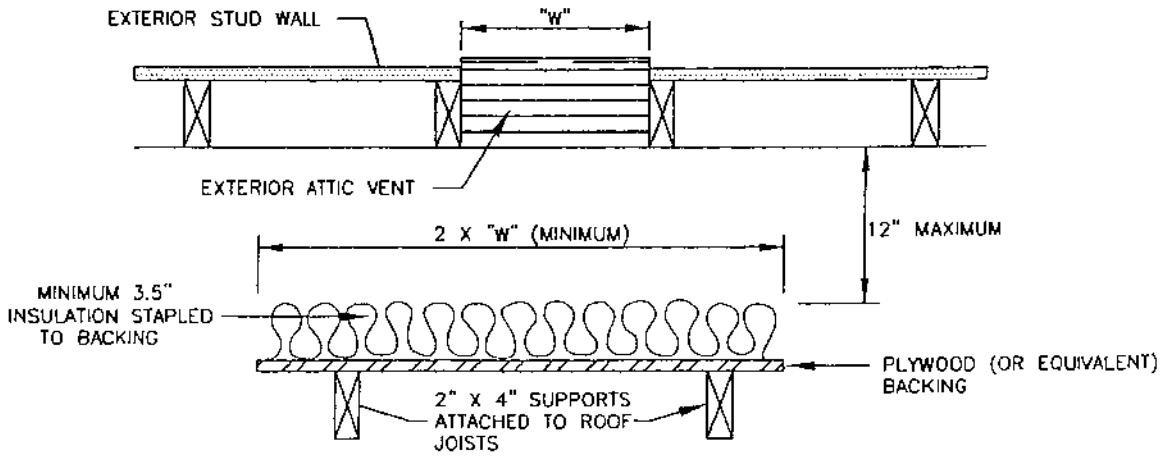
EXHIBIT D

ATTIC VENT ACOUSTICAL BAFFLE DETAIL

SECTION



PLAN VIEW



INTRODUCTION

This report presents the results of a preliminary acoustical study for proposed TTM 16072 located in the City of Rancho Cucamonga. Included in this report is a discussion of the expected future exterior community noise environment and recommendations to control this environment's noise impacts to the outdoor and indoor areas of the proposed project.

The general location of the proposed project is shown on the Location Map, Exhibit A. The site plan used for the acoustical analysis of this project was prepared by MDS CONDSULTING, and is presented as the Site Plan on Exhibit B.

In the following sections, noise exposures expected within the planned site are reviewed and compared to the applicable noise standards. Design recommendations necessary to comply with the noise standards have been presented in the Summary of Recommendations section of this report and are illustrated on Exhibits C-1 and C-2. For your reference, a glossary of acoustical terms is included in Appendix "A".

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NOISE STANDARDS

The City of Rancho Cucamonga uses the CNEL scale for land use/noise compatibility assessment. The proposed project's residential land use is considered to be a noise sensitive land use for which noise standards of 60 dBA CNEL exterior and 45 dBA CNEL interior are not to be exceeded. Exterior areas are defined as all livable outside areas (backyards in this case) and interior areas are defined as all habitable rooms. The City of Rancho Cucamonga Noise Standards are included in Appendix "B".

Noise Rating Scales

A number of noise rating scales are used in California for land use compatibility assessment. These scales are: Equivalent Noise Level (LEQ), Day Night Noise Level (LDN), and the Community Noise Equivalent Noise Level (CNEL). These scales are described in the following paragraphs:

- A-weighted decibels (dBA) are the most common units used for measuring the loudness of a noise event. The human ear's sensitivity is different for different frequencies of sound (noise). A-weighting is an attempt to give the noise monitor the same frequency sensitivity as the human ear. Technically, it is the measurement of the energy being received when listening to (or monitoring) a source of noise. For example, the loudness of a highway may be 65 dBA when measured 50 feet away. The sound decreases as one moves away from the source, and the same highway would have a perceived noise level of 62 dBA at 100 feet.

  The relationship between how one perceives a sound and the actual sound energy emitted by the source of noise is very complex. However, a good rule of thumb is if a noise increases 10 dBA, its apparent loudness will double. Therefore, a noise that is 70 dBA will be perceived as twice as loud as a 60 dBA noise.

- The LEQ scale represents the energy average noise level over a sample period of time. It represents the decibel sound level that would contain the same amount of energy as a fluctuating sound level over the sample time period.

- The LDN scale represents a time weighted 24-hour average noise level based on the A-weighted decibel. Time weighted means that a noise occurring during certain sensitive time periods is penalized for occurring at these times. For the LDN scale the nighttime period (10:00 PM to 7:00 AM) noises are penalized by 10 dBA.

- The CNEL scale is similar to the LDN scale except that it includes an additional 5 dBA penalty for the evening time period (7:00 PM to 10:00 PM).

EXTERIOR NOISE ENVIRONMENTAL ANALYSIS

It is expected that the primary source of noise to the site will be traffic noise from Wilson Avenue, Etiwanda Avenue and East Avenue. To the south (of the southwest corner of the project), there is a water treatment plant (C.C.W.D. Water Treatment Facility). After speaking with Larry Henderson (from the City's Planning Department) on 10/03/02, it has been decided that the plant does not create sufficient noise to address in this report. The plant is approximately five years old and had some noise mitigation measure built-in; such as indoor machinery.

There are no existing railroad lines near the proposed project site. It is expected that railroad noise will not contribute to the overall noise environment.

The expected roadway noise impacts were projected using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model (FHWA-RD-77-108), as modified for CNEL and the "CALVENO" energy curves, together with several key roadway site parameters. The key input parameters, which determine the projected impact of vehicular traffic noise, include the roadway classification (e.g. collector, secondary, primary, major, freeway or transportation corridor), roadway active width (the distance between the center of the outer most travel lanes on each side of the roadway), total vehicle count per day (ADT), travel speed, percentages of automobiles, medium trucks and heavy trucks in the roadway volume, roadway grade, angle of view, site conditions ("hard" or "soft") and percentage of total average daily traffic (ADT), which flows each hour throughout a 24-hour period.

The traffic volumes and travel speeds used for this study are presented in Table 1. Jon Gillespie, the City's Traffic Engineer, provided the subject roadways' speed limits and traffic volumes on 10/01/02, which are shown in Table 1. Roadway classifications were obtained from the Rancho Cucamonga General Plan, which is included in Appendix "D". Pad and roadway elevations were obtained from the site plan. Using the FHWA Traffic Noise Prediction Model and the aforementioned parameters, calculations of the expected

future noise impacts were completed. The computed traffic noise impact printouts are included in Appendix "C".

EXTERIOR AREA NOISE EXPOSURE ANALYSIS AND CONTROL

The City of Rancho Cucamonga standards for residential construction require that noise exposures for all useable outdoor areas not exceed 60 dBA CNEL. Analysis and recommendations for the control of motor vehicle noise impacts to outdoor living areas are presented in this section.

Using the FHWA Traffic Noise Prediction Model, parameters outlined in Table 1 and other information sourced form the City, calculations of potential worst-case traffic noise impacts were completed. The computer printouts used to calculate specific unit impacts, as well as dB addition printouts are included in Appendix "C".

Determinations of maximum future traffic noise impacts for outdoor useable areas were developed using the roadway noise assumptions in Table 2 and site plan for the proposed project. Calculations were made using road and preliminary pad grades along with previously specified parameters. Hard site parameters were used for all calculations. The site exposure analysis indicates expected future unmitigated exposure to lots facing the subject roadways.

A barrier analysis was performed to determine required acoustical shielding which will be necessary to reduce the expected roadway noise impacts to below 60 dBA CNEL for the affected outdoor useable areas. This barrier analysis was completed using a version of the FHWA-RD-77-108 Noise Model. Key input data for these barrier performance equations include relative source-barrier-receiver horizontal separations; relative source-barrier-receiver vertical separations; typical noise source spectra and barrier transmission loss. Following are the general assumptions used in determining the source and receiver geometry:

Receiver Assumptions:

Horizontal Geometry: Distance behind top-of-slope barrier: 5 feet.

Vertical Geometry: Height above pad for ground level receivers:

- Exterior noise: 5 feet above ground
- 1st Floor Interior: 5 feet above finished floor
- 2nd Floor Interior: 15 feet above finished floor

Source Assumptions:

Horizontal Geometry: For roadways with grades no greater than 2%, all vehicles are located at the single lane equivalent acoustic center of the full roadway. For roadways with over 2% grade, vehicle count is divided in half and is located at the single lane equivalent acoustic center for each side of the roadway.

Vertical Geometry: Height above road grade:

Autos	=	0.0 feet
Medium Trucks	=	2.3 feet
Heavy Trucks	=	8.0 feet

These assumptions and the preliminary site plan (Exhibit B) were used to fix the horizontal and vertical geometry used in the barrier analysis. For the purposes of this study, the FHWA traffic noise spectra assumptions were used in the barrier analysis.

To meet the City of Rancho Cucamonga residential exterior noise standard of 60 dBA CNEL, a preliminary exterior noise mitigation method has been developed. This mitigation consists of noise barriers along Wilson Avenue, Etiwanda Avenue and East Avenue. The barriers range in height from 3.0 to 6.5-feet. These barriers' ends will need

to "wrap-around" to ensure no noise will flank from the sides. Exhibit C-2 illustrates the noise barrier locations and heights in detail.

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INTERIOR AREA NOISE EXPOSURE ANALYSIS AND CONTROL

Interior noise exposure is the difference between the projected exterior dBA CNEL at the structure's facade and the noise reduction effects of the structure itself. Typical building construction will provide approximately 12 dBA noise reduction with "windows open" and a minimum 20 dBA noise reduction with "windows closed".

The results of this preliminary analysis indicate that some lots (lots facing subject roadways) will require a noise reduction of up to 21.9 dBA CNEL. "Windows closed" conditions have been recommended for some lots (Exhibit C-2). This method of mitigation will require a means of mechanical ventilation (i.e. air conditioning) at the corresponding lots. However it is suspected that this level of mitigation will not be adequate for all lots. Lots needing further mitigation may require upgraded windows (with STC ratings >25) to meet the City's standards.

The final interior noise exposure for this project will be determined at the time of building permit application, when a final acoustical report will need to be prepared. The final noise study will evaluate the affects of the precise building placement, building design and materials used for construction. That report will make recommendations for any necessary building upgrades or other requirements necessary to meet the 45 dBA CNEL interior noise standard.

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CONCLUSIONS

A preliminary acoustical analysis and design has been completed for the proposed TTM 16072 project. The analysis indicates that the future noise environment is expected to be dominated be vehicle noise from Wilson Avenue, Etiwanda Avenue and East Avenue. The noise control findings show that the residential 60 dBA CNEL outdoor noise exposure limit is expected to be met with the implementation of the recommended mitigation contained in this report. Compliance with the 45 dBA CNEL interior noise standard will be met with the recommended noise control measures in this and the final acoustical study.

The analysis and design presented in this report comply with applicable City of Rancho Cucamonga requirements for control of community noise impacts for outdoor/indoor living areas.

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APPENDIX A

GLOSSARY OF ACOUSTICAL TERMS

APPENDIX A

GLOSSARY OF ACOUSTICAL TERMS

A-WEIGHTED SOUND LEVEL. The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

AMBIENT NOISE LEVEL. The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL). The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7 p.m. to 10 p.m. and after addition of ten (10) decibels to sound levels in the night before 7 a.m. and after 10 p.m.

DECIBEL (dB). A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A). A-weighted sound level (see definition above).

EQUIVALENT SOUND LEVEL (LEQ). The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

HABITABLE ROOM. Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms and similar spaces.

L(n). The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly L50, L90, L99 etc.

NOISE. Any unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

OUTDOOR LIVING AREA. Outdoor spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, etc. associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included in this definition are: front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and, outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas).

PERCENT NOISE LEVELS. See L(n).

SOUND LEVEL (NOISE LEVEL). The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

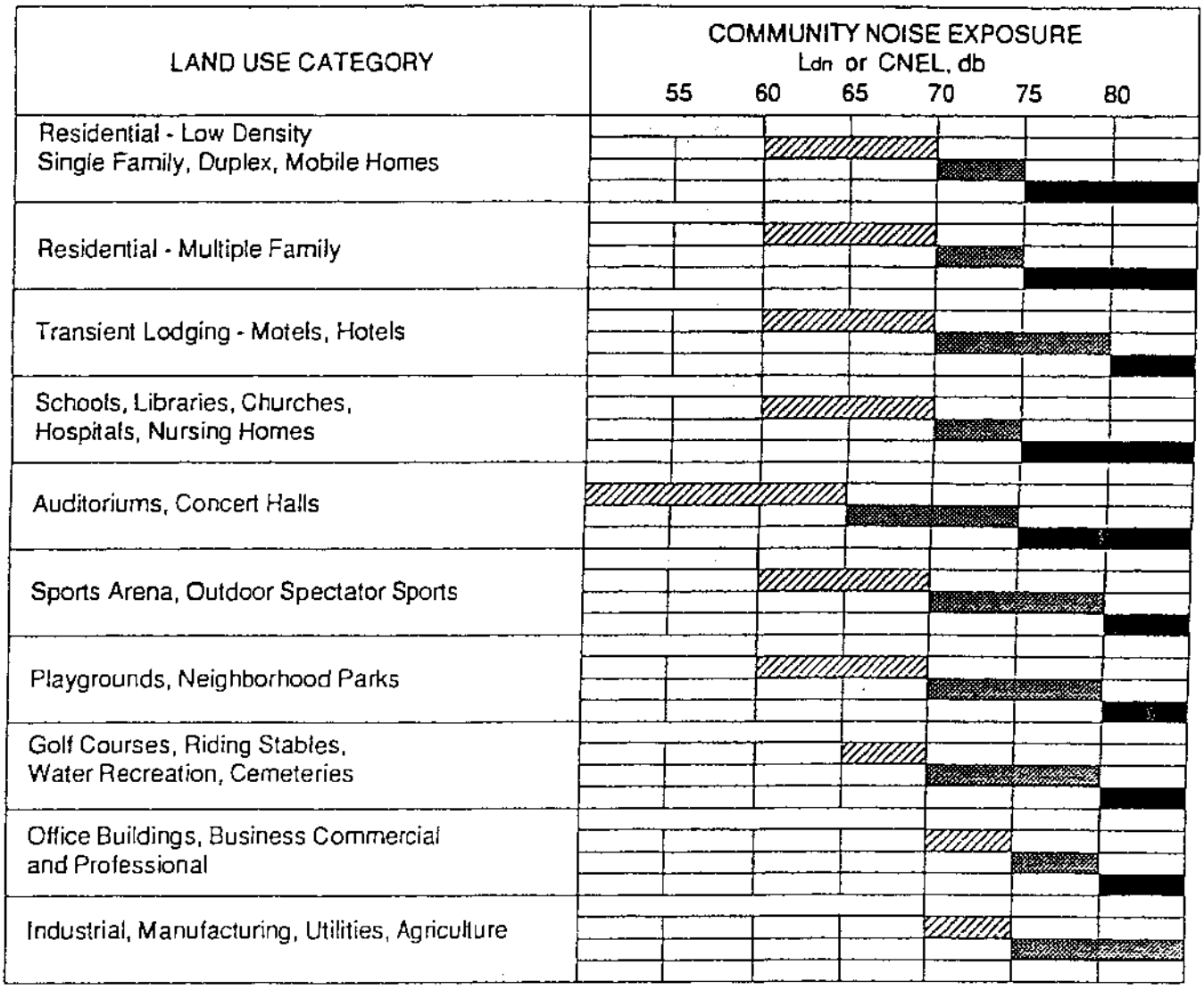
SOUND LEVEL METER. An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

SINGLE EVENT NOISE EXPOSURE LEVEL (SENEL). The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

APPENDIX B

CITY OF RANCHO CUCAMONGA NOISE STANDARDS

FIGURE V - 10
LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS



INTERPRETATION

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice. Outdoor environment will seem noisy.

Potentially Unacceptable: New Construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor areas must be shielded.

Normally Unacceptable: New construction or development should generally not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.

- If site planning, architectural layout, noise barriers, or a combination of these measures do not achieve the required noise reduction for the building in question, it may be necessary to modify the building's construction. Indoor noise levels due to exterior sources are controlled by the noise reduction characteristics of the building shell. The walls, roof, ceilings, doors, windows and other penetrations are all determinants of the structure's overall noise reduction capabilities.

- The City has adopted a Noise Ordinance which address systems, mechanical construction equipment, barking dogs, etc.

- The City shall review federal and state noise control legislation and support legislation which is in the best interests of the City.

- The City should work closely with Caltrans to reduce levels along the state highways and freeways through the City. The new transportation facility in the Foothill Freeway corridor should include a minimum of 10 dB of noise attenuation in its design.

- The City shall establish noise abatement policies for each new road and for those areas of the City where future land uses would be incompatible with the noise environment. These measures could include the erection of walls or berms, restriction of building multi-story dwellings within fixed distances of the roads, using open space as a buffer, site planning or architectural treatments.

- The City should work with the surrounding communities to ensure compliance with the land use and noise compatibility goals and objectives contained in this Noise Element at City boundaries.

- The City shall monitor and comment on any proposed changes in Ontario International Airport's operation which would affect noise levels in Rancho Cucamonga.

APPENDIX C

CNEL COMPUTER PRINTOUTS

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	WILSON AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 17 - BY (NO WALL)	BY:	MIKE ROSA

ADT =	13,000			PK HR VOL =	1,300
SPEED =	40				
PK HR % =	10				
CTL DIST=	101				
DIST N/F=	46	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	99.69
DT WALL=	96			MED TRUCK SLE DIST=	99.38
DT W/OB=	5			HVY TRUCK SLE DIST=	98.88
HTH WALL=	0.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	0.00
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1684.8	EL AUTOMOBILES =	1673.5
ROAD EL =	1671.5	EL MEDIUM TRUCKS=	1675.5
GRADE =	0.0 %	EL HEAVY TRUCKS =	1679.5

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.0	62.1	60.3	54.3	63.5
MEDIUM TRUCKS LEQ	55.7	54.2	47.9	46.3	55.0
HEAVY TRUCKS LEQ	56.6	55.2	46.2	47.4	55.9
VEHICULAR NOISE	65.2	63.5	60.7	55.6	64.7

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	65.2	63.5	60.7	55.6	64.7

		W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=	65.2		65.2
MIT PK HR LEQ WITH TOPO AND BARRIER	=	65.2	*******	65.2
CNEL WITHOUT TOPO AND BARRIER	=	64.7		64.7
MIT CNEL WITH TOPO AND BARRIER	=	64.7	*******	64.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	WILSON AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 17 - BY (WITH WALL)	BY:	MIKE ROSA

ADT =	13,000	PK HR VOL =	1,300
SPEED =	40		
PK HR % =	10		
CTL DIST=	101		
DIST N/F=	46 (M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =	99.56
DT WALL=	96	MED TRUCK SLE DIST=	99.25
DT W/OB=	5	HVY TRUCK SLE DIST=	98.74
HTH WALL=	4.5 ********		
OBS HTH=	5.0		
AMBIENT=	0.0		

ROADWAY VIEW: LF ANGLE= -90
RT ANGLE= 90
DF ANGLE= 180

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	0.00
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1684.8	EL AUTOMOBILES =	1673.5
ROAD EL =	1671.5	EL MEDIUM TRUCKS=	1675.5
GRADE =	0.0 %	EL HEAVY TRUCKS =	1679.5

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.0	62.1	60.3	54.3	63.5
MEDIUM TRUCKS LEQ	55.7	54.2	47.9	46.3	55.0
HEAVY TRUCKS LEQ	56.6	55.2	46.2	47.4	55.9
VEHICULAR NOISE	65.2	63.5	60.7	55.6	64.7

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LSQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	60.3	58.5	55.8	50.7	59.7

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	65.2		65.2
MIT PK HR LEQ WITH TOPO AND BARRIER =	60.3	*******	60.3
CNEL WITHOUT TOPO AND BARRIER =	64.7		64.7
MIT CNEL WITH TOPO AND BARRIER =	59.7	*******	59.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	WILSON AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 17 - 1ST FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	13,000			PK HR VOL =	1,300
SPEED =	40				
PK HR % =	10				
CTL DIST=	121				
DIST N/F=	46	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	119.62
DT WALL=	96			MED TRUCK SLE DIST=	119.30
DT W/OB=	25			HVY TRUCK SLE DIST=	118.78
HTH WALL=	4.5	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	0.00
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1685.3	EL AUTOMOBILES =	1673.5
ROAD EL =	1671.5	EL MEDIUM TRUCKS=	1675.5
GRADE =	0.0 %	EL HEAVY TRUCKS =	1679.5

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.2	61.3	59.5	53.5	62.7
MEDIUM TRUCKS LEQ	54.9	53.4	47.1	45.5	54.2
HEAVY TRUCKS LEQ	55.8	54.4	45.4	46.6	55.1
VEHICULAR NOISE	64.4	62.7	59.9	54.8	63.9

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	57.8	56.0	53.3	48.2	57.2

		W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=	64.4		64.4
MIT PK HR LEQ WITH TOPO AND BARRIER	=	57.8	*******	57.8
CNEL WITHOUT TOPO AND BARRIER	=	63.9		63.9
MIT CNEL WITH TOPO AND BARRIER	=	57.2	*******	57.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	WILSON AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 17 - 2ND FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	13,000			PK HR VOL =	1,300
SPEED =	40				
PK HR % =	10				
CTL DIST=	121				
DIST N/F=	46	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	121.78
DT WALL=	96			MED TRUCK SLE DIST=	121.36
DT W/OB=	25			HVY TRUCK SLE DIST=	120.60
HTH WALL=	4.5	********			
OBS HTH=	15.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	0.00
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL = 1685.3		EL AUTOMOBILES =	1673.5
ROAD EL = 1671.5		EL MEDIUM TRUCKS=	1675.5
GRADE = 0.0 %		EL HEAVY TRUCKS =	1679.5

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.1	61.2	59.5	53.4	62.6
MEDIUM TRUCKS LEQ	54.9	53.3	47.0	45.4	54.1
HEAVY TRUCKS LEQ	55.8	54.4	45.3	46.6	55.0
VEHICULAR NOISE	64.4	62.6	59.9	54.8	63.8

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	64.4	62.6	59.9	54.8	63.8

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	64.4		64.4
MIT PK HR LEQ WITH TOPO AND BARRIER =	64.4	*******	64.4
CNEL WITHOUT TOPO AND BARRIER =	63.8		63.8
MIT CNEL WITH TOPO AND BARRIER =	63.8	*******	63.8

NOISE LEVEL ADDITION (dBA)
LOT 18 - WILSON AVENUE AND ETIWANDA AVENUE

BACKYARD (NO WALL)	NOISE LEVEL (dBA)	10^dBA/10
WILSON AVENUE	63.6	2,290,867.7
ETIWANDA AVENUE	66.6	4,570,881.9
TOTAL NOISE LEVEL (dBA) =	**68.4**	6,861,749.5

BACKYARD (W/WALL)	NOISE LEVEL (dBA)	10^dBA/10
WILSON AVENUE (6' WALL)	56.0	398,107.2
ETIWANDA AVENUE (6.5' WALL)	57.3	537,031.8
TOTAL NOISE LEVEL (dBA) =	**59.7**	935,139.0

1ST FLOOR FAÇADE (W/WALL)	NOISE LEVEL (dBA)	10^dBA/10
WILSON AVENUE (6' WALL)	54.5	281,838.3
ETIWANDA AVENUE (6.5' WALL)	55.1	323,593.7
TOTAL NOISE LEVEL (dBA) =	**57.8**	605,432.0

2ND FLOOR FAÇADE (W/WALL)	NOISE LEVEL (dBA)	10^dBA/10
WILSON AVENUE (6' WALL)	62.8	1,905,460.7
ETIWANDA AVENUE (6.5' WALL)	64.8	3,019,951.7
TOTAL NOISE LEVEL (dBA) =	**66.9**	4,925,412.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	WILSON AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 18 - BY (NO WALL)	BY:	MIKE ROSA

ADT =	13,000			PK HR VOL =	1,300
SPEED =	40				
PK HR % =	10				
CTL DIST=	108				
DIST N/F=	46	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	107.13
DT WALL=	103			MED TRUCK SLE DIST=	106.80
DT W/OB=	5			HVY TRUCK SLE DIST=	106.26
HTH WALL=	0.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	60		
		DF ANGLE=	150		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	0.00
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL = 1685.5		EL AUTOMOBILES =	1672.0
ROAD EL = 1670.0		EL MEDIUM TRUCKS=	1674.0
GRADE = 1.0 %		EL HEAVY TRUCKS =	1678.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	62.9	61.0	59.2	53.2	62.4
MEDIUM TRUCKS LEQ	54.6	53.1	46.7	45.2	53.9
HEAVY TRUCKS LEQ	55.5	54.1	45.1	46.3	54.8
VEHICULAR NOISE	64.1	62.4	59.6	54.5	63.6

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	64.1	62.4	59.6	54.5	63.6

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	64.1		64.1
MIT PK HR LEQ WITH TOPO AND BARRIER =	64.1	*******	64.1
CNEL WITHOUT TOPO AND BARRIER =	63.6		63.6
MIT CNEL WITH TOPO AND BARRIER =	63.6	*******	63.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	WILSON AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 18 - BY (WITH WALL)	BY:	MIKE ROSA

ADT =	13,000			PK HR VOL =	1,300
SPEED =	40				
PK HR % =	10				
CTL DIST=	108				
DIST N/F=	46	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	107.37
DT WALL=	103			MED TRUCK SLE DIST=	107.01
DT W/OB=	5			HVY TRUCK SLE DIST=	106.40
HTH WALL=	6.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	60		
		DF ANGLE=	150		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =		10			
MEDIUM TRUCKS =		10		GRADE ADJUSTMENT=	0.00
HEAVY TRUCKS =		10		(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)				
PAD EL =	1685.5			EL AUTOMOBILES =	1672.0
ROAD EL =	1670.0			EL MEDIUM TRUCKS=	1674.0
GRADE =	1.0 %			EL HEAVY TRUCKS =	1678.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	62.9	61.0	59.2	53.2	62.4
MEDIUM TRUCKS LEQ	54.6	53.1	46.7	45.2	53.9
HEAVY TRUCKS LEQ	55.5	54.1	45.1	46.3	54.8
VEHICULAR NOISE	64.1	62.3	59.6	54.5	63.6

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	56.5	54.7	52.0	46.9	56.0

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	64.1		64.1
MIT PK HR LEQ WITH TOPO AND BARRIER =	56.5	*******	56.5
CNEL WITHOUT TOPO AND BARRIER =	63.6		63.6
MIT CNEL WITH TOPO AND BARRIER =	56.0	*******	56.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	WILSON AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 18 - 1ST FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	13,000			PK HR VOL =	1,300
SPEED =	40				
PK HR % =	10				
CTL DIST=	128				
DIST N/F=	46	(M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =		127.39
DT WALL=	103		MED TRUCK SLE DIST=		127.02
DT W/OB=	25		HVY TRUCK SLE DIST=		126.39
HTH WALL=	6.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				

ROADWAY VIEW: LF ANGLE= -90
RT ANGLE= 60
DF ANGLE= 150

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	0.00
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1686.0	EL AUTOMOBILES =	1672.0
ROAD EL =	1670.0	EL MEDIUM TRUCKS=	1674.0
GRADE =	1.0 %	EL HEAVY TRUCKS =	1678.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	62.1	60.2	58.5	52.4	61.6
MEDIUM TRUCKS LEQ	53.9	52.4	46.0	44.5	53.1
HEAVY TRUCKS LEQ	54.8	53.4	44.3	45.6	54.1
VEHICULAR NOISE	63.4	61.6	58.9	53.8	62.8

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	55.0	53.2	50.5	45.4	54.5

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	63.4		63.4
MIT PK HR LEQ WITH TOPO AND BARRIER =	55.0	*******	55.0
CNEL WITHOUT TOPO AND BARRIER =	62.8		62.8
MIT CNEL WITH TOPO AND BARRIER =	54.5	*******	54.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	WILSON AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 18 - 2ND FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	13,000			PK HR VOL =	1,300
SPEED =	40				
PK HR % =	10				
CTL DIST=	128				
DIST N/F=	46	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	129.21
DT WALL=	103			MED TRUCK SLE DIST=	128.78
DT W/OB=	25			HVY TRUCK SLE DIST=	128.00
HTH WALL=	6.0	********			
OBS HTH=	15.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	60		
		DF ANGLE=	150		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	0.00
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1686.0	EL AUTOMOBILES =	1672.0
ROAD EL =	1670.0	EL MEDIUM TRUCKS=	1674.0
GRADE =	1.0 %	EL HEAVY TRUCKS =	1678.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	62.1	60.2	58.4	52.3	61.6
MEDIUM TRUCKS LEQ	53.8	52.3	45.9	44.4	53.1
HEAVY TRUCKS LEQ	54.7	53.3	44.3	45.5	54.0
VEHICULAR NOISE	63.3	61.5	58.8	53.7	62.8

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	63.3	61.5	58.8	53.7	62.8

		W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=	63.3		63.3
MIT PK HR LEQ WITH TOPO AND BARRIER	=	63.3	*******	63.3
CNEL WITHOUT TOPO AND BARRIER	=	62.8		62.8
MIT CNEL WITH TOPO AND BARRIER	=	62.8	*******	62.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 18 - BY (NO WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	42				
DIST N/F=	22	(M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =		41.87
DT WALL=	37		MED TRUCK SLE DIST=		41.42
DT W/OB=	5		HVY TRUCK SLE DIST=		40.78
HTH WALL=	0.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE= -90			
		RT ANGLE= 90			
		DF ANGLE= 180			

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL = 1685.5		EL AUTOMOBILES =	1680.0
ROAD EL = 1678.0		EL MEDIUM TRUCKS=	1682.0
GRADE = 6.0 %		EL HEAVY TRUCKS =	1686.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	65.7	63.8	62.0	55.9	65.2
MEDIUM TRUCKS LEQ	57.4	55.9	49.5	48.0	56.7
HEAVY TRUCKS LEQ	60.1	58.7	49.7	50.9	59.4
VEHICULAR NOISE	67.2	65.4	62.5	57.6	66.6

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	67.2	65.4	62.5	57.6	66.6

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	67.2		67.2
MIT PK HR LEQ WITH TOPO AND BARRIER =	67.2	*******	67.2
CNEL WITHOUT TOPO AND BARRIER =	66.6		66.6
MIT CNEL WITH TOPO AND BARRIER =	66.6	*******	66.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 18 - BY (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	42				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	42.53
DT WALL=	37			MED TRUCK SLE DIST=	41.94
DT W/OB=	5			HVY TRUCK SLE DIST=	41.05
HTH WALL=	6.5	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1685.5	EL AUTOMOBILES =	1680.0
ROAD EL =	1678.0	EL MEDIUM TRUCKS=	1682.0
GRADE =	6.0 %	EL HEAVY TRUCKS =	1686.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	65.6	63.7	61.9	55.9	65.1
MEDIUM TRUCKS LEQ	57.4	55.9	49.5	47.9	56.6
HEAVY TRUCKS LEQ	60.1	58.7	49.6	50.9	59.4
VEHICULAR NOISE	67.1	65.4	62.4	57.6	66.6

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	57.9	56.1	53.1	48.3	57.3

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	67.1		67.1
MIT PK HR LEQ WITH TOPO AND BARRIER =	57.9	*******	57.9
CNEL WITHOUT TOPO AND BARRIER =	66.6		66.6
MIT CNEL WITH TOPO AND BARRIER =	57.3	*******	57.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 18 - 1ST FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	62				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	62.52
DT WALL=	37			MED TRUCK SLE DIST=	61.90
DT W/OB=	25			HVY TRUCK SLE DIST=	60.96
HTH WALL=	6.5	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL = 1686.0		EL AUTOMOBILES =	1680.0
ROAD EL = 1678.0		EL MEDIUM TRUCKS=	1682.0
GRADE = 6.0 %		EL HEAVY TRUCKS =	1686.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.9	62.0	60.2	54.2	63.4
MEDIUM TRUCKS LEQ	55.7	54.2	47.8	46.3	54.9
HEAVY TRUCKS LEQ	58.4	57.0	47.9	49.2	57.7
VEHICULAR NOISE	65.5	63.7	60.7	55.9	64.9

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	55.7	53.9	51.0	46.1	55.1

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	65.5		65.5
MIT PK HR LEQ WITH TOPO AND BARRIER =	55.7	*******	55.7
CNEL WITHOUT TOPO AND BARRIER =	64.9		64.9
MIT CNEL WITH TOPO AND BARRIER =	55.1	*******	55.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 18 - 2ND FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	62				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	64.53
DT WALL=	37			MED TRUCK SLE DIST=	63.91
DT W/OB=	25			HVY TRUCK SLE DIST=	62.83
HTH WALL=	6.5	********			
OBS HTH=	15.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1686.0	EL AUTOMOBILES =	1680.0
ROAD EL =	1678.0	EL MEDIUM TRUCKS=	1682.0
GRADE =	6.0 %	EL HEAVY TRUCKS =	1686.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.8	61.9	60.1	54.0	63.3
MEDIUM TRUCKS LEQ	55.5	54.0	47.7	46.1	54.8
HEAVY TRUCKS LEQ	58.2	56.8	47.8	49.0	57.5
VEHICULAR NOISE	65.3	63.6	60.6	55.7	64.8

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	65.3	63.6	60.6	55.7	64.8

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	65.3		65.3
MIT PK HR LEQ WITH TOPO AND BARRIER =	65.3	*******	65.3
CNEL WITHOUT TOPO AND BARRIER =	64.8		64.8
MIT CNEL WITH TOPO AND BARRIER =	64.8	*******	64.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 19 - BY (NO WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	37				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	36.11
DT WALL=	32			MED TRUCK SLE DIST=	35.75
DT W/OB=	5			HVY TRUCK SLE DIST=	35.36
HTH WALL=	0.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		
SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)					
AUTOMOBILES =		10			
MEDIUM TRUCKS =		10		GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =		10		(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)				
PAD EL =	1690.5			EL AUTOMOBILES =	1688.0
ROAD EL =	1686.0			EL MEDIUM TRUCKS=	1690.0
GRADE =	6.0 %			EL HEAVY TRUCKS =	1694.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	66.3	64.4	62.6	56.6	65.8
MEDIUM TRUCKS LEQ	58.1	56.5	50.2	48.6	57.3
HEAVY TRUCKS LEQ	60.7	59.3	50.3	51.5	60.0
VEHICULAR NOISE	67.8	66.1	63.1	58.3	67.3

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	67.8	66.1	63.1	58.3	67.3

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	67.8		67.8
MIT PK HR LEQ WITH TOPO AND BARRIER =	67.8	*******	67.8
CNEL WITHOUT TOPO AND BARRIER =	67.3		67.3
MIT CNEL WITH TOPO AND BARRIER =	67.3	*******	67.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 19 - BY (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000	PK HR VOL =	800
SPEED =	40		
PK HR % =	10		
CTL DIST=	37		
DIST N/F=	22 (M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =	36.33
DT WALL=	32	MED TRUCK SLE DIST=	35.84
DT W/OB=	5	HVY TRUCK SLE DIST=	35.25
HTH WALL=	6.0 ********		
OBS HTH=	5.0		
AMBIENT=	0.0		

ROADWAY VIEW: LF ANGLE= -90
RT ANGLE= 90
DF ANGLE= 180

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	

BARRIER = 0 (0=WALL,1=BERM)

PAD EL =	1690.5	EL AUTOMOBILES =	1688.0
ROAD EL =	1686.0	EL MEDIUM TRUCKS=	1690.0
GRADE =	6.0 %	EL HEAVY TRUCKS =	1694.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	66.3	64.4	62.6	56.5	65.8
MEDIUM TRUCKS LEQ	58.0	56.5	50.2	48.6	57.3
HEAVY TRUCKS LEQ	60.8	59.3	50.3	51.5	60.0
VEHICULAR NOISE	67.8	66.1	63.1	58.2	67.3

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	60.1	58.3	55.3	50.5	59.5

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	67.8		67.8
MIT PK HR LEQ WITH TOPO AND BARRIER =	60.1	*******	60.1
CNEL WITHOUT TOPO AND BARRIER =	67.3		67.3
MIT CNEL WITH TOPO AND BARRIER =	59.5	*******	59.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 19 - 1ST FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	57				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	56.39
DT WALL=	32			MED TRUCK SLE DIST=	55.87
DT W/OB=	25			HVY TRUCK SLE DIST=	55.22
HTH WALL=	6.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1691.0	EL AUTOMOBILES =	1688.0
ROAD EL =	1686.0	EL MEDIUM TRUCKS=	1690.0
GRADE =	6.0 %	EL HEAVY TRUCKS =	1694.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.4	62.5	60.7	54.6	63.9
MEDIUM TRUCKS LEQ	56.1	54.6	48.2	46.7	55.4
HEAVY TRUCKS LEQ	58.8	57.4	48.3	49.6	58.1
VEHICULAR NOISE	65.9	64.1	61.2	56.3	65.3

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	57.6	55.8	52.8	48.0	57.0

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	65.9		65.9
MIT PK HR LEQ WITH TOPO AND BARRIER =	57.6	*******	57.6
CNEL WITHOUT TOPO AND BARRIER =	65.3		65.3
MIT CNEL WITH TOPO AND BARRIER =	57.0	*******	57.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 19 - 2ND FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	57				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	58.75
DT WALL=	32			MED TRUCK SLE DIST=	58.17
DT W/OB=	25			HVY TRUCK SLE DIST=	57.20
HTH WALL=	6.0	********			
OBS HTH=	15.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10			
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=		1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)		
BARRIER =	0 (0=WALL,1=BERM)			
PAD EL =	1691.0	EL AUTOMOBILES =		1688.0
ROAD EL =	1686.0	EL MEDIUM TRUCKS=		1690.0
GRADE =	6.0 %	EL HEAVY TRUCKS =		1694.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.2	62.3	60.5	54.5	63.7
MEDIUM TRUCKS LEQ	55.9	54.4	48.1	46.5	55.2
HEAVY TRUCKS LEQ	58.7	57.2	48.2	49.4	57.9
VEHICULAR NOISE	65.7	64.0	61.0	56.1	65.2

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	65.7	64.0	61.0	56.1	65.2

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	65.7		65.7
MIT PK HR LEQ WITH TOPO AND BARRIER =	65.7	*******	65.7
CNEL WITHOUT TOPO AND BARRIER =	65.2		65.2
MIT CNEL WITH TOPO AND BARRIER =	65.2	*******	65.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	WILSON AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 89 - BY (NO WALL)	BY:	MIKE ROSA

ADT =	13,000			PK HR VOL =	1,300
SPEED =	40				
PK HR % =	10				
CTL DIST=	83				
DIST N/P=	46	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	80.65
DT WALL=	78			MED TRUCK SLE DIST=	80.37
DT W/OB=	5			HVY TRUCK SLE DIST=	79.97
HTH WALL=	0.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.11
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1655.0	EL AUTOMOBILES =	1648.0
ROAD EL =	1646.0	EL MEDIUM TRUCKS=	1650.0
GRADE =	3.0 %	EL HEAVY TRUCKS =	1654.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.9	63.0	61.2	55.2	64.4
MEDIUM TRUCKS LEQ	56.6	55.1	48.8	47.2	55.9
HEAVY TRUCKS LEQ	58.7	57.2	48.2	49.5	57.9
VEHICULAR NOISE	66.3	64.6	61.7	56.7	65.8

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	66.3	64.6	61.7	56.7	65.8

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	66.3		66.3
MIT PK HR LEQ WITH TOPO AND BARRIER =	66.3	*******	66.3
CNEL WITHOUT TOPO AND BARRIER =	65.8		65.8
MIT CNEL WITH TOPO AND BARRIER =	65.8	*******	65.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	WILSON AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 89 - BY (WITH WALL)	BY:	MIKE ROSA

ADT =	13,000			PK HR VOL =	1,300
SPEED =	40				
PK HR % =	10				
CTL DIST=	83				
DIST N/F=	46	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	80.60
DT WALL=	78			MED TRUCK SLE DIST=	80.29
DT W/OB=	5			HVY TRUCK SLE DIST=	79.84
HTH WALL=	5.5	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.11
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1655.0	EL AUTOMOBILES =	1648.0
ROAD EL =	1646.0	EL MEDIUM TRUCKS=	1650.0
GRADE =	3.0 %	EL HEAVY TRUCKS =	1654.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.9	63.0	61.3	55.2	64.4
MEDIUM TRUCKS LEQ	56.6	55.1	48.8	47.2	55.9
HEAVY TRUCKS LEQ	58.7	57.3	48.2	49.5	57.9
VEHICULAR NOISE	66.3	64.6	61.7	56.7	65.8

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	60.1	58.3	55.4	50.5	59.5

		W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=	66.3		66.3
MIT PK HR LEQ WITH TOPO AND BARRIER	=	60.1	*******	60.1
CNEL WITHOUT TOPO AND BARRIER	=	65.8		65.8
MIT CNEL WITH TOPO AND BARRIER	=	59.5	*******	59.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	WILSON AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 89 - 1ST FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	13,000			PK HR VOL =	1,300
SPEED =	40				
PK HR % =	10				
CTL DIST=	103				
DIST N/F=	46	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	100.66
DT WALL=	78			MED TRUCK SLE DIST=	100.34
DT W/OB=	25			HVY TRUCK SLE DIST=	99.86
HTH WALL=	5.5	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.11
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL = 1655.5		EL AUTOMOBILES =	1648.0
ROAD EL = 1646.0		EL MEDIUM TRUCKS=	1650.0
GRADE = 3.0 %		EL HEAVY TRUCKS =	1654.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.0	62.1	60.3	54.2	63.5
MEDIUM TRUCKS LEQ	55.7	54.2	47.8	46.3	55.0
HEAVY TRUCKS LEQ	57.7	56.3	47.2	48.5	57.0
VEHICULAR NOISE	65.4	63.6	60.7	55.8	64.8

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	58.2	56.4	53.5	48.6	57.6

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	65.4		65.4
MIT PK HR LEQ WITH TOPO AND BARRIER =	58.2	*******	58.2
CNEL WITHOUT TOPO AND BARRIER =	64.8		64.8
MIT CNEL WITH TOPO AND BARRIER =	57.6	*******	57.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	WILSON AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 89 - 2ND FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	13,000			PK HR VOL =	1,300
SPEED =	40				
PK HR % =	10				
CTL DIST=	103				
DIST N/F=	46	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	102.89
DT WALL=	78			MED TRUCK SLE DIST=	102.47
DT W/OB=	25			HVY TRUCK SLE DIST=	101.75
HTH WALL=	5.5	********			
OBS HTH=	15.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		
SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)					
AUTOMOBILES =		10			
MEDIUM TRUCKS =		10		GRADE ADJUSTMENT=	1.11
HEAVY TRUCKS =		10		(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)				
PAD EL =	1655.5			EL AUTOMOBILES =	1648.0
ROAD EL =	1646.0			EL MEDIUM TRUCKS=	1650.0
GRADE =	3.0 %			EL HEAVY TRUCKS =	1654.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.9	62.0	60.2	54.1	63.4
MEDIUM TRUCKS LEQ	55.6	54.1	47.7	46.2	54.9
HEAVY TRUCKS LEQ	57.6	56.2	47.2	48.4	56.9
VEHICULAR NOISE	65.3	63.5	60.6	55.7	64.7

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	65.3	63.5	60.6	55.7	64.7

		W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=	65.3		65.3
MIT PK HR LEQ WITH TOPO AND BARRIER	=	65.3	*******	65.3
CNEL WITHOUT TOPO AND BARRIER	=	64.7		64.7
MIT CNEL WITH TOPO AND BARRIER	=	64.7	*******	64.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	EAST AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 125 - BY (NO WALL)	BY:	MIKE ROSA

ADT =	14,000			PK HR VOL =	1,400
SPEED =	40				
PK HR % =	10				
CTL DIST=	70				
DIST N/F=	22	(M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =		70.11
DT WALL=	65		MED TRUCK SLE DIST=		69.81
DT W/OB=	5		HVY TRUCK SLE DIST=		69.36
HTH WALL=	0.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE= -90			
		RT ANGLE= 90			
		DF ANGLE= 180			

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.11
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1676.7	EL AUTOMOBILES =	1670.0
ROAD EL =	1668.0	EL MEDIUM TRUCKS=	1672.0
GRADE =	4.0 %	EL HEAVY TRUCKS =	1676.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	65.8	63.9	62.2	56.1	65.3
MEDIUM TRUCKS LEQ	57.6	56.1	49.7	48.2	56.9
HEAVY TRUCKS LEQ	59.6	58.2	49.1	50.4	58.9
VEHICULAR NOISE	67.3	65.5	62.6	57.7	66.7

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	67.3	65.5	62.6	57.7	66.7

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	67.3		67.3
MIT PK HR LEQ WITH TOPO AND BARRIER =	67.3	*******	67.3
CNEL WITHOUT TOPO AND BARRIER =	66.7		66.7
MIT CNEL WITH TOPO AND BARRIER =	66.7	*******	66.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	EAST AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 125 - BY (WITH WALL)	BY:	MIKE ROSA

ADT =	14,000			PK HR VOL =	1,400
SPEED =	40				
PK HR % =	10				
CTL DIST=	70				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	70.41
DT WALL=	65			MED TRUCK SLE DIST=	70.05
DT W/OB=	5			HVY TRUCK SLE DIST=	69.51
HTH WALL=	6.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.11
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL = 1676.7		EL AUTOMOBILES =	1670.0
ROAD EL = 1668.0		EL MEDIUM TRUCKS=	1672.0
GRADE = 4.0 %		EL HEAVY TRUCKS =	1676.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	65.8	63.9	62.2	56.1	65.3
MEDIUM TRUCKS LEQ	57.6	56.1	49.7	48.1	56.8
HEAVY TRUCKS LEQ	59.6	58.2	49.1	50.4	58.9
VEHICULAR NOISE	67.2	65.5	62.6	57.6	66.7

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	59.7	58.0	55.1	50.1	59.2

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	67.2		67.2
MIT PK HR LEQ WITH TOPO AND BARRIER =	59.7	*******	59.7
CNEL WITHOUT TOPO AND BARRIER =	66.7		66.7
MIT CNEL WITH TOPO AND BARRIER =	59.2	*******	59.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	EAST AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 125 - 1ST FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	14,000			PK HR VOL =	1,400
SPEED =	40				
PK HR % =	10				
CTL DIST=	90				
DIST N/F=	22	(M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =		90.43
DT WALL=	65		MED TRUCK SLE DIST=		90.05
DT W/OB=	25		HVY TRUCK SLE DIST=		89.49
HTH WALL=	6.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE= -90			
		RT ANGLE= 90			
		DF ANGLE= 180			

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.11
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1677.2	EL AUTOMOBILES =	1670.0
ROAD EL =	1668.0	EL MEDIUM TRUCKS=	1672.0
GRADE =	4.0 %	EL HEAVY TRUCKS =	1676.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.7	62.8	61.1	55.0	64.2
MEDIUM TRUCKS LEQ	56.5	55.0	48.6	47.1	55.8
HEAVY TRUCKS LEQ	58.5	57.1	48.0	49.3	57.8
VEHICULAR NOISE	66.2	64.4	61.5	56.6	65.6

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	58.1	56.3	53.4	48.5	57.5

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	66.2		66.2
MIT PK HR LEQ WITH TOPO AND BARRIER =	58.1	*******	58.1
CNEL WITHOUT TOPO AND BARRIER =	65.6		65.6
MIT CNEL WITH TOPO AND BARRIER =	57.5	*******	57.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	EAST AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 125 - 2ND FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	14,000			PK HR VOL =	1,400
SPEED =	40				
PK HR % =	10				
CTL DIST=	90				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	92.04
DT WALL=	65			MED TRUCK SLE DIST=	91.58
DT W/OB=	25			HVY TRUCK SLE DIST=	90.78
HTH WALL=	6.0	********			
OBS HTH=	15.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.11
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL = 1677.2		EL AUTOMOBILES =	1670.0
ROAD EL = 1668.0		EL MEDIUM TRUCKS=	1672.0
GRADE = 4.0 %		EL HEAVY TRUCKS =	1676.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.7	62.8	61.0	54.9	64.2
MEDIUM TRUCKS LEQ	56.4	54.9	48.5	47.0	55.7
HEAVY TRUCKS LEQ	58.4	57.0	48.0	49.2	57.7
VEHICULAR NOISE	66.1	64.3	61.4	56.5	65.5

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	66.1	64.3	61.4	56.5	65.5

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	66.1		66.1
MIT PK HR LEQ WITH TOPO AND BARRIER =	66.1	*******	66.1
CNEL WITHOUT TOPO AND BARRIER =	65.5		65.5
MIT CNEL WITH TOPO AND BARRIER =	65.5	*******	65.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	EAST AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 181 - BY (NO WALL)	BY:	MIKE ROSA

ADT =	14,000			PK HR VOL =	1,400
SPEED =	40				
PK HR % =	10				
CTL DIST=	63				
DIST N/F=	22	(M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =		62.68
DT WALL=	58		MED TRUCK SLE DIST=		62.43
DT W/OB=	5		HVY TRUCK SLE DIST=		62.10
HTH WALL=	0.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE= -90			
		RT ANGLE= 90			
		DF ANGLE= 180			

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1720.0	EL AUTOMOBILES =	1716.0
ROAD EL =	1714.0	EL MEDIUM TRUCKS=	1718.0
GRADE =	6.0 %	EL HEAVY TRUCKS =	1722.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	66.3	64.4	62.7	56.6	65.8
MEDIUM TRUCKS LEQ	58.1	56.6	50.2	48.6	57.3
HEAVY TRUCKS LEQ	60.7	59.3	50.3	51.5	60.0
VEHICULAR NOISE	67.9	66.1	63.1	58.3	67.3

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	67.9	66.1	63.1	58.3	67.3

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	67.9		67.9
MIT PK HR LEQ WITH TOPO AND BARRIER =	67.9	*******	67.9
CNEL WITHOUT TOPO AND BARRIER =	67.3		67.3
MIT CNEL WITH TOPO AND BARRIER =	67.3	*******	67.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	EAST AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 181 - BY (WITH WALL)	BY:	MIKE ROSA

ADT =	14,000			PK HR VOL =	1,400
SPEED =	40				
PK HR % =	10				
CTL DIST=	63				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	63.13
DT WALL=	58			MED TRUCK SLE DIST=	62.80
DT W/OB=	5			HVY TRUCK SLE DIST=	62.34
HTH WALL=	6.5	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1720.0	EL AUTOMOBILES =	1716.0
ROAD EL =	1714.0	EL MEDIUM TRUCKS=	1718.0
GRADE =	6.0 %	EL HEAVY TRUCKS =	1722.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	66.3	64.4	62.6	56.6	65.8
MEDIUM TRUCKS LEQ	58.0	56.5	50.2	48.6	57.3
HEAVY TRUCKS LEQ	60.7	59.3	50.3	51.5	60.0
VEHICULAR NOISE	67.8	66.1	63.1	58.2	67.3

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	59.6	57.8	54.8	50.0	59.0

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	67.8		67.8
MIT PK HR LEQ WITH TOPO AND BARRIER =	59.6	*******	59.6
CNEL WITHOUT TOPO AND BARRIER =	67.3		67.3
MIT CNEL WITH TOPO AND BARRIER =	59.0	*******	59.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	EAST AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 181 - 1ST FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	14,000			PK HR VOL =	1,400
SPEED =	40				
PK HR % =	10				
CTL DIST=	83				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	83.04
DT WALL=	58			MED TRUCK SLE DIST=	82.70
DT W/OB=	25			HVY TRUCK SLE DIST=	82.21
HTH WALL=	6.5	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE= -90			
		RT ANGLE= 90			
		DF ANGLE= 180			
SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)					
AUTOMOBILES =		10			
MEDIUM TRUCKS =		10		GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =		10		(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)				
PAD EL =	1720.5			EL AUTOMOBILES =	1716.0
ROAD EL =	1714.0			EL MEDIUM TRUCKS=	1718.0
GRADE =	6.0 %			EL HEAVY TRUCKS =	1722.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	65.1	63.2	61.4	55.4	64.6
MEDIUM TRUCKS LEQ	56.8	55.3	49.0	47.4	56.1
HEAVY TRUCKS LEQ	59.5	58.1	49.1	50.3	58.8
VEHICULAR NOISE	66.6	64.9	61.9	57.1	66.1

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	58.6	56.8	53.8	49.0	58.0

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	66.6		66.6
MIT PK HR LEQ WITH TOPO AND BARRIER =	58.6	*******	58.6
CNEL WITHOUT TOPO AND BARRIER =	66.1		66.1
MIT CNEL WITH TOPO AND BARRIER =	58.0	*******	58.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	EAST AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 181 - 2ND FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	14,000			PK HR VOL =	1,400
SPEED =	40				
PK HR % =	10				
CTL DIST=	83				
DIST N/F=	22	(M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =		84.55
DT WALL=	58		MED TRUCK SLE DIST=		84.11
DT W/OB=	25		HVY TRUCK SLE DIST=		83.37
HTH WALL=	6.5	********			
OBS HTH=	15.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE= -90			
		RT ANGLE= 90			
		DF ANGLE= 180			

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1720.5	EL AUTOMOBILES =	1716.0
ROAD EL =	1714.0	EL MEDIUM TRUCKS=	1718.0
GRADE =	6.0 %	EL HEAVY TRUCKS =	1722.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	65.0	63.1	61.4	55.3	64.5
MEDIUM TRUCKS LEQ	56.8	55.3	48.9	47.4	56.0
HEAVY TRUCKS LEQ	59.4	58.0	49.0	50.2	58.7
VEHICULAR NOISE	66.6	64.8	61.8	57.0	66.0

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	66.6	64.8	61.8	57.0	66.0

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	66.6		66.6
MIT PK HR LEQ WITH TOPO AND BARRIER =	66.6	*******	66.6
CNEL WITHOUT TOPO AND BARRIER =	66.0		66.0
MIT CNEL WITH TOPO AND BARRIER =	66.0	*******	66.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	EAST AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 213 - BY (NO WALL)	BY:	MIKE ROSA

ADT =	14,000			PK HR VOL =	1,400
SPEED =	40				
PK HR % =	10				
CTL DIST=	64				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	63.39
DT WALL=	59			MED TRUCK SLE DIST=	63.22
DT W/OB=	5			HVY TRUCK SLE DIST=	63.05
HTH WALL=	0.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				

ROADWAY VIEW: LF ANGLE= -90
RT ANGLE= 90
DF ANGLE= 180

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	0.00
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1759.6	EL AUTOMOBILES =	1758.0
ROAD EL =	1756.0	EL MEDIUM TRUCKS=	1760.0
GRADE =	2.0 %	EL HEAVY TRUCKS =	1764.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	66.3	64.4	62.6	56.6	65.8
MEDIUM TRUCKS LEQ	58.0	56.5	50.1	48.6	57.3
HEAVY TRUCKS LEQ	58.9	57.5	48.5	49.7	58.2
VEHICULAR NOISE	67.5	65.7	63.0	57.9	67.0

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	67.5	65.7	63.0	57.9	67.0

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	67.5		67.5
MIT PK HR LEQ WITH TOPO AND BARRIER =	67.5	*******	67.5
CNEL WITHOUT TOPO AND BARRIER =	67.0		67.0
MIT CNEL WITH TOPO AND BARRIER =	67.0	*******	67.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	EAST AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 213 - BY (WITH WALL)	BY:	MIKE ROSA

ADT =	14,000			PK HR VOL =	1,400
SPEED =	40				
PK HR % =	10				
CTL DIST=	64				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	63.75
DT WALL=	59			MED TRUCK SLE DIST=	63.51
DT W/OB=	5			HVY TRUCK SLE DIST=	63.22
HTH WALL=	6.5	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10			
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=		0.00
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)		
BARRIER =	0 (0=WALL,1=BERM)			
PAD EL =	1759.6	EL AUTOMOBILES =		1758.0
ROAD EL =	1756.0	EL MEDIUM TRUCKS=		1760.0
GRADE =	2.0 %	EL HEAVY TRUCKS =		1764.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	66.3	64.4	62.6	56.5	65.8
MEDIUM TRUCKS LEQ	58.0	56.5	50.1	48.6	57.3
HEAVY TRUCKS LEQ	58.9	57.5	48.4	49.7	58.2
VEHICULAR NOISE	67.5	65.7	63.0	57.9	67.0

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	59.6	57.8	55.1	50.0	59.0

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	67.5		67.5
MIT PK HR LEQ WITH TOPO AND BARRIER =	59.6	*******	59.6
CNEL WITHOUT TOPO AND BARRIER =	67.0		67.0
MIT CNEL WITH TOPO AND BARRIER =	59.0	*******	59.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	EAST AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 213 - 1ST FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	14,000			PK HR VOL =	1,400
SPEED =	40				
PK HR % =	10				
CTL DIST=	84				
DIST N/F=	22	(M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =		83.64
DT WALL=	59		MED TRUCK SLE DIST=		83.38
DT W/OB=	25		HVY TRUCK SLE DIST=		83.07
HTH WALL=	6.5	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE= -90			
		RT ANGLE= 90			
		DF ANGLE= 180			
SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)					
AUTOMOBILES =		10			
MEDIUM TRUCKS =		10	GRADE ADJUSTMENT=		0.00
HEAVY TRUCKS =		10	(ADJUSTMENT TO HEAVY TRUCKS)		
BARRIER =	0 (0=WALL,1=BERM)				
PAD EL =	1760.1		EL AUTOMOBILES =		1758.0
ROAD EL =	1756.0		EL MEDIUM TRUCKS=		1760.0
GRADE =	2.0 %		EL HEAVY TRUCKS =		1764.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	65.1	63.2	61.4	55.3	64.6
MEDIUM TRUCKS LEQ	56.8	55.3	48.9	47.4	56.1
HEAVY TRUCKS LEQ	57.7	56.3	47.3	48.5	57.0
VEHICULAR NOISE	66.3	64.5	61.8	56.7	65.8

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	58.9	57.1	54.4	49.3	58.4

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	66.3		66.3
MIT PK HR LEQ WITH TOPO AND BARRIER =	58.9	*******	58.9
CNEL WITHOUT TOPO AND BARRIER =	65.8		65.8
MIT CNEL WITH TOPO AND BARRIER =	58.4	*******	58.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	EAST AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 213 - 1ST FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	14,000			PK HR VOL =	1,400
SPEED =	40				
PK HR % =	10				
CTL DIST=	84				
DIST N/F=	22	(M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =		85.01
DT WALL=	59		MED TRUCK SLE DIST=		84.63
DT W/OB=	25		HVY TRUCK SLE DIST=		84.01
HTH WALL=	6.5	********			
OBS HTH=	15.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE= -90			
		RT ANGLE= 90			
		DF ANGLE= 180			

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	0.00
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1760.1	EL AUTOMOBILES =	1758.0
ROAD EL =	1756.0	EL MEDIUM TRUCKS=	1760.0
GRADE =	2.0 %	EL HEAVY TRUCKS =	1764.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	65.0	63.1	61.3	55.3	64.5
MEDIUM TRUCKS LEQ	56.7	55.2	48.9	47.3	56.0
HEAVY TRUCKS LEQ	57.7	56.2	47.2	48.5	56.9
VEHICULAR NOISE	66.3	64.5	61.7	56.6	65.7

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	66.3	64.5	61.7	56.6	65.7

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	66.3		66.3
MIT PK HR LEQ WITH TOPO AND BARRIER =	66.3	*******	66.3
CNEL WITHOUT TOPO AND BARRIER =	65.7		65.7
MIT CNEL WITH TOPO AND BARRIER =	65.7	*******	65.7

FHWA RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 256 - BY (NO WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	70				
DIST N/F=	22	(M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =		69.13
DT WALL=	65		MED TRUCK SLE DIST=		69.15
DT W/OB=	5		HVY TRUCK SLE DIST=		69.35
HTH WALL=	0.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE= -90			
		RT ANGLE= 90			
		DF ANGLE= 180			
SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)					
AUTOMOBILES =		10			
MEDIUM TRUCKS =		10	GRADE ADJUSTMENT=		1.75
HEAVY TRUCKS =		10	(ADJUSTMENT TO HEAVY TRUCKS)		
BARRIER =	0	(0=WALL,1=BERM)			
PAD EL =	1817.5		EL AUTOMOBILES =		1822.0
ROAD EL =	1820.0		EL MEDIUM TRUCKS=		1824.0
GRADE =	6.0 %		EL HEAVY TRUCKS =		1828.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.5	61.6	59.8	53.7	63.0
MEDIUM TRUCKS LEQ	55.2	53.7	47.3	45.8	54.5
HEAVY TRUCKS LEQ	57.8	56.4	47.4	48.6	57.1
VEHICULAR NOISE	65.0	63.2	60.3	55.4	64.4

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	65.0	63.2	60.3	55.4	64.4

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	65.0		65.0
MIT PK HR LEQ WITH TOPO AND BARRIER =	65.0	*******	65.0
CNEL WITHOUT TOPO AND BARRIER =	64.4		64.4
MIT CNEL WITH TOPO AND BARRIER =	64.4	*******	64.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 256 - BY (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	70				
DIST N/F=	22	(M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =		69.47
DT WALL=	65		MED TRUCK SLE DIST=		69.54
DT W/OB=	5		HVY TRUCK SLE DIST=		69.89
HTH WALL=	3.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				

ROADWAY VIEW: LF ANGLE= -90
RT ANGLE= 90
DF ANGLE= 180

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1817.5	EL AUTOMOBILES =	1822.0
ROAD EL =	1820.0	EL MEDIUM TRUCKS=	1824.0
GRADE =	6.0 %	EL HEAVY TRUCKS =	1828.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.5	61.6	59.8	53.7	63.0
MEDIUM TRUCKS LEQ	55.2	53.7	47.3	45.8	54.4
HEAVY TRUCKS LEQ	57.8	56.4	47.3	48.6	57.1
VEHICULAR NOISE	65.0	63.2	60.3	55.4	64.4

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	56.1	54.4	51.4	46.5	55.6

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	65.0		65.0
MIT PK HR LEQ WITH TOPO AND BARRIER =	56.1	*******	56.1
CNEL WITHOUT TOPO AND BARRIER =	64.4		64.4
MIT CNEL WITH TOPO AND BARRIER =	55.6	*******	55.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 256 - 1ST FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	90				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	89.15
DT WALL=	65			MED TRUCK SLE DIST=	89.33
DT W/OB=	25			HVY TRUCK SLE DIST=	89.47
HTH WALL=	3.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10				
MEDIUM TRUCKS =	10			GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10			(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)				
PAD EL =	1818.0			EL AUTOMOBILES =	1822.0
ROAD EL =	1820.0			EL MEDIUM TRUCKS=	1824.0
GRADE =	6.0 %			EL HEAVY TRUCKS =	1828.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	62.4	60.5	58.7	52.6	61.9
MEDIUM TRUCKS LEQ	54.1	52.6	46.2	44.7	53.4
HEAVY TRUCKS LEQ	56.7	55.3	46.3	47.5	56.0
VEHICULAR NOISE	63.9	62.1	59.2	54.3	63.3

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	60.4	58.7	55.7	50.9	59.9

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	63.9		63.9
MIT PK HR LEQ WITH TOPO AND BARRIER =	60.5	*******	60.5
CNEL WITHOUT TOPO AND BARRIER =	63.3		63.3
MIT CNEL WITH TOPO AND BARRIER =	59.9	*******	59.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 256 - 2ND FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	90				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	90.00
DT WALL=	65			MED TRUCK SLE DIST=	89.78
DT W/OB=	25			HVY TRUCK SLE DIST=	89.46
HTH WALL=	3.0	********			
OBS HTH=	15.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL = 1818.0		EL AUTOMOBILES =	1822.0
ROAD EL = 1820.0		EL MEDIUM TRUCKS=	1824.0
GRADE = 6.0 %		EL HEAVY TRUCKS =	1828.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	62.3	60.4	58.7	52.6	61.8
MEDIUM TRUCKS LEQ	54.1	52.5	46.2	44.6	53.3
HEAVY TRUCKS LEQ	56.7	55.3	46.3	47.5	56.0
VEHICULAR NOISE	63.9	62.1	59.1	54.3	63.3

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	63.9	62.1	59.1	54.3	63.3

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	63.9		63.9
MIT PK HR LEQ WITH TOPO AND BARRIER =	63.9	*******	63.9
CNEL WITHOUT TOPO AND BARRIER =	63.3		63.3
MIT CNEL WITH TOPO AND BARRIER =	63.3	*******	63.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 262 - BY (NO WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	77				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	76.63
DT WALL=	72			MED TRUCK SLE DIST=	76.45
DT W/OB=	5			HVY TRUCK SLE DIST=	76.24
HTH WALL=	0.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10			
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=		3.18
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)		
BARRIER =	0 (0=WALL,1=BERM)			
PAD EL =	1785.0	EL AUTOMOBILES =		1782.0
ROAD EL =	1780.0	EL MEDIUM TRUCKS=		1784.0
GRADE =	7.0 %	EL HEAVY TRUCKS =		1788.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.0	61.1	59.4	53.3	62.5
MEDIUM TRUCKS LEQ	54.8	53.2	46.9	45.3	54.0
HEAVY TRUCKS LEQ	58.8	57.4	48.4	49.6	58.1
VEHICULAR NOISE	64.9	63.1	59.9	55.3	64.3

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	64.9	63.1	59.9	55.3	64.3

		W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=	64.9		64.9
MIT PK HR LEQ WITH TOPO AND BARRIER	=	64.9	*******	64.9
CNEL WITHOUT TOPO AND BARRIER	=	64.3		64.3
MIT CNEL WITH TOPO AND BARRIER	=	64.3	*******	64.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 262 - BY (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000	PK HR VOL =	800
SPEED =	40		
PK HR % =	10		
CTL DIST=	77		
DIST N/F=	22 (M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =	76.60
DT WALL=	72	MED TRUCK SLE DIST=	76.41
DT W/OB=	5	HVY TRUCK SLE DIST=	76.18
HTH WALL=	5.0 ********		
OBS HTH=	5.0		
AMBIENT=	0.0		

ROADWAY VIEW: LF ANGLE= -90
RT ANGLE= 90
DF ANGLE= 180

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	3.18
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1785.0	EL AUTOMOBILES =	1782.0
ROAD EL =	1780.0	EL MEDIUM TRUCKS=	1784.0
GRADE =	7.0 %	EL HEAVY TRUCKS =	1788.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.0	61.1	59.4	53.3	62.5
MEDIUM TRUCKS LEQ	54.8	53.2	46.9	45.3	54.0
HEAVY TRUCKS LEQ	58.8	57.4	48.4	49.6	58.1
VEHICULAR NOISE	64.9	63.1	59.9	55.3	64.3

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	59.7	58.0	54.8	50.2	59.2

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	64.9		64.9
MIT PK HR LEQ WITH TOPO AND BARRIER =	59.7	*******	59.7
CNEL WITHOUT TOPO AND BARRIER =	64.3		64.3
MIT CNEL WITH TOPO AND BARRIER =	59.2	*******	59.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 262 - 1ST FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	97				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	96.66
DT WALL=	72			MED TRUCK SLE DIST=	96.45
DT W/OB=	25			HVY TRUCK SLE DIST=	96.20
HTH WALL=	5.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	3.18
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1785.5	EL AUTOMOBILES =	1782.0
ROAD EL =	1780.0	EL MEDIUM TRUCKS=	1784.0
GRADE =	7.0 %	EL HEAVY TRUCKS =	1788.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	62.0	60.1	58.4	52.3	61.5
MEDIUM TRUCKS LEQ	53.7	52.2	45.9	44.3	53.0
HEAVY TRUCKS LEQ	57.8	56.4	47.4	48.6	57.1
VEHICULAR NOISE	63.9	62.1	58.9	54.3	63.3

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	58.0	56.3	53.1	48.5	57.5

		W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=	63.9		63.9
MIT PK HR LEQ WITH TOPO AND BARRIER	=	58.0	*******	58.0
CNEL WITHOUT TOPO AND BARRIER	=	63.3		63.3
MIT CNEL WITH TOPO AND BARRIER	=	57.5	*******	57.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 262 - 2ND FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	97				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	98.13
DT WALL=	72			MED TRUCK SLE DIST=	97.78
DT W/OB=	25			HVY TRUCK SLE DIST=	97.18
HTH WALL=	5.0	********			
OBS HTH=	15.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	3.18
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1785.5	EL AUTOMOBILES =	1782.0
ROAD EL =	1780.0	EL MEDIUM TRUCKS=	1784.0
GRADE =	7.0 %	EL HEAVY TRUCKS =	1788.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	62.0	60.1	58.3	52.2	61.5
MEDIUM TRUCKS LEQ	53.7	52.2	45.8	44.3	53.0
HEAVY TRUCKS LEQ	57.8	56.4	47.3	48.6	57.1
VEHICULAR NOISE	63.8	62.1	58.8	54.2	63.2

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	63.8	62.1	58.8	54.2	63.2

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	63.8		63.8
MIT PK HR LEQ WITH TOPO AND BARRIER =	63.8	*******	63.8
CNEL WITHOUT TOPO AND BARRIER =	63.2		63.2
MIT CNEL WITH TOPO AND BARRIER =	63.2	*******	63.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 268 - BY (NO WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	65				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	65.57
DT WALL=	60			MED TRUCK SLE DIST=	65.18
DT W/OB=	5			HVY TRUCK SLE DIST=	64.56
HTH WALL=	0.0	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL = 1751.0		EL AUTOMOBILES =	1742.0
ROAD EL = 1740.0		EL MEDIUM TRUCKS=	1744.0
GRADE = 6.0 %		EL HEAVY TRUCKS =	1748.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.7	61.8	60.0	54.0	63.2
MEDIUM TRUCKS LEQ	55.4	53.9	47.6	46.0	54.7
HEAVY TRUCKS LEQ	58.1	56.7	47.7	48.9	57.4
VEHICULAR NOISE	65.2	63.5	60.5	55.7	64.7

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	65.2	63.5	60.5	55.7	64.7

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	65.2		65.2
MIT PK HR LEQ WITH TOPO AND BARRIER =	65.2	*******	65.2
CNEL WITHOUT TOPO AND BARRIER =	64.7		64.7
MIT CNEL WITH TOPO AND BARRIER =	64.7	*******	64.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 268 - BY (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	65				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	65.53
DT WALL=	60			MED TRUCK SLE DIST=	65.12
DT W/OB=	5			HVY TRUCK SLE DIST=	64.48
HTH WALL=	4.5	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL = 1751.0		EL AUTOMOBILES =	1742.0
ROAD EL = 1740.0		EL MEDIUM TRUCKS=	1744.0
GRADE = 6.0 %		EL HEAVY TRUCKS =	1748.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.7	61.8	60.0	54.0	63.2
MEDIUM TRUCKS LEQ	55.4	53.9	47.6	46.0	54.7
HEAVY TRUCKS LEQ	58.1	56.7	47.7	48.9	57.4
VEHICULAR NOISE	65.2	63.5	60.5	55.7	64.7

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	60.0	58.3	55.3	50.4	59.5

		W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=	65.2		65.2
MIT PK HR LEQ WITH TOPO AND BARRIER	=	60.0	*******	60.0
CNEL WITHOUT TOPO AND BARRIER	=	64.7		64.7
MIT CNEL WITH TOPO AND BARRIER	=	59.5	*******	59.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 268 - 1ST FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	85				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	85.63
DT WALL=	60			MED TRUCK SLE DIST=	85.20
DT W/OB=	25			HVY TRUCK SLE DIST=	84.53
HTH WALL=	4.5	********			
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10			
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=		1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)		
BARRIER =	0 (0=WALL,1=BERM)			
PAD EL =	1751.5	EL AUTOMOBILES =		1742.0
ROAD EL =	1740.0	EL MEDIUM TRUCKS=		1744.0
GRADE =	6.0 %	EL HEAVY TRUCKS =		1748.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	62.5	60.6	58.9	52.8	62.1
MEDIUM TRUCKS LEQ	54.3	52.8	46.4	44.9	53.6
HEAVY TRUCKS LEQ	57.0	55.5	46.5	47.7	56.2
VEHICULAR NOISE	64.1	62.3	59.4	54.5	63.5

NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	56.7	54.9	51.9	47.1	56.1

	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	64.1		64.1
MIT PK HR LEQ WITH TOPO AND BARRIER =	56.7	*******	56.7
CNEL WITHOUT TOPO AND BARRIER =	63.5		63.5
MIT CNEL WITH TOPO AND BARRIER =	56.1	*******	56.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT:	TTM 16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY:	ETIWANDA AVENUE	DATE:	03-Oct-02
LOCATION:	LOT 268 - 2ND FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA

ADT =	8,000			PK HR VOL =	800
SPEED =	40				
PK HR % =	10				
CTL DIST=	85				
DIST N/F=	22	(M=76,P=52,S=36,C=12)		AUTO SLE DISTANCE =	87.77
DT WALL=	60			MED TRUCK SLE DIST=	87.24
DT W/OB=	25			HVY TRUCK SLE DIST=	86.29
HTH WALL=	4.5	********			
OBS HTH=	15.0				
AMBIENT=	0.0				
ROADWAY VIEW:		LF ANGLE=	-90		
		RT ANGLE=	90		
		DF ANGLE=	180		

SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)

AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAVY TRUCKS)	
BARRIER =	0 (0=WALL,1=BERM)		
PAD EL =	1751.5	EL AUTOMOBILES =	1742.0
ROAD EL =	1740.0	EL MEDIUM TRUCKS=	1744.0
GRADE =	6.0 %	EL HEAVY TRUCKS =	1748.0

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	62.4	60.5	58.8	52.7	61.9
MEDIUM TRUCKS LEQ	54.2	52.7	46.3	44.8	53.5
HEAVY TRUCKS LEQ	56.9	55.4	46.4	47.7	56.1
VEHICULAR NOISE	64.0	62.2	59.2	54.4	63.4

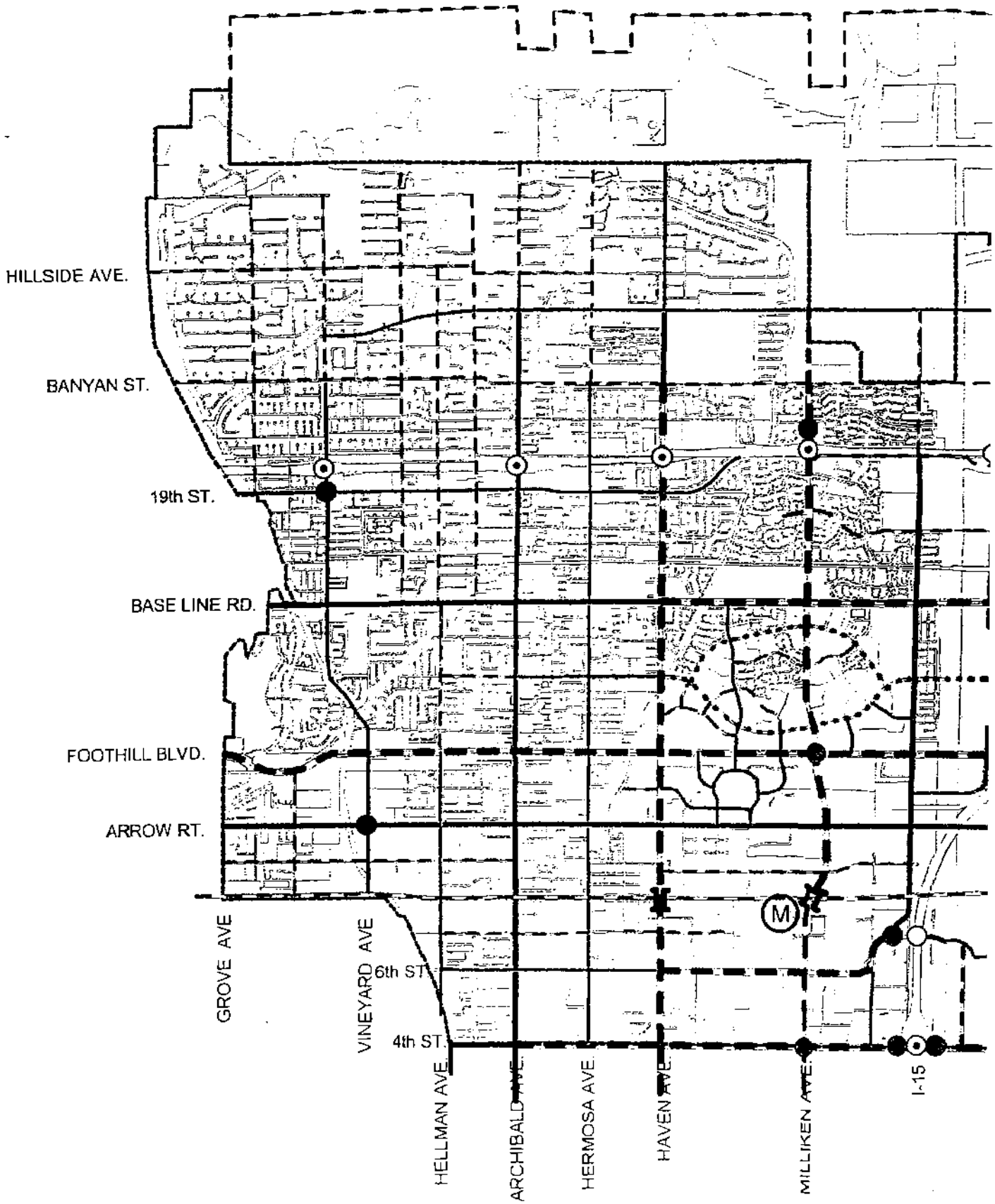
NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	64.0	62.2	59.2	54.4	63.4

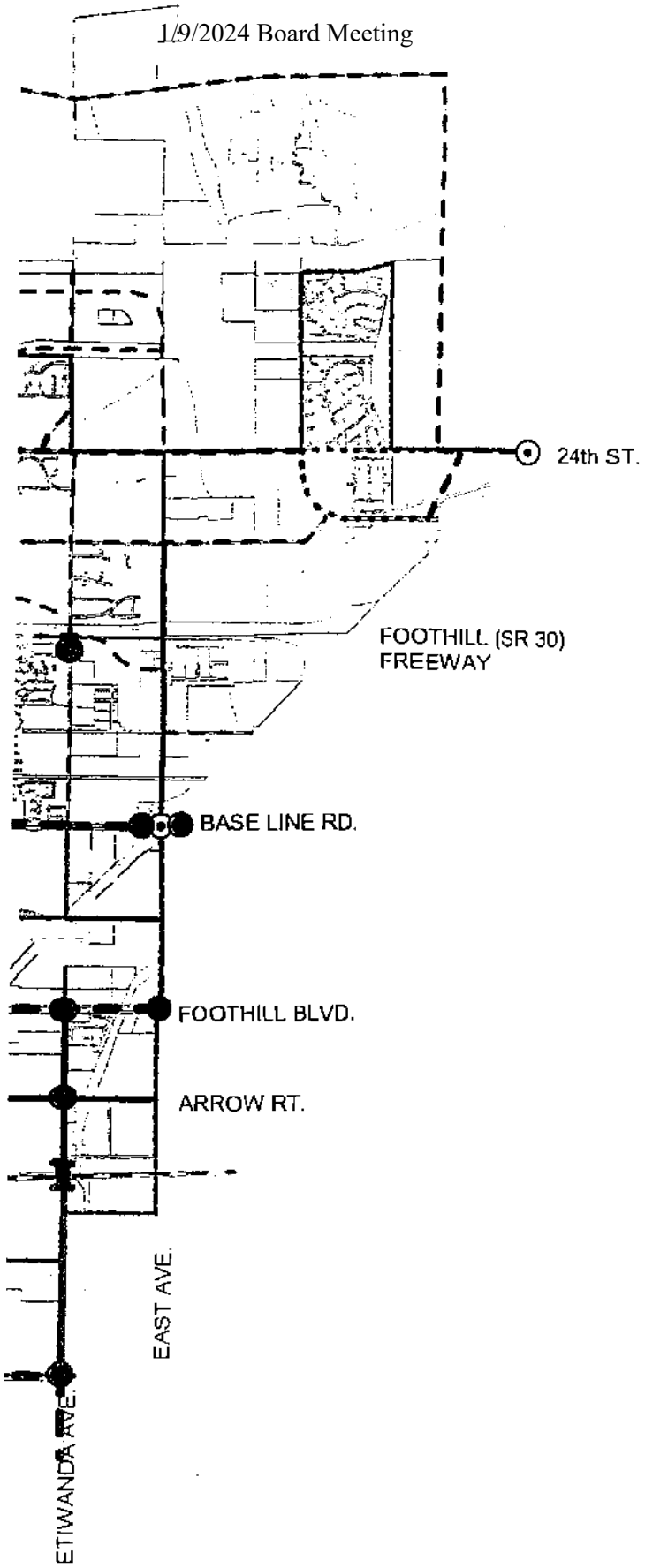
	W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER =	64.0		64.0
MIT PK HR LEQ WITH TOPO AND BARRIER =	64.0	*******	64.0
CNEL WITHOUT TOPO AND BARRIER =	63.4		63.4
MIT CNEL WITH TOPO AND BARRIER =	63.4	*******	63.4

APPENDIX D

CITY OF RANCHO CUCAMONGA GENERAL PLAN



Circulation Plan
Exhibit III-4



- Collector
- Modified Collector with Median
- Secondary
- Modified Secondary with Median
- Major Arterial
- Modified Major with Median
- Major Divided Arterial
- Major Divided Highway
- Intersections to be widened beyond typical General Plan standards
- Freeways
- Freeway Interchange
- Proposed Freeway Interchange
- Railroad
- Railroad Grade Separation
- Metrolink Station
- Circulation Study Area Overlay
- City Limits
- Unincorporated Areas

N

0 5000 Feet

1" = 5,000' 1:60,000

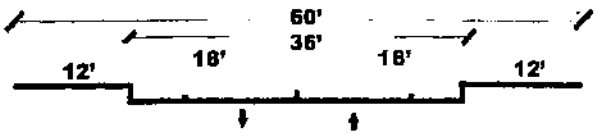
10 17 01

THE PLANNING CENTER

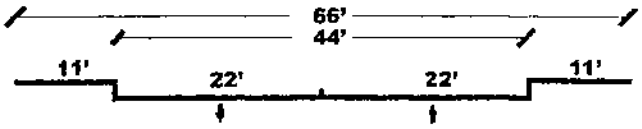
PSOMAS

City of Rancho Cucamonga
GENERAL PLAN

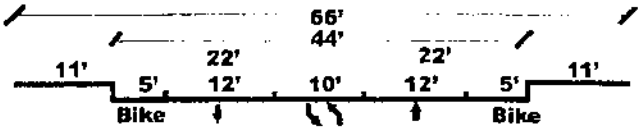
The City of Rancho Cucamonga General Plan



LOCAL - RESIDENTIAL

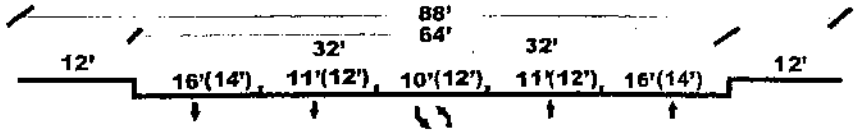


COLLECTOR - RESIDENTIAL & INDUSTRIAL

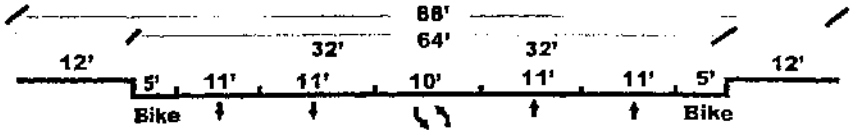


COLLECTOR - RESIDENTIAL & INDUSTRIAL
WITH CLASS II BIKE LANE

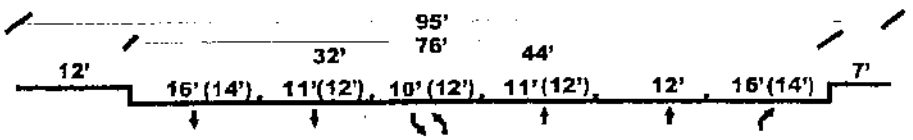
MODIFIED COLLECTOR WITH MEDIAN
*SEE SPECIFIC PLAN



SECONDARY ARTERIAL Mid-Block

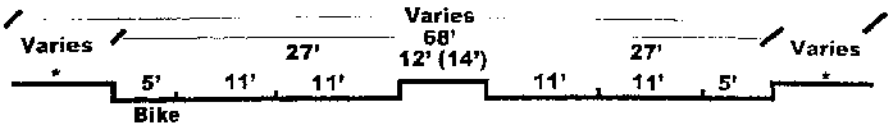


SECONDARY ARTERIAL WITH CLASS II BIKE LANE



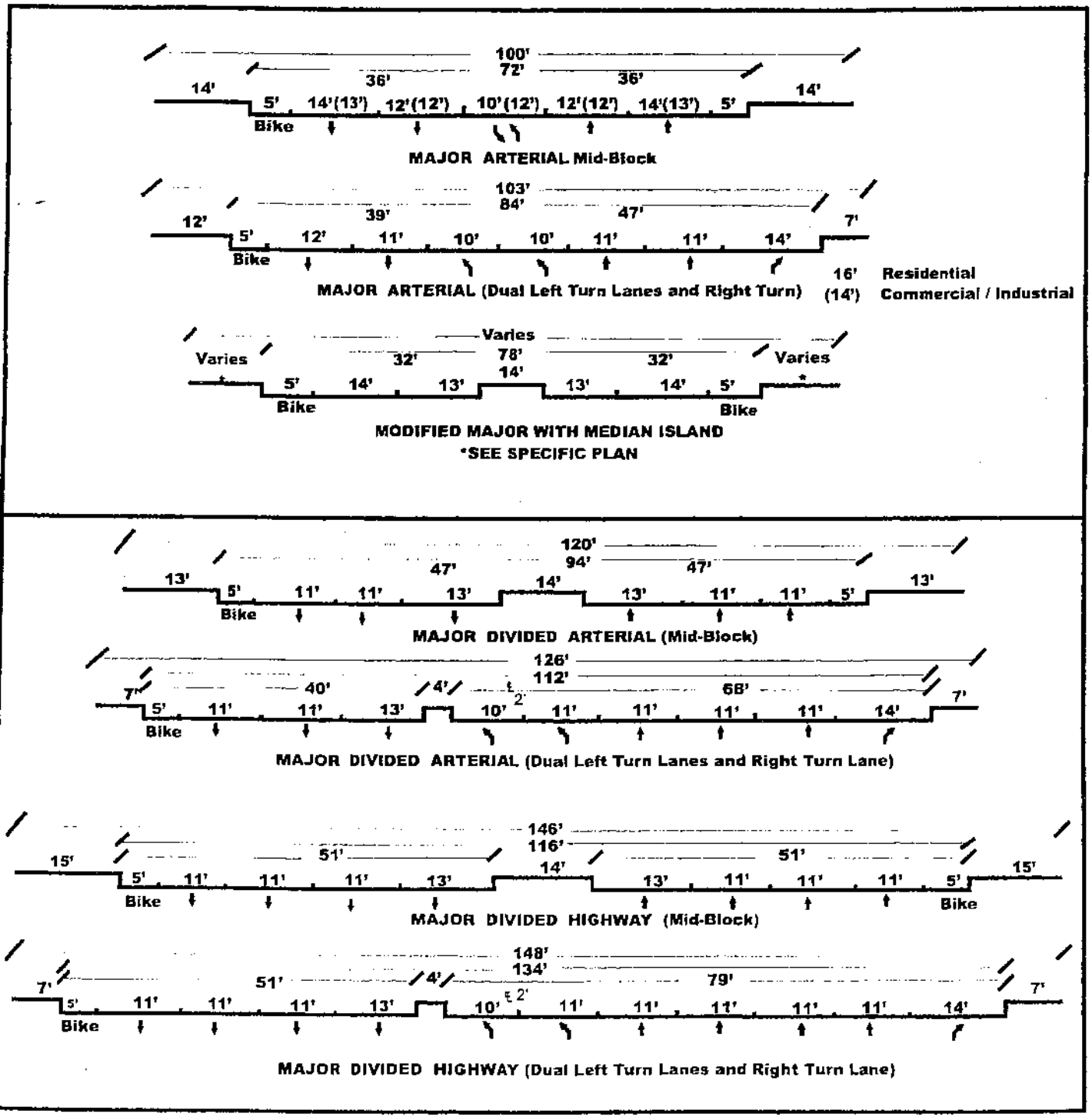
SECONDARY ARTERIAL Intersection Right Turn

16' (14') Residential
Commercial / Industrial



MODIFIED SECONDARY WITH MEDIAN ISLAND
*SEE SPECIFIC PLAN

Typical Roadway Cross-Sections
Exhibit III-5



Typical Roadway Cross-Sections
Exhibit III-5 (Continued)

TABLE III-11
CLASSIFICATIONS OF GENERAL PLAN ROADWAYS

East/West Street	Boundaries		North/South Street	Boundaries	
	West	East		North	South
Collector Streets					
Proposed Day Creek Extension	Day Creek	Etiwanda	Sapphire	Almond	19th
Proposed East Extension	Etiwanda	Wilson	Baker	Foothill	8th
Hillside	West City Boundary	Haven	Camelian	Almond	Banyan
Banyan	West City Boundary	Youngs Canyon	Beryl	Reales	Base Line Road
Church	Hermosa	Archibald	Hellman	Hillside	Foothill
9th	Grove	Archibald	Amethyst	Almond	Base Line Road
8th	Grove	Haven	Archibald	City Boundary	Hillside
7th	Hellman	Archibald	Hermosa	City Boundary	Banyan
Victoria	East	I-15	Santa Anita	6th	4th
Highland	Kenyan	East	Wardman Bullock	City Boundary	Wilson
Jersey	Haven	Rochester	Terra Vista Parkway	Church	Town Center Drive
Vintage	Day creek	Etiwanda			
Town Center Drive	Haven	Spruce			
W. Elm Ave.	Town Center Drive.	Church			
Mountain View Drive	Spruce Avenue	Terra Vista Parkway			
Modified Collector With Median					
Victoria Park Lane	Fairmont	Base Line Road			

TABLE III-11
CLASSIFICATIONS OF GENERAL PLAN ROADWAYS

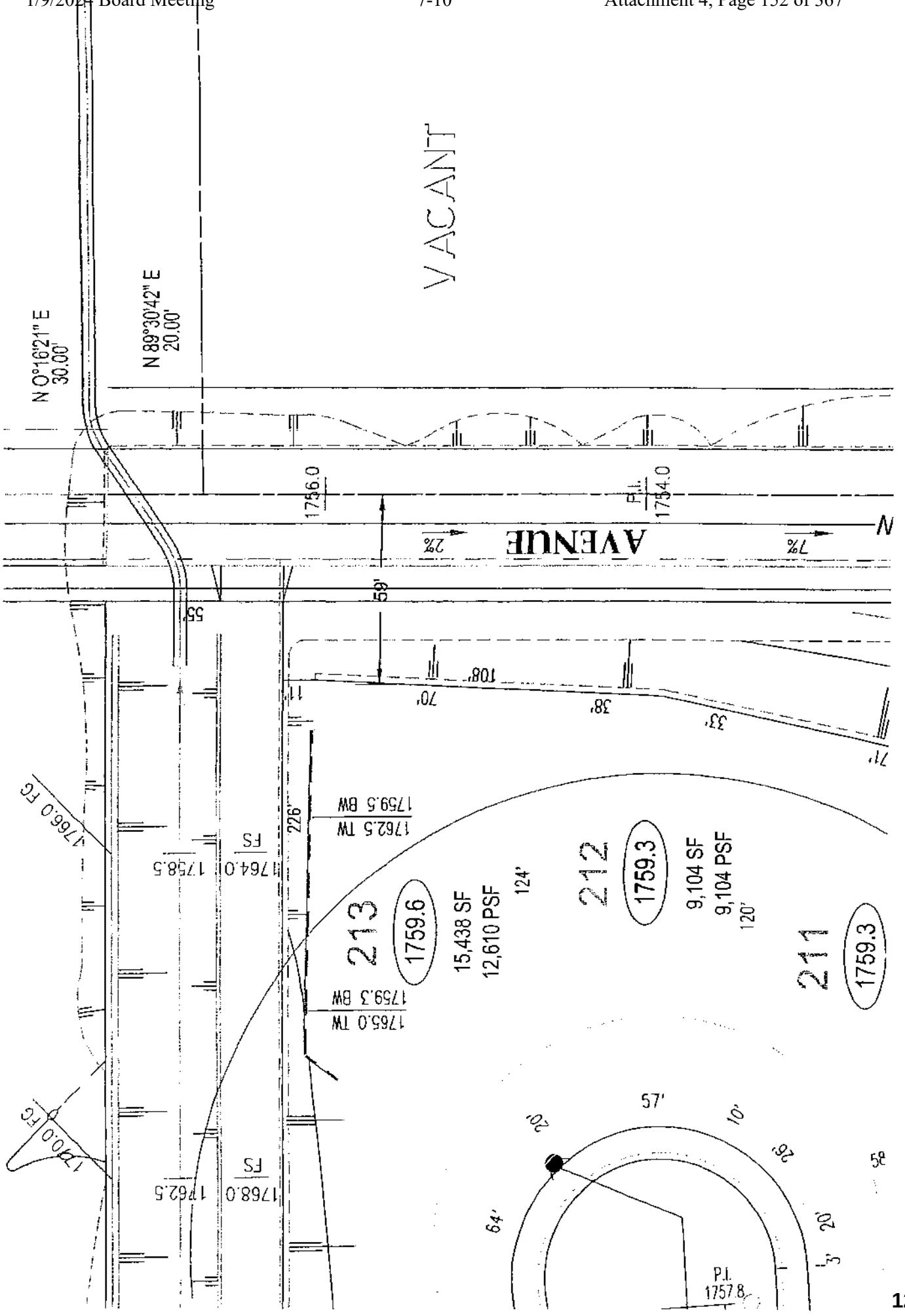
East/West Street	Boundaries		North/South Street	Boundaries	
	West	East		North	South
Secondary Streets					
Wilson	Carnelian	Day Creek	Carnelian	Banyan	Vineyard
19th	West City Boundary	San Benito	Vineyard	Carnelian	8th
Church	Archibald	Haven	Hellman	Foothill	4th
Miller	Etiwanda	East	Archibald	Hillside	Wilson
6th	Hellman	Haven	Hermosa	Banyan	4th
6th	I-15	Etiwanda	Haven	City Boundary	Wilson
Civic Center Drive	Haven	White Oak	Buffalo	6th	4th
Poplar Drive	Church Street	Rochester	Etiwanda	Base Line Road	Foothill
			East	Wilson	Foothill
			Spruce	Base Line Road	Red Oak/White Oak
			Etiwanda	City Boundary	Wilson
			Red Oak	Arrow	Spruce
			White Oak	Arrow	Spruce
			Maytem Avenue	Church	Foothill
			E. Elm Avenue	Church	White Oaks Avenue
Modified Secondary With Median					
Wilson	Wardman Bullock	Cherry	Wardman Bullock	Wilson	Cherry
Church	Victoria Park Lane	Etiwanda			
Church	Haven	Day Creek			
Terra Vista Parkway	Church	Church			
Major Arterials					
Base Line Road	West City Boundary	Haven	Archibald	Hillside	4th
Arrow	Grove	East	Rochester	Highland	6th
4th	Hellman	Archibald	Etiwanda	Foothill	4th
Modified Major With Median					
Wilson	Day Creek	Wardman Bullock	Day Creek	Wilson	I-210
Wilson	Cherry	I-15	Cherry	Wilson	I-15
Church	Day Creek	Victoria Park Lane	Milliken	Wilson	Banyan

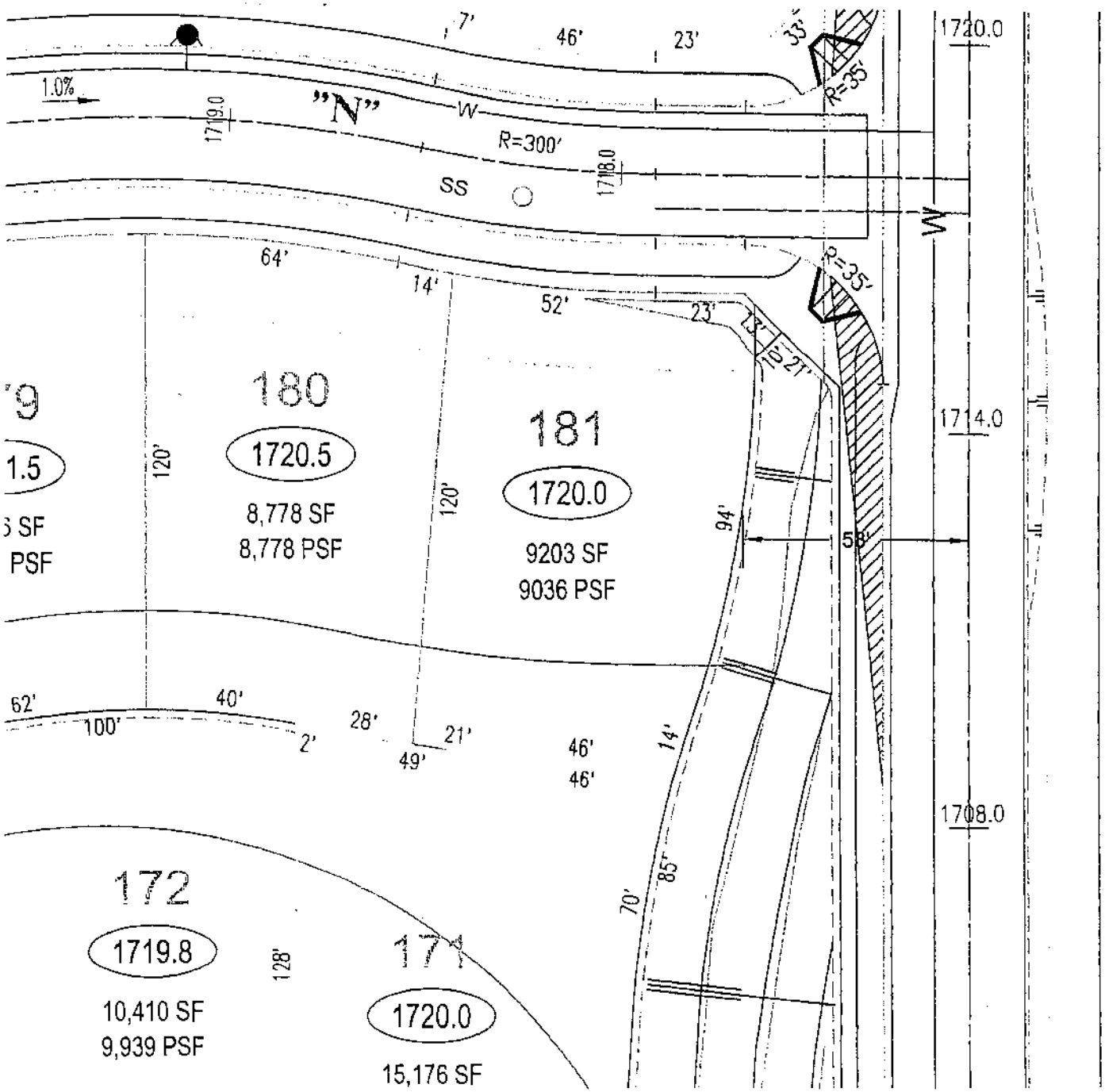
TABLE III-11
CLASSIFICATIONS OF GENERAL PLAN ROADWAYS

East/West Street	Boundaries		North/South Street	Boundaries	
	West	East		North	South
Major Divided Arterials					
Base Line Road	Haven	Etiwanda	Haven	Wilson	Trademark
Foothill	Grove	Day Creek Channel	Milliken	Banyan	4th
Foothill	I-15	East	Day Creek	I-210	Foothill
6th	Haven	Rochester			
4th	Archibald	Etiwanda			
Major Divided Highways					
Base Line Road	Etiwanda	East	Milliken	Fifth	4th
Foothill	Day Creek Channel	I-15	Haven	Trademark	4th

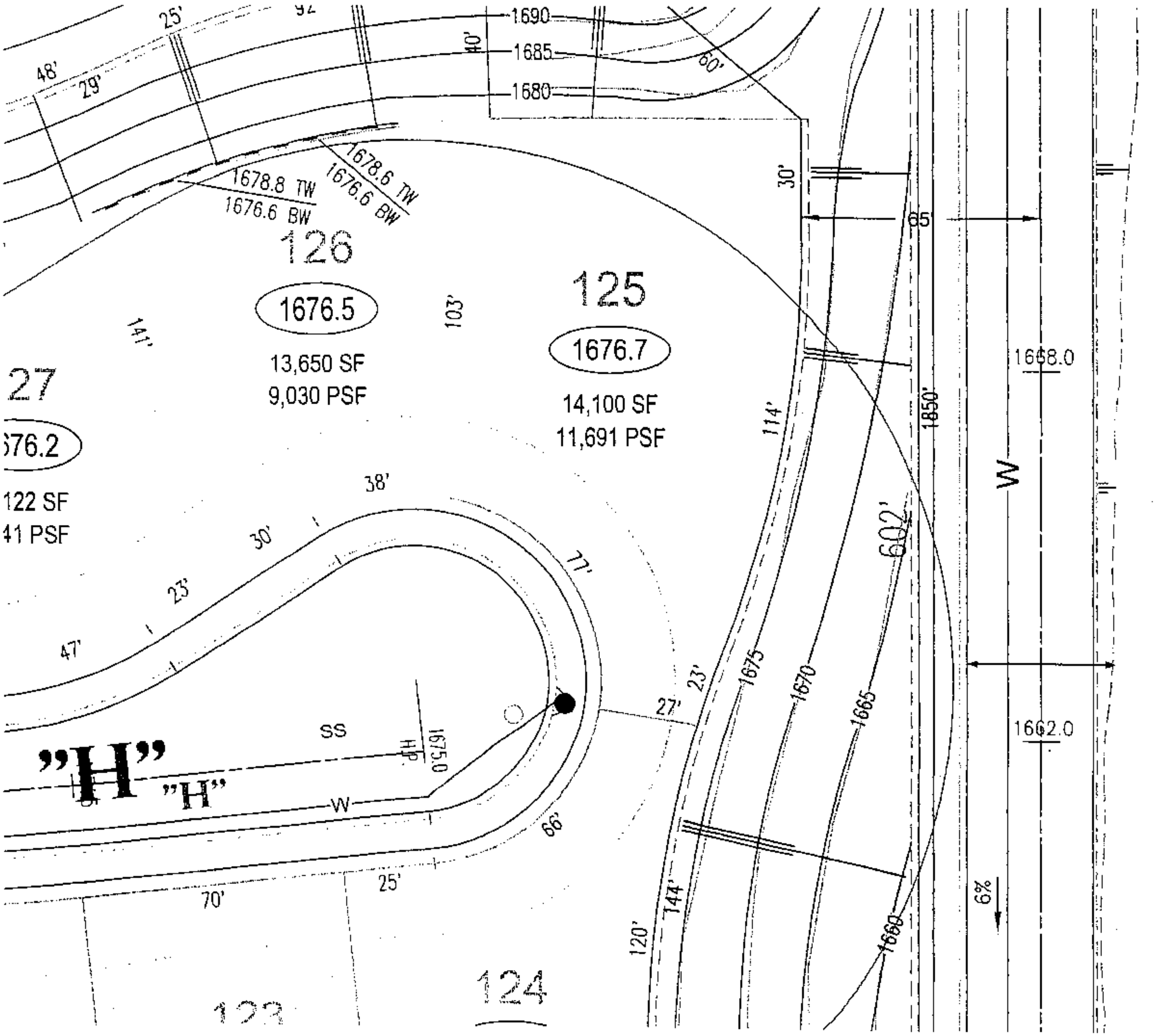
APPENDIX E

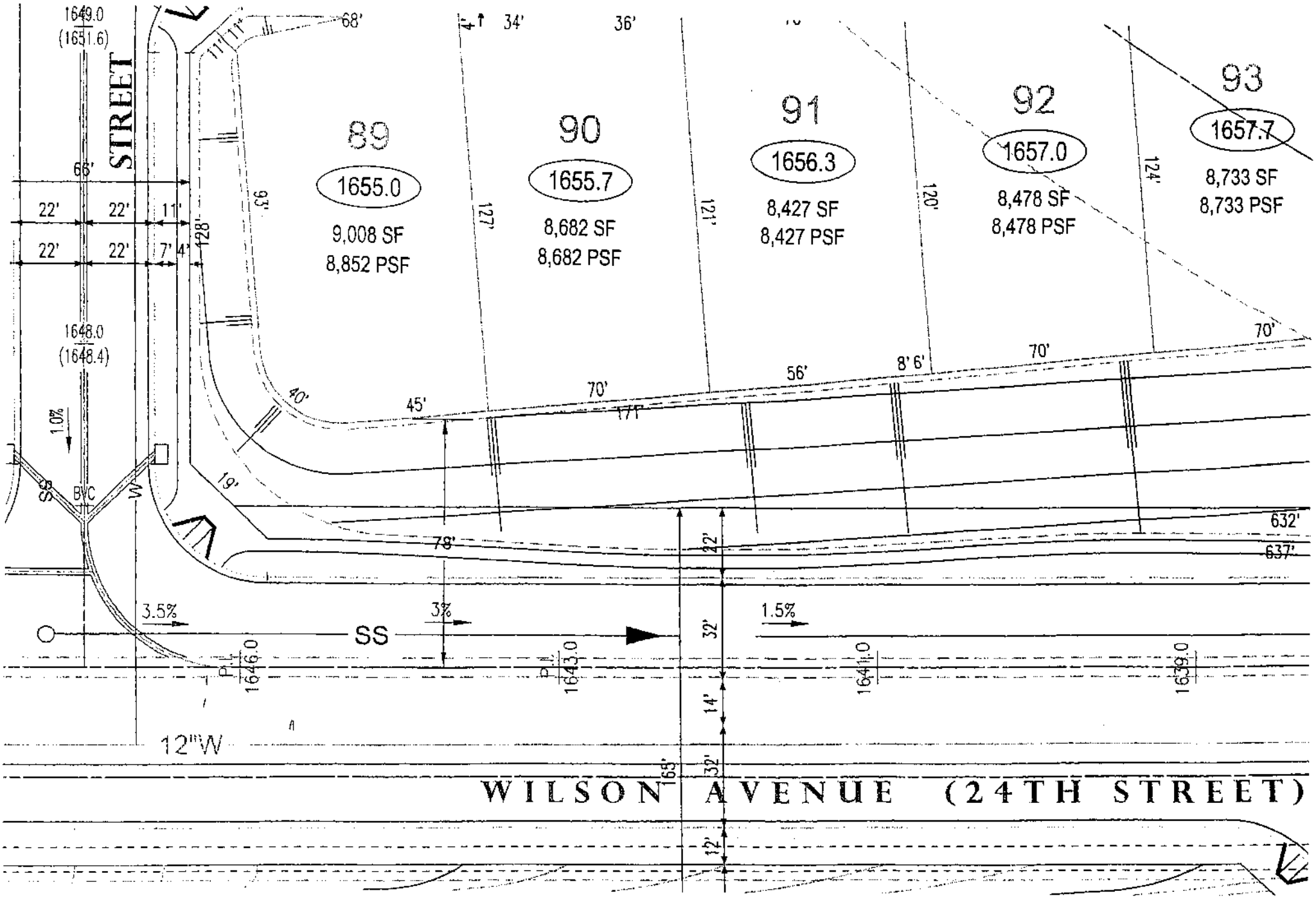
PRELIMINARY GRADING PLANS

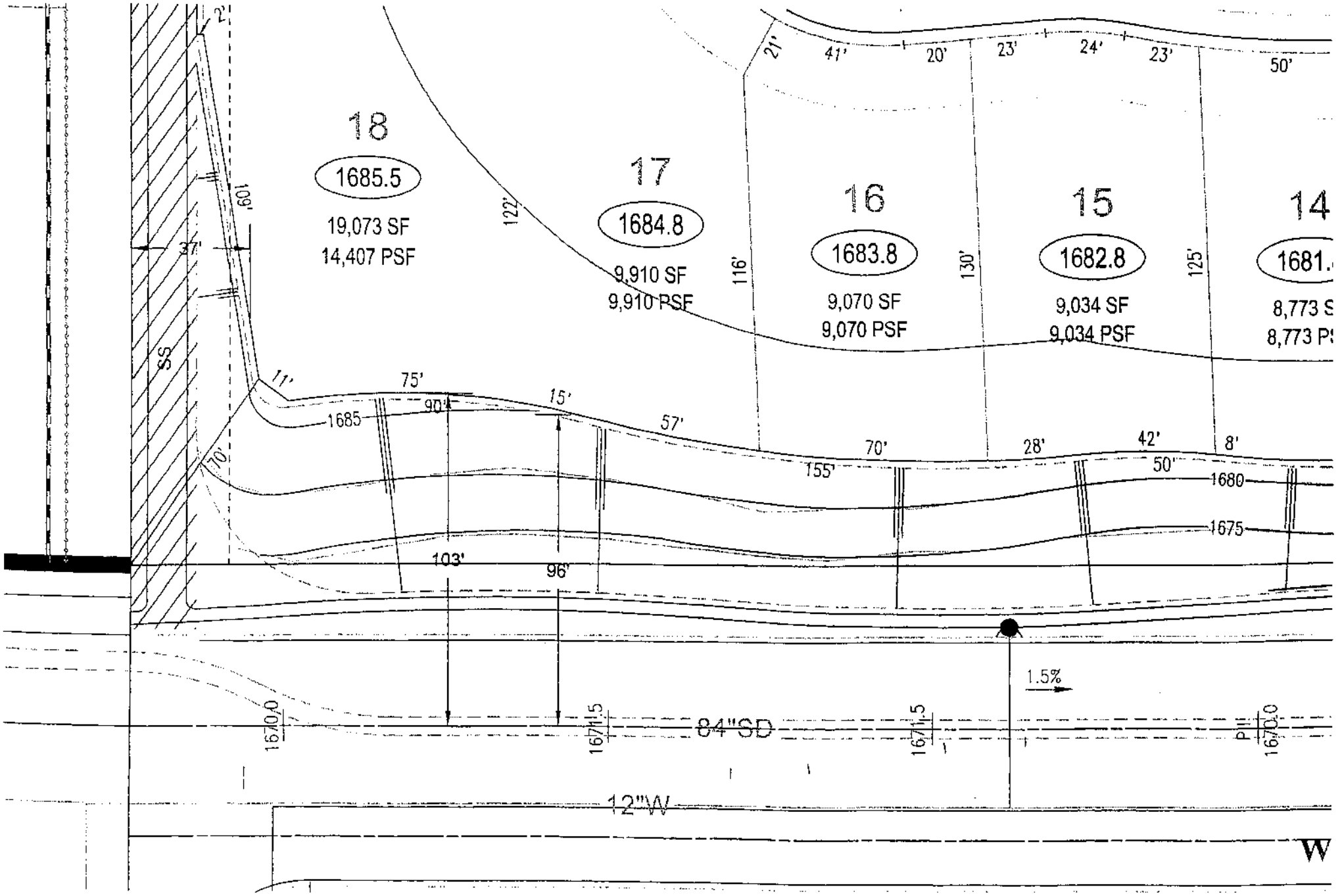

VACANT
N 0°16'21" E
30.00'
N 89°30'42" E
20.00'
AVENUE
1756.0
P.I.
1754.0
2%
7%
59'
55'
108'
70'
38'
33'
17'
226'
1759.5 BW
1762.5 TW
1764.0 FS
1758.5
1766.0 FC
1765.0 TW
1759.3 BW
1768.0 FS
1762.5
1790.0 FC
213
1759.6
15,438 SF
12,610 PSF
124'
212
1759.3
9,104 SF
9,104 PSF
120'
211
1759.3
57'
20'
10'
26'
58'
64'
3'
20'
P.I.
1757.8

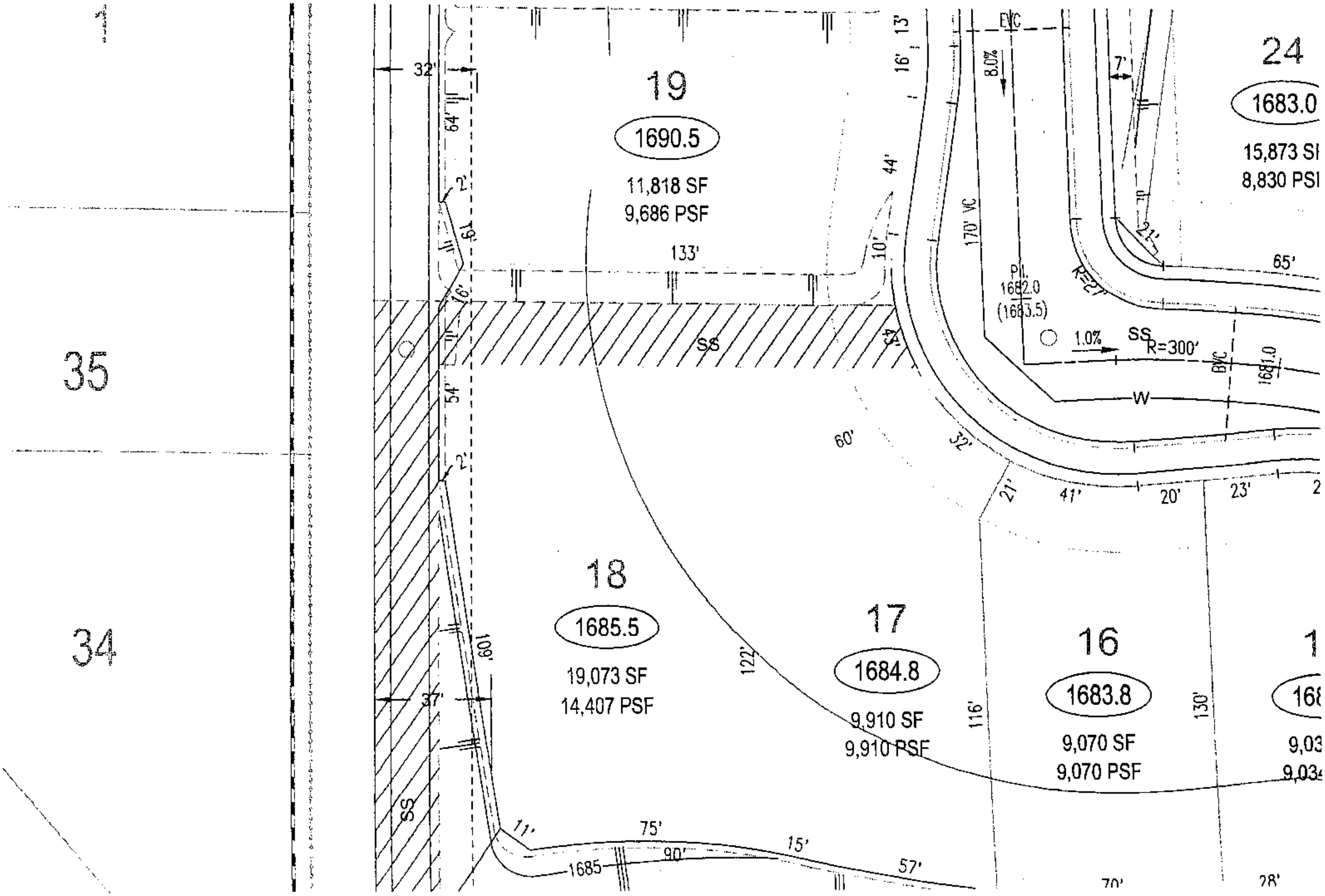

1.0%
"N"
W
R=300'
SS
1719.0
1718.0
7'
46'
23'
35'
R=35'
1720.0
1714.0
1708.0
64'
14'
52'
23'
13'
21'
180
1720.5
8,778 SF
8,778 PSF
181
1720.0
9203 SF
9036 PSF
120'
120'
94'
58'
62'
40'
100'
2'
28'
21'
49'
46'
46'
14'
85'
70'
172
1719.8
10,410 SF
9,939 PSF
128'
174
1720.0
15,176 SF

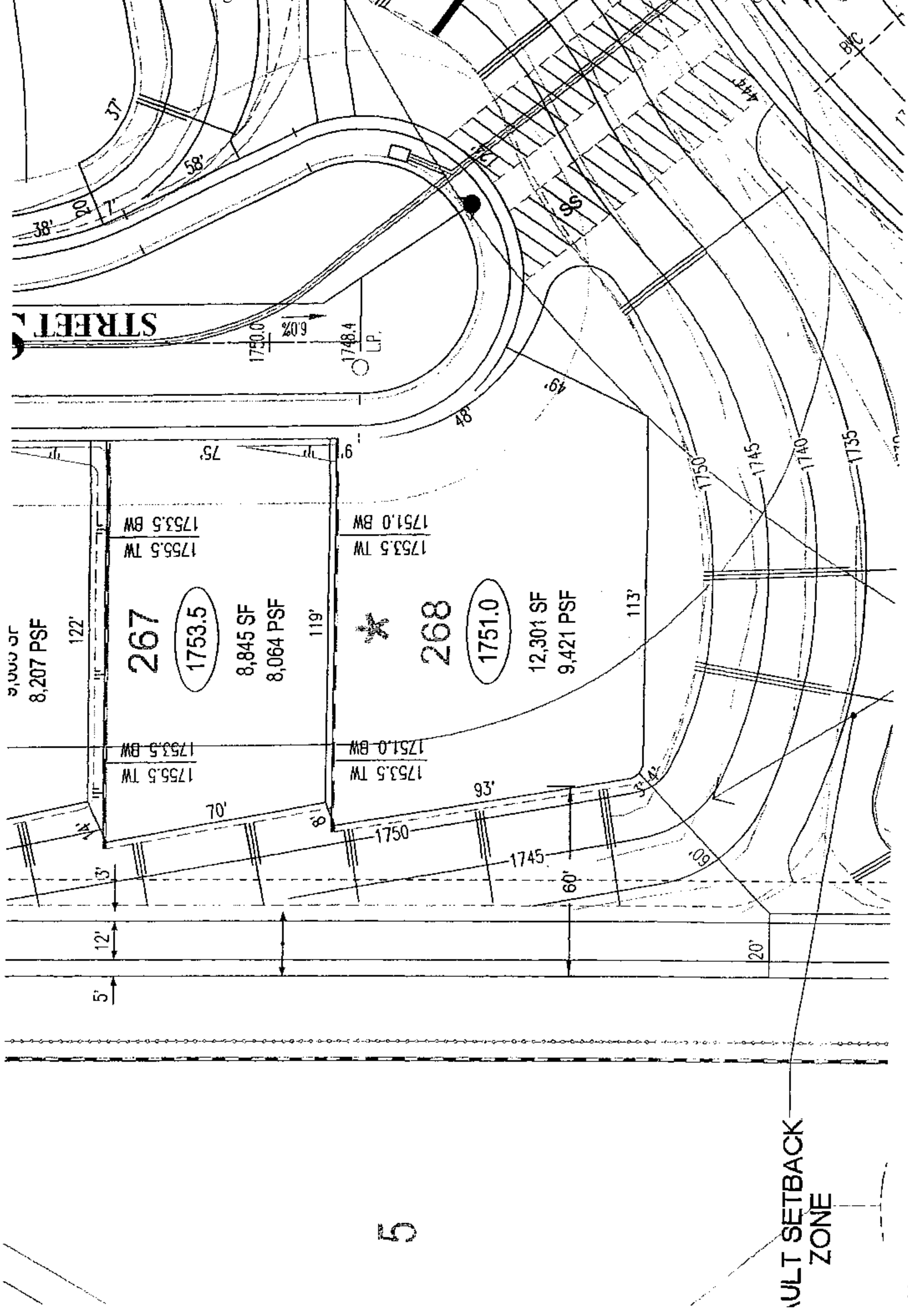
VACANT

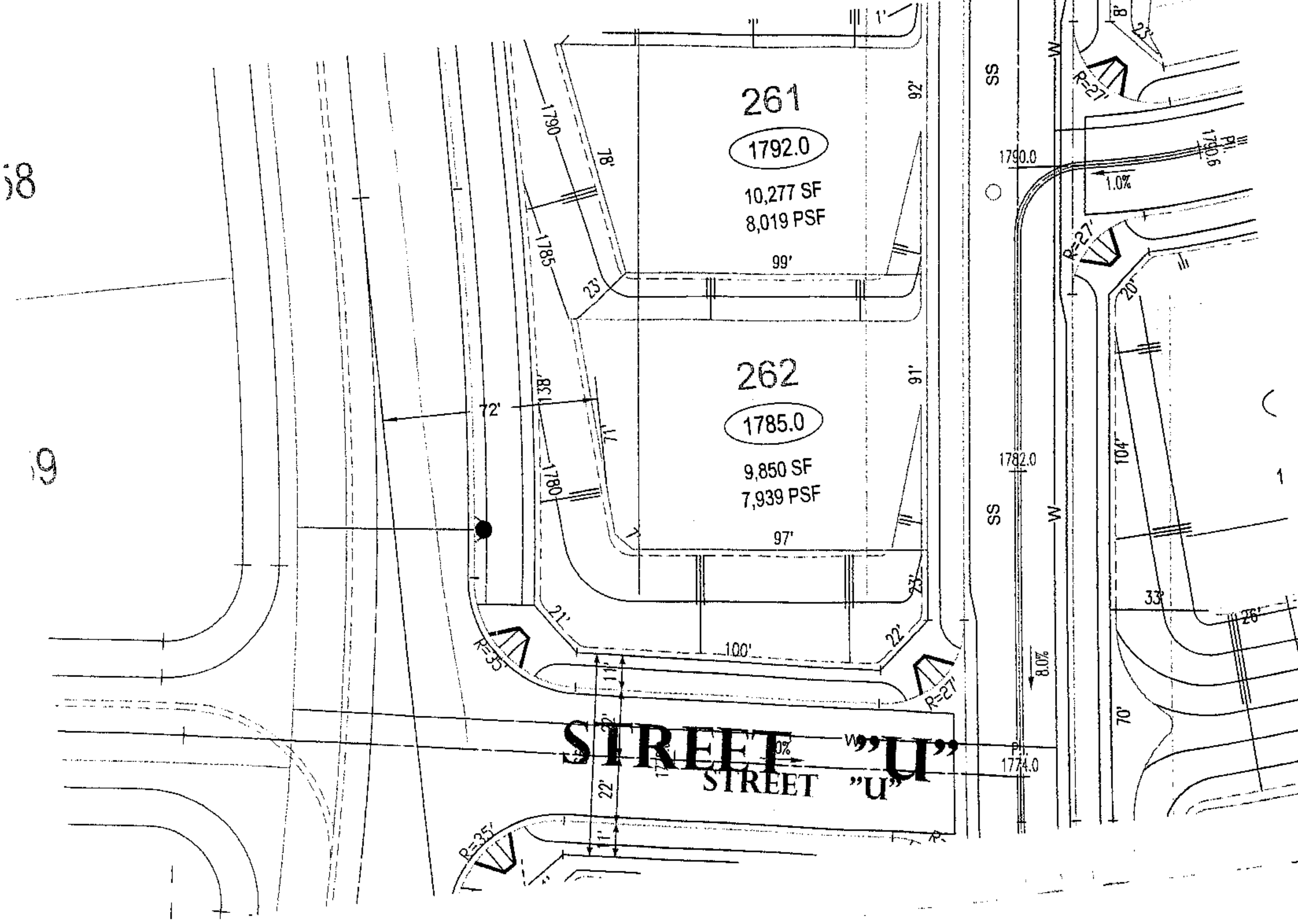

1690
1685
1680
40'
60'
25'
48'
29'
1678.8 TW
1676.6 BW
1678.6 TW
1676.6 BW
126
1676.5
13,650 SF
9,030 PSF
125
1676.7
14,100 SF
11,691 PSF
103'
141'
30'
65
114'
1850'
W
1668.0
1662.0
602'
38'
30'
77'
23'
47'
SS
HP
1675.0
"H"
"H"
W
27'
23'
1675
1670
1665
1660
66'
25'
70'
144'
120'
6%
124

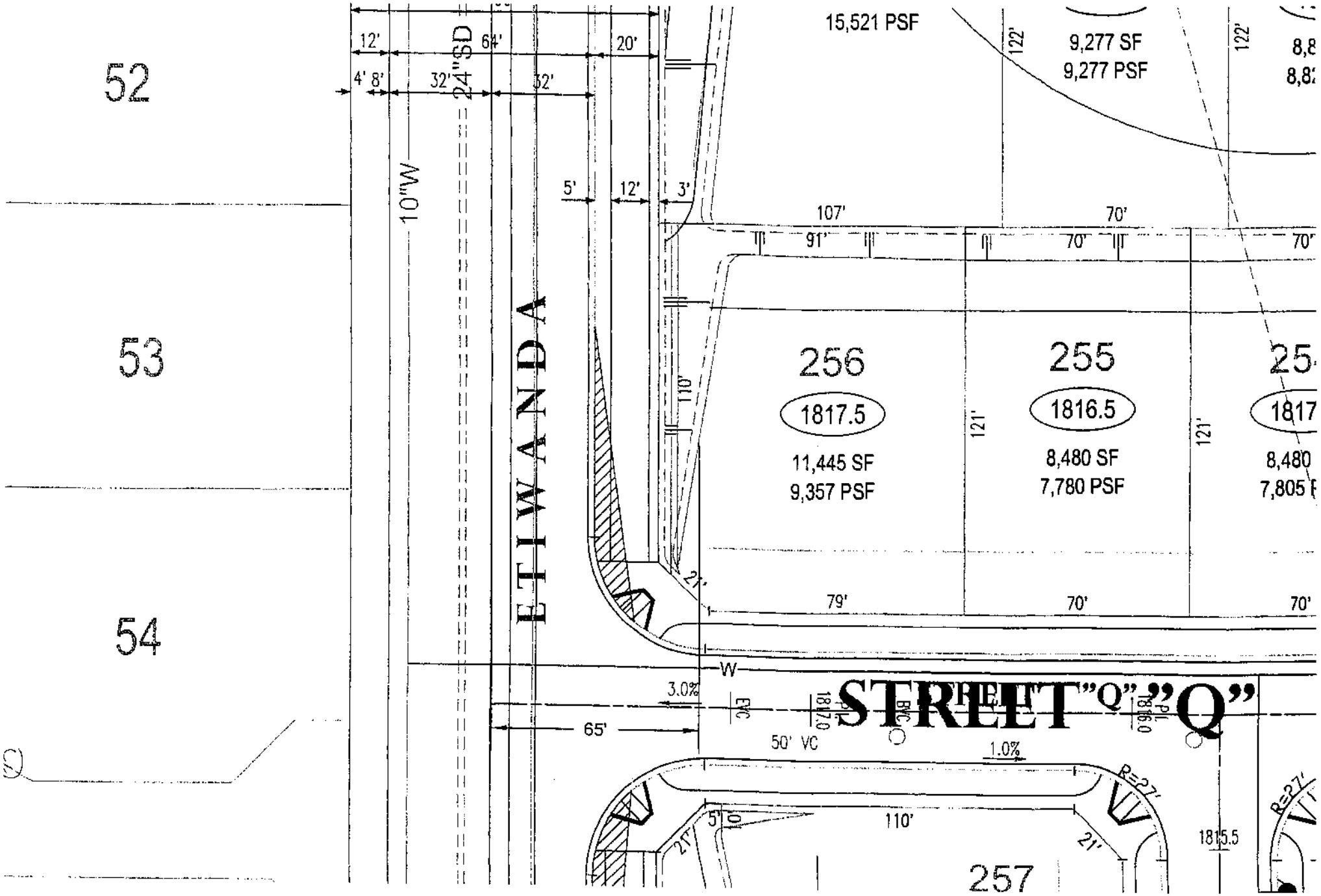

STREET
89
1655.0
9,008 SF
8,852 PSF
90
1655.7
8,682 SF
8,682 PSF
91
1656.3
8,427 SF
8,427 PSF
92
1657.0
8,478 SF
8,478 PSF
93
1657.7
8,733 SF
8,733 PSF
1649.0
(1651.6)
1648.0
(1648.4)
66'
22'
22'
11'
7' 4'
128'
93'
127'
121'
120'
124'
70'
56'
8' 6'
45'
40'
19'
78'
632'
637'
1.0%
3.5%
3%
1.5%
SS
BVC
W
P.I. 1646.0
P.I. 1643.0
1641.0
1636.0
22'
32'
14'
32'
12'
168'
12"W
WILSON AVENUE (24TH STREET)


18
1685.5
19,073 SF
14,407 PSF
17
1684.8
9,910 SF
9,910 PSF
16
1683.8
9,070 SF
9,070 PSF
15
1682.8
9,034 SF
9,034 PSF
14
1681.
8,773 S
8,773 PS
21'
41'
20'
23'
24'
23'
50'
122'
116'
130'
125'
109'
37'
2'
SS
11'
75'
90'
15'
57'
70'
155'
28'
42'
8'
50'
1685
1680
1675
103'
96'
1.5%
84"SD
12"W
W


1
35
34
19
1690.5
11,818 SF
9,686 PSF
133'
18
1685.5
19,073 SF
14,407 PSF
17
1684.8
9,910 SF
9,910 PSF
16
1683.8
9,070 SF
9,070 PSF
24
1683.0
15,873 SF
8,830 PSF
SS
W
32'
37'
64'
54'
109'
122'
116'
130'
60'
32'
21'
41'
20'
23'
65'
44'
10'
16'
13'
11'
75'
90'
15'
57'
1685
EVC
BVC
8.0%
1.0%
170' VC
P.I.
1682.0
(1683.5)
R=300'
1681.0


267
1753.5
8,845 SF
8,064 PSF
268
1751.0
12,301 SF
9,421 PSF
8,207 PSF
1755.5 TW
1753.5 BW
1753.5 TW
1751.0 BW
1748.4
L.P.
1750.0
6.0%
1750
1745
1740
1735
ZONE


261
1792.0
10,277 SF
8,019 PSF
92'
78'
99'
23'
1790
1785
262
1785.0
9,850 SF
7,939 PSF
91'
97'
72'
138'
1780
21'
100'
22'
23'
R=35'
R=27'
R=27'
SS
W
1790.0
1790.6
1.0%
1782.0
8.0%
104'
20'
33'
26'
70'
11'
22'
STREET "U"
1774.0


52
53
54
12'
64'
20'
4' 8'
32'
24"SD
32'
10"W
5'
12'
3'
15,521 PSF
122'
9,277 SF
9,277 PSF
107'
70'
91'
70'
70'
ETIWANDA
256
1817.5
11,445 SF
9,357 PSF
255
1816.5
8,480 SF
7,780 PSF
110'
121'
121'
21'
79'
70'
70'
W
3.0%
65'
50' VC
1.0%
STREET "Q"
"Q"
R=27'
5'
110'
21'
21'
257
1815.5
R=27'

Appendix G
Archaeological and Paleontological Resources Assessment

Appendix G
Archaeological and Paleontological Resources Assessment

An Archaeological and Paleontological Resource Evaluation and Significance Assessment for Tract 16072, Located Near Wilson and East Avenues, City of Rancho Cucamonga Sphere of Influence, County of San Bernardino, California

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TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

Exhibit **Page**

LIST OF EXHIBITS

Exhibit **Page**

LIST OF PHOTOGRAPHS

Photograph **Page**

ACRONYMS

AIC .....Archaeological Information Center, San Bernardino County Museum

APE .....Area of Potential Effect

ARMR .....Archaeological Resource Management Report

CEQA .....California Environmental Quality Act

CRHP.....California Register of Historic Places

DPR523 .....California Department of Public Resources Archaeological Recordation Form Set (523)

EIC.....Eastern Information Center, University of California, Riverside

NEPA.....National Environmental Policy Act

NAHC.....Native American Heritage Commission

NHPA .....National Historic Preservation Act

SBBM.....San Bernardino Base Meridian

SBCM.....San Bernardino County Museum

SHPO.....State Historic Preservation Office

SECTION 1: PUBLIC INFORMATION STATEMENT

1.1 - Location and Study Area

At the request of the City of Rancho Cucamonga, California (City), Michael Brandman Associates (MBA) has conducted an archaeological resource survey, paleontological records search and archaeological/historical site significance evaluation within a proposed single-family residential tract currently located within the County of San Bernardino. Tract 16072 is located near the corner of Wilson and East Avenues and is considered to be the full cultural resource study area. The total amount of land covered by the study area is roughly 160 acres.

1.2 - Purpose

The purpose of this report is to delineate the location of the study area, define the APE, identify all potentially significant cultural and paleontological resources situated within the study area, establish the significance of sites located within the Tract and, if impacted by the proposed development, propose recommendations for mitigation where necessary. Completion of this investigation fulfills the requirements of the National Environmental Policy Act (NEPA), protocols associated with the National Historic Preservation Act (NHPA) as Amended, Executive Order 11593 requirements and the California Environmental Quality Act (CEQA).

This report follows the California State Historic Preservation Office (SHPO) recommended Archaeological Resource Management Report (ARMR) format and fulfills all protocols associated with NEPA-level and CEQA-level archaeological studies.

1.3 - Report Overview

This report is organized into sections and appendices, which are summarized as follows:

- Section 2 reviews the goals of this study.
- Section 3 summarizes the environmental and cultural setting.
- Section 4 presents the investigative methods.
- Section 5 reviews any previous cultural resource investigations and/or sites in or near the study area.
- Section 6 provides cultural resource survey and paleontological assessment results.
- Section 7 provides archaeological/historical significance assessments.
- Section 8 summarizes the project and provides management recommendations.
- Section 9 presents a reference list.
- Section 10 contains the project certification.
- Appendix A provides recent photographs of the Study Area,
- Appendix B presents personnel qualifications,
- Appendix C includes reproductions of compliance documents, and
- Appendix D provides the DPR523 Data Sets.

1.4 - Research

Robin Laska, Assistant Center Coordinator for the Archaeological Information Center (AIC) of the San Bernardino County Museum conducted the archaeological record search at the AIC, on September 20, 2002. The AIC research indicated that none of the study area had been directly surveyed for the existence of cultural resources. Two historic sites lie within the direct APE of the project. These sites have not yet been evaluated for significance under CEQA and Section 106 of the NHPA. Nine historic sites and one prehistoric isolated tool are located within a one-mile radius of the study area. Two of these historic sites appear to be National Register eligible and one appears to lie within the indirect APE of the project. It was determined through map research that five or more structures had been plotted on various archival maps for the project area.

MBA staff archaeologists surveyed the project area on September 19, 2002. During the cultural resources survey, two of the three cultural resource sites found by Ms. Laska were detected in the study area. One new historic flood control site (Temp #1) was also detected.

Eric Scott, PhD., Curator of Paleontology at the San Bernardino County Museum (SBCM) conducted the paleontological literature and records review at the SBCM on September 17, 2002. The SBCM research showed that the Tract is situated on "Pleistocene older fan deposits." These deposits have high potential to contain fossil resources throughout their extent.

Christeen Taniguchi M.A., MBA architectural historian and MBA staff archaeologist Dustin Kay, B.S., evaluated three historic archaeological sites for significance. None of the sites appear to be eligible for the National Register or the California Register. They may be eligible for local historical listing under certain conditions.

1.5 - Findings Summary

The survey revealed that two previously known historic cultural resource sites, with one exhibiting two distinct loci, were located within the Tract. One new site, an old San Bernardino County flood control berm known as Temp #1, was also detected. The new and previously known sites were not revisited during this phase of the project for the purposes of establishing significance.

During the significance evaluation, modern DPR523 site forms were drafted for these sites; included in Appendix D. The historical significance of P1081-1/H (East and West loci), P1081-19/H (Ranch Complexes, East and West loci) and Temp #1 were established. MBA did not find these sites to be significant under CEQA, nor are they significant under Section 106 of the NHPA. However, because historical sites were detected in the project area, the chance that additional historical materials will be uncovered during grading is "moderate." Therefore, we must recommend at least part-time monitoring during earthmoving.

Monitoring mitigation measures must be in place prior to earthmoving in the Tract. In addition, should previously undetected and potentially significant cultural resourecs be uncovered during

earthmoving within this Tract, such resources (excluding isolated artifacts) should be tested for *historical significance* under CEQA and the national Advisory Council on Historic Preservation Criterion A, B, C and/or D prior to continued impact. In addition, California State Health and Safety Code Section 7050.5 dictates that if human remains are unearthed during construction, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to CEQA regulations and Public Resources Code Section 5097.98.

The paleontological records search revealed that no fossil resources have been recorded within the project area. The nearest deposit of fossils within sediments mapped as Pleistocene older fan deposits occurs approximately eight miles to the south, and there is another deposit located approximately nine miles to the southeast. Dr. Scott concluded that earthmoving should take place within the project area.

SECTION 2: INTRODUCTION

The following archaeological survey report has been prepared for the City of Rancho Cucamonga, California (City). Michael Brandman Associates has conducted a cultural resource records search, field survey, paleontological records search and archaeological/historical significance test for a 160-acre tract located in the southwest ¼ of Section 21 of T1N, R6W (SBBM). Located a few miles northeast of the center of the City of Rancho Cucamonga (Exhibit 2-2), the study area is proposed for annexation into the City of Rancho Cucamonga, but is currently under County of San Bernardino jurisdiction. This report is associated with a tentative tract map (Tract 16072) proposing to construct 359 single-family residences.

The cultural resource survey took place on September 19, 2002, while the cultural resource records and map search took place on September 20, 2002. The paleontological resource records search took place on September 17, 2002. The study area was surveyed for cultural resources utilizing procedures noted in Section 4.0. Significance testing of three sites in the study area took place between May 25 and June 12, 2003.

The cultural resource assessment was performed at the request of the City of Rancho Cucamonga (Lead) in order to comply with 36CFR800 (Section 106) implementing regulations found in the California Environmental Quality Act (CEQA), the National Historic Preservation Act (NHPA 1999; Archnet 1999), the National Register of Historic Places (NRHP 1999, ParkNet 2001) and the National Environmental Policy Act (NEPA). This report closely follows the ARMR reporting format as is currently recommended by the California State Office of Historic Preservation (SHPO).

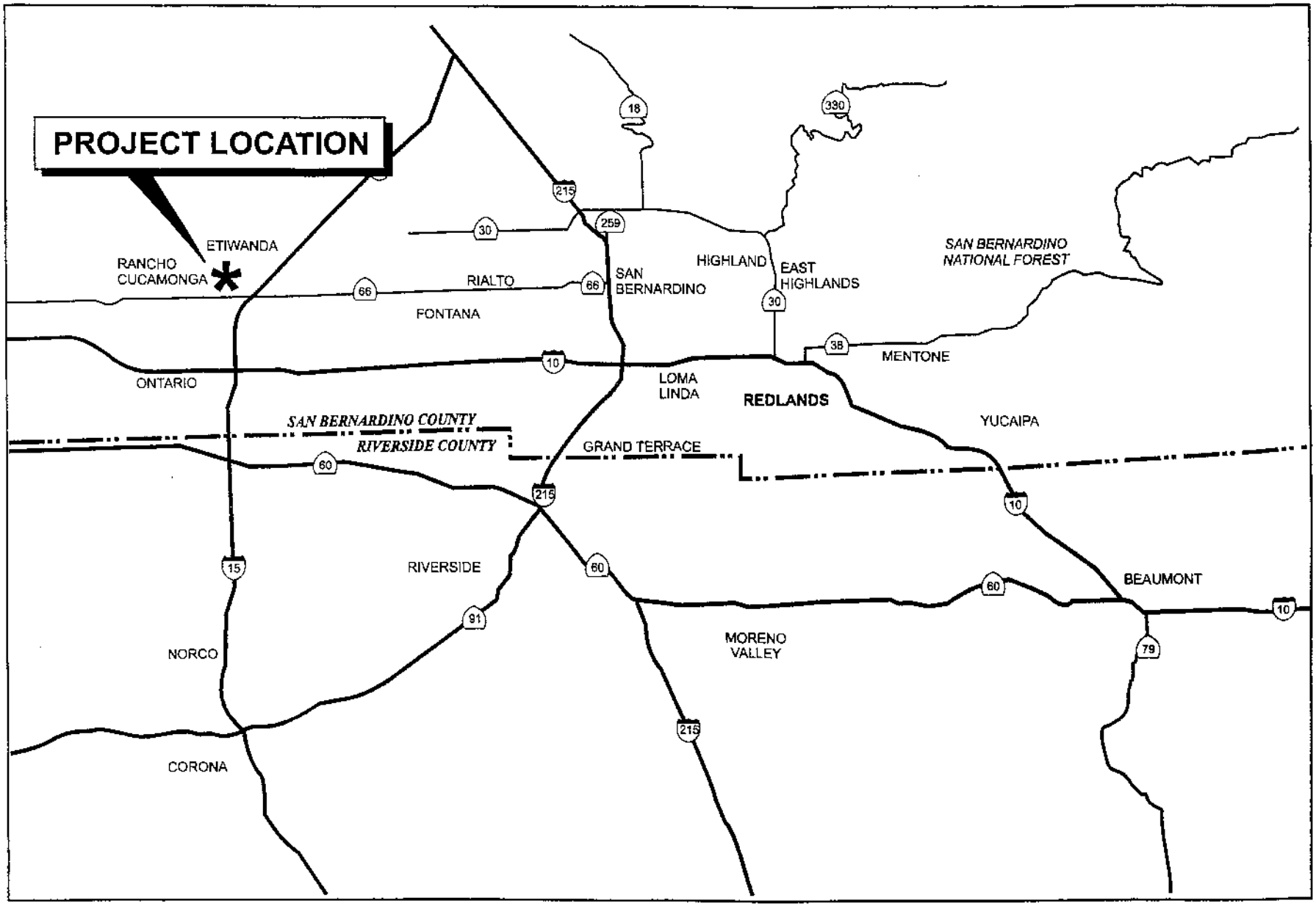
2.1 - Assessment Goals

The goal of the project was to identify all significant cultural and paleontological resources situated within the Area of Potential Effect (APE), evaluate sites within the project area or significance, and develop mitigation recommendations, if necessary. A protocol archaeological survey in the boundaries of the Tract, which shall be directly affected by construction, was undertaken because the property had not been archaeologically surveyed in the last 10 years. The study consisted of seven distinct efforts:

1. Cultural resource record search conducted to determine whether any previously recorded cultural materials are present within the boundaries of the study area, or within a one-mile radius of the study area.
2. Protocol field reconnaissance in the form of a systematic, intensive pedestrian survey designed to identify any cultural resources within the study area.
3. Examination of archived aerial photographs, topographic maps and road maps that might reveal historic land use.
4. Intensive historical data collection for the purposes of a historical significance evaluation for sites detected during the survey.
5. Development of cultural mitigation recommendations.
6. Paleontological resource record search conducted to determine whether any previously recorded fossiliferous resources are present within the boundaries of the study area, or within

a one-mile radius of the study area.

7. Development of paleontological mitigation recommendations.



NORTH

12 6 0 12

SCALE IN MILES

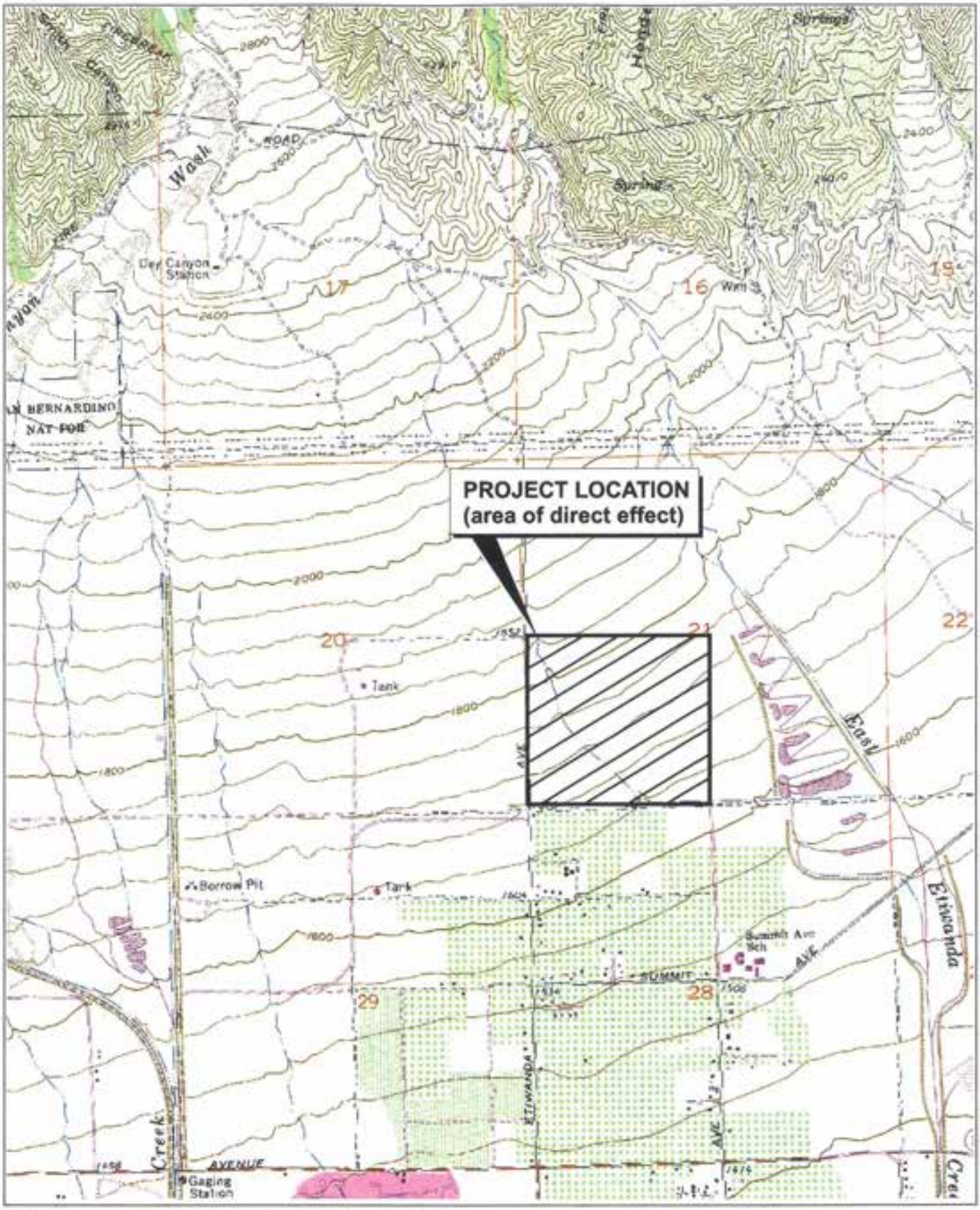
Michael Brandman Associates

00160027 • 11/2002

Exhibit **2-1**

Regional Location Map

TRACT 16072 • ARCHAEOLOGICAL SURVEY



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

2000 1000 0 2000
SCALE IN FEET

Michael Brandman Associates
00180027 - 10/2002

Exhibit **2-2**
Project Location Map
TRACT 16072 • ARCHAEOLOGICAL SURVEY

SECTION 3:
ENVIRONMENTAL AND CULTURAL SETTING

3.1 - Location

As seen in Exhibit 2-2, the project area is located in the southwest ¼ of Section 21 of T1N, R6W (SBBM) as found on the USGS *Cucamonga Peak, CA.* 7.5' topographic quadrangle map. The study area could be easily accessed and roughly 160 acres of land was surveyed to protocol. The study area was partly bounded by roads and fences. Because nearly all on-site vegetation was less than five feet in height, unfenced boundaries could be estimated by observing off-project topographic details.

3.2 - Topography

A modern aerial photograph, taken in 2001, is shown as Exhibit 3-1. The study area consists mostly of boulder-strewn alluvial fan with a strong slope running to the southeast. Ground visibility during the survey neared 75%, and the ground surfaces were exposed between natural groundcover. The elevation of the study area ranged from 1,620 to 1,850 feet above sea level.

3.3 - Vegetation

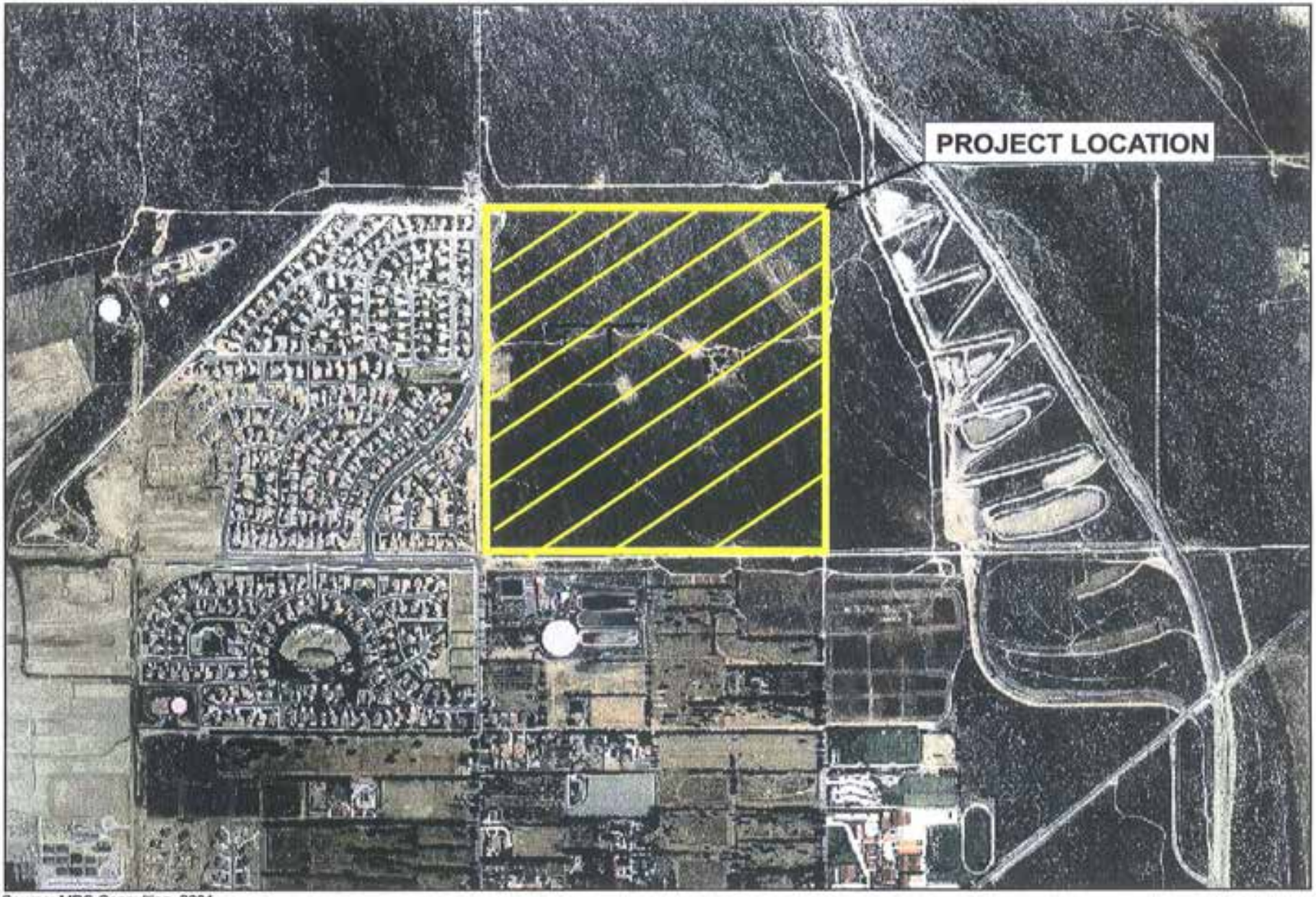
The study area is located in an area exhibiting natural, burned natural and various non-native plants. Density of the plants ranged from moderate to heavy site-wide. Previous biological studies indicated that the types of vegetative groups within the project area included Riversidean sage scrub of varied quality, ornamental alignments and ruderal species.

3.4 - Geology

The project area exhibits moderately coarse to extremely coarse deposits of alluvium that has cascaded out of Day Canyon and East Etiwanda Canyon to the north. Boulders, some weighing several tons and measuring more than 20 feet in circumference, were noted in the project area.

3.5 - Water Resources

The project is located in an area exhibiting occasionally severe flooding events. No local springs or seeps are found on the *Cucamonga Peak, CA.* topographic map. An intermittent streambed is plotted on the topographic map along the west margin of the project area. In some places, this consisted of a steep-walled canyon with 20-foot walls that was difficult to traverse. Prior to the dropping of the local water table through over-pumping of the aquifer, this might have provided near year-round water to aboriginal and historic occupants.



Source: MDS Consulting, 2001

NORTH

NOT TO SCALE

Michael Brandman Associates

00180027 • 11/2002

Exhibit 3-1

2001 Aerial Photograph

TRACT 16072 • ARCHAEOLOGICAL SURVEY

SECTION 5:
PREVIOUS RESEARCH AND RECORDS REVIEW RESULTS

The record search indicated that the study area may have been directly surveyed for cultural resources in 1991, as part of a cultural resource study associated with the North Etiwanda Specific Plan (McKenna 1991). Tbe search also indicated that two historic sites have been recorded within the search radius.

5.1 - Known Cultural Resources in the Project Vicinity

According to AIC files, ten known area-specific archaeological investigations have occurred within a one-mile radius of the Study Area (Baldwin 1978a, 1978b, 1978c, 1978d; Landis 1993; Lerch 1986, 1987; McKenna 1991; Padon et al 1989; TetraTech 2000). Five non-specific overviews of the project area have also been produced (Bean and Vane 1981; Carrico et al 1982; McIntyre 1986; Robinson and Risher 1990; Scott 1976). Eleven known historic archaeological sites lacking significance determinations are within the search radius, along with two National Register eligible historic archaeological sites and one isolated prehistoric artifact. Of these, site P#1081 1/H Locus west, site P#1081 1/H Locus east and site P#1081-19/H are located in the project area. Although older site recordation forms associated with these sites are available for review, they have not been previously evaluated for significance under CEQA.

Table 5-1: Known Cultural Resource Located Within One Mile of the Study Area

Site Number	Site Description
P1081-1/H east	Light scatter of historic artifacts and rock alignment.
P1081-1/H west	Multiple historical components associated with irrigation pipes and refuse deposits.
P1081-15/H	Three rock alignments and cluster of rock piles.
P1081-16/H	Historic trash scatter located east of structure complex known as 19H.
P1081-19/H east	Ranch complex.
P1081-19/H west	Ranch complex.
P1081-35/H	1880s weir box with later structural additions.
P36-060,255	Isolated obsidian biface.
CA-SBR-82	CPHI-82: first house utilizing hydroelectric power in California. May be considered NR-eligible if intact.
CA-SBR-3131/H	Rock wall possibly associated with 1880s Etiwanda Water Company base camp.
CA-SBR-4946/H	12 rectangular rock cairns.
CA-SBR-7661/H	3 concrete structure foundations and 18 refuse dumps. Early twentieth century.
CA-SBR-7694	Also known as PSBR-36H. Boulder 1 and Boulder 2 transmission lines. NR-eligible. Lies approximately ½ mile north of the study area.
CA-SBR-10296/H	Three historic refuse deposits and an overgrown trail.
CA-SBR-10297/H	Historic rock wall, rock pile and eucalyptus trees.

A review of the National Register Index for San Bernardino County (NRHP 2003) showed that no National Register-eligible sites are located in the study area. Review of NR-eligible sites showed that two are located within the search radius. These are noted in Table 1.

NR-eligible CA-SBR-7694 lies approximately ½ mile north of the project area. We do not believe that the development of the project will impact this site as the power lines lies well outside the direct APE. Site CA-SBR-82 is quite probably NR-eligible, but this site is also located well outside the APE and cannot be seen from the project area.

5.2 - Archival Aerial Photograph Review

One archival aerial photograph was purchased in order to review past land-use of the study area. Taken in February of 1953 (Exhibit 3-2), this shows that the Tract was bisected by an unusual change in existing flora. Magnified inspection of the lighter-colored area, along with the field survey, showed that a fire had burned the southeastern half of Section 21 several years prior to 1953. The fire was apparently halted by a firebreak that bisected the property from northeast to southwest: this firebreak can be seen in this aerial photograph.

A lengthy rock berm and ditch associated with flood control can also be noted in this exhibit. This feature was detected during the survey. The feature is considered an historic site as it is clearly more than 45 years old and, as noted in Section 6 and Section 7, should be documented using DPR523 forms. As noted in Section 7.0, this site was evaluated for significance under CEQA.

The two ranch complexes P1081-19/H (Locus A, West; Locus B, East) can be clearly observed in Exhibit 3-2, although magnified inspection of this area shows that the structures once located within were reduced to the foundations. It is uncertain just when the ranches were abandoned.

Irrigation features associated with the west and east loci of P1081-1/H can also be observed. Refuse associated with P1081-16/H is located just outside the eastern edge of the project area, but the location for this is clearly visible in a magnified area of this photograph.

SECTION 6: SURVEY AND PALEONTOLOGICAL ASSESSMENT RESULTS

6.1 - Cultural Resources

During the survey, two previously recorded sites, and one new site were observed within the study area. The two ranch complexes P1081-19/H (Locus A, West; Locus B, East) were clearly observed and extensive photographs were taken of this site. The site is unusual as it exhibits numerous well-made rock alignments in and around the complex. Two structural complexes were observed. Locals currently use Locus B as an informal paintball course.

Irrigation features and rock alignments associated with the west loci of P1081-1/H were also observed and photographed. This appears to be relatively intact due to its isolation. No remnants of the east loci of P1081-1/H were found. A rock berm associated with flood control construction, built prior to 1953, was detected on the archival photograph and then located during the survey. The significance of both sites was determined during the 2003 phase of this study (see Section 7.0), and DPR523 form sets for all three sites are found in Appendix D.

6.2 - Assessment of Paleontological Resources

Eric Scott, Ph. D. of the Division of Geological Sciences of the San Bernardino County Museum completed a literature review and records search for Tract 16072 on September 17, 2002. According to Dr. Scott, the project area lies on surface exposures of Pleistocene older fan deposits. These deposits have high potential to contain fossil resources throughout their extent. No fossil resources are known for the project area and the nearest resources found in similar deposits are located approximately eight miles to the south. His report has been attached to this document (see Appendix C). Dr. Scott recommended that monitoring of the project area should occur during earthmoving. Specific mitigation recommendations can be found in Section 8.2.

SECTION 7: CULTURAL SIGNIFICANCE ASSESSMENTS

7.1 - Historical Significance Evaluation of Ranch Complex P#1081-19/H (Locus B, East)

On February 23, 1991, Jeanette McKenna recorded this site on DPR422A forms during work on the Etiwanda North Specific Plan. The AIC labeled the site P#1081-19/H. The west ranch complex was not discussed at that time. For the purposes of analysis, we are treating the two complexes separately. Locus A consists of the eastern portion with cobble foundations representing long-abandoned structures, while Locus B consists of all historical materials found in the northwest quarter of the study area. The divisions between these two Loci are clearly visible on the archival photographs reproduced as exhibits in this document. Maps associated with this site can be found in Appendix D.

Locus B exhibits the remains of two cobble wall and mortar structures, along with other features surrounding the foundations. One foundation is near the center of the property (see DPR forms, Feature 1) with low irregular wall remnants; its ground plan or use could not be determined. The second foundation (Feature 2) was most likely the main building on the property. It is located at the north end of Locus B, and has an irregular floor plan. This building remnant is relatively intact and retains some definition. Although the foundation outline remains, the walls of the eastern portion of the building, however, no longer exist. Photograph A-3 taken circa 1964-67 shows this section of the building still intact, illustrating the presence of a chimney. The primary entrance for this structure appears to be on the north elevation, facing the dirt access road; there are remnants of steps and a walkway leading up to it. Another door was found at the east elevation. There are various outlines for windows throughout the walls. A west-facing wall near the access road still has what appears to be a concrete sill. There is no longer any evidence of the roof or flooring material.

There are remnants of a concrete trough near the northwest end of the property (Feature 3). A nearly square shaped cobble wall surrounds the property (Feature 4). At the northeast corner of this wall, there is another small cobble wall enclosure (Feature 5) within the larger one; there is extensive chaparral growth within this smaller area. Both walls are low and the stones are now irregularly laid with no visible mortar. The property shares the same dirt access road running east and west as Locus A. There are eucalyptus and pepper trees planted throughout. Currently, the complex is being used informally as a paint ball course, resulting in extensive paint stains and some graffiti on the remains of the main building and nearby wall enclosure surfaces. In addition, there are various padded boards and other paint ball related gear and debris scattered throughout. This activity appears to have also resulted in there being less vegetation overgrowth within the complex as compared to the surrounding areas, including Locus A.

Based on information from William Robert Perdew, a life long resident of Etiwanda, Locus B was built by his ancestor Rufus Putnum Perdew. Popularly known as "Put," he was born on August 14,

1854, in Sioux City, Iowa, and came to Etiwanda with his family when he was six years old. His first wife was Sarah Elizabeth Day, daughter of George Day (who had played a role in securing water rights from the canyons north of Etiwanda, including Day Canyon, which is named after him). After Sarah Elizabeth died in 1889, "Put" married her sister Georgianna that same year, and they eventually had twelve children. "Put" died in 1939 and Georgianna in 1932. According to William Robert, "Put" and his family lived at this complex. They raised cattle and had an apiary. They also grew almonds, and had peach and apricot trees.

According to Larry Perdew (William Robert's son), "Put's" brother Joseph Edward Perdew and their uncle Greenberry Rufus Ferdinand Benton Perdew, lived north of this ranch complex, closer to the foothills. This information is verified in the 1919-1920 Etiwanda City Directory, which indicates "J. E. Perdew," rancher, living at the north end of Etiwanda Avenue, and "R. F. Perdew" (possibly the uncle), rancher, living at the north end of East Avenue.

By 1904, San Bernardino County Archives tax assessment records show "R. P. Perdew" as the owner of this property; no adequate documentation of ownership from the years before were found. However, based on visual observations and taking into account that "Put" married his second wife in 1889 and started a family, Locus B dates from the late nineteenth century or possibly the early twentieth century. Although "Put" was still alive, ownership of the property changed hands to his wife Georgianna in 1906. By 1917, however, the property came into the hands of W. F. Courtright, et al. In 1919, A. H. Laurence became the owner until the property transferred to Lila M. Lawrence, who owned it from 1922 to 1942. Rena Walker Main owned it from 1945 to at least 1974. It is likely that Locus B was abandoned by at least the late 1930s; 74 year old lifelong Etiwanda resident William Robert Perdew always remembers it being unused and in disrepair. A 1961 fire, which also affected Locus A, further destroyed this property.

The existence of residences exhibiting cobble foundations is common to older Etiwanda and Alta Loma structures. A few well-preserved examples of such structures can be found along Foothill Boulevard and East 19th Street in both Rancho Cucamonga and Upland. In addition, it was also very common for the early orchardists to create unreinforced walls of cobblestones that bordered parcel boundaries in the orchards of Alta Loma. Numerous examples of this practice can be found in parcels near Wilson and Hermosa Streets, and Hermosa and Banyan Streets in Rancho Cucamonga. Some of these walls were 12 feet high, and a few such walls remain to this day.

The purpose of this practice appears to be threefold: 1) the walls identified the exact boundaries of parcels created by surveyors when the Model Colonies were first subdivided in the late 1800s, 2) the stones would support growth of *Eucalyptus* windbreaks, and 3) the unreinforced nature of the walls allowed the addition of stones to the walls tops as they were brought up by the plow over time.

Application of California Register Criteria

When evaluated within its historic context, a property must be shown to be significant for one or more of the four Criteria for Evaluation: A, B, C, or D. The Criteria describe how properties are significant for their association with important events or persons, for their importance in design or construction, or for their information potential. In addition, a property not only must be shown to be significant under the California Register of Historical Resources criteria, but it also must have integrity. The seven aspects of integrity include: location, design, setting, materials, workmanship, feeling and association.

Criterion A: Event

To be considered for listing under Criterion A, a property must be associated with one or more events important in the defined historic context. The event or trends must clearly be important within the associated context. Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A: the property's specific association must be considered important as well.

Locus B does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at the local, state or national level.

Criterion B: Person

Criterion B applies to properties associated with individuals whose specific contributions to history can be identified and documented. Persons "significant in our past" refers to individuals whose activities are demonstrably important within a local, state, or national historic context. The criterion is generally restricted to those properties that illustrate, rather than commemorate, a person's important achievements. The persons associated with the property must be individually significant within a historic context. Significant individuals must be directly associated with the nominated property. Properties eligible under Criterion B are usually those associated with a person's productive life, reflecting the time period when he or she achieved significance. Speculative associations are not acceptable. Documentation must make clear how the nominated property represents an individual's significant contributions. A property must retain integrity from the period of its significant historic associations. Architects are often represented by their works, which are eligible under Criterion C. Their homes, however, can be eligible for consideration under Criterion B, if these properties were personally associated with the individual.

Locus B does not qualify under California Register Criterion B: Person, as historical research failed to identify any of the past owners or occupants of the house as historically significant at the state or national level. The resource may, however, have some local significance for its direct association with Rufus Putnum "Put" Perdew, a locally known resident of Etiwanda.

Criterion C: Design/Construction

Properties may be eligible under Criterion C if they embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction. Properties which embody the distinctive characteristics of a type, period, or method of construction refer to the way in which a property was conceived, designed, or fabricated by a people or culture in past periods of history. Distinctive characteristics are the physical features or traits that commonly recur in individual types, periods, or methods of construction. To be eligible, a property must clearly contain enough of those characteristics to be considered a true representative of a particular type, period, or method of construction.

A master is a figure of generally recognized greatness in a field, a known craftsman of consummate skill, or an anonymous craftsman whose work is distinguishable from others by its characteristic style and quality. The property must express a particular phase in the development of the master's career, an aspect of his or her work, or a particular theme in his or her craft.

Embodying the distinctive characteristics of a type, period, or method of construction.
Locus B does not qualify under California Register Criterion C: Design/Construction at the state or national level as a property that embodies the distinctive characteristics of a type, period, or method of construction.

Representing the work of a master or important, creative individual.
Locus B does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as representative of the work of a master or creative individual.

Possessing high artistic values.
Locus B does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as a structure possessing high artistic values.

Criterion D: Information Potential

Properties may be eligible under Criterion D if they have yielded, or may be likely to yield, information important in prehistory or history.

It is possible that subsurface study of Locus B may lead to further information, but not likely with regard to the historical and architectural significance of the property. The history of this ranch complex has not been previously investigated. Unfortunately, most of the important data associated with historical sites in California is associated with characteristics of the superstructure. Buried historical materials, except under unusual circumstances (such as

human burials or privies), typically do not yield substantial amounts of historical information. In this case, MBA does not think that excavation would yield substantial amounts of historical information that might change the significance rating of the complex. However, if human remains or privies were uncovered during grading, such deposits would constitute features that, after analysis, might be of importance to the understanding of the historic nature of early Rancho Cucamonga.

Integrity

Location. *Location is the place where the historic property was constructed or the place where the historic event occurred.*

The location of Locus B has remained the same since its construction. It, therefore, retains its location element for integrity purposes.

Design. *Design is the combination of elements that create the form, plan, space, structure, and style of a property.*

Locus B is currently a historic archaeological ruin. The design elements are no longer clearly distinctive.

Setting. *Setting is the physical environment of a historic property.*

The subject ranch complex Locus B possesses a high degree of original setting.

Materials. *Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.*

Locus B was constructed of typical materials using a common pattern for its time and location.

Workmanship. *Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.*

Locus B is currently a historic archaeological ruin. The workmanship, however, is reflective of early twentieth century vernacular architectural styles in southern California that used locally available building materials such as cobblestone.

Feeling. *Feeling is a property's expression of the aesthetic or historic sense of a particular period of time.*

Locus B is currently a historic archaeological ruin, but has enough structural elements to retain the aesthetic or historic sense of a particular period.

Association. *Association is the direct link between an important historic event or person and a historic property.*

Locus B is not linked directly with any event or person significant in California history at the state or national level. The resource may, however, be significant for local history for its association with Rufus Putnum "Put" Perdew, a locally known resident of Etiwanda.

7.2 - Historical Significance Evaluation of Ranch Complex P#1081-19/H (Locus A, West)

This ranch complex (Locus A, West) consists of structures and features that appear to be of later construction than those within the other ranch complex (Locus B, East). At the northernmost side of Locus A is an aging eucalyptus wind break with a low cobble wall that parallels it just to the north (see DPR forms, Feature 1). Both are about 240 meters long and run east to west. Running perpendicular to the south of the windbreak is an irregular row of eucalyptus trees about 110 meters long (Feature 2). At the south end of the property is another cobble wall, about 140 meters long, running east to west (Feature 3). There is a dirt access road running east to west through this property; Locus B shares this road.

There are also remnants of two wall structures, one building, and a cobblestone and concrete trough at this ranch complex (Locus A, West). The wall structures are of cobble wall construction with mortar, and are located at the west end of the complex. Of the two, the one to the north of the dirt road is approximately 45 meters long. (Feature 4). The other to the south of the dirt road (Feature 5), has a symmetrical rectangular plan with an extension to the north. The areas within the wall remnants for both are filled with chaparral growth. The building is of cobblestone construction with cement mortar (Feature 6) and supported by rebar; it has a concrete floor that has cracks, but is generally intact; although basically of similar construction as Locus B, the use of rebar and concrete floor reflects a higher level of structural sophistication. It is located to the northeast of the two wall structures. This building has an irregular floor plan, and appears to have had three rooms. Although some lower portions of the walls still stand, many do not, especially toward the west end of the structure; there are not enough remains to help determine fenestration or door openings. The west wall does, however, have the remnants of a chimney, with a broken clay flue inside. Scattered throughout Locus A are historic midden concentrations exhibiting concrete rubble, ceramic pipe fragments, wood, bricks, metal and glass fragments.

An exact construction date could not be determined at this time, although the complex does exist in a 1938 aerial photograph (Exhibit 7-1). This photograph suggests that Locus A is younger than Locus B based on the size of the eucalyptus in each locus. Based on visual inspection, Locus A was most likely constructed during the first quarter of the twentieth century, some time after Locus B was built. It is possible that this was also constructed by a member of the Perdew family, since the property was

also under their ownership until 1917 (note: until 1945, the ownership record for this complex is the same as for the one to the east). By 1917, however, the property came into the hands of W. F. Courtright, et al. In 1919, A. H. Laurence became the owner until the property transferred to Lila M. Lawrence, who owned it from 1922 to 1942. From 1945 to 1953, C. D. and Emma M. Zuppan were the owners. From 1961 to at least 1974, Claudia L. Darington owned this ranch complex.

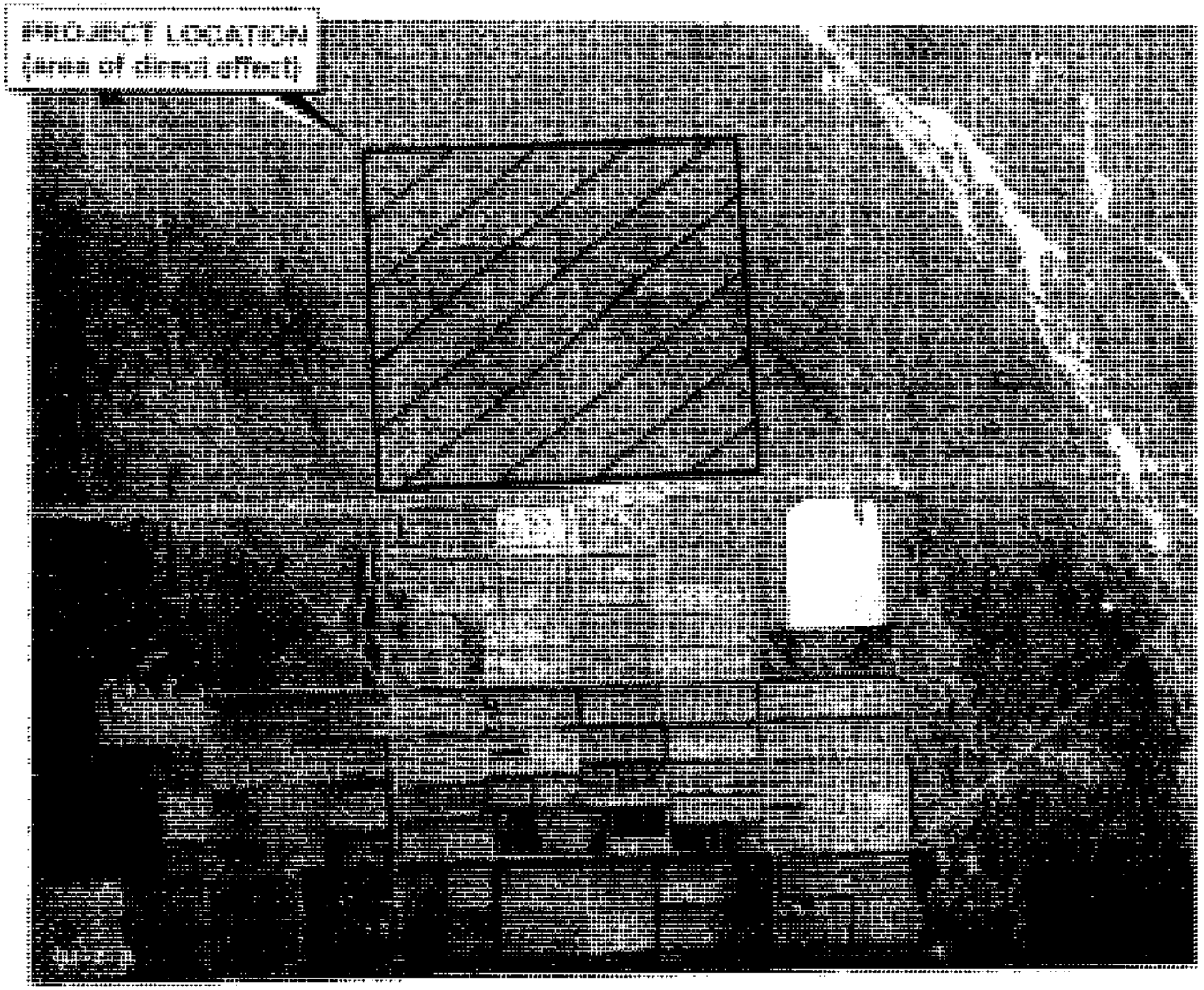
Due to the lack of public records, additional historical information could not be obtained. However, according to Larry Perdew, Locus A was abandoned for a period of time until 1958 when Lucky and Gerry Humphrey repaired and moved into the complex with their family; they lived in what is today the building ruin with the concrete floor. According to the County Archives, Claudia Darington was the owner at that time. They had some horses, but did not participate in any agricultural activities. In 1961, however, a fire destroyed their home, along with the abandoned remnants of Locus B. The complex has since remained unused.

Application of California Register Criteria

When evaluated within its historic context, a property must be shown to be significant for one or more of the four Criteria for Evaluation: A, B, C, or D. The Criteria describe how properties are significant for their association with important events or persons, for their importance in design or construction, or for their information potential. In addition, a property not only must be shown to be significant under the California Register of Historical Resources criteria, but it also must have integrity. The seven aspects of integrity include: location, design, setting, materials, workmanship, feeling and association.

> **Criterion A: Event**
> *To be considered for listing under Criterion A, a property must be associated with one or more events important in the defined historic context. The event or trends must clearly be important within the associated context. Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A: the property's specific association must be considered important as well.*

Locus A does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at either the local, state or national level.



Source: County of San Bernardino, Department of Public Works, Flood Control Planning Division, Aerial Photos, Valleywide, 1938.

NORTH

800 400 0 800

SCALE IN FEET

Michael Brandman Associates

00180027 • 06/2003

Exhibit 7-1

1938 Aerial Photograph

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Criterion B: Person

Criterion B applies to properties associated with individuals whose specific contributions to history can be identified and documented. Persons "significant in our past" refers to individuals whose activities are demonstrably important within a local, state, or national historic context. The criterion is generally restricted to those properties that illustrate, (rather than commemorate,) a person's important achievements. The persons associated with the property must be individually significant within a historic context. Significant individuals must be directly associated with the nominated property. Properties eligible under Criterion B are usually those associated with a person's productive life, reflecting the time period when he or she achieved significance. Speculative associations are not acceptable. Documentation must make clear how the nominated property represents an individual's significant contributions. A property must retain integrity from the period of its significant historic associations. Architects are often represented by their works, which are eligible under Criterion C. Their homes, however, can be eligible for consideration under Criterion B, if these properties were personally associated with the individual.

Locus A does not qualify under California Register Criterion B: Person, as historical research failed to identify any of the past owners or occupants of the house as historically significant at the state or national level. It is possible that the resource has some local significance through a direct association with the Perdews, a locally known family, but this has not been established.

Criterion C: Design/Construction

Properties may be eligible under Criterion C if they embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction. Properties which embody the distinctive characteristics of a type, period, or method of construction refer to the way in which a property was conceived, designed, or fabricated by a people or culture in past periods of history. Distinctive characteristics are the physical features or traits that commonly recur in individual types, periods, or methods of construction. To be eligible, a property must clearly contain enough of those characteristics to be considered a true representative of a particular type, period, or method of construction.

A master is a figure of generally recognized greatness in a field, a known craftsman of consummate skill, or an anonymous craftsman whose work is distinguishable from others by its characteristic style and quality. The property must express a particular

phase in the development of the master's career, an aspect of his or her work, or a particular theme in his or her craft.

Embodying the distinctive characteristics of a type, period, or method of construction. The subject resource does not qualify under California Register Criterion C: Design/Construction at the state or national level as a property that embodies the distinctive characteristics of a type, period, or method of construction.

Representing the work of a master or important, creative individual. The subject resource does not qualify under Califoruia Register Criterion C: Design/Construction at the state, national, or local level as representative of the work of a master or creative individual.

Possessing High Artistic Values. Locus A does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as a structure possessing high artistic values.

Criterion D: Information Potential

Properties may be eligible under Criterion D if they have yielded, or may be likely to yield, information important in prehistory or history.

Subsurface study of the resource may lead to further information, but likely not with regard to the historical and architectural significance of the property. The history of Locus A has not been investigated previously. Unfortunately, most of the important data associated with historical sites in California is associated with characteristics of the superstructure. Buried historical materials, except under unusual circumstances (such as human burials or privies), typically does not commonly yield substantial amounts of historical information. In this case, we do not feel that excavation would yield substantial amounts of historical information that might change the significance rating of the complex. However, if human remains or privies were uncovered during grading, we feel that such deposits would constitute features that, after analysis, might be of importance to the understanding of the historic nature of early Rancho Cucamonga.

Integrity

Location. *Location is the place where the historic property was constructed or the place where the historic event occurred.*

The location of the subject resource has remained the same since its construction. It, therefore, retains its location element for integrity purposes.

Design. *Design is the combination of elements that create the form, plan, space,*

structure, and style of a property.

The subject is currently a historic archaeological ruin. The design elements are no longer clearly distinctive.

Setting. *Setting is the physical environment of a historic property.*

The subject ranch Locus A possesses a high degree of original setting.

Materials. *Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.*

Locus A was constructed of typical materials and a common pattern for its time and location.

Workmanship. *Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.*

The subject is currently a historic archaeological ruin. The workmanship is, however, reflective of early twentieth century veruacular architectural styles in southern California that used locally available building materials such as cobblestone.

Feeling. *Feeling is a property's expression of the aesthetic or historic sense of a particular period of time.*

The subject is currently a historic archaeological ruin, but has enough structural elements to retain the aesthetic or historic sense of a particular period.

Association. *Association is the direct link between an important historic event or person and a historic property.*

The subject resource is not linked directly with any event or person significant in California history at the state or national level. Its local significance as linked with the Perdew family has not been established.

7.3 - Historical Significance Evaluation of Irrigation Complex P#1081-1/H

On February 23 1991, Jeanette McKenna recorded this site on DPR422A forms during work on the Etiwanda North Specific Plan. The AIC labeled the site P#1081-1/H (Locus West) and P#1081-1/H (Locus East). The eastern portions of the complex could not be observed in the field, suggesting that this portion of the site has been graded over or lost to pot hunting. Maps associated with this site can be found in Appendix D.

The site consists of remnants of a disused water irrigation system near the dirt portion of Etiwanda Avenue. The site is about 180 meters long. At the northwest end is a subsurface concrete structure (see DPR forms, Feature 1), surrounded by ceramic pipe fragments and concrete structural remains. There are also foundation remains of a nearby concrete standpipe and trash scatter. A rock berm defines the line of the system as it runs southeast (Feature 2). There are currently ceramic pipe and concrete fragments scattering the areas surrounding the berm. About 90 meters south from the concrete substructure is a concrete circular water diversion system with a subterranean ceramic pipe (Feature 3). There is a metal grate embedded within a concrete ring covering the access to the pipe. In addition, there are three diversion ceramic pipes radiating from the system. The one furthest west is currently capped. Just south of this structure is a concrete rectangular subterranean reservoir, with cobble wall construction, and clad on some of the exterior surfaces with concrete. Southwest of these two structures is a continuation of the rock berm, which runs for about 50 meters to a concrete watercap and standpipe (Feature 4). This is about 10 meters away from Wilson Avenue, which is a graded dirt road.

This irrigation system was under the control of the Etiwanda Water Company (founded by George Chaffey Jr. and his brother William Benjamin Chaffey in 1882), and later was owned by the Cucamonga Water Control District. A construction date, however, could not be established, although it appears to be from the early quarter of the twentieth century. The irrigation system is visible in an 1938 aerial photograph (Exhibit 7-1). A pipeline leading up to a reservoir distribution point for the Etiwanda Water Company is illustrated going across Section 21 in a sketch by Robert L. Hickcox in "A History of Etiwanda." This was constructed in 1927, but it is not certain whether this is the irrigation system that exists today. Larry Perdew, an Etiwanda resident, recollects accompanying his grandfather, Robert Roland Perdew who was a "zanjero," for the Etiwanda Water Company, to regulate this irrigation system in the early 1960s. Larry Perdew also indicated that the distribution box for this system was commonly called the "Rader box," possibly in reference to F. E. Rader, who owned the land on which this system exists, from 1910 to 1919.

Starting from 1904 until 1910, A. R. Land owned this property. In 1910, it came into the hands of the above-mentioned F. E. Rader, who possessed it until 1919. B. B. and Edith B. Willson owned it from 1919 to 1923. Zilpha L. Sawyer became the owner from 1924 until 1945. Rena Walker Main became a long-time owner in 1945, still possessing the land in 1974.

Application of California Register Criteria

When evaluated within its historic context, a property must be shown to be significant for one or more of the four Criteria for Evaluation– : A, B, C, or D. The Criteria describe how properties are significant for their association with important events or persons, for their importance in design or construction, or for their information potential. In addition, a property must not only must be shown to be significant under the California Register of Historical Resources criteria, but it also must have

integrity. The seven aspects of integrity include: location, design, setting, materials, workmanship, feeling and association.

Criterion A: Event

To be considered for listing under Criterion A, a property must be associated with one or more events important in the defined historic context. The event or trends must clearly be important within the associated context. Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A: the property's specific association must be considered important as well.

The resource does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at either the local, state or national level.

Criterion B: Person

Criterion B applies to properties associated with individuals whose specific contributions to history can be identified and documented. Persons "significant in our past" refers to individuals whose activities are demonstrably important within a local, state, or national historic context. The criterion is generally restricted to those properties that illustrate, rather than commemorate, a person's important achievements. The persons associated with the property must be individually significant within a historic context. Significant individuals must be directly associated with the nominated property. Properties eligible under Criterion B are usually those associated with a person's productive life, reflecting the time period when he or she achieved significance. Speculative associations are not acceptable. Documentation must make clear how the nominated property represents an individual's significant contributions. A property must retain integrity from the period of its significant historic associations. Architects are often represented by their works, which are eligible under Criterion C. Their homes, however, can be eligible for consideration under Criterion B, if these properties were personally associated with the individual.

The subject resource does not qualify under California Register Criterion B: Person, because historical research failed to identify any significant person associated with this irrigation system at the local, state or national level.

Criterion C: Design/Construction

Properties may be eligible under Criterion C if they embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction. Properties which embody the distinctive characteristics of a type, period, or method of construction refer to the way in which a property was conceived, designed, or

fabricated by a people or culture in past periods of history. Distinctive characteristics are the physical features or traits that commonly recur in individual types, periods, or methods of construction. To be eligible, a property must clearly contain enough of those characteristics to be considered a true representative of a particular type, period, or method of construction.

A master is a figure of generally recognized greatness in a field, a known craftsman of consummate skill, or an anonymous craftsman whose work is distinguishable from others by its characteristic style and quality. The property must express a particular phase in the development of the master's career, an aspect of his or her work, or a particular theme in his or her craft.

Embodying the distinctive characteristics of a type, period, or method of construction: The subject resource does not qualify under California Register Criterion C: Design/Construction at the local, state or national level as a property which embodies the distinctive characteristics of a type, period, or method of construction.

Representing the work of a master or important, creative individual. The subject resource does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as representative of the work of a master or creative individual.

Possessing high artistic values. The subject resource does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as a structure possessing high artistic values.

Criterion D: Information Potential

Properties may be eligible under Criterion D if they have yielded, or may be likely to yield, information important in prehistory or history.

Subsequent study of the subject resource is not likely to lead to further information regarding the historical and architectural significance of the property.

Integrity

Location. *Location is the place where the historic property was constructed or the place where the historic event occurred.*

The location of the subject resource has remained the same since its construction. It, therefore, retains its location element for integrity purposes.

Design. *Design is the combination of elements that create the form, plan, space, structure, and style of a property.*

It appears that the irrigation system's original design elements remain intact for integrity purposes.

Setting. *Setting is the physical environment of a historic property.*

The subject irrigation system possesses a high degree of original setting.

Materials. *Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.*

This irrigation system was constructed of materials typical of its likely construction period of the early quarter of the twentieth century.

Workmanship. *Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.*

The workmanship is reflective of irrigation system construction during the likely time at the early quarter of the twentieth century.

Feeling. *Feeling is a property's expression of the aesthetic or historic sense of a particular period of time.*

Although in ruinous condition, most of the structural elements appear intact and have not been compromised. It retains its feeling element for integrity purposes.

Association. *Association is the direct link between an important historic event or person and a historic property.*

The subject resource is not linked directly with any event or person significant in California history at the local, state or national level.

7.4 - Historical Significance Evaluation of Berm Temp #1

This man made flood control berm was the only new historic site detected during the survey. It is approximately 18 meters wide, 520 meters long and 2 meters high. It may have been initially used as a firebreak and later for control of water that runs through the intermittent stream channel that crosses the project area from northwest to southeast. Two circular concrete bench markers were detected during the survey. They have inscribed metal plates indicating that the structure was built in 1949 by the San Bernardino County Flood Control District ("S.B.C., F.C.D., 1949"). There is one marker each with pole on either side of the berm and water way located about 245 meters north of Wilson Avenue. Plans at the San Bernardino County, Department of Public Works, Flood Control District

indicate that this berm was part of an East Etiwanda and San Sevaine project from January 1949. In tax assessor records at the San Bernardino County Archives, there is a record of an easement made for flood control in 1948 by the owner at the time, Rena Walker Main.

Ownership for this property is the same as that of the irrigation system. Starting from 1904, A. R. Land owned this property until 1910. At that time, it came into the hands of the F. E. Rader, who possessed it until 1919. B. B. and Edith B. Willson owned it from 1919 to 1923. Zilpha L. Sawyer became the owner from 1924 until 1945. The abovementioned Rena Walker Main became a long time owner in 1945, still possessing the land in 1974.

Application of California Register Criteria

When evaluated within its historic context, a property must be shown to be significant for one or more of the four Criteria for Evaluation: A, B, C, or D. The Criteria describe how properties are significant for their association with important events or persons, for their importance in design or construction, or for their information potential. In addition, a property not only must be shown to be significant under the California Register of Historical Resources criteria, but it also must have integrity. The seven aspects of integrity include: location, design, setting, materials, workmanship, feeling and association.

Criterion A: Event

To be considered for listing under Criterion A, a property must be associated with one or more events important in the defined historic context. The event or trends must clearly be important within the associated context. Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A: the property's specific association must be considered important as well.

The resource does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at either the local, state or national level.

Criterion B: Person

Criterion B applies to properties associated with individuals whose specific contributions to history can be identified and documented. Persons "significant in our past" refers to individuals whose activities are demonstrably important within a local, state, or national historic context. The criterion is generally restricted to those properties that illustrate, rather than commemorate, a person's important achievements. The persons associated with the property must be individually significant within a historic context. Significant individuals must be directly associated with the nominated property. Properties eligible under Criterion B are usually those associated with a person's productive life, reflecting the time period when he or she achieved significance. Speculative associations are not acceptable. Documentation must make clear how the nominated property represents an

individual's significant contributions. A property must retain integrity from the period of its significant historic associations. Architects are often represented by their works, which are eligible under Criterion C. Their homes, however, can be eligible for consideration under Criterion B, if these properties were personally associated with the individual.

The subject resource does not qualify under California Register Criterion B: Person, as historical research failed to identify any significant person associated with this berm at the local, state or national level.

Criterion C: Design/Construction

Properties may be eligible under Criterion C if they embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction. Properties which embody the distinctive characteristics of a type, period, or method of construction refer to the way in which a property was conceived, designed, or fabricated by a people or culture in past periods of history. Distinctive characteristics are the physical features or traits that commonly recur in individual types, periods, or methods of construction. To be eligible, a property must clearly contain enough of those characteristics to be considered a true representative of a particular type, period, or method of construction.

A master is a figure of generally recognized greatness in a field, a known craftsman of consummate skill, or an anonymous craftsman whose work is distinguishable from others by its characteristic style and quality. The property must express a particular phase in the development of the master's career, an aspect of his or her work, or a particular theme in his or her craft.

Embodying the distinctive characteristics of a type, period, or method of construction. The subject resource does not qualify under California Register Criterion C: Design/Construction at the local, state or national level as a property which embodies the distinctive characteristics of a type, period, or method of construction.

Representing the work of a master or important, creative individual. The subject resource does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as representative of the work of a master or creative individual.

Possessing high artistic values. The subject resource does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as a structure possessing high artistic values.

Criterion D: Information Potential

Properties may be eligible under Criterion D if they have yielded, or may be likely to yield, information important in prehistory or history.

Subsequent study of the subject resource is not likely to lead to further information regarding the historical and architectural significance of the property.

Integrity

Location. *Location is the place where the historic property was constructed or the place where the historic event occurred.*

The location of the subject resource has remained the same since its construction. It, therefore, retains its location element for integrity purposes.

Design. *Design is the combination of elements that create the form, plan, space, structure, and style of a property.*

Although somewhat obscured with vegetation growth, the berm's original design elements remain intact for integrity purposes.

Setting. *Setting is the physical environment of a historic property.*

The subject berm possesses a high degree of original setting.

Materials. *Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.*

This was constructed of material typical of berm construction.

Workmanship. *Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.*

The workmanship is reflective of berm construction.

Feeling. *Feeling is a property's expression of the aesthetic or historic sense of a particular period of time.*

Although obscured by vegetation, the berm is intact and has not been compromised. It retains its feeling element for integrity purposes.

Association. *Association is the direct link between an important historic event or*

person and a historic property.

The subject resource is not linked directly with any event or person significant in California history at the local, state or national level.

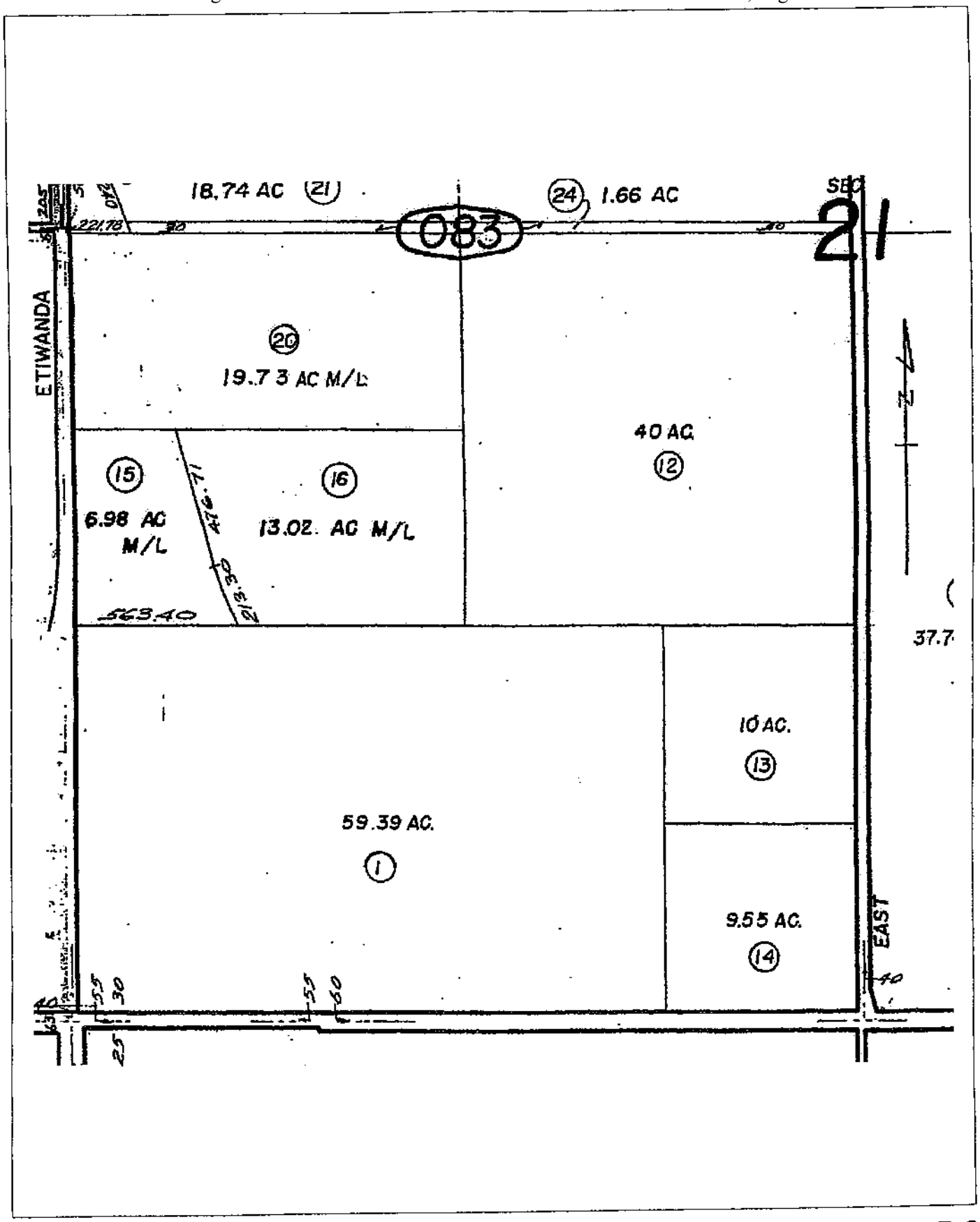
7.5 - Ownership Information

Unless otherwise noted, the following ownership information for Township 1N, Range 10W, SW ¼ of Section 21 was obtained at the San Bernardino County Archives:

Table 7-1: Ownership Information

Year	Ownership
1868	According to an assessor's field book, the Southern Pacific Railroad owned all of Section 21.
1868 and 1903	Ownership information between 1868 and 1903 could not be traced either through deeds or county tax assessor records. The following gave some possible evidence of ownership during this period: 1. *Etiwanda: The First Hundred Years 1870 to 1890* notes, "The Chaffeys also purchased 640 acres from the Southern Pacific Railroad." It is possible that this land bought by George Chaffey Jr. and his brother William Benjamin Chaffey in the early 1880s is in reference to Section 21, which is also 640 acres. In addition, the assessor's field book did not indicate any other nearby land that was owned by the Southern Pacific Railroad at that time. However, this information could not be confirmed through primary documentation. 2. In *A History of Etiwanda*, Robert L. Hickcox indicates that: *"Two men, a Mr. Woods and a Mr. Stafford, had purchased considerable acreage along East Etiwanda Creek and constructed a ditch and diverted flow from the creek to their land. In 1892 (written communication, Etiwanda Water Company) Woods and Stafford claimed a portion of the flow of the creek and did not acknowledge the Etiwanda Water Company claim for all the water. After considerable controversy, the company purchased 1,235 acres of land along the channel in Section 8, 9, 16, 21, and 27, together with all the water rights to it for $31,000. The company later sold the land without any water rights."* This appears to indicate that at least part of Section 21 was owned by Woods and/or Stafford by at least 1892, and was then sold to the Etiwanda Water Company. This information could not be confirmed through primary documentation.
1904 to 1943	During this period, the SW ¼ of Section 21 was divided into N ½ and S ½. **N ½, SW ¼** 1904-1906 R. P. Perdew 1906-1916 Georgiana Perdew 1917-1918 W. F. Courtright, et al. 1919-1922 A. H. Laurence 1922-1942 Lila M. Lawrence **S ½, SW ¼** 1904-1910 A. R. Land 1910-1919 F. E. Rader 1919-1923 B. B. and Edith B. Willson 1924-1945 Zilpha L. Sawyer
1945 to	From approximately 1945, the SW ¼ of Section 21 was further divided into six parcels. They are identified by parcel numbers in brackets below, taken from later map books (Exhibit 7-2).

Year	Ownership	
1953	**N ½ NW ¼ SW ¼ [20]**	**S ½ SW ¼ (except SE ¼ SE ¼ SW ¼) [1]**
	1946-1953 Eskil A. and Eloise O. Johnson	1945-1953 Rena Walker Main (A record made to an easement for flood control in 1948)
	NE ¼ SW ¼ [12]	**NE ¼ SE ¼ SW ¼ [13]**
	1945-1953 Rena Walker Main	1949-1953 Roderick and Maxine Stevenson
	S ½ NW ¼ SW ¼ [15, 16]	**SE ¼ SE ¼ SW ¼ [14]**
	1945-1953 C. D. and Emma M. Zuppan	1946-1953 Effie A. and Mary Theresa Stanford
1954 to 1960	There is a gap in the county tax assessor records for this section during these years.	
1960 to 1974	S ½, NW ¼, SW ¼ was further divided, so that there were seven parcels (Exhibit 7-2).	
	N ½ NW ¼ SW ¼ [03, 18/19 or 20]	**West portion of S ½ NW ¼ SW ¼ [15]**
	(Note: In 1961, this was called parcel 03. From 1962-65, it was divided into parcels 18 and 19. It was rejoined by 1966 into parcel 20.)	1961-1965 James R. and Mildred E. Johnson
		1965 Oliver D. and Dorothy L. Angell
		1966-1974 Oliver D. Angell
	1961 Beaumont Meadows Incorporation (parcel 03)	**East portion of S ½ NW ¼ SW ¼ [16]**
	1962-1964 Siddal Incorporated (parcel 18: 15.15 acres)	1961-1974 Claudia L. Darington
	1965 S. R. Investments Incorporated (parcel 18)	**S ½ SW ¼ (except SE ¼ SE ¼ SW ¼) [1]**
		1961-1974 Security Title Insurance Company
	1962-1966 Beaumont Meadows Incorporation (parcel 19: 4.55 acres)	**NE ¼ SE ¼ SW ¼ [13]**
	1966-1974 Arthur Brown (parcel 20)	1961-1974 Security Title Insurance Company
	NE ¼ SW ¼ [12]	**SE ¼ SE ¼ SW ¼ [14]**
	1961-1974 Rena Walker Main	1961-1974 Effie A. and Mary Theresa Stanford



Source: Assessor's Map Book, Book 225, Page 8, 2003.

Exhibit 7-2

Assessor's Map Book Page for SW 1/4 of Section 21

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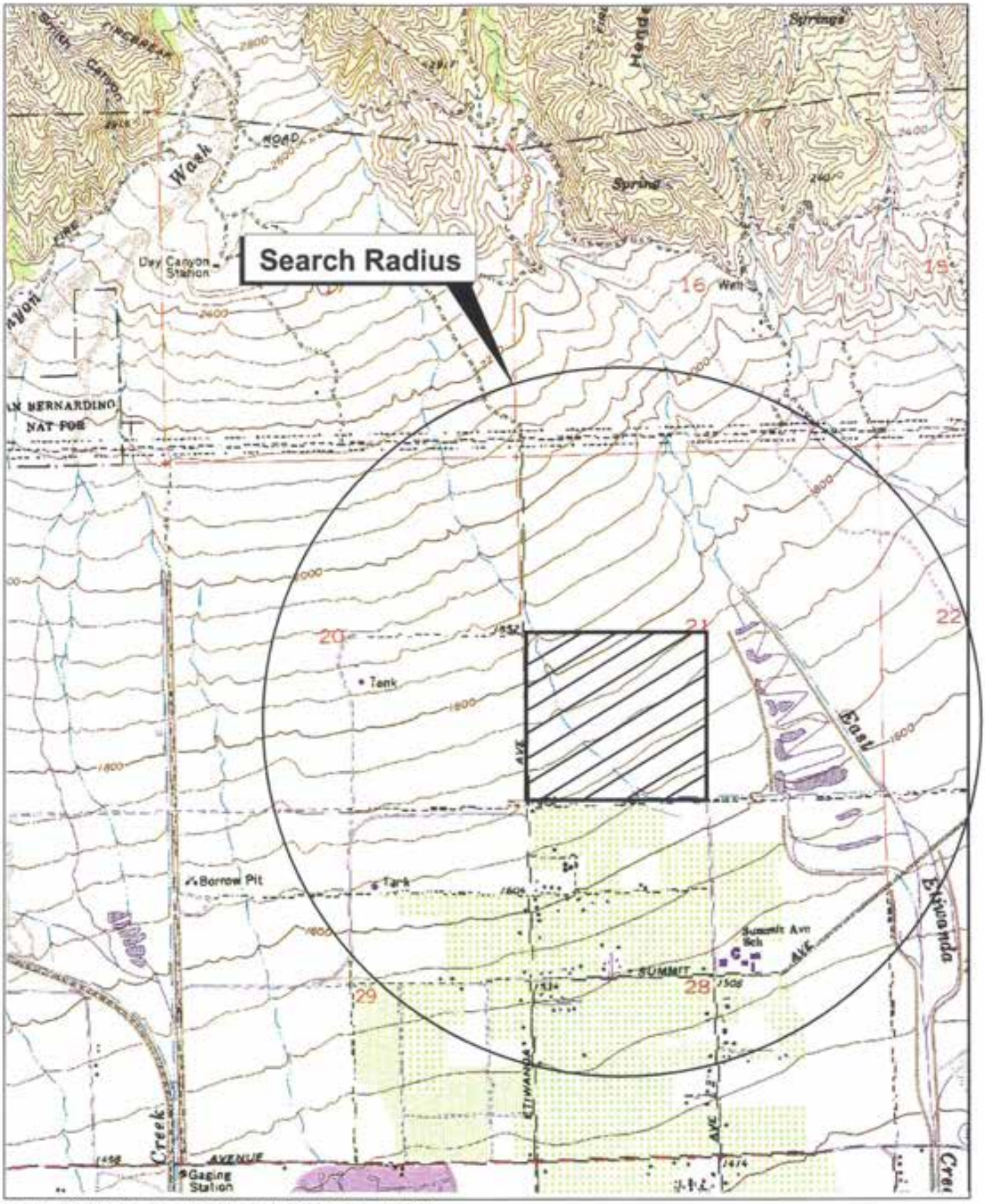
00180027 • .06/2003



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

2000 1000 0 2000

SCALE IN FEET

Exhibit **4-1**

Archaeological Record Search Radius

Michael Brandman Associates

00180027 - 10/2002

TRACT 16072 • ARCHAEOLOGICAL SURVEY

SECTION 8:
PROJECT SUMMARY AND RESOURCE ASSESSMENTS

8.1 - Cultural Resource Management Recommendations

Ranch Complex P#1081-19/H (Locus B, East)

Results of the study showed that the ranch complex does not qualify for the National Register or the California Register under criteria A, B, C and/or D. The property may, however, have some local significance for its direct association with Rufus Putnum "Put" Perdew, a locally known resident of Etiwanda.

Ranch Complex P#1081-19/H (Locus A, West)

Results of the study showed that the ranch complex does not qualify for the National Register or the California Register under criteria A, B, C and/or D. The property may have some direct association with the Perdew family, but this could not be established.

Irrigation Complex P#1081-1/H

Results of the study showed that the ranch complex does not qualify for the National Register or the California Register under criteria A, B, C and/or D.

Berm Temp #1

Results of the study showed that the ranch complex does not qualify for the National Register or the California Register under criteria A, B, C and/or D.

As shown above, the project area exhibits three distinct historic sites, with one of the sites exhibiting two loci. With appropriate mitigation, the development of the project could result in beneficial effects, including the recovery of scientifically highly important cultural materials that would not have been exposed without earthmoving. MBA recommends that an archaeological monitor should be on-site 50 percent of the time once earthmoving commences and remain until and if the Lead Archaeologist recommends that half-time monitoring be reduced or eliminated entirely.

Archeological Mitigations

AR-1 Prior to the issuance of a grading permit, the project applicant shall retain a Lead Agency-approved archaeologist to develop an archaeological mitigation plan and a discovery clause/treatment plan. Both of these plans shall be reviewed and approved by the Agency. The archaeological mitigation plan shall include monitoring 50% of the excavation activities on the project site by an Agency-approved archaeologist and/or his/her representative. The discovery clause/treatment plan shall include recovery and subsequent treatment of any archaeological or historical remains and associated data uncovered by brushing, grubbing or excavation. The treatment plan shall provide procedures for the curation of any detected cultural specimens. Any recovered cultural resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard professional archaeological practices. Examination by an archaeological specialist shall be included where necessary, dependent upon the artifacts, features, or

sites that are encountered. Specialists will identify, date and/or determine significance potential.

AR-2 Following CEQA, monitoring is not required on archaeological or historical sites once the significance of such sites has been determined. In this case, the evaluation of the sites is based upon surface characteristics only. It is possible that buried human remains or privies will be encountered during construction.

AR-3 If the archaeological monitor discovers buried cultural deposits, earthmoving shall be diverted temporarily around the deposits until the deposits have been evaluated, recorded, excavated and/or recovered, as necessary, and in accordance with the Agency-approved recovery plan. Earthmoving shall be allowed to proceed through the area after the archaeologist determines the artifacts are recovered and/or site mitigated to the extent necessary.

AR-4 If a previously unknown cultural site is encountered during monitoring and it is determined by the archaeologist that a significance determination is required, the site shall be evaluated and recorded in accordance with requirements of the State Office of Historic Preservation (i.e., DPR 523 form). In this case, if the site is not determined to be significant, no measures subsequent to recording the site on appropriate forms are required. If any of the sites are determined to be significant, the Agency-approved archaeologist shall collect an adequate amount of artifacts at the specific archaeological site. The archaeologist shall determine the amount of artifacts needed to be collected.

AR-5 If human remains are encountered during excavations associated with this project, all work shall halt and the County Coroner shall be notified (Section 5097.98 of the Public Resources Code). The Coroner will determine whether the remains are of forensic interest. If the coroner, with the aid of the City-approved archaeologist, determines that the remains are prehistoric, he/she will contact the Native American Heritage Commission (NAHC). The NAHC will be responsible for designating the most likely descendant (MLD), who will be responsible for the ultimate disposition of the remains, as required by Section 7050.5 of the California Health and Safety Code. The MLD will make his/her recommendations within 24 hours of their notification by the NAHC. This recommendation may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials (Section 7050.5 of the Health and Safety Code).

AR-6 Any recovered archaeological resources should be identified, sites recorded, mapped and artifacts catalogued as required by standard archaeological practices. Examination by an archaeological specialist should be included where necessary, dependent upon the artifacts, features or sites that are encountered. Specialists will identify, date and/or determine significance potential.

AR-7 A final report of findings will be prepared by the Project Archaeologist for submission to the Proponent, the Lead Agency, and the Archaeological Information Center of the San Bernardino County Museum. The report will describe the history of the project area, summarize field and laboratory methods used, if applicable, and include any testing or special analysis information conducted to support the resultant findings.

Native American Commentary

It is assumed that once the suite of environmental reports is sent to the State environmental clearinghouse, and/or routed by the local agency, local tribal jurisdictions may comment upon these findings. For this reason, Native American comments relative to the study area were not obtained prior to issuance of this report. The Native American Heritage Commission (NAHC) was contacted in writing, but their statement has not been received as of this date. Because we have issued letter requests to Gabrielino tribal authorities in the past, and the project area lies within Gabrielino tribal interests, we mailed a notice to the standardized list of tribal members in late 2002. No responses to our letters have been received as of the date of this report.

8.2 - Paleontological Resource Management Recommendations

The project area has a high chance that significant paleontological resources will he impacted during earthmoving. With appropriate mitigation, the development of the project could result in beneficial effects, including the recovery of scientifically highly important fossil remains that would not have been exposed without earthmoving. MBA recommends that a paleontological monitor should be on-site full time once earthmoving commences until and if the Lead Paleontologist recommends that full-time monitoring be reduced or eliminated entirely.

Paleontological Mitigations

PA-1 Prior to the issuance of a grading permit, the project applicant shall retain a City-approved paleontologist. The City-approved paleontologist shall monitor all excavation activities in areas of the project underlain by previously undisturbed sediments. Earthmoving in areas of the site where previously undisturbed sediments will be buried but not disturbed will not be monitored. Monitoring shall begin once earthmoving reaches five (5) feet below the original ground surface.

PA-2 Monitoring shall be conducted on a full-time basis in areas of the project underlain by sensitive rock units associated with older alluvium being encountered by earthmoving.

PA-3 Should fossils be found within an area being cleared or graded, divert earth-disturbing activities elsewhere until the monitor has completed salvage. If construction personnel make the discovery, the grading contractor should immediately divert construction and notify the monitor of the fmd. If too few fossil remains are found after 50 percent of earthmoving has been completed, monitoring can be reduced or discontinued in those areas at the project paleontologist's direction.

PA-4 If paleontological resources are detected. Prepare, identify, and curate all recovered fossils for documentation in the summary report and transfer to an appropriate depository (i.e., San Bernardino County Museum).

PA-5 A final report of findings will be prepared by the City-approved paleontologist for submission to the City, project applicant, and the San Bernardino County Museum. All collected specimens and the final report shall be provided to the San Bernardino County Museum.

These recommended mitigation measures would be part of a program that is in compliance with Society of Vertebrate Paleontologists' standard guidelines. Implementing and adhering to these guidelines will reduce the potential adverse environmental impacts of construction on paleontologic resources to an insignificant level. The guidelines will also allow acceptance by a museum repository of a fossil collection, the result of an impact mitigation program.

SECTION 9: REFERENCES

ArchNet (CRM Archives)
1999 Section 106 Users Guide: 36 CFR 800: Part 800-Protection of Historic and Cultural Properties. Website: 8000x.htm. Downloaded December 6, 1999.

Baldwin, J.
1978a *Environmental Impact Evaluation: An Archaeological Assessment Of The Proposed Transmission Line From The Filtration Plant At Hanley Avenue And 25th Street To The Day Canyon Ranger Station.* On file, AIC, San Bernardino County Museum, Document #1060651.
1978b *Environmental Impact Evaluation: An Archaeological Assessment Of The Proposed Transmission Line Along Summit Avenue From Hanley Avenue To Etiwanda Avenue.* On file, AIC, San Bernardino County Museum, Document #1060652.
1978c *Environmental Impact Evaluation: An Archaeological Assessment Of Filtration Plant 4-C, Cucamonga Water District, San Bernardino County, California.* On file, AIC, San Bernardino County Museum, Document #1060653.
1978d *Environmental Impact Evaluation: An Archaeological Assessment Of Filtration Plant 3-C, Cucamonga Water District, San Bernardino County, California.* On file, AIC, San Bernardino County Museum, Document #1060654.

Bean, L.J. and F.C. Shipek
1978 *Luiseño.* In R.F. Heizer, (ed.), Handbook of North American Indians, Vol. 8: California: 550-563. Washington, D.C.: Smithsonian Institution.

Bean, L.J. and C.R. Smith
1978 *Gabrielino.* In R.F. Heizer, (ed.), Handbook of North American Indians, Vol. 8: California: 538-549. Washington, D.C.: Smithsonian Institution.

Bean, L.J. and S. Vane
1981 *Native American Places In The San Bernardino National Forest, San Bernardino and Riverside Counties, California.* On file, AIC, San Bernardino County Museum, Document #1061115.

Carrico, R., A. Schliz, F. Noris and R. Minnich
1982 *Cultural Resource Overview: San Bernardino National Forest, California.* On file, AIC, San Bernardino County Museum, Document #1061300.

Chartkoff J.L. and K.K. Chartkoff
1984 *The Archaeology of California.* Stanford University Press, Menlo Park.

CHRIS (Office of Historic Preservation, California State Parks)
1999 Instructions For Recording Historical Resources. Website: http://ohp.parks.ca.gov/chris/hrmanual.htm. Downloaded December 6, 1999.

Clucas, D.
1979 *Light Over The Mountain: A History Of The Rancho Cucamonga Area.* California Family House, Upland.

County of San Bernardino, Archives, county tax assessment records.

County of San Bernardino, Department of Public Works, Flood Control District.

Etiwanda Centennial Committee
1982 *Etiwanda, the First 100 Years.* [Etiwanda, CA: Etiwanda Centennial Committee].

Fagan, B.M.
1995 *Ancient North America: The Archaeology Of A Continent.* Thames and Hudson, Inc. New York.

Heizer, R.F. (ed.)
1978 *Handbook of North American Indians,* Vol. 8: California. Washington, D.C.: Smithsonian Institution.

Hickcox, Robert L.
A History of Etiwanda. Rancho Cucamonga, CA: Community Services Department.

Ingersoll, L. A.
1904 *Ingersoll's Century Annals of San Bernardino County, 1769 to 1904.* Los Angeles: L. A. Ingersoll.

Interview with Jan Sutton, President, Etiwanda Historical Society, May 31, 2003.

Interview with Larry Perdew, June 10 and 20, 2003.

Interview with William Robert Perdew, via Larry Perdew, June 20, 2003.

Keller, J.K. and D.F. McCarthy
1989 Data Recovery at the Cole Canyon Site (CA-RIV-1139), Riverside, California. *Pacific Coast Archaeological Society Quarterly,* V25, No. 1.

Kroeber, A.L.
1925 Handbook Of The Indians Of California. *Bureau of Ethnology Bulletin* No. 78. Washington D.C.

Meighan, C.W.
1954 *A Late Complex in Southern California Prehistory.* Southwestern Journal of Anthropology, 10:215-227.

Landis, D.G.
1993 *A Cultural Resources Survey For The Chino Basin Groundwater Storage Program, San Bernardino County, California.* On file, AIC, San Bernardino County Museum, Document #1062851.

Lerch, M.K.
1986 *Class III Cultural Resources Inventory: San Sevaine Creek Water Project, San Bernardino County, California.* On file, AIC, San Bernardino County Museum, Document #1061582.
1987 *Cultural Resource Field Reconnaissance: Caryn Project, West Valley Foothills Community Plan.* On file, AIC, San Bernardino County Museum, Document #1061655.

McIntyre, M.J.
1986 *Cultural Resource Overview Of The Angeles National Forest.* On file, AIC, San Bernardino County Museum, Document #1061580.

McKenna, J.
1991 *Cultural Resources Investigations Of The Etiwanda North Specific Plan EIR, City Of Etiwanda, San Bernardino County.* On file, AIC, San Bernardino County Museum, Document #1062316.

Moratto, M.J.
1984 *California Archaeology.* San Diego, Academic Press.

NPS (National Park Service)
1983 *Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines.* Washington, D.C.
1985 Guidelines for Local Surveys: A Basis for Preservation Planning. *National Register Bulletin* 24. Washington D.C.

(NRHP) National Register of Historic Places
1999 How Do I List A Property? Website: http://www.cr.nps.gov/nr/listing.htm. Downloaded December 6, 1999.

OHP (Office of Historic Preservation, California)
1995 *Instructions for Recording Historical Resources.* Office of Historic Preservation, Sacramento.

Padon, B., J. Elliott and S. Dies
1989 *North Etiwanda Specific Plan: Cultural Resource Assessment.* On file, AIC, San Bernardino County Museum, Document #1061868.

ParkNet
2001 *National Register Bulletin* 15 (rev August 1995). Washington, D.C. Accessed on-line from the National Park Service Website.

Rasmussen, C.
2001 "*Greed, Violence Haunted Wealthy Heiress*". Los Angeles Times 2/18/2001.

Robinson, J.W. and B.R. Risher
1990 San Bernardino National Forest: A Century Of Federal Stewardship. *San Bernardino County Museum Association Quarterly* 37(4):1-88. On file, AIC, San Bernardino County Museum, Document #1062261.

Rootsweb.com

Scott, M.B.
1976 *Development Of Water Facilities In The Santa Ana River Basin, California, 1810-1968.* On file, AIC, San Bernardino County Museum, Document #1060447.

Stoebe, M.G., H.S. Billings and W. Stoebe
1981 *The History Of Alta Loma, California.* B&S Publishing Company, Alta Loma.

Tetra Tech
2000 *Phase 1 Archaeological Survey of the Proposed Rancho Summit II Project, Rancho Cucamonga, California.* On file, AIC, San Bernardino County Museum, Document #1063455.

Wallace, W.J.
1955 A Suggested Chronology for Southern California Coastal Archaeology. *Southwestern Journal of Anthropology* 11(3):214-230.

Warren, C.N.
1968 Cultural Tradition and Ecological Adaptation on the Southern California Coast In *Archaic Prehistory in the Western United States*, C. Irwin-Williams, ed. Eastern New Mexico University Contributions in Anthropology vol. 1, no. 3, pp. 1-4. Portales.

SECTION 10: CERTIFICATION

10.1 - Certification

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this archaeological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: 6/25/03 **Signed:** _____

Michael Dice, M.A.

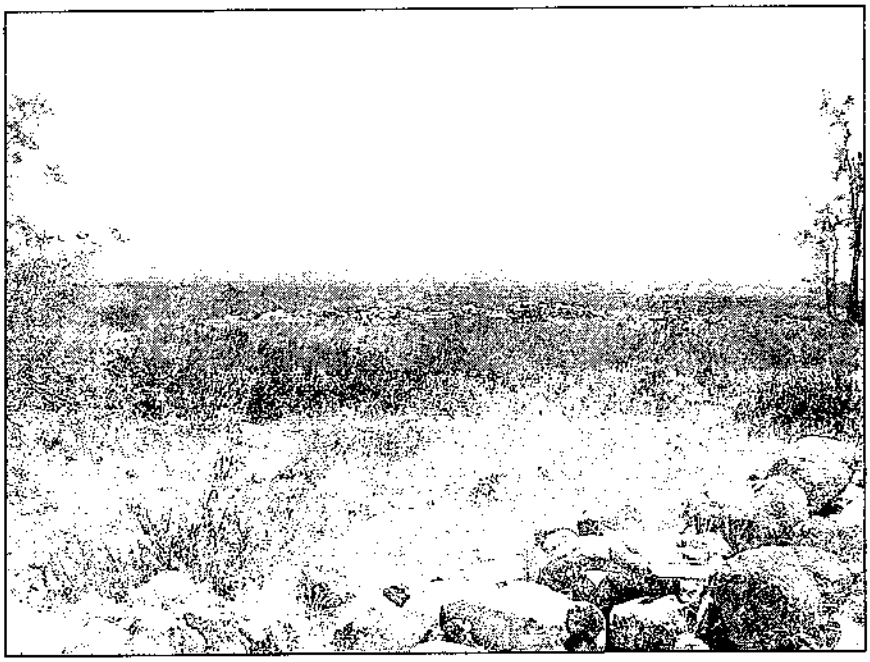
Date: 6/25/03 **Signed:** _____

Christeen Taniguchi, M.A.
Michael Brandman Associates
Irvine, CA

APPENDIX A:
PHOTOGRAPHS FROM THE STUDY AREA

Photograph A-1:View of Ranch Complex P#1081-19/H (east loci) structural foundation and cobblestone wall remnants.

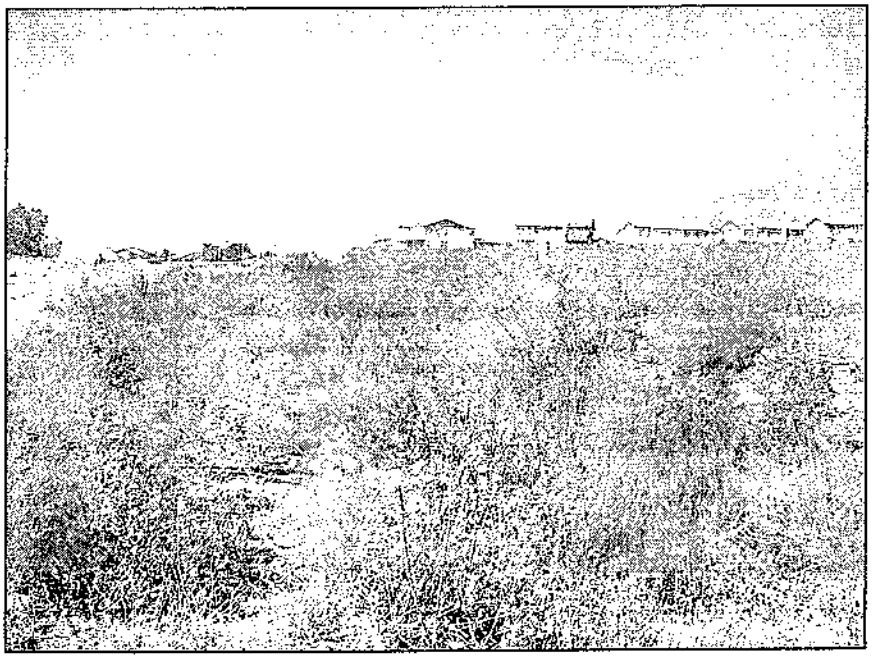
Photograph A-2: View of cobblestone walls foundations located west of Ranch Complex P#1081-19/H (Locus B, East).



Photograph A-3: Taken by Harold Orr, circa 1964-1967.

Photograph A-4: View of typical landscape found during the survey.

Photograph A-5: View of site number P#1081-1/H west locus, southern section.

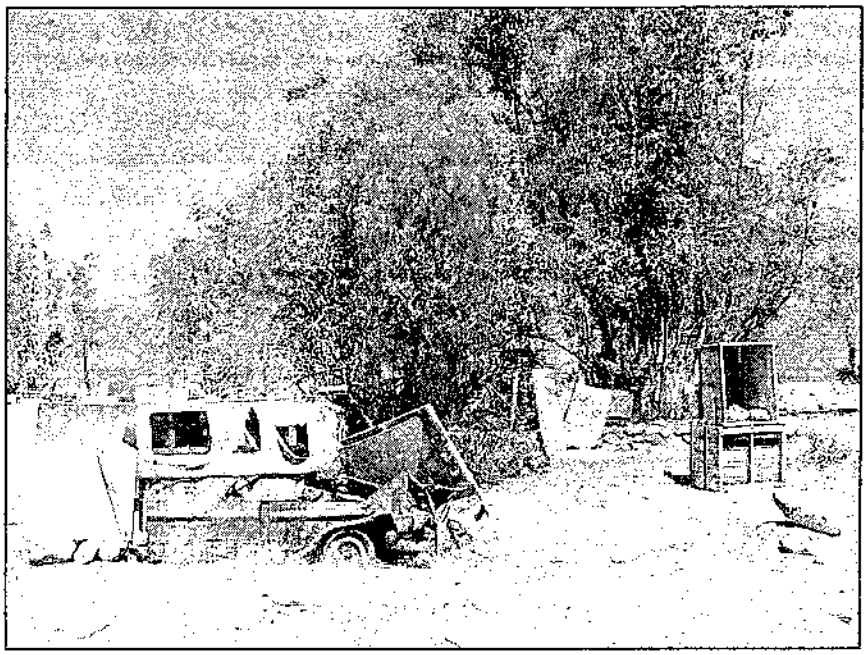


Photograph A-6: View to the north near the corner of Etiwanda and Wilson

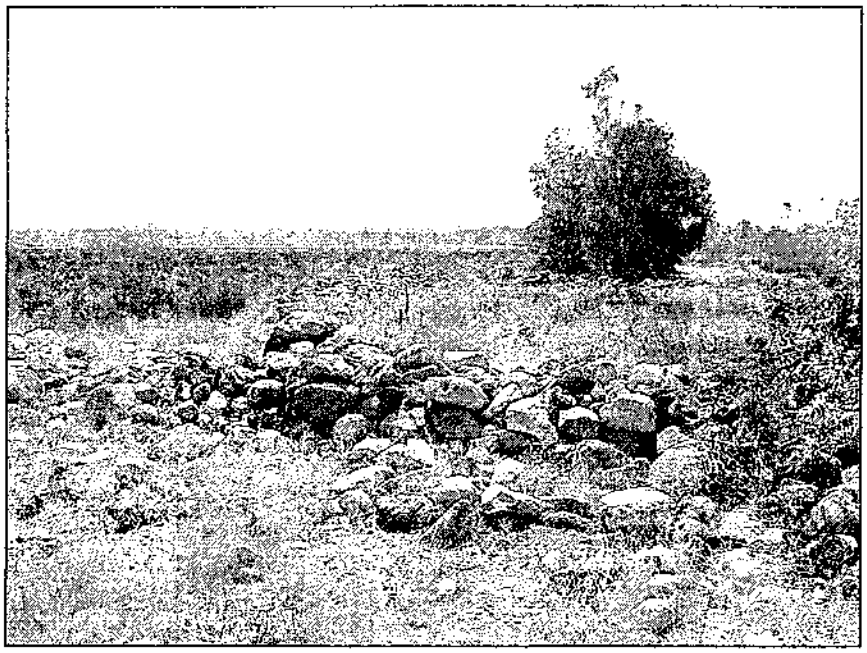
Photograph A-7: View to the east near the corner of Etiwanda and Wilson

Photograph A-8: View to the west from Locus B of P#1081-19/H toward Locus A.

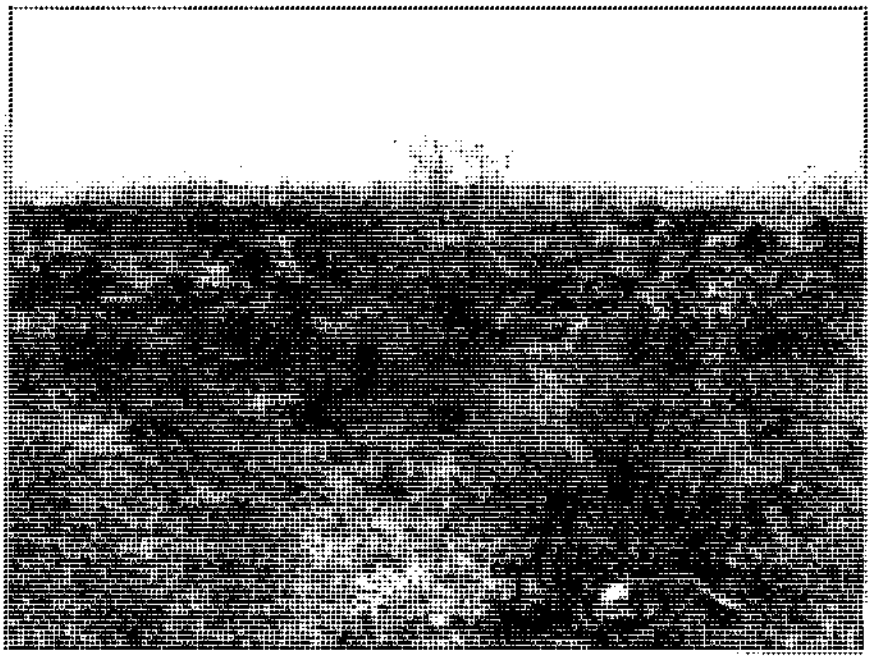
Photograph A-9: View of Locus B with modern trash deposits.



Photograph A-10: View to the south of large rock alignments in southwest corner of P#1081-19H Locus A.



Photograph A-11: View of drainage as it crosses the dirt road leading to P#1081-19/H



APPENDIX B:
PERSONNEL QUALIFICATIONS

MICHAEL H. DICE, M.A.
PROJECT SCIENTIST/SENIOR ARCHAEOLOGIST

EDUCATION

M.A.., Anthropology - Arizona State University, Tempe, Arizona
B.A., Anthropology - Washington State University, Pullman, Washington
Anthropology Track, University of Washington, Seattle, Washington
Professional Affiliations

Member, California Historical Society

Member, National Trust For Historic Preservation

REGISTERED PROFESSIONAL ARCHAEOLOGIST (RPA 2000)

Professional History
Michael Brandman Associates, Tustin, California - Senior Archaeologist
L&L Environmental, Inc. Corona, California - Senior Archaeologist
National Park Service (Pipe Spring National Monument) - Archaeologist

NATIONAL PARK SERVICE (MESA VERDE NATIONAL PARK) - ARCHAEOLOGIST

CRMC, Inc., Farmington, New Mexico - Archaeological Project Manager
LaPlata Archaeological Consultants, Dolores, Colorado - Archaeologist
CASA, Inc. Cortez, Colorado - Archaeologist, Human Skeletal Analyst

Mr. Dice is a Certified Archaeologist with more than 16 years of experience performing records searches, archaeological surveys, archaeological site testing (Phase 2) and data collection (Phase 3) projects on private and public lands in the Southwestern United States and Southern California. During his career, he has authored or co-authored more than 50 CEQA and/or NEPA level documents including several manuscripts for the National Park Service. Mr. Dice is a member of the California Historical Society, a Registered Professional Archaeologist (RPA), and is a member of the National Trust For Historic Preservation.

Professional Experiences
Project Scientist/Archaeologist for CEQA-level Phase 1, Phase 2 and Phase 3 archaeological mitigation for the Temecula Marketplace Project in the City of Temecula, California. Performed the field survey, recorded a large historic ranch complex remnant, developed testing procedures for the historic and prehistoric components of the site, then gathered a crew and performed the Phase 2 test in the field. Responsible for developing the Phase 3 data collection plan.

Project Scientist/Archaeologist for Section 106 level review of archaeological testing at Pipe Spring National Monument, Fredonia, Arizona. Produced complete report synthesizing a series of excavations (1996-1998) on an historic Mormon Fort within the Monument. Also wrote a draft plan for any future archaeological mitigation.

Project Archaeologist/Database Manager for the emergency Chapin-5 Fire Rehabilitation Project, Mesa Verde National Park, Colorado (1996-1999). Began as field crew chief (GS-7) and finished with the Park as a GS-9 Database manager. Created an ACCESS 6.0 database for the recordation or re-recordation of more than 500 archaeological sites within the rehabilitation area.

Project Scientist/Archaeologist for CEQA-level Phase 1 and Phase 4 archaeological mitigation for the "The Club at Big Bear Lake" Project in the City of Big Bear Lake, California. Performed the field survey, recorded a large historic tourist complex remnant, wrote mitigation-monitoring recommendations for the City, then supervised the monitoring, analyzed the historic artifacts and wrote the final report.

Performed more than 40 CEQA-level Phase 1 archaeological surveys in Southern California, which included evaluating more than 30 historic and prehistoric archaeological sites per California SHPO protocol. The reports fulfill ARMR reporting guidelines, while the County of Riverside reports fulfilled both ARMR and County of Riverside protocols.

Technical skills include scientific writing, project organization, field management of archaeological personnel, personal computing, database management, and analysis of human remains.

CHRISTEEN TANIGUCHI M.A.

ARCHITECTURAL HISTORIAN/ARCHEOLOGIST

EDUCATION

MS, Historic Preservation, University of Pennsylvania, PA
BA, History, University of California, Los Angeles, CA
Cum laude and Phi Beta Kappa honors, One year of study abroad at the University of Kent, England

PROFESSIONAL EXPERIENCE

- **Pasadena, CA.** Currently heading the assessment and treatment of a historic sandstone block bench and wall in Pasadena.

- **California Missions San Juan Capistrano, San Buenaventura and San Juan Bautista.** Created thorough assessment reports that detail current conditions and recommendations for the proper maintenance and conservation of artifacts and building materials at the California Missions.

- **Will Rogers State Historic Park, Pacific Palisades, CA.** Assisted with creating a condition assessment report of outdoor artifacts.

- **Hollyhock House, Los Angeles, CA.** Helped identify, document, label and pack historic artifacts and building components, as part of the restoration project at Hollyhock House in Los Angeles. Individual condition assessments and comprehensive artifact lists were a part of the work performed.

- **Cypress Lawn Cemetery, Colma, CA.** Assisted with determining and carrying out treatments for the conservation of a granite and marble mausoleum.

- **National Park Service, Philadelphia, PA.** Prepared approved HABS/HAER documents for shipment to the Library of Congress. Assisted with the organization of conferences and workshops. Helped create historic cemetery survey forms, as well as organized teams to perform survey work. Assisted with maintaining the National Historic Landmarks program. Participated in review committees for National Historic Landmarks federal grant applications.

- **Historic Preservation Partners, Los Angeles, CA.** Helped owners with National Register or National Register eligible buildings damaged by the Northridge Earthquake receive federal grant funds, by acting as the liaison between the owners and the federal funding agency. Organized teams of architects and engineers to survey damaged historic buildings.

- **Los Angeles, CA.** Prepared nomination forms for Los Angeles Historic Cultural Monuments by doing research, organizing support for the nominations, and presenting the results to the Los Angeles Cultural Heritage Commission and city council.

- **Museum of Natural History, Los Angeles, CA.** Inventoried and packed objects of American material to be moved.

- **Santa Monica Heritage Museum, Santa Monica, CA.** Helped properly maintain an extensive permanent photograph collection at the Museum. Assisted with the installation of new exhibits. Organized records of past exhibits.

PROFESSIONAL HISTORY

Michael Brandman Associates, Architectural Historian
Sculpture Conservation Studio, Architectural Conservator
Conde Nast Publications, Ethitorial Assistant
National Park Service, Architectural Historian

Los Angeles Conservancy, Intern
Historic Preservation partners, Field Representative
Museum of Natural History, Museum Assistant
Santa Monica Heritage Museum, Intern/Museum Assistant

SELECTED PUBLICATIONS

Co-presented a paper on a Damien Hirst installation at the 2002 Western Association for Art Conservation (WAAC) annual meeting

Wrote treatment proposals for various historic architectural projects for the Sculpture Conservation Studio, Los Angeles CA.

Presented a paper dealing with the preservation of interior plastic architectural components at Russel Wright's home, Dragon Rock in Garrison, New York, at the 1998 Association for Preservation Technology (APT) annual conference.

Researched and wrote the text for a tour of historic houses designed by architect Paul R. Williams. An accompanying brochure was also generated.

Master of Science thesis dealt with the identification and conservation of interior plastic architectural components at Dragon Rock, in Garrison, NY

DUSTIN KAY, B.S.

ARCHEOLOGIST

EDUCATION

Bachelor of Science, Archaeology
Oregon State University

PROFESSIONAL EXPERIENCE

NEPA Compliance/Telecommunication Facilities. Providing cultural resource monitoring for a variety of telecommunication providers throughout southern and central California in complying with the National Environmental Policy Act (NEPA) for the implementation of cellular communication facilities. This project includes the preparation of NEPA compliance documents in accordance with the Federal Communication Commissions regulations pertaining to telecommunication facilities, in particular cultural resource records searches and Phase I surveys, including architectural/historical evaluations, viewshed impact assessments, and construction monitoring.

Level 3 Fiber Optics Project (Level 3/Kiewit Pacific) Served as a crew member and archaeological monitor during project activities. This project involved the construction of a fiber optic cable running from Vandenberg Air Force Base to Summerland, California and from Oakland to Burbank, California. Performed test excavations and data recovery, and completed site maps and artifact illustrations.

North Baja Pipeline *(PGE)* Served as lead cultural monitor for the project, which involved coordinating monitors, working directly with Environmental Coordinator, Lead Biologists and Construction Foremen. Oversaw site location, recording, monitoring and construction activities. Conducted information record searches.
Niland to Blythe Powerline Replacement Project *(Greystone)* Served as crew member for an intensive cultural resources survey for a portion of the project. The project involved a literature search and field survey to identify the presence and location of archaeological sites within the project boundary. Participated in recording and locating some of the new sites found during the survey, which included many historic can scatters. Conducted records search at the Eastern Information Center at the University of California, Riverside.
San Dieguito River Valley Regional Park *(MWWD)* Served as crew member and report co-author for the project, which involved cultural resource monitoring of 1.61 acres for the revegetation of a riparian habitat. San Diego, California.

San Pasqual Homes *(San Pasqual Band of Mission Indians)* Served as report co-author for a project involving the completion of firebreaks on the San Pasqual Indian Reservation. This involved the review of historic information, including maps and database information. Valley Center, California.

PROFESSIONAL HISTORY

Archaeological Associates – Director/Principal

APPENDIX C:
REPRODUCED COMPLIANCE DOCUMENTS

SAN BERNARDINO COUNTY MUSEUM

2024 Orange Tree Lane • Redlands, California USA 92374-4560
(909) 307-2669 • Fax (909) 307-0539 • www.sbcountymuseum.org

COUNTY OF SAN BERNARDINO
ECONOMIC DEVELOPMENT
AND PUBLIC SERVICES GROUP

ROBERT L. McKERNAN
Director

17 September 2002

Michael Brandman Associates
attn: Michael Dice
15901 Red Hill Avenue, Suite #200
Tustin, CA 92780-7318

re: **PALEONTOLOGY LITERATURE AND RECORDS REVIEW, SB TRACT #16072, CITY OF RANCHO CUCAMONGA, SAN BERNARDINO COUNTY, CALIFORNIA**

Dear Mr. Dice,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named land tract in the Rancho Cucamonga area of San Bernardino County, California. The study area is located in the southwestern ¼ of section 21, Township 1 North, Range 6 West, San Bernardino Base and Meridian, as seen on the Cucamonga Peak, California 7.5' United States Geological Survey topographic quadrangle map (1966 edition, photorevised 1980).

Previous geologic mapping (Bortugno and Spittler, 1986) indicates that the land tract under study is situated on surface exposures of Pleistocene older fan deposits. These older fan sediments have high potential to contain fossil resources throughout their extent, depending upon their lithology. Older Pleistocene alluvial sediments elsewhere throughout the Inland Empire have been reported to yield significant fossils of extinct animals from the Ice Age (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, short-faced bears, sabre-toothed cats, large and small horses, large and small camels, and bison (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999).

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously-known paleontologic resource localities are recorded by the SBCM from the study area, nor from within several miles in any direction. The nearest recorded paleontologic resource locality, SBCM 5.1.8, is located ~8 miles to the south. This locality yielded fossil remains of extinct mammoth (*Mammuthus*) from surface and subsurface sediments mapped (Bortugno and Spittler, 1986) as Pleistocene older fan deposits identical to those present within the boundaries of Tract #16072. Additionally, locality SBCM 5.1.11, located ~9 miles southeast of Tract #16072, yielded remains of extinct sabre toothed cat (*Smilodon*) from similar subsurface deposits of older Pleistocene fan alluvium.

The results of the literature review and the check of the RPLI at the SBCM demonstrate that excavation in conjunction with development may have high potential to adversely impact significant nonrenewable paleontologic resources present within the boundaries of Tract #16072, depending upon the lithology of the Pleistocene older fan deposits present therein. A qualified vertebrate paleontologist must be retained to develop a program to mitigate impacts to such resources. This mitigation program should be consistent with the provisions of the California Environmental Quality Act, as well as with regulations currently implemented by the County of San Bernardino and the proposed guidelines of the Society of Vertebrate Paleontology. This program should include, but not be limited to:

1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Based upon the results of this review, areas of concern include all previously-undisturbed sediments of fossiliferous Pleistocene older fan alluvium present within the boundaries of the property. Paleontologic monitors should be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediments which are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced if the potentially-fossiliferous units described herein are not present, or if present are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

2. Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates.

3. Identification and curation of specimens into a museum repository with permanent retrievable storage (e.g., SBCM). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities.

4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency, will signify completion of the program to mitigate impacts to paleontologic resources.

References

Bortugno, E.J. and T. E. Spittler, 1986. Geologic map of California, San Bernardino sheet, scale 1:250,000. California Division of Mines and Geology Regional Geologic Map Series, Map 3A.

Jefferson, G.T., 1991. A catalogue of late Quaternary vertebrates from California: Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, No. 7.

Reynolds, R.E. and R.L. Reynolds, 1991. The Pleistocene beneath our feet: near-surface Pleistocene fossils in inland southern California basins, *in* Inland Southern California: the last 70 million years, M.O. Woodburne, R.E. Reynolds, and D.P. Whistler, eds. Redlands, San Bernardino County Museum Special Publication 38(3&4), p. 41-43.

Scott, E., 1997. A review of *Equus conversidens* in southern California, with a report on a second, previously-unrecognized species of Pleistocene small horse from the Mojave Desert." Journal of Vertebrate Paleontology 17(3): 75-A.

Springer, K.B. and E. Scott, 1994. First record of late Pleistocene vertebrates from the Domenigoni Valley, Riverside County, California. Journal of Vertebrate Paleontology 14 (3): 47A.

Springer, K.B., E. Scott, L.K. Murray and W.G. Spaulding, 1998. Partial skeleton of a large individual of *Mammut americanum* from the Domenigoni Valley, Riverside County, California. Journal of Vertebrate Paleontology 18(3): 78-A.

Springer, K.B., E. Scott, J.C. Sagebiel and K.M. Scott, 1999. A late Pleistocene lake edge vertebrate assemblage from the Diamond Valley, Riverside County, California. Journal of Vertebrate Paleontology 19(3): 77-A.

Woodburne, M.O., 1991. The Cajon Valley, *in* Inland Southern California: the last 70 million years, M.O. Woodburne, R.E. Reynolds, and D.P. Whistler, eds. Redlands, San Bernardino County Museum Special Publication 38(3&4), p. 41-43.

Please do not hesitate to contact us with any further questions you may have.

Sincerely,

Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

STATE OF CALIFORNIA Gray Davis, Governor

NATIVE AMERICAN HERITAGE COMMISSION
916 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390
Web Site www.nahc.ca.gov

January 24, 2003

Michael Dice M.A., Senior Archaeologist
Michael Brandman Associates

Sent By Fax: 714-~~260-0184~~ 508-4110
No. Pages: 4

RE: Proposed Etiwanda Tract 16072 Project, near Rancho cucamonga, San Bernardino County.

Dear Mr. Dice:

A record search of the sacred lands file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend other with specific knowledge. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4040.

Sincerely,

Rob Wood

Rob Wood
Environmental Specialist III

NATIVE AMERICAN CONTACTS
San Bernardino County
January 24, 2003

La Jolla Band of Mission Indians
Wendy Schlater, Chairperson
22000 Highway 76 Luiseno
Pauma Valley , CA 92061
(760) 742-3771/72

Rincon Band of Mission Indians
Culture Committee
P.O. Box 68 Luiseno
Valley Center , CA 92082
(760) 749-1051
(760) 749-8901 Fax

Pala Band of Mission Indians
Robert Smith, Chairperson
P.O. Box 50 Luiseno
Pala , CA 92059 Cupeno
(760) 742-3784
(760) 742-1411 Fax

San Manuel Band of Mission Indians
Deron Marquez, Chairperson
PO Box 266 Serrano
Patton , CA 92369
(909) 864-8933
(909) 864-3370 Fax
Bingo Hall:(909) 864-5050

Pauma & Yuima
Christobal C. Devers, Chairperson
P.O. Box 369 Luiseno
Pauma Valley , CA 92061
(760) 742-1289
(760) 742-3422 Fax

Soboba Band of Mission Indians
Robert J. Salgado, Sr., Chairperson
P.O. Box 487 Luiseno
San Jacinto , CA 92581
(909) 654-2765
Fax: (909) 654-4198

Pechanga Band of Mission Indians
Mark Macarro, Chairperson
P.O. Box 1477 Luiseno
Temecula , CA 92593
(909) 676-2768
(909) 695-1778 Fax

Twenty-Nine Palms Band of Mission Indians
Dean Mike, Chairperson
46-200 Harrison Place Luiseno
Coachilla , CA 92236 Chemehuevi
(760) 775-5566
(760) 775-4639 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regards to the cultural assessment for the proposed Etiwanda Tract 16072 Project, near Rancho Cucamonga, San Bernardino County.

Samuel H. Dunlap
P.O. Box 1391
Temecula , CA 92593
(909) 699-5544 (Voice)
(909) 262-9351 (Cell)
(909) 693-9196 FAX
Gabrielino
Cahuilla
Luiseno

Gabrieleno/Tongva Tribal Council
Anthony Morales, Chairperson
PO Box 693
San Gabriel , CA 91778
(626) 286-1632
(626) 286-1262 Fax
(626) 286-1758 (Home)
Gabrieleno Tongva

Ti'At Society
Cindi Alvitre
15600 Mulholland Dr., Apt. K
Bel Air , CA 90077
(310) 440-0245
Gabrielino

San Luis Rey Band of Mission Indians
Henry Contreras, Cultural Resources Representative
1763 Chapulin Lane
Fallbrook , CA 92028
(760) 728-6722 - Home
(760) 207-3618 - Cell
Luiseno
Cupeno

Gabrielino Tongva Indians of California Tribal Council
Robert F. Dorame, Chairperson
PO Box 490
Bellflower , CA 90707
(562) 761-6417 - Voice
562 920-9449 - Fax
Gabrielino Tongva

San Luis Rey Band of Mission Indians
Russell Romo, Captain
2302 Carriage Circle
Oceanside , CA 92056
(760) 724-8505
(760) 757-6749 - Fax
Luiseno
Cupeno

Ish Panesh United Band of Indians
John Valenzuela
PO Box 402597
Hesperia , CA 92340
(760) 949-2103 Home
Chumash
Tataviam
Tongva, Gabrielino
Vanyume; Serrano
Kitanemuk

Alfred L. Valenzuela
18678 Pad Court
Newhall , CA 91321
(661) 252-1486 Home
(661) 755-8314 Work
Chumash
Tataviam
Gabrielino
Kitanemuk
Vanyume ; Serrano

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NATIVE AMERICAN CONTACTS
San Bernardino County
January 24, 2003

Gabrielino/Tongva Council / Gabrielino Tongva Nation
501 Santa Monica Blvd., Suite 500 Gabrieleno Tongva
Santa Monica 90401-2415
, CA
(310) 587-2203
(310) 587-2281 Fax

Gabrielino Band of Mission Indians of CA
Ms. Susan Frank
PO Box 3022 Gabrielino
Beaumont , CA 92223
(909) 845-3606

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

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Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 23, 2003

Ti'At Society
Cindi Alvitre
15600 Mulholland Dr., Apt. K
Bel Air, CA 90077

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Ms. Alvitre:

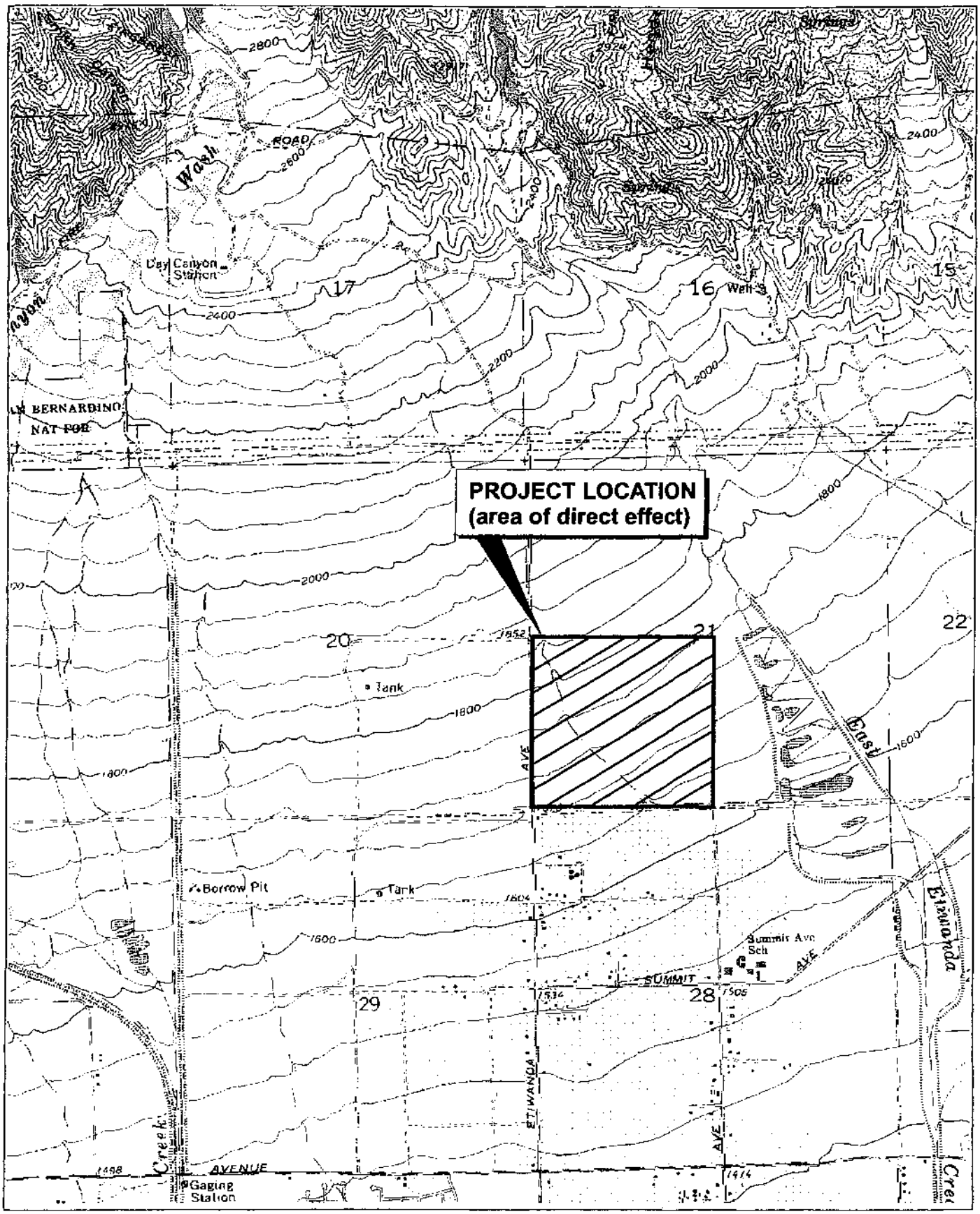
Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

We have attached a topographic map showing the project location for your convenience. Please notify us of any sacred Native American sites that may be affected by the undertaking. A full description of this aspect of the project can be found in our archaeological survey report which is a part of an EIR we are developing for this project.

Sincerely,

Michael Dice M.A.
Senior Archaeologist
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
00180027



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

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Exhibit 2

Project Location Map

Michael Brandman Associates
00180027 - 10/2002

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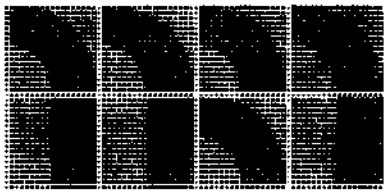

Michael Brandman Associates ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 23, 2003

Craig Torres
713 E. Bishop
Santa Ana, CA 92701

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Torres:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Sincerely,

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220 Commerce, Suite 200
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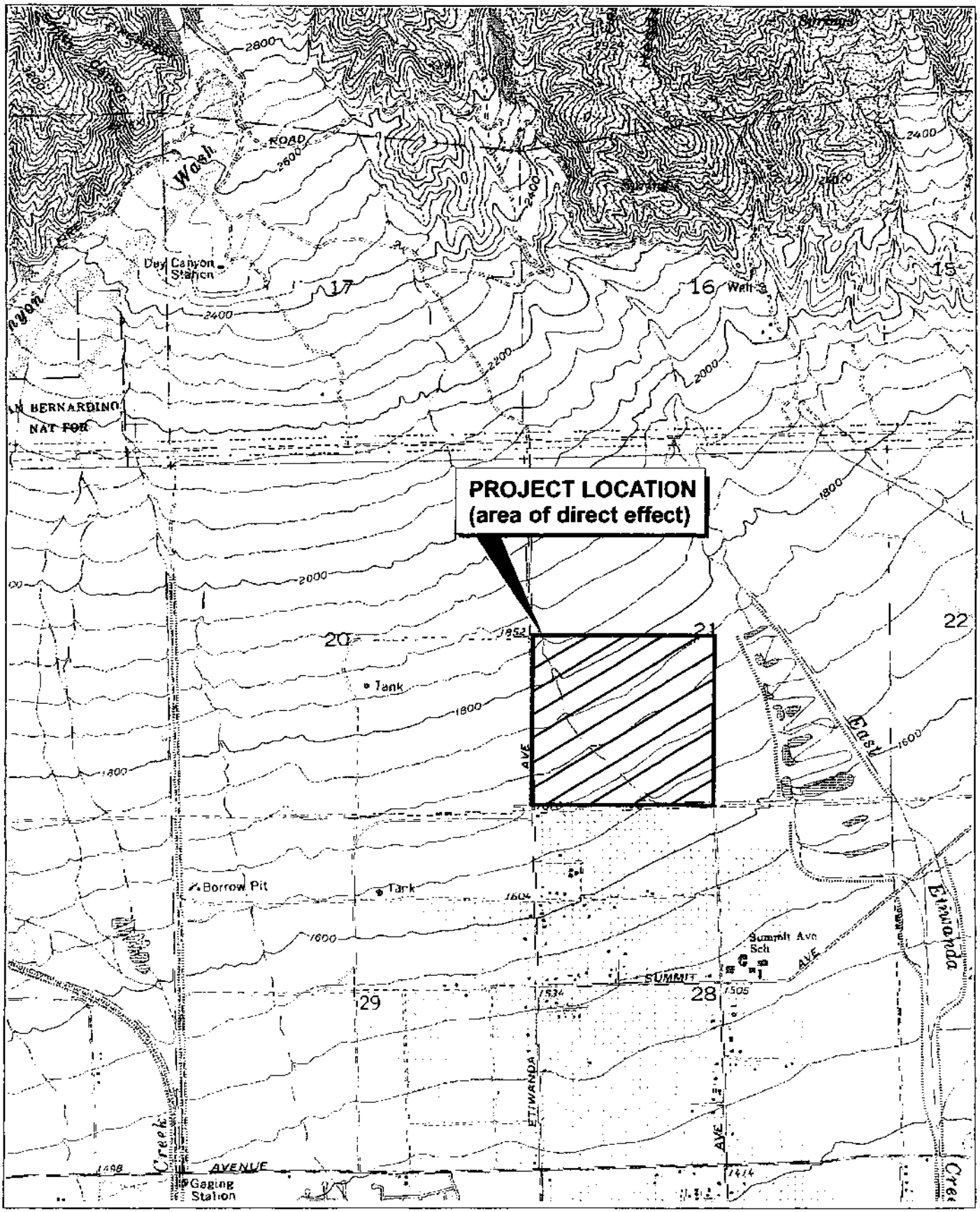

Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

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Project Location Map

Michael Brandman Associates
00180027 - 10/2002

Michael Brandman Associates

Environmental Services • Planning • Natural Resources Management

January 23, 2003

Gabrielino/Tongva Tribal Council
Anthony Morales, Chairperson
P.O. Box 693
San Gabriel, CA 91778

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Morales:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Irvine, CA. 92602

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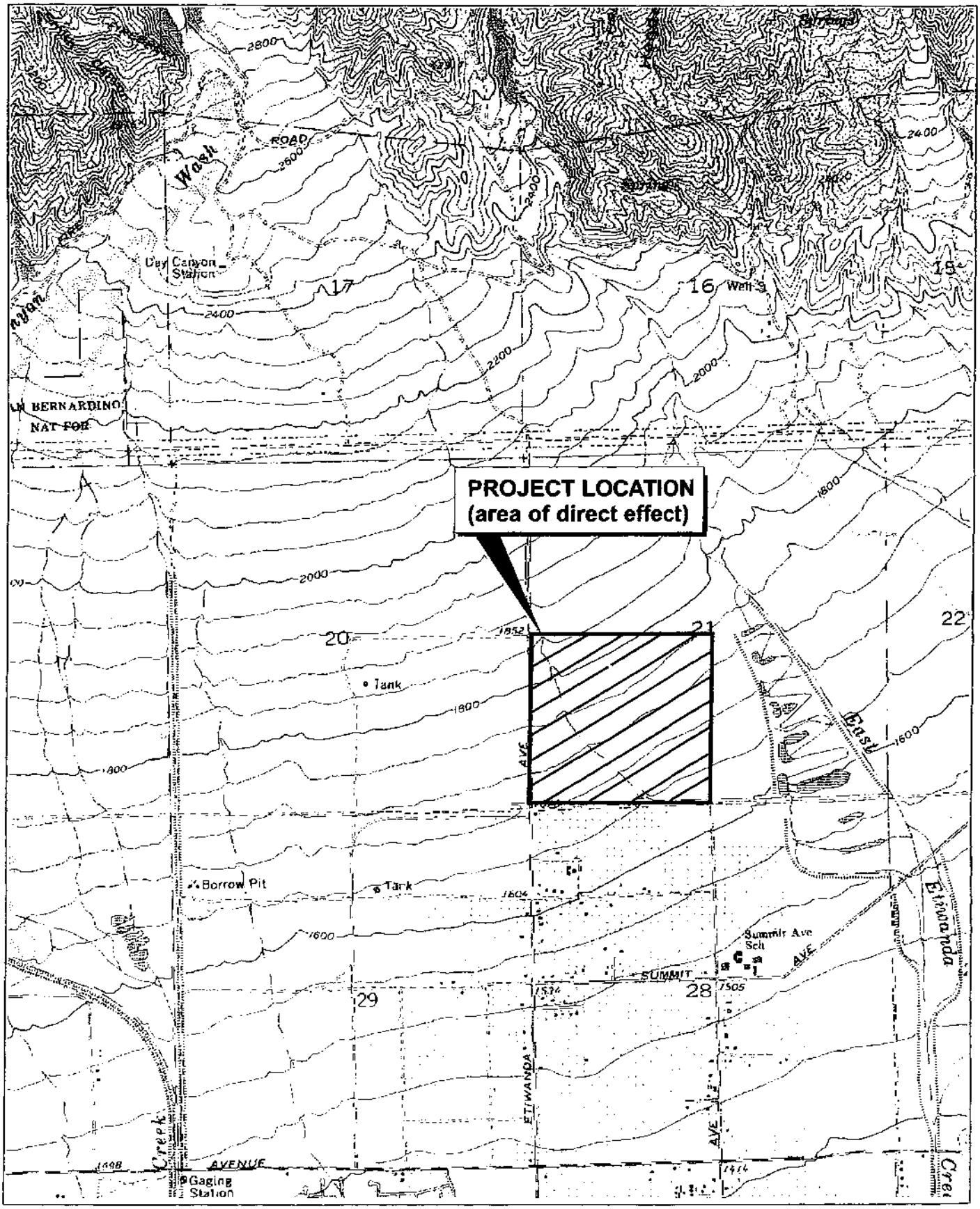

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Michael Brandman Associates

Environmental Services • Planning • Natural Resources Management

January 23, 2003

Samuel H. Dunlap
P.O. Box 1391
Temecula, CA 92593

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Dunlap:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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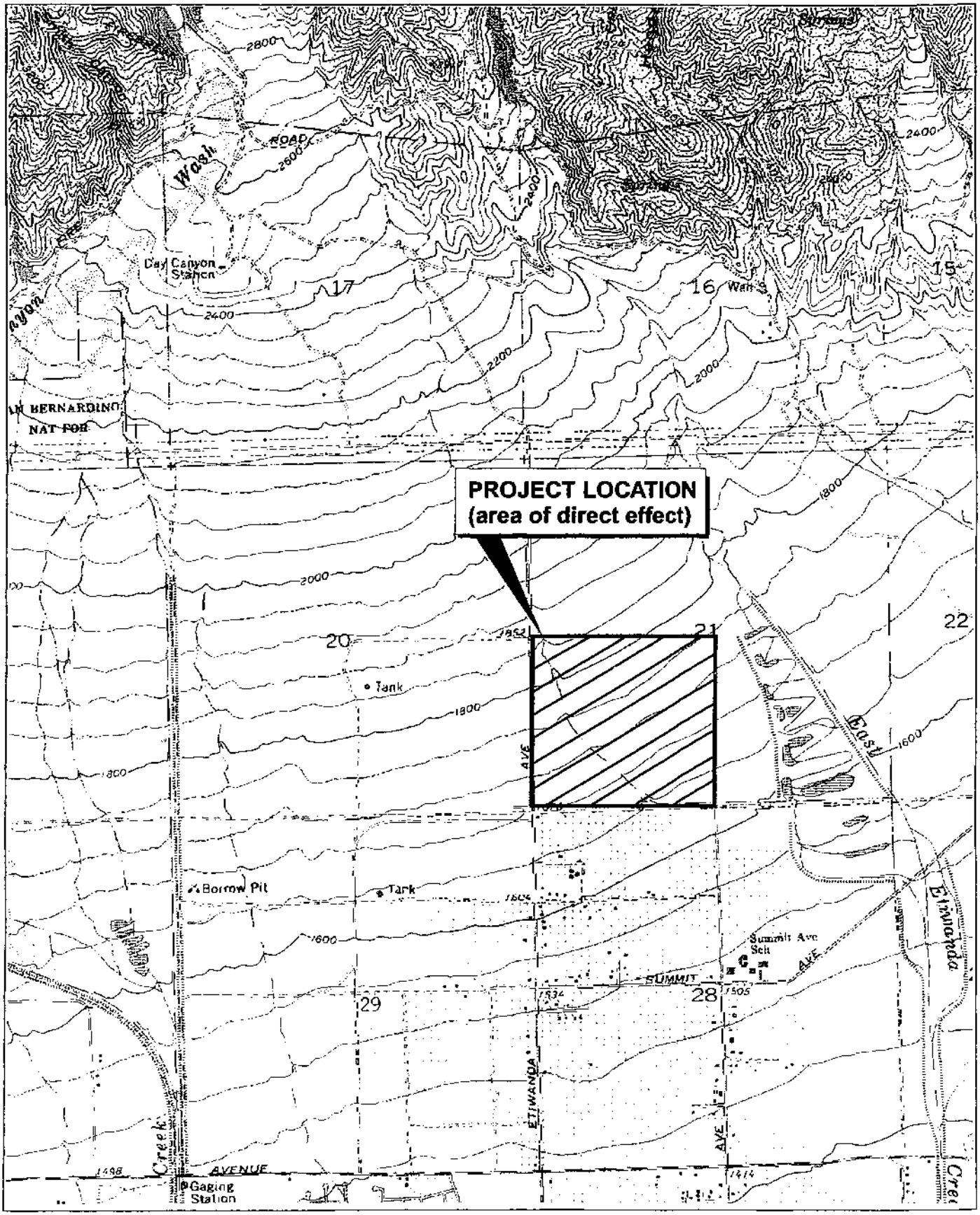

Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

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Exhibit **2**

Project Location Map

Michael Brandman Associates
00180027 - 10/2002

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Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 23, 2003

Alfred L. Valenzuela
18678 Pad Court
Newhall, CA 91321

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Valenzuela:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently nnder the jurisdiction of San Bernardino Connty. 359 homes will be constructed.

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Senior Archaeologist
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220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
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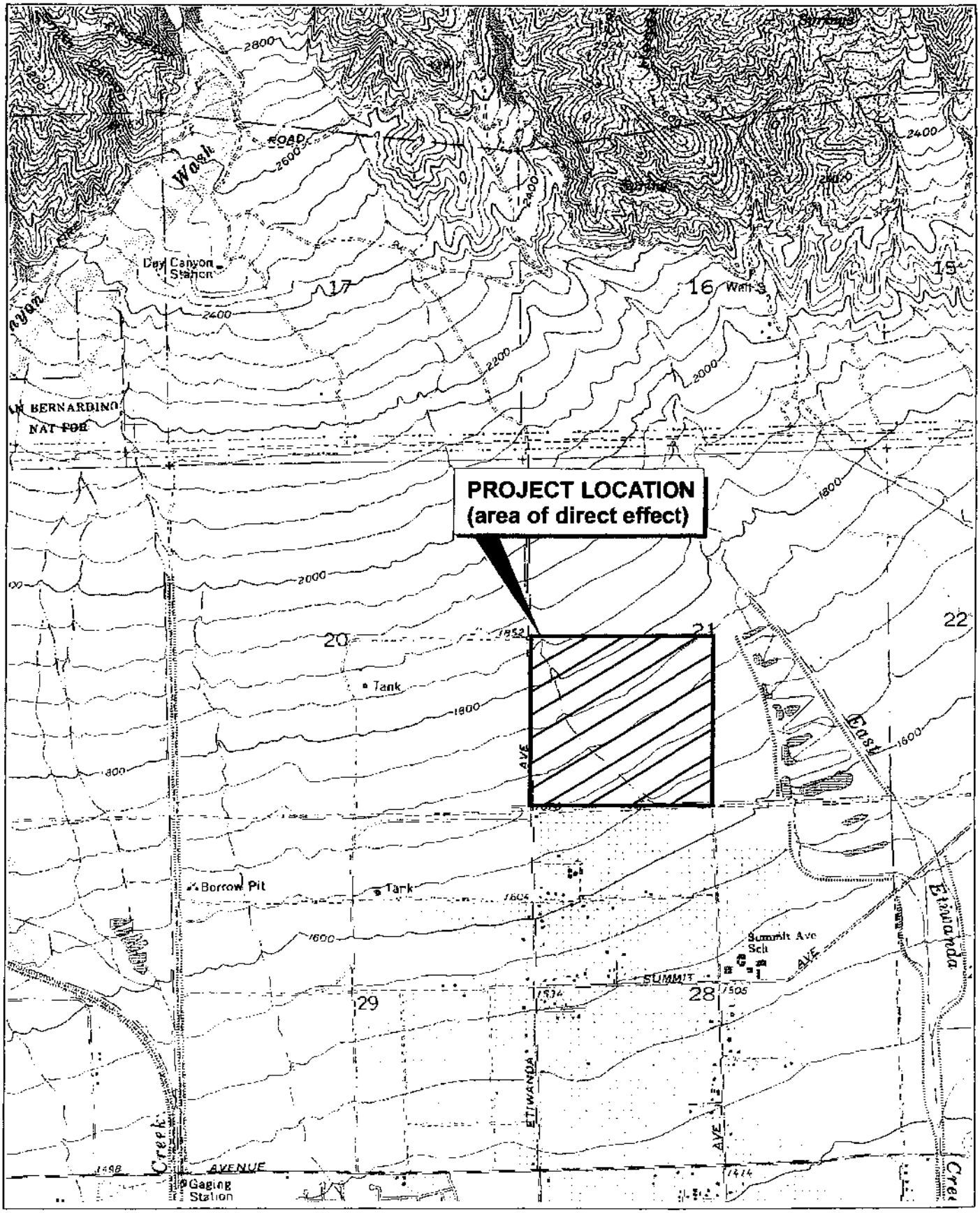
220 Commerce, Suite 200, Irvine CA 92602 714 508 4100 fax 714 508 4110
[illegible]



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

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Project Location Map

Michael Brandman Associates
00180027 - 10/2002

TRACT 16072 • ARCHAEOLOGICAL SURV

Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 23, 2003

Coastal Gabrielino Diegueno
Jim Velasquez
5776 42nd St.
Riverside, CA 92509

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Velasquez:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino Couuty. 359 homes will be constructed.

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Sincerely,

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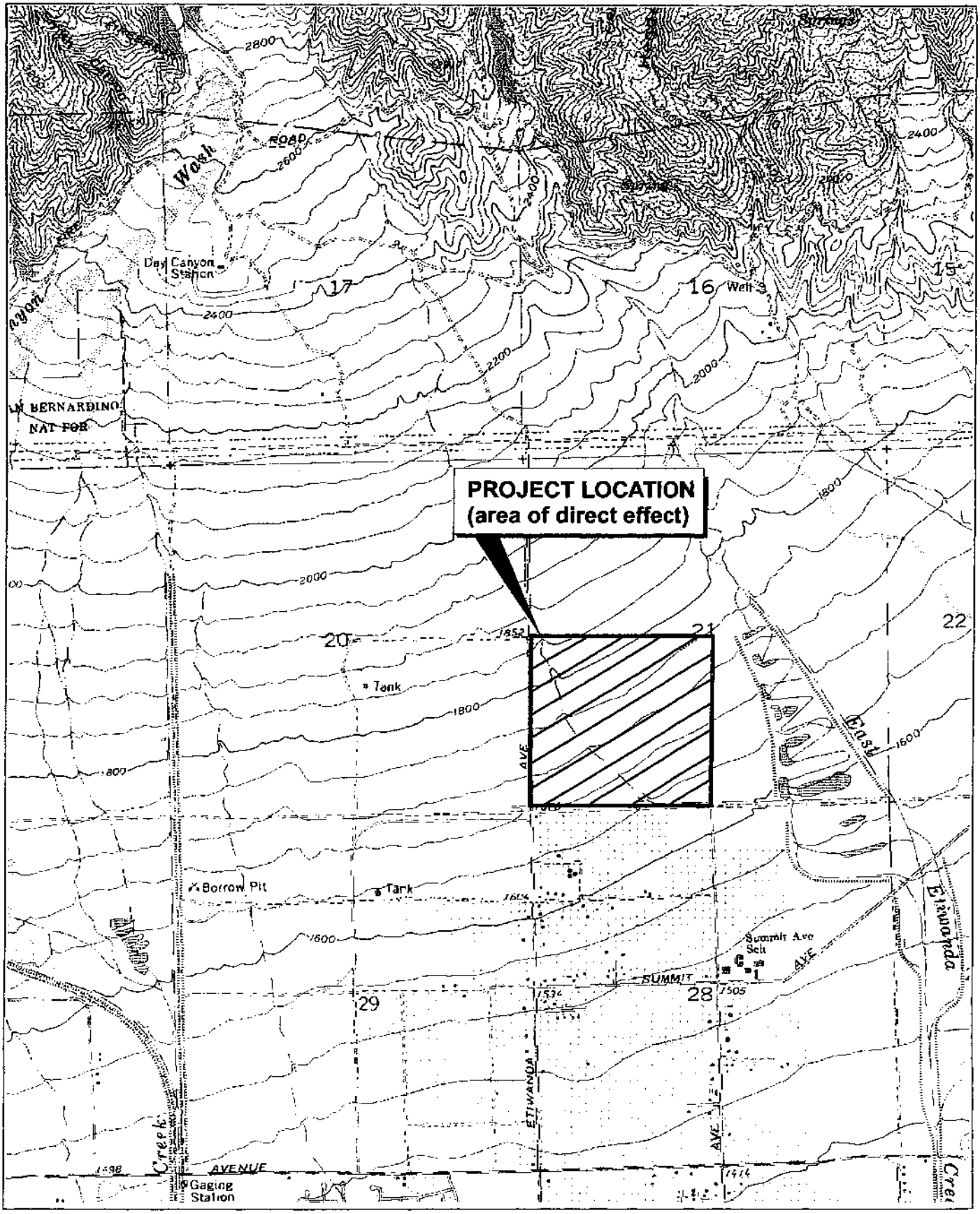
Senior Archaeologist
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
00180027



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

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Michael Brandman Associates
00180027 - 10/2002

Exhibit 2
Project Location Map
TRACT 16072 • ARCHAEOLOGICAL SURV

Michael Brandman Associates

January 23, 2003

Gabrielino/Tongva Council/Gabrielino Tongva Nation
501 Santa Monica Blvd.,. Suite 500
Santa Monica, CA 90401

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Sirs:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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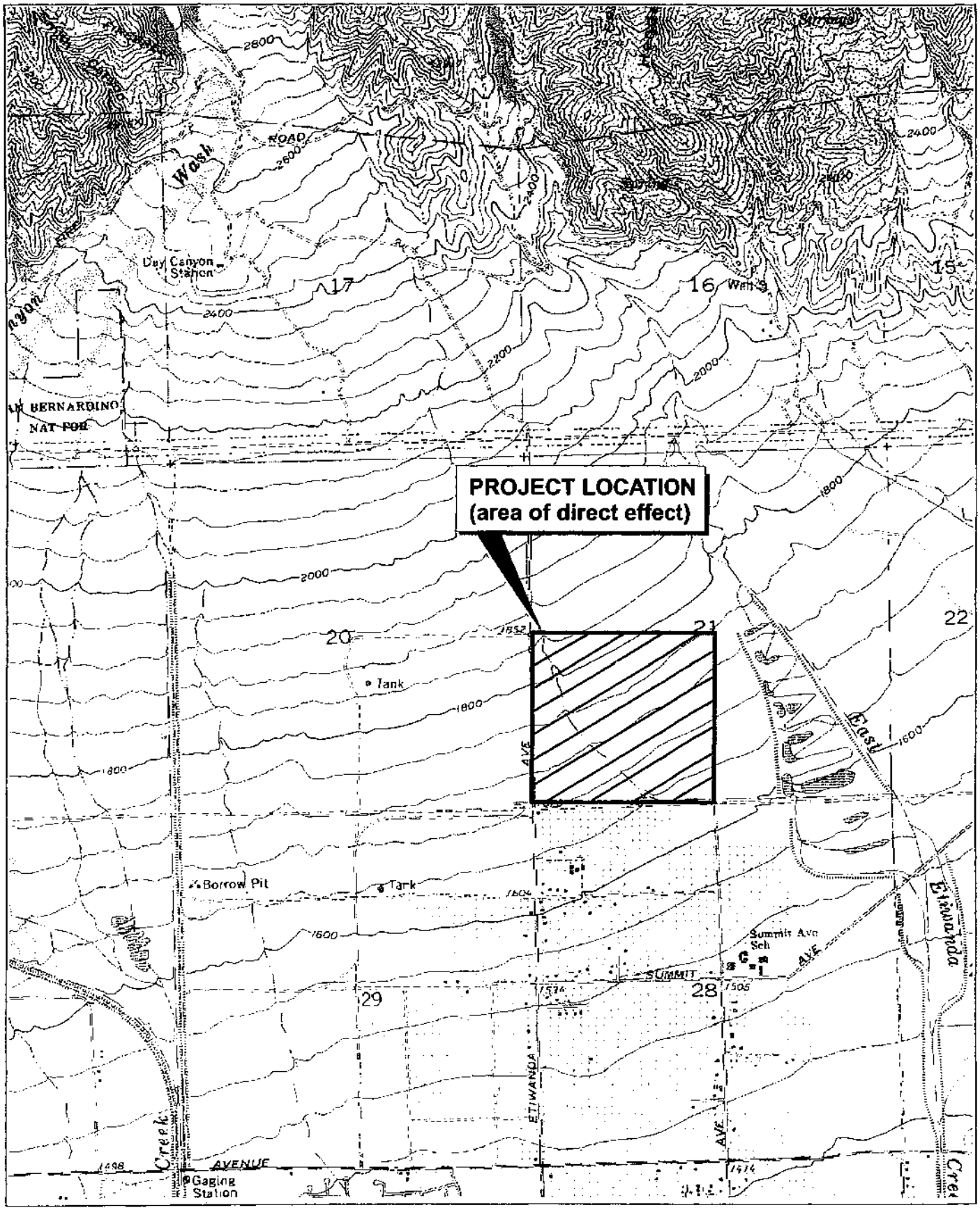
Senior Archaeologist
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
00180027

220 Commerce, Suite 200, Irvine, CA 92602



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

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Exhibit **2**

Project Location Map

Michael Brandman Associates
00180027 - 10/2002

TRACT 16072 • ARCHAEOLOGICAL SURV

Michael Brandman Associates

Environmental Services • Planning • Natural Resources Management

January 23, 2003

Gabrielino Band of Mission Indians of California
Ms. Susan Frank
P.O. Box 3022
Beaumont, CA 92223

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Ms. Frank:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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220 Commerce, Suite 200
Irvine, CA. 92602

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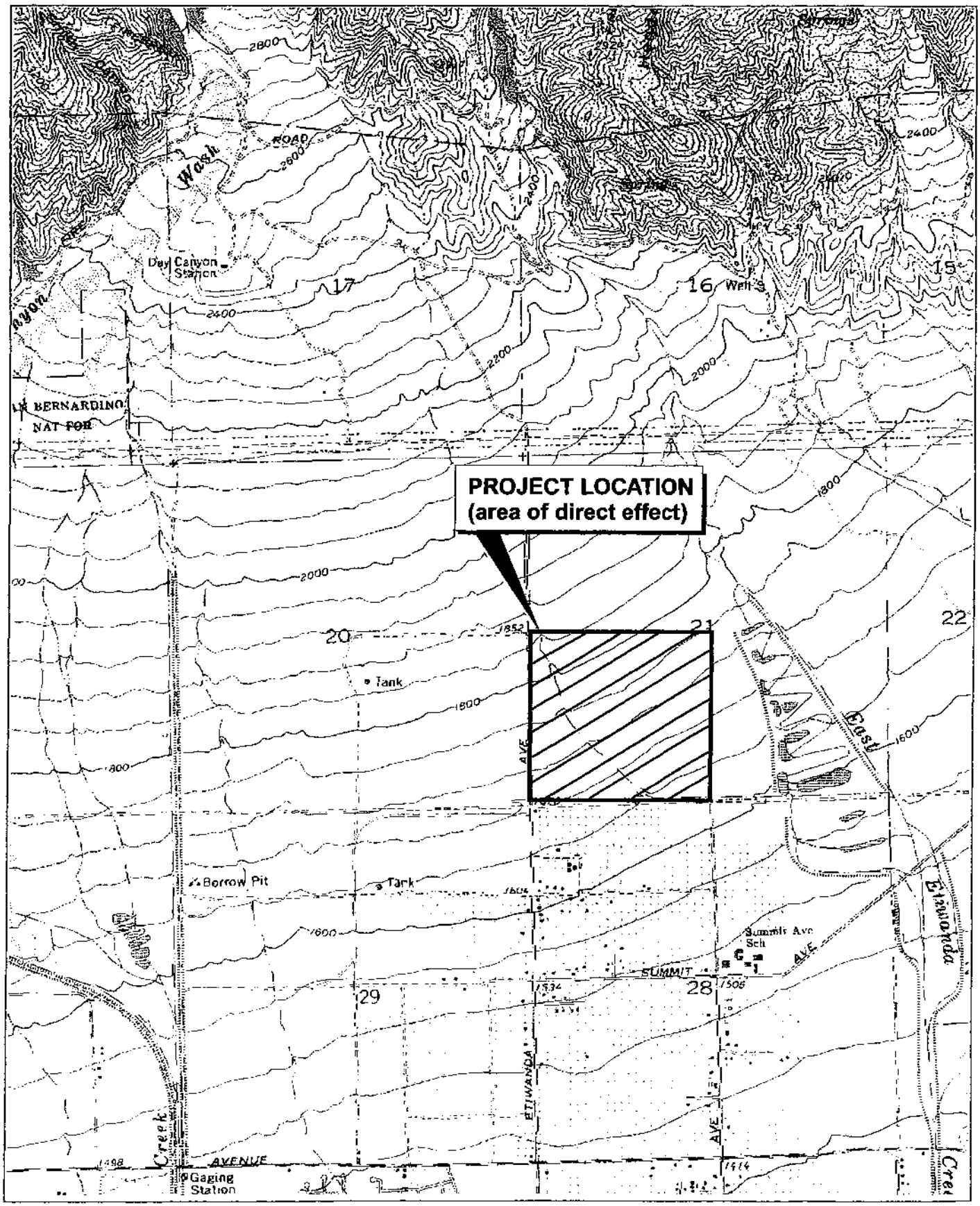

Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

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Project Location Map

Michael Brandman Associates
00180027 - 10/2002

TRACT 16072 • ARCHAEOLOGICAL SURV

Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 23, 2003

Ish Panesh United Band of Indians
John Valenzuela
P.O. Box 402597
Hesperia, CA 92340

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Valenzuela:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Beruardino County. 359 homes will be constructed.

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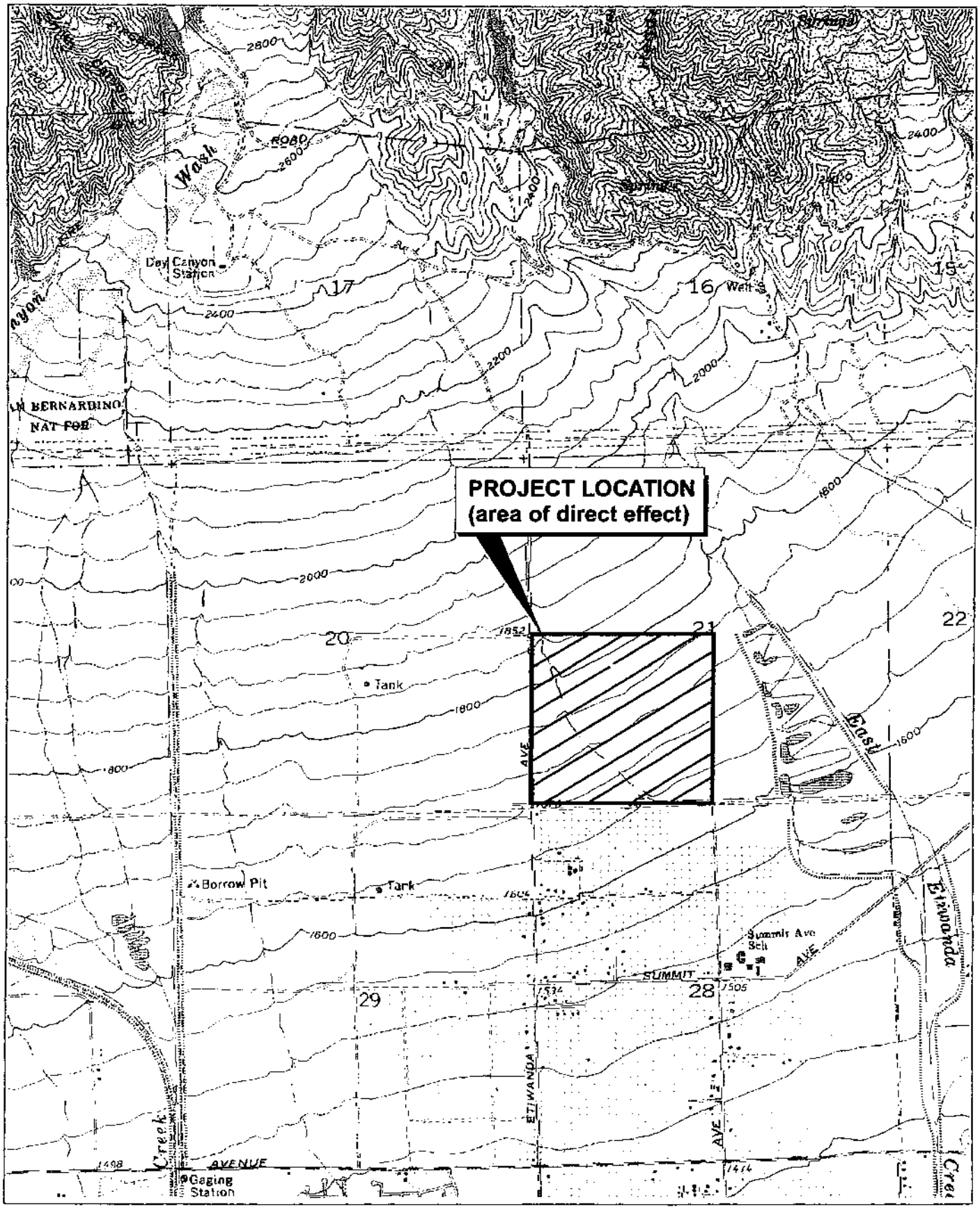
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
00180027

220 Commerce, Suite 200, Irvine, CA 92602 714.508.4100 FAX 714.508.4110



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

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Project Location Map

Michael Brandman Associates

00180027 - 10/2002

TRACT 16072 - ARCHAEOLOGICAL SURV

Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 23, 2003

Gabrielino Tongva Indians of California Tribal Group
Robert F. Dorame, Chairperson
P.O. Box 490
Bellflower, CA 90707

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamouga Peak 7.5' Quad.)

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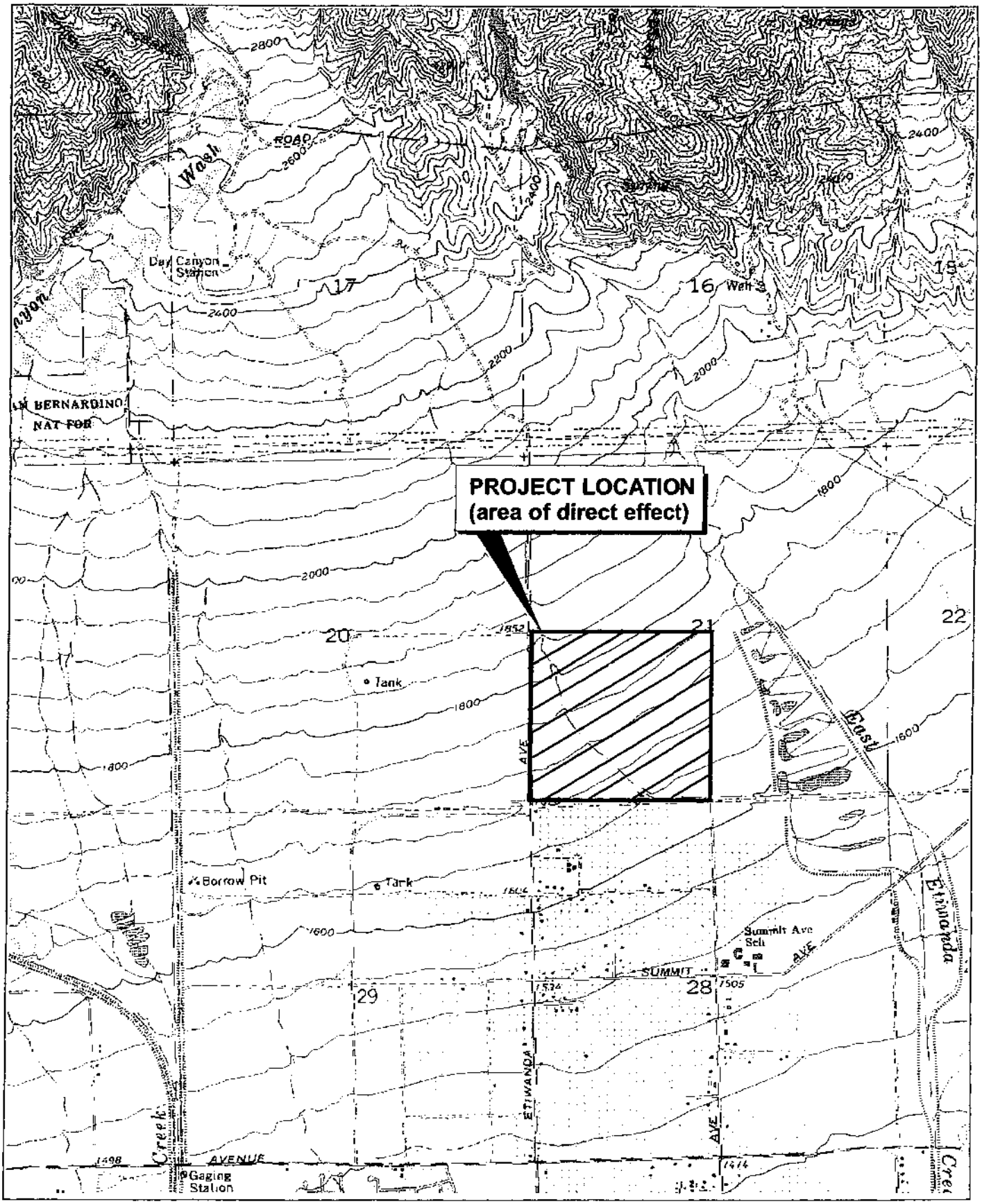
MD/ey
00180027



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

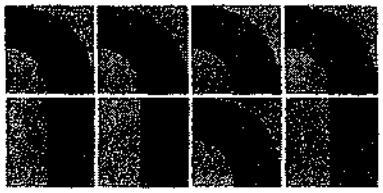
2000 1000 0 2000
SCALE IN FEET

Exhibit **2**

Project Location Map

Michael Brandman Associates
00180027 · 10/2002

TRACT 16072 • ARCHAEOLOGICAL SURV



Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 23, 2003

Island Gabrielino Group
John Jeffredo
P.O. Box 669
San Marcos, CA 92079

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Jeffredo:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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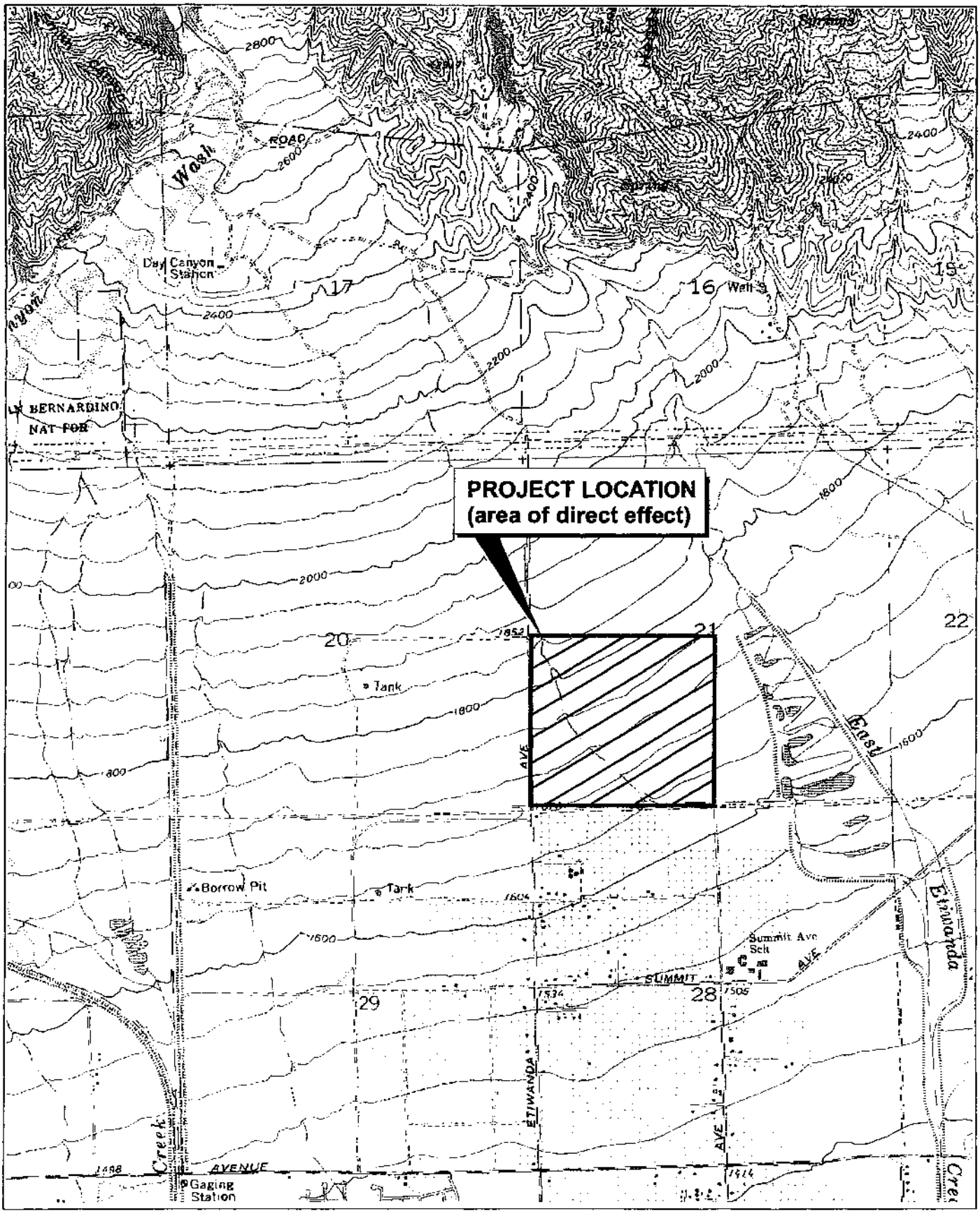
Sincerely,

Michael Dice M.A.
Senior Archaeologist
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
00180027



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

2000 1000 0 2000
SCALE IN FEET

Exhibit 2

Project Location Map

Michael Brandman Associates
00180027 - 10/2002

TRACT 16072 • ARCHAEOLOGICAL SUR...

Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 23, 2003

Los Angeles City/County Native American Indian Commission
3175 West 6th Street, Room 403
Los Angeles, CA 90020

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Sirs:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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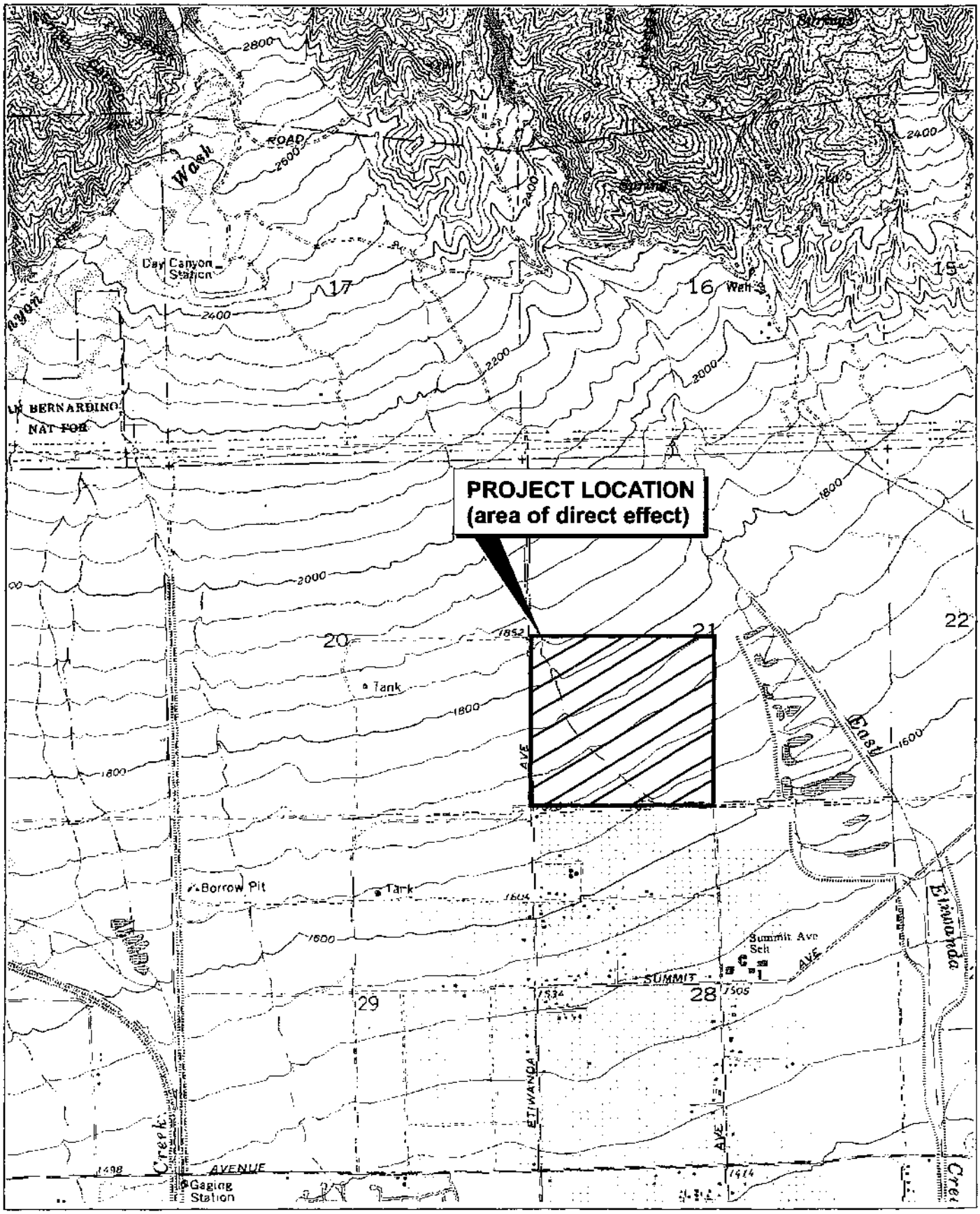

Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

2000 1000 0 2000
SCALE IN FEET

Exhibit **2**

Project Location Map

Michael Brandman Associates
00180027 - 10/2002

Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 24, 2003

Pala Band of Mission Indians
Robert Smith, Chairperson
P.O. Box 50
Pala, CA 92059

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Smith:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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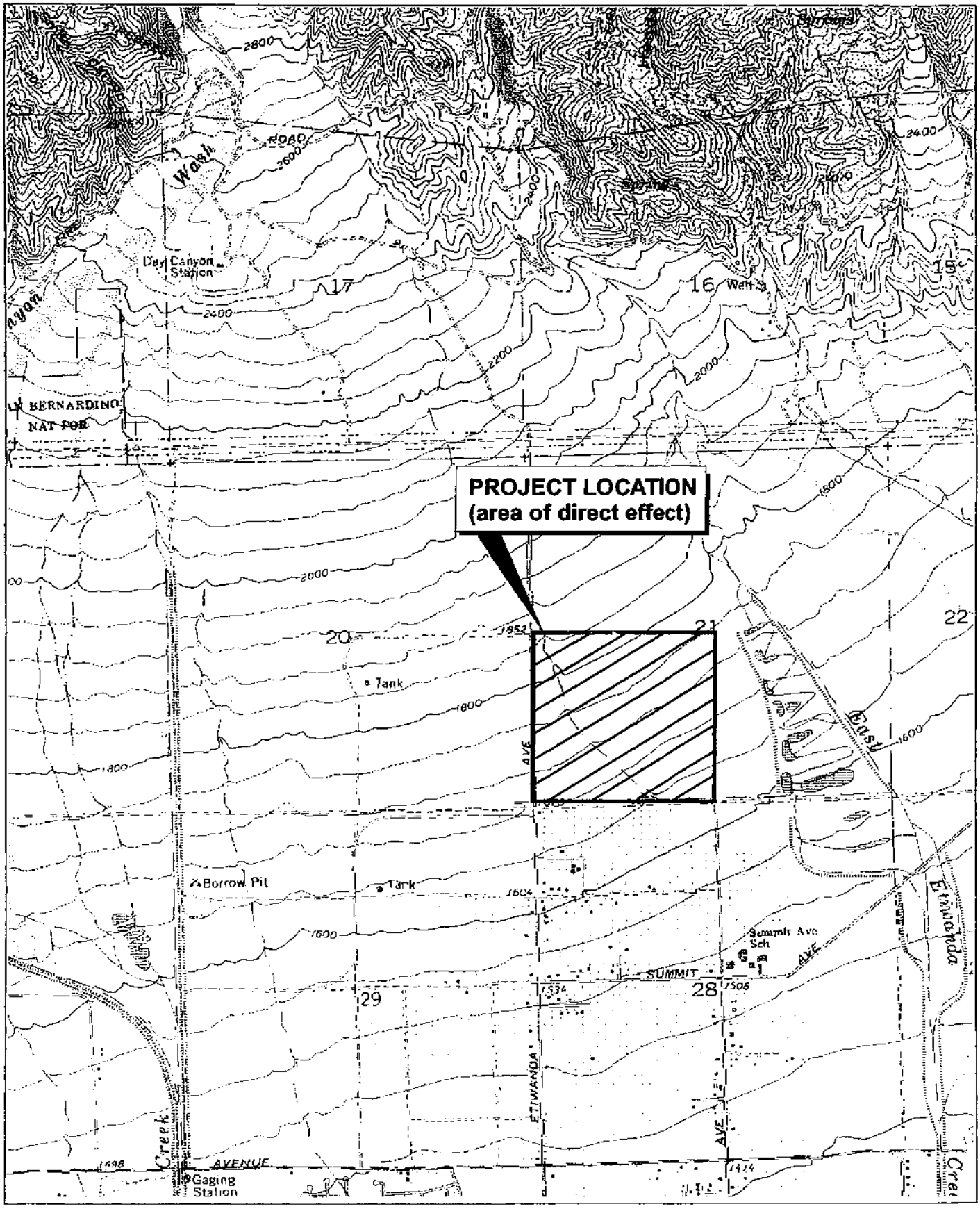
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
00180027



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

2000 1000 0 2000

SCALE IN FEET

Michael Brandman Associates

Exhibit 2

Project Location M 1371

Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 24, 2003

San Luis Rey Band of Mission Indians
Henry Contreras, Cultural Resources Representative
1763 Chapulin Lane
Fallbrook, CA 92082

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Contreras:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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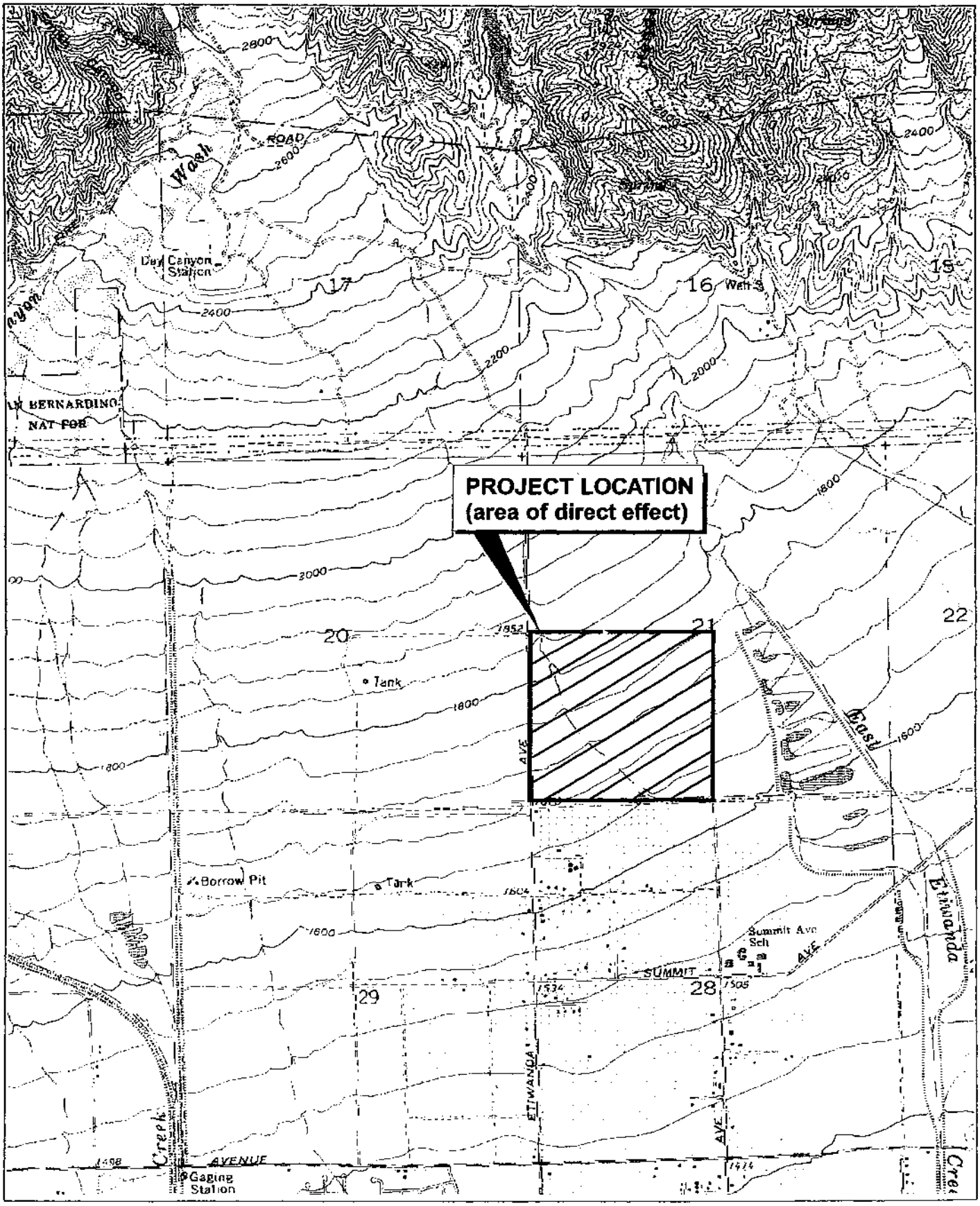
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
00180027



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

2000 1000 0 2000

SCALE IN FEET

Michael Brandman Associates

Exhibit 2

Project Location M: 1373

Michael Brandman Associates

Environmental Services • Planning • Natural Resources Management

January 24, 2003

Pechanga Band of Mission Indians
Mark Macarro, Chairperson
P.O. Box 1477
Temecula, CA 92593

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Macarro:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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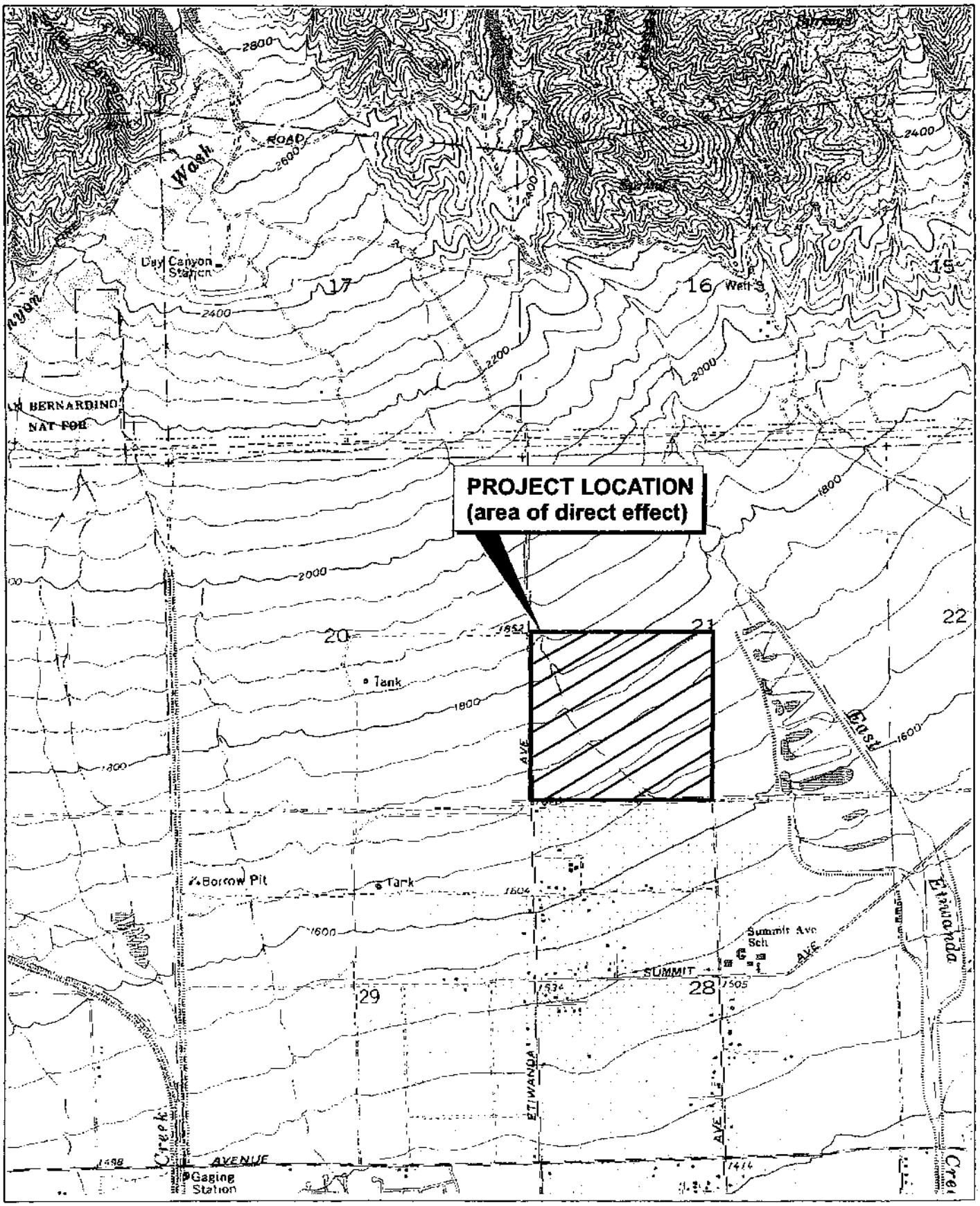
Senior Archaeologist
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
00180027

220 Commerce · Suite 200, Irvine CA 92602 · 714 508 4100 · fax 714 508 4110



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

2000 1000 0 2000

SCALE IN FEET

Michael Brandman Associates

Exhibit 2

Project Location Ma

Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 24, 2003

Pauma & Yuima
Christobal C. Devers, Chairperson
P.O. Box 369
Pauma Valley, CA 92061

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Devers:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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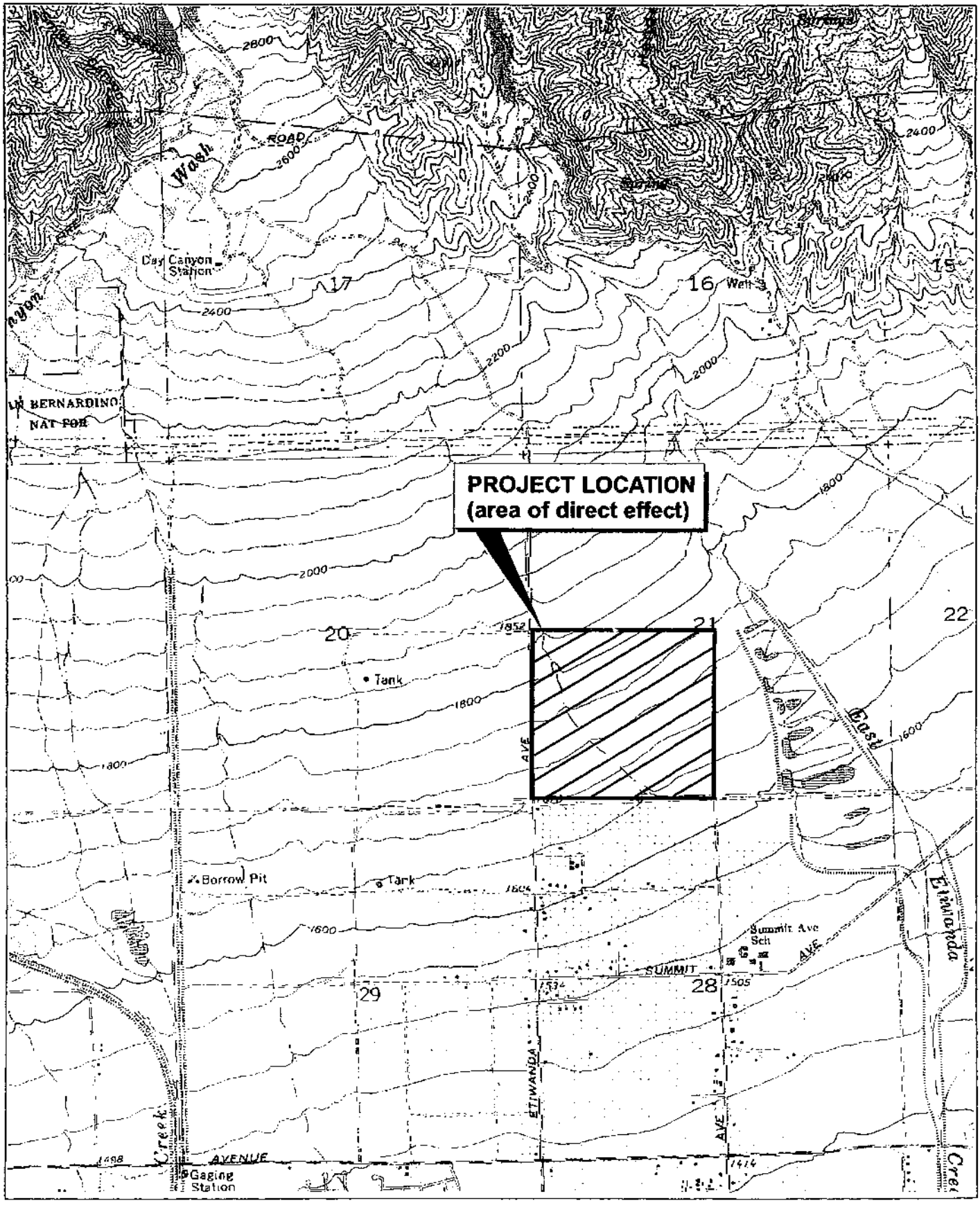
220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
00180027



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

2000 1000 0 2000

SCALE IN FEET

Michael Brandman Associates

Exhibit 2

Project Location M 1377

Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 24, 2003

Rincon Band of Mission Indians
Culture Commitee
P.O. Box 68
Valley Center, CA 92082

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Sirs:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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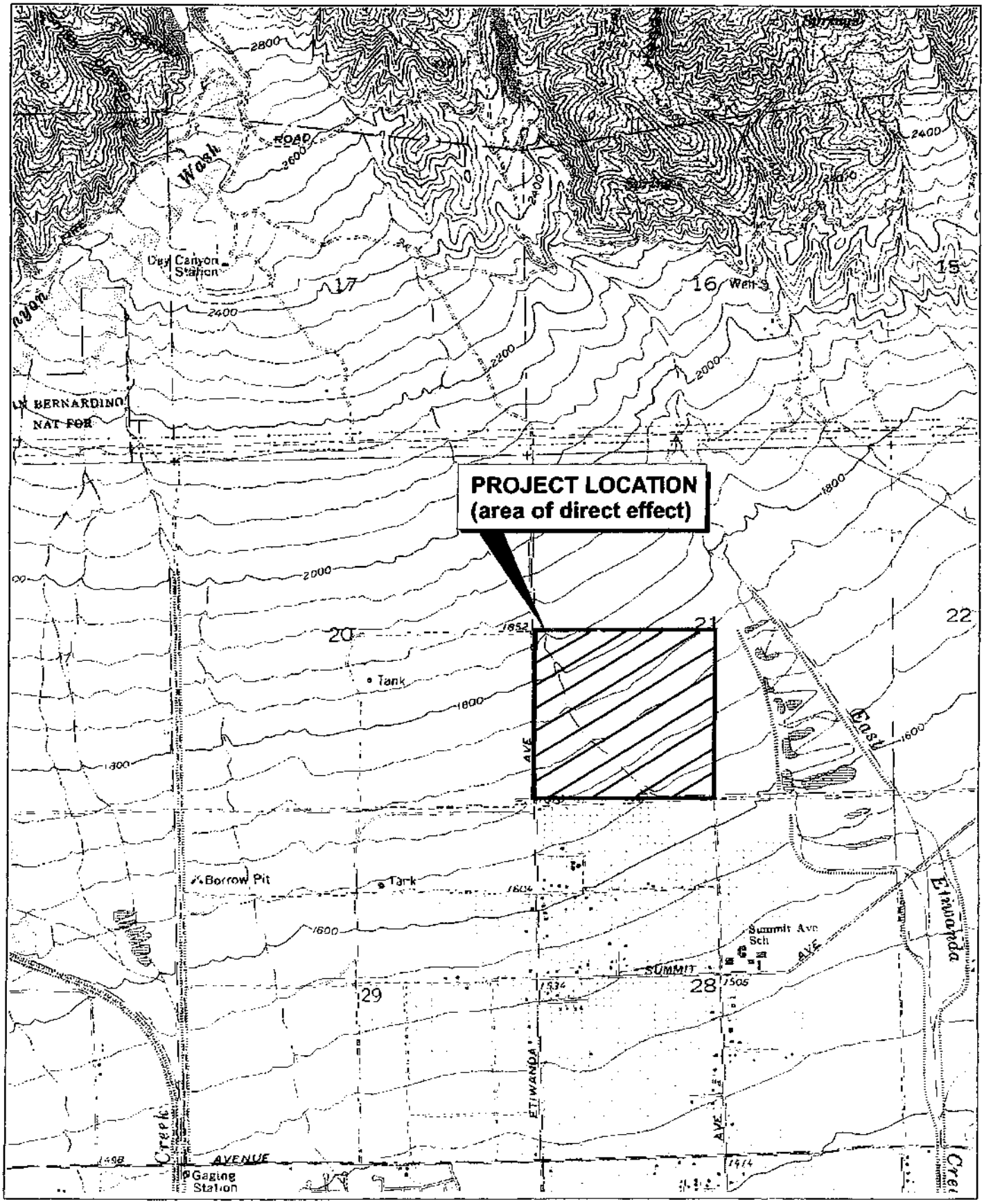
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

MD/cy
00180027



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

2000 1000 0 2000

SCALE IN FEET

Exhibit 2

Project Location M

Michael Brandman Associates

Michael Brandman Associates

Environmental Services • Planning • Natural Resources Management

January 24, 2003

Soboba Band of Mission Indians
Robert J. Salgado, Sr., Chairperson
P.O. Box 487
San Jacinto, CA 92581

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Salgado:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or uear a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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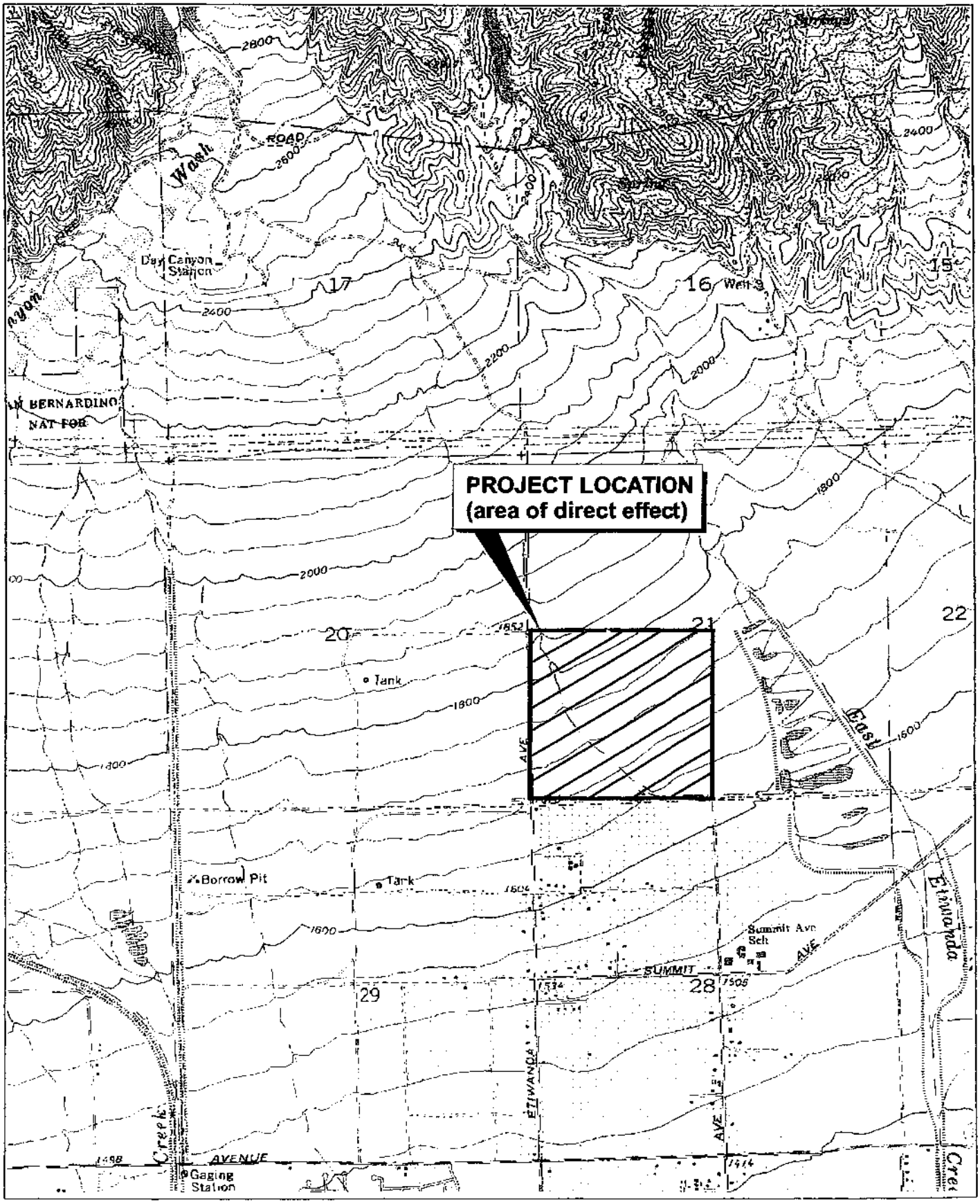
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
00180027

220 Commerce, Suite 200, Irvine CA 92602 714.508.4100 Fax 714.508.4110



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

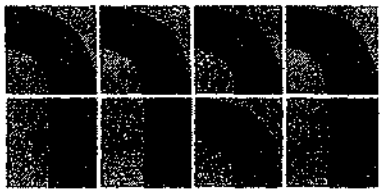
2000 1000 0 2000

SCALE IN FEET

Michael Brandman Associates

Exhibit 2

Project Location M: 1381



Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 24, 2003

La Jolla Band of Mission Indians
Wendy Schlater, Chairperson
22000 Highway 76
Pauma Valley, CA 92061

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Ms. Schlater:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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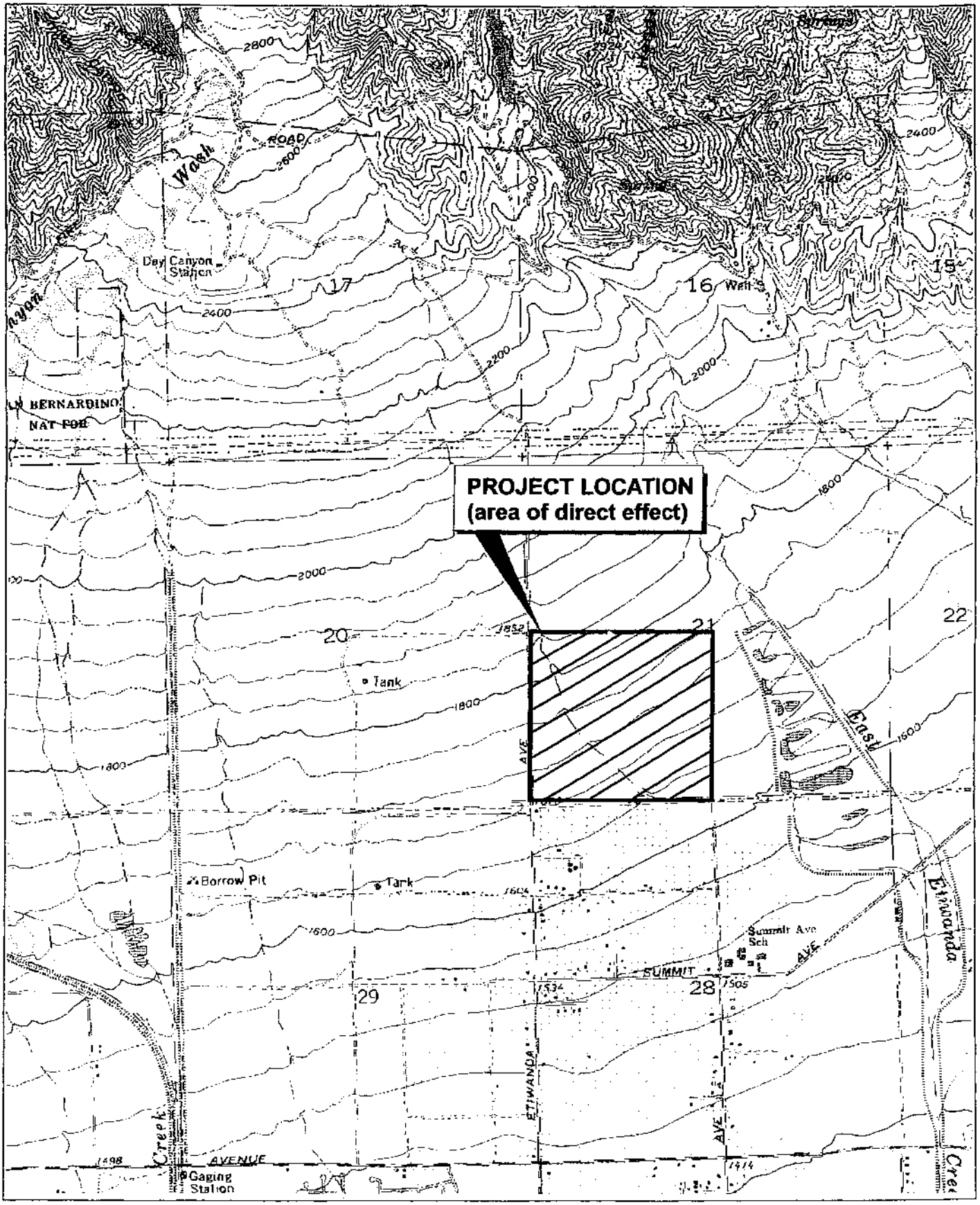
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
00180027

220 Commerce, Suite 200, Irvine, CA 92602 [illegible]



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

2000 1000 0 2000

SCALE IN FEET

Michael Brandman Associates

Exhibit 2

Project Location M 1383

Michael Brandman Associates

Environmental Services • Planning • Natural Resources Management

January 24, 2003

San Luis Rey Band of Mission Indians
Russell Romo, Captain
2302 Carriage Circle
Ocenaside, CA 92056

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Romo:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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MD/ey
00180027

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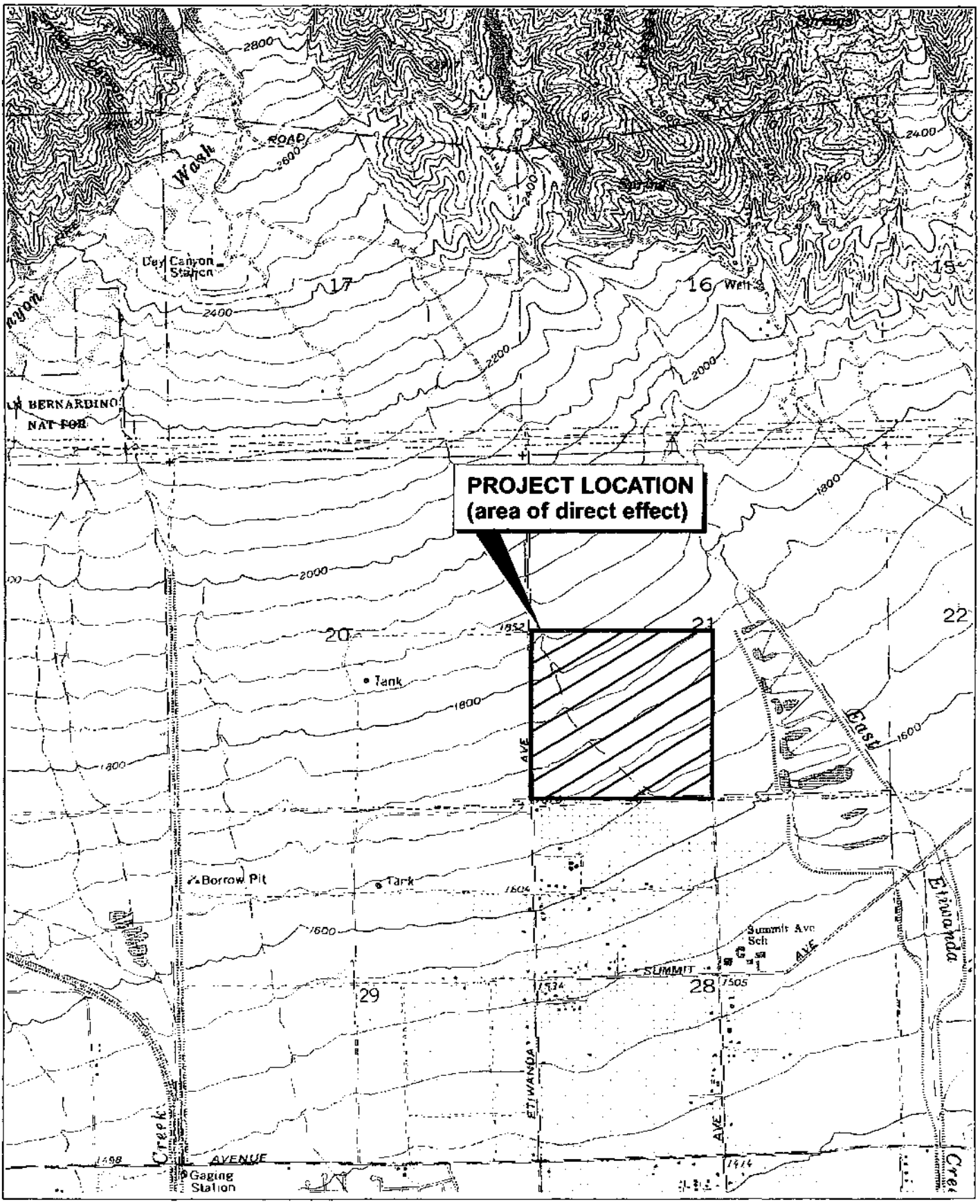

Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

2000 1000 0 2000

SCALE IN FEET

Michael Brandman Associates

Exhibit 2

Project Location M

TRACT 18973 - ARCHAEOLOGICAL SURVEY

Michael Brandman Associates

Environmental Services • Planning • Natural Resources Management

January 24, 2003

San Manuel Band of Mission Indians
Deron Marquez, Chairperson
P.O. Box 266
Patton, CA 92369

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Marquez:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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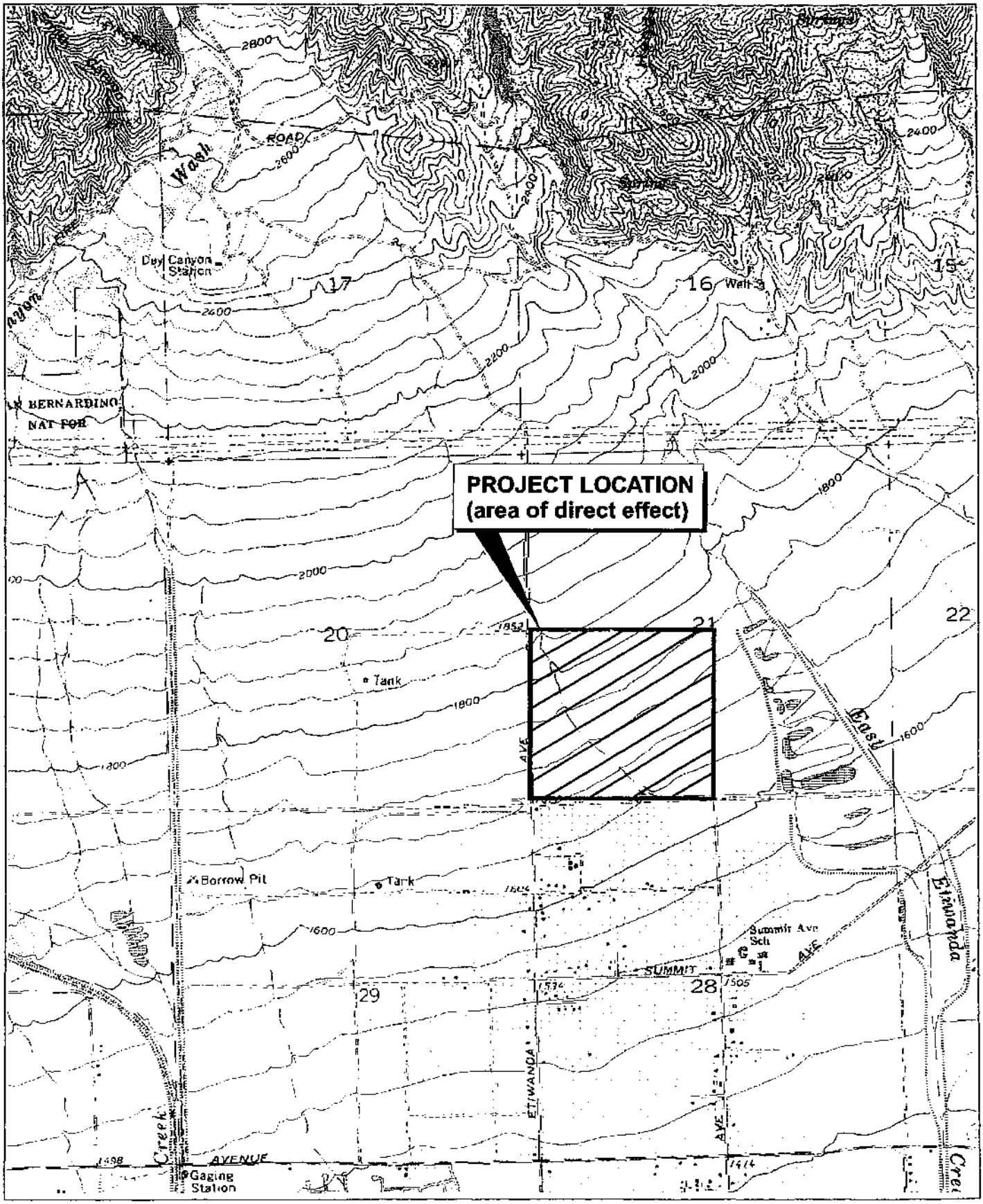
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
00180027

220 Commerce Suite 200 Irvine CA 92602 [illegible]
Inland Empire [illegible] Kern County [illegible] Bay Area [illegible]
[illegible]



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

2000 1000 0 2000

SCALE IN FEET

Michael Brandman Associates

Exhibit 2

Project Location M

Michael Brandman Associates

Environmental Services • Planning • Natural Resources Management

January 24, 2003

Twenty-Nine Palms Band of Mission Indians
Dean Mike, Chairperson
46-200 Harrison Place
Coachilla, CA 92236

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Mike:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be coustructed.

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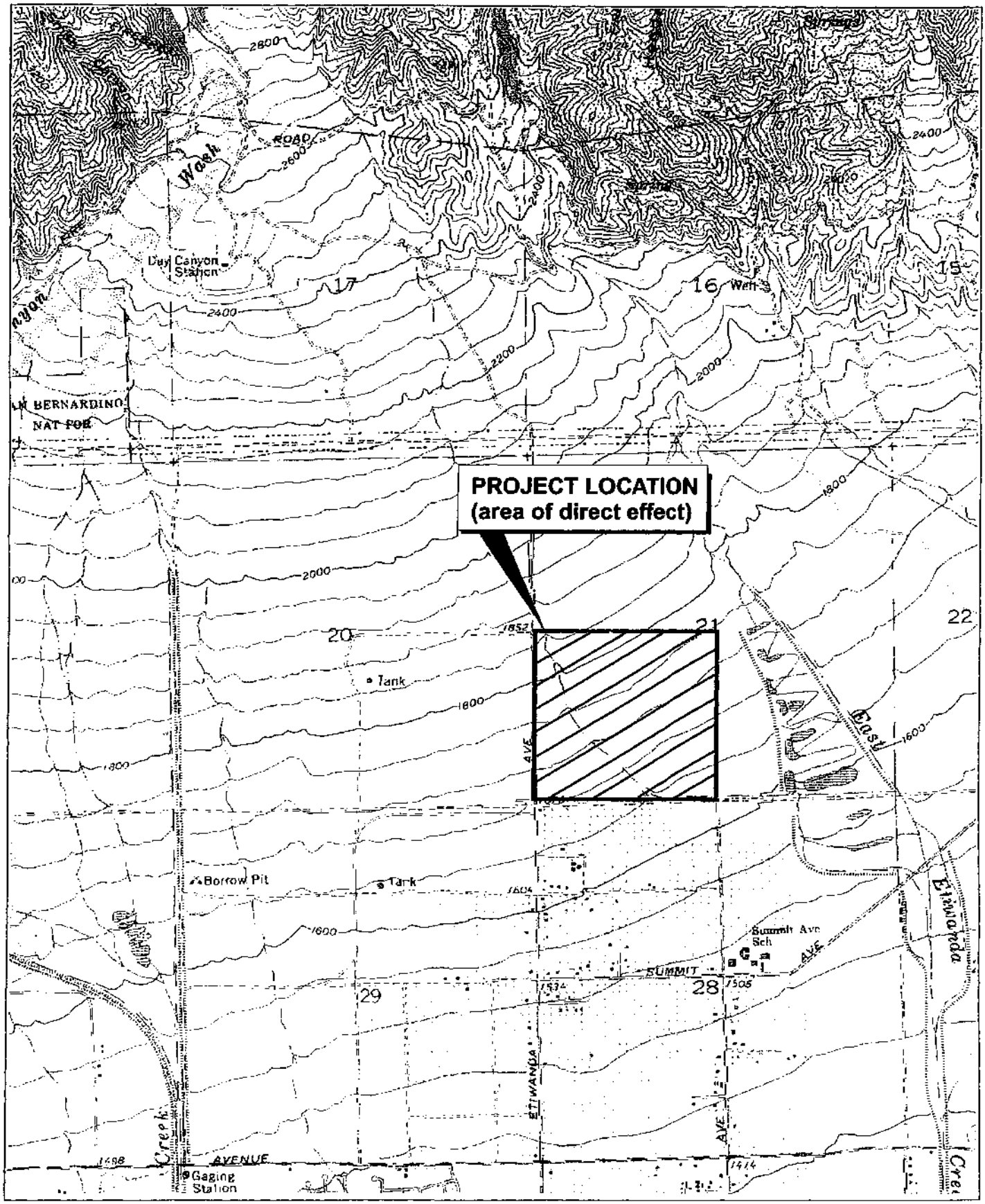
220 Commerce, Suite 200
Irvine, CA. 92602

MD/ey
00180027

220 Commerce, Suite 200, Irvine CA 92602 [illegible] 714 508.4100 [illegible] 714 508.4110



Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

NORTH

2000 1000 0 2000

SCALE IN FEET

Michael Brandman Associates

Exhibit 2

Project Location M

APPENDIX D:
DPR523 FORM SETS

PRIMARY RECORD

Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602
Other Listings:
Review Codes:_____ Reviewer:_____ Date:_____

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx
NRHP Status Code: _____

Page 1 of 14 ***Resource Name or # (Assigned by recorder): P1081-1/H**

P1. **Other Identifier:** "Locus West"

P2.* **Location:** _____Not for Publication ___X__Unrestricted

a. *County: San Bernardino **(P2b and P2c or P2d; attach location map)**

b. *USGS Quad: Cucamonga Peak **Dated:** 1980. **Photorev. :** ____.

Township: 1 North **Range:** 10 West . **Section:** 21 **.(SBBM)**

Elevation: 1720 feet above mean sea level (centerpoint)

c. Address: none **City:** _____ **Zip:** _____.

d.* UTM: (Give more than one for large and/or linear resources)

Zone: 11S: 451834mE / 3779188mN **(north end point, NAD 1983)**

11S: 451834mE / 3779007mN **(south end point, NAD 1983)**

UTM Derivation: __X__ USGS Quad _____GPS

GPS UTM Corrected: _____Yes __X__No **GPS brand/Model:** _____

e. Other Locational Data (e.g. parcel number, directions to resource, etc. as appropriate):

From the intersection of Etiwanda Avenue and Wilson Avenue, the site is approximately 11 meters north and 114 meters east. Located within an open field of coastal chaparral and north of drainage. The site is elongated (N/S) beginning at the water cap and continuing north to structural remains for approximately 180 meters.

P3a.* **Description** *(Describe resource and its major elements; include design, materials, condition, alterations, size, setting, and boundaries):* This is a long linear historic-era site consisting of remnants of a disused water irrigation system near the dirt portion of Etiwanda Avenue. The site is about 180 meters long. At the northwest end is a subsurface concrete structure (Feature 1), surrounded by ceramic pipe fragments and concrete structural remains. There are also foundation remains of a nearby concrete standpipe and trash scatter. A rock berm defines the line of the system as it runs southeast (Feature 2). There are currently ceramic pipe and concrete fragments scattering the areas surrounding the berm. About 90 meters south from the concrete substructure is a concrete circular water diversion system with a subterranean ceramic pipe (Feature 3). There is a metal grate embedded within a concrete ring covering the access to the pipe. In addition, there are three diversion ceramic pipes radiating from the system. The one furthest west is currently capped. Just south of this structure is a concrete rectangular subterranean reservoir, with cobble wall construction; it is clad on some of the exterior surfaces with concrete. Southwest of these two structures is a continuation of the rock berm, which runs for about 50 meters to a concrete watercap and standpipe (Feature 4). This is about 10 meters away from Wilson Avenue, which is a graded dirt road.

Earlier researchers stated that associated materials and historical site components were located to the east of this portion of the site. After the survey and a thorough search of the areas to the east, such materials could not be found.

P3b.* **Resource Attributes** (List attributes and codes): AH5, AH6.

P4.* **Resources Present:** _____Building _____Structure _____Object __X__Site _____District _____Element of District _____Isolate _____Other

P5a. **Photograph or Drawing** (Required for **HRI** buildings, structures, and objects): Digital photos are found on the Photograph record page.

P5b. **Description of Photo** (View, date, accession #): See photograph record.

P6.* **Date Constructed/Age and Source:** _____Prehistoric ___X___Historic ____Both
Likely built during the first quarter of the twentieth century.

P7.* **Owner and Address:** City of Rancho Cucamonga

ARCHAEOLOGICAL SITE RECORD

Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 3 of 14 ***Resource Name or # (Assigned by recorder): P1081-1/H**

A1.* **Dimensions:** **Length:** 180m (N-S) **Width:** 60m (E-W)

Method of measurement: X Paced _____Taped _____Visual Estimate X Other (topo map measurement)

Method of determination (Check any that apply): _____Artifacts X Features ____Soil _____Vegetation _____Topography _____Cut bank _____Animal burrow _____Excavation _____Property boundary _____Other (Explain):

Reliability of determination: X High _____Medium ____Low Explain:

Limitations (Check any that apply): _____Restricted access _____Paved/built over _____Site limits incompletely defined _____Disturbances _____Vegetation _____ Other(Explain):

A2. **Depth:** _____None _____Unknown. **Method of Determination:** Depth of site is likely less than 10 feet below modern grade because the cisterns were sunk perhaps 10 feet into the topsoil after digging the needed pit.

A3.* **Human Remains:** _____Present X Absent _____Possible _____Unknown (explain):

A4.* **Features** (Number, describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map):

1) subsurface concrete structure and cement rubble

2) rock berm with ceramic pipe and concrete fragments (subsurface water pipe)

3) cement subterranean reservoir and water diversion system remnant

4) watercap and standpipe

no Feature #) historic debris scatter: structural remains, ceramic pipe fragments, wood, metal, cans, glass.

A5.* **Cultural Constituents** (Describe and quantify artifacts, human-introduced organic residues, etc. not associated with features): Structural remains, ceramic pipe fragments, wood, metal, cans, glass. Modern trash consisting of plastic and a cut up hot tub.

A6.* **Were Specimens Collected?** X No ____Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated).

A7.* **Site Condition:** _____Good X Fair _____Poor (Describe disturbances). Some structural remains are in ruins while others in fairly good context.

A8.* **Nearest Water** (Type, distance, and direction): Intermittent creeks from Day and East Etiwanda Canyon. One intermittent creek is located about 200 meters to the east.

A9.* **Elevation:** (see P2b) 1720 feet above mean sea level

A10. **Environmental Setting**

Vegetation (Site and vicinity): Coastal chaparral

Soil (Site and surrounding): Coarse sandy loam and numerous granite boulders

Landform: Coarse alluvial fan

Geology: Alluvium is likely composed of croded granitic basement rock and some aeolian silt.

Exposure/Slope: Exposed to the north on a 5 degree slope (average).

Other Associations: Coastal Chaparral includes white sage, and introduced Eucalyptus and Pepper trees. Soil consists of a sandy loam with decomposing granites and rounded river cobbles. Located on a 5° slope in an open exposure.

LOCATION MAP

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HRI#:
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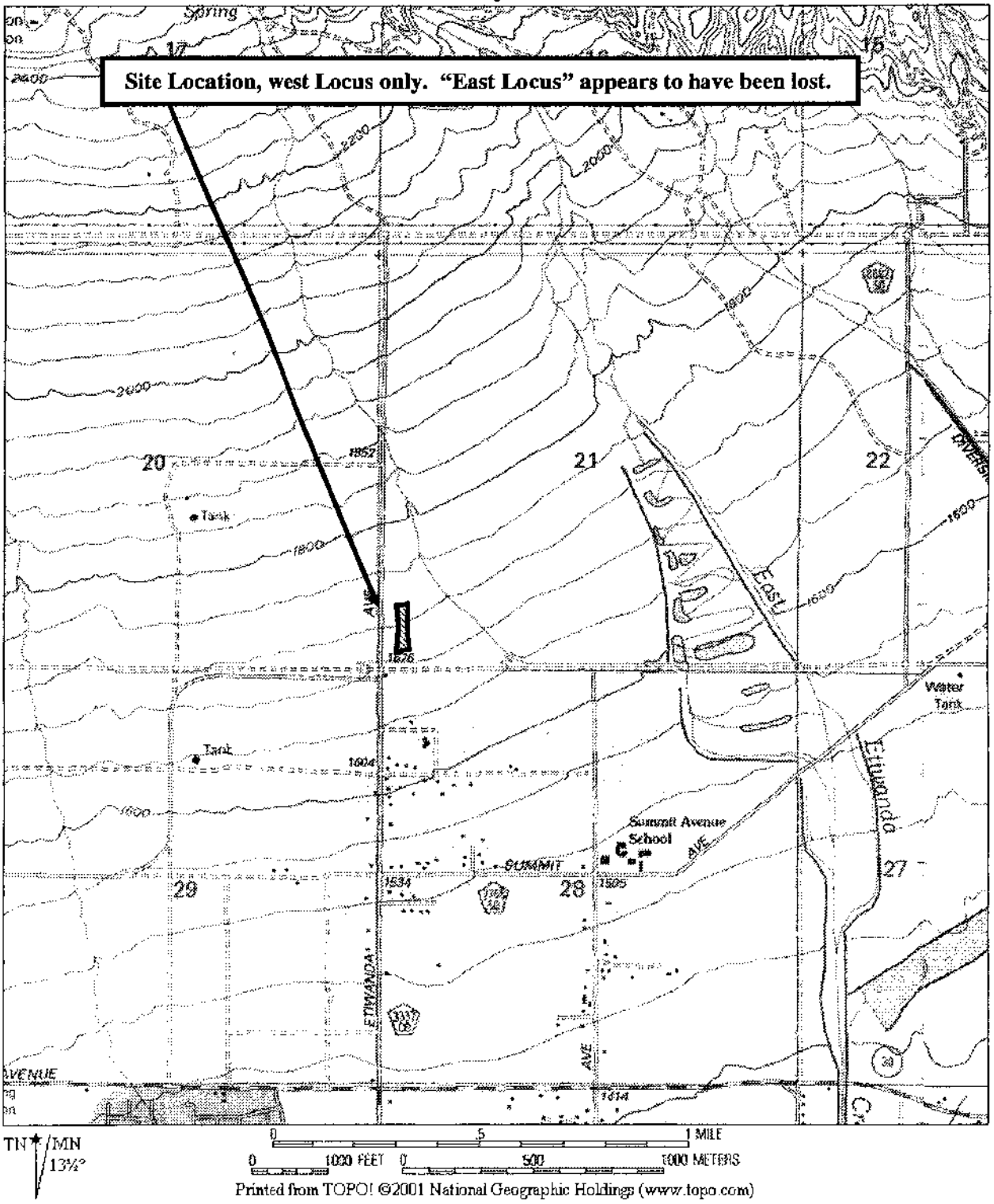
Page 5 **of** 14

***Resource Name or #** (Assigned by recorder): P1081-1/H

***Map Name:** Cucamonga Peak, CA. **Scale:** 1:24,000 **Date of Map:** 1980

Tract 16072: Cucamonga Peak, CA. 7.5' USGS



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SKETCH MAP

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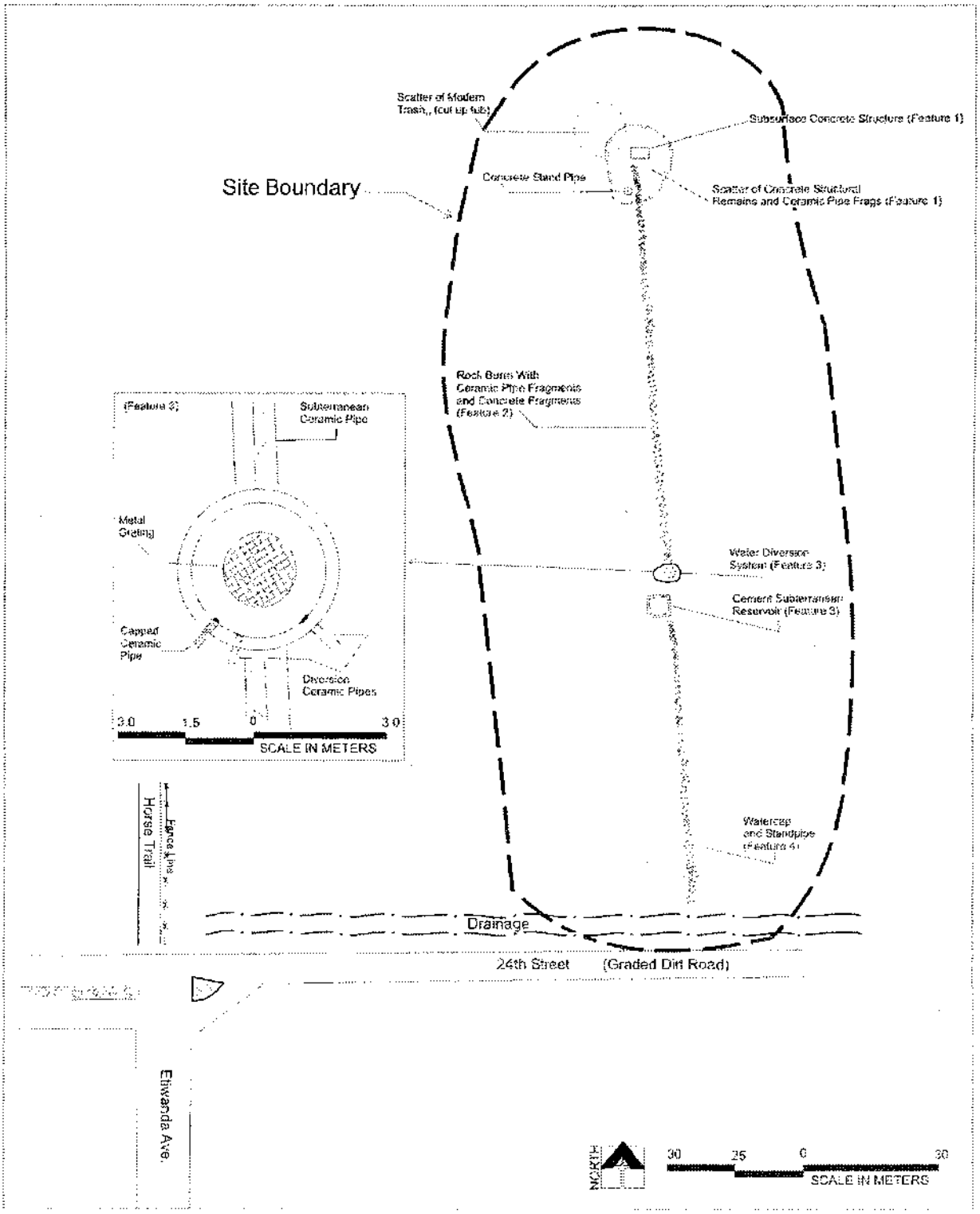
Page 6 of 14 ***Resource Name or # (Assigned by recorder): P1081-1/H**

***Drawn by:** Dustin Kay **Date of Map:** 5/27/03 **North is up.** Scale: 1"=33m



1/95; updated 1/98 *Required Information

PHOTOGRAPHIC RECORD

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 7 **of** 14

***Resource Name or #** (Assigned by recorder): P1081-1/H

Camera format: Toshiba digital
Lens size: _____
Film type and speed: _____
Negative on file at: _____

Month	Day	Time	Exp/Frame	Subject/Description	View Toward	Accession#
5	27	11am	1	See below	Northwest	None
5	27	11am	2	See below	Southwest	None
5	27	11am	3	See below	Uncertain	None
5	27	11am	4	See below	Down	None
5	27	11am	5	See below	Down	None
5	27	11am	6	See below, overview	North	None
5	27	--	7	See below, overview	West	None

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HRI#:
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Page 8 of 14

***Resource Name or #** (Assigned by recorder): P1081-1/H

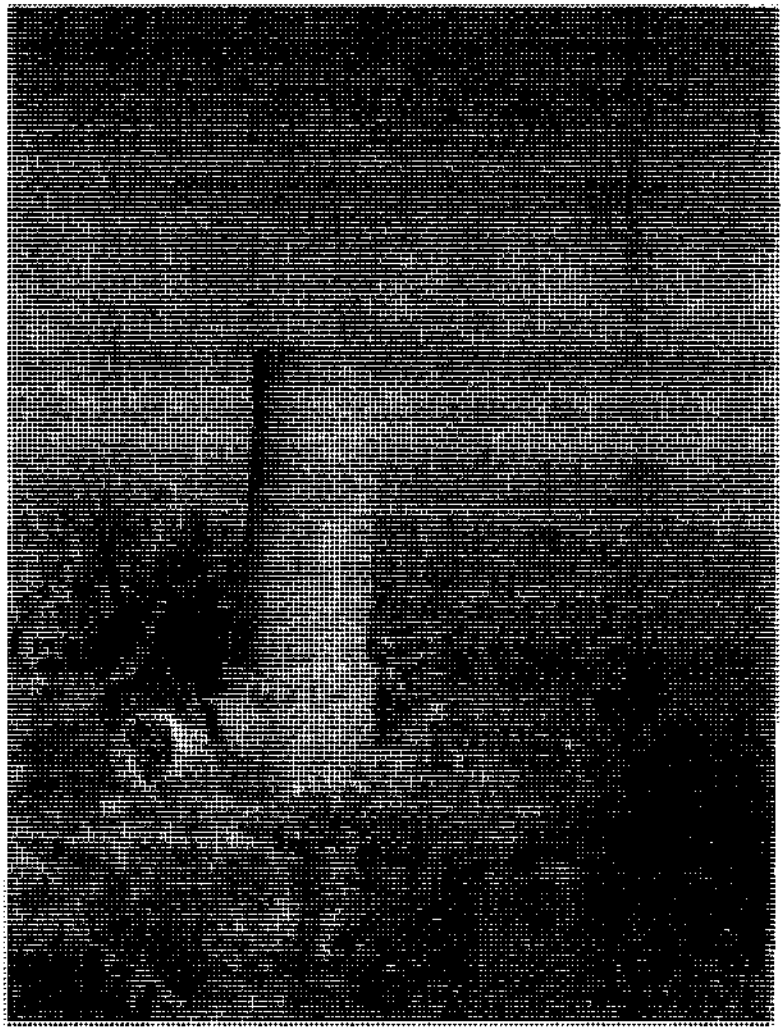

Image 1: View to the northwest of Feature 4.

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Page 9 of 14 ***Resource Name or # (Assigned by recorder): P1081-1/H**

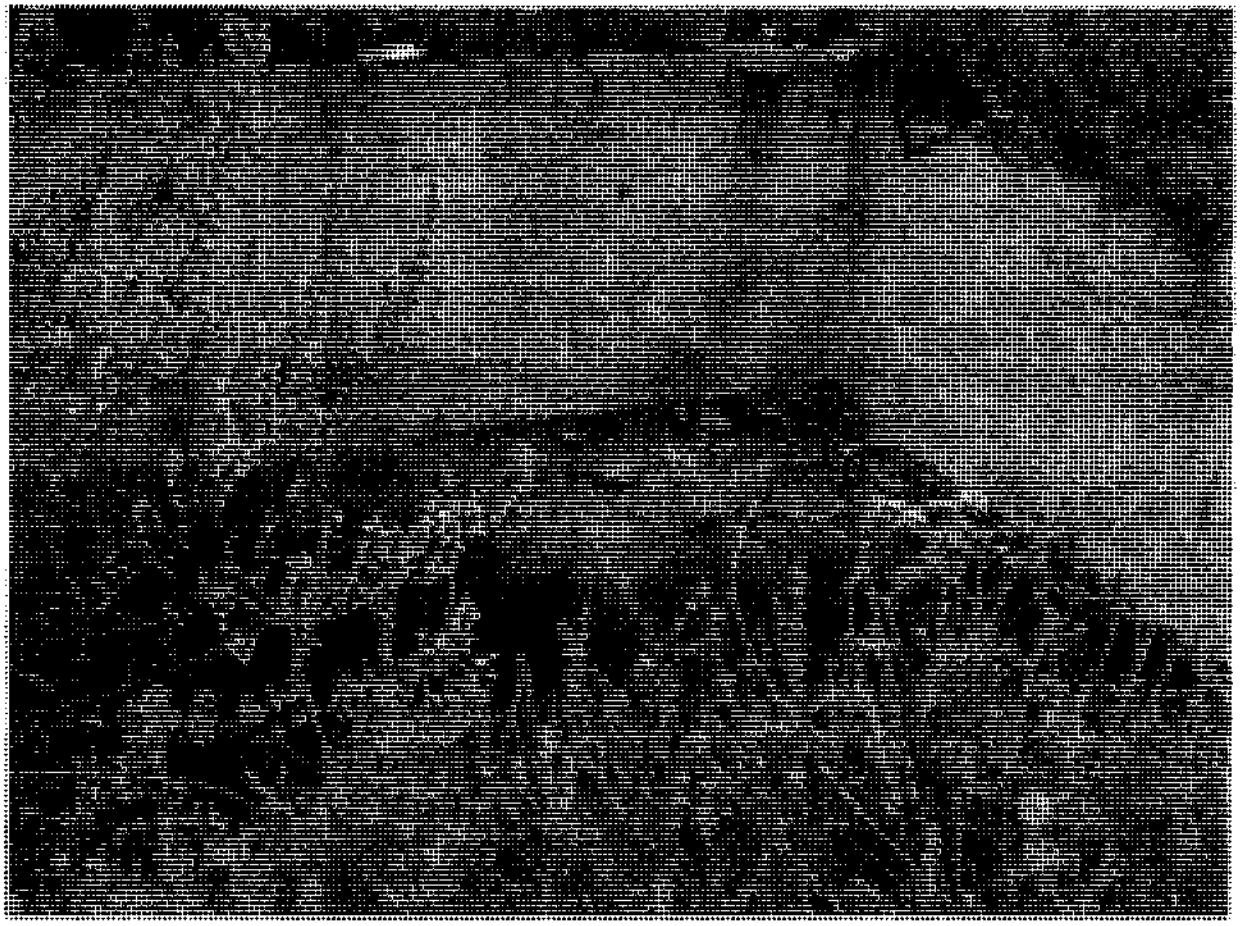

Image 2: View of Feature 1, a subsurface concrete structure. This is likely a small irrigation reservoir.

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Page 10 **of** 14 ***Resource Name or #** (Assigned by recorder): P1081-1/H

Image 3: View of Feature 3 diversion system.

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Page 11 of 14 ***Resource Name or # (Assigned by recorder): P1081-1/H**

Image 4: Closer view of construction of Feature 3.

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Page 11 of 11 **Resource Name or # (Assigned by recorder)** P1081-1/H

Image 5: View of opened metal grate in Feature 3.

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Page 13 of 14 ***Resource Name or #** (Assigned by recorder): P1081-1/H

Image 6: View of the area where the East Locus of the site is supposed to be. We did not observe any historical materials.

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Page 14 of 14 ***Resource Name or #** (Assigned by recorder): P1081-1/H

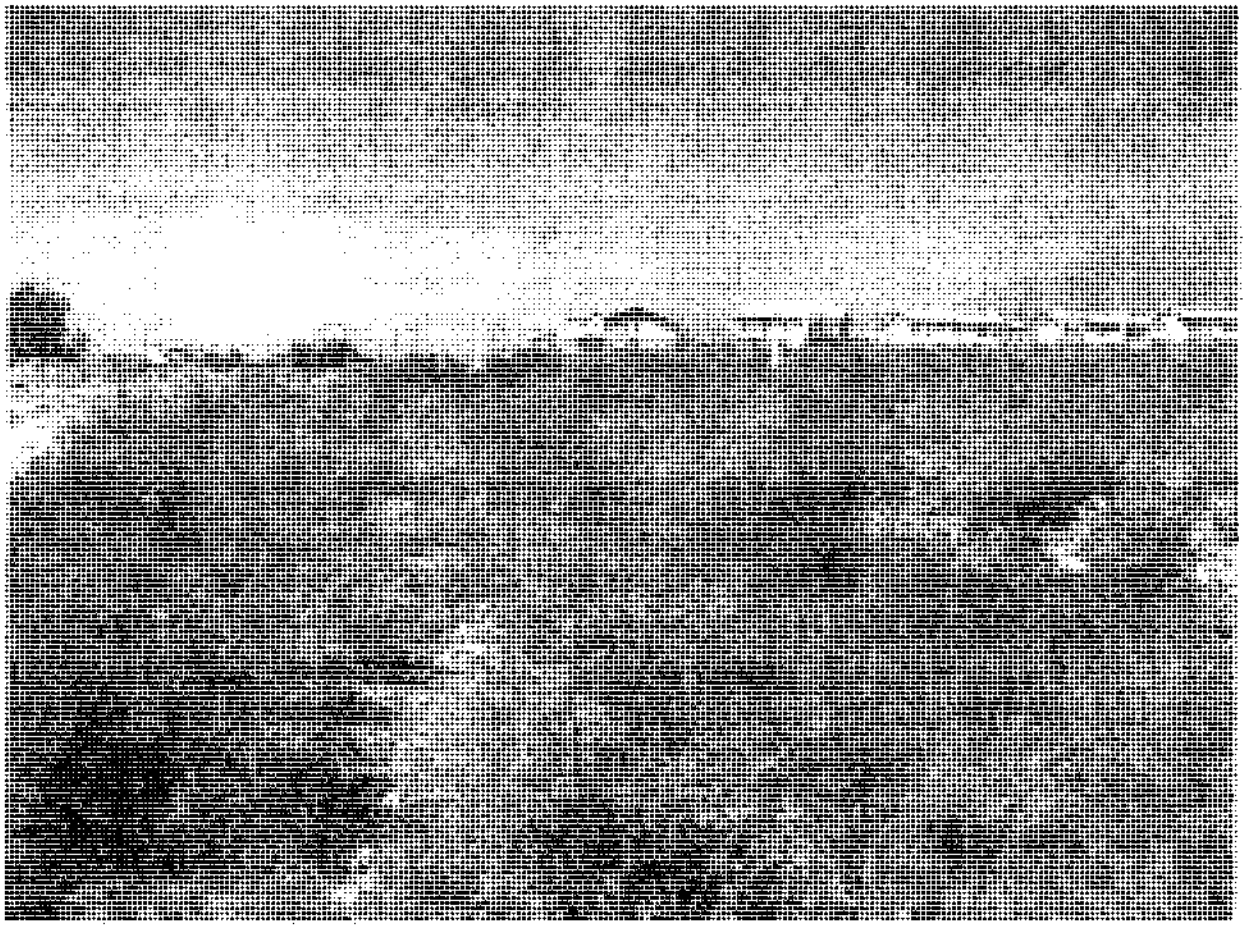

Image 7: View of southern portion of site. Feature 4 standpipe can be observed in the distance.

PRIMARY RECORD

Michael Brandman Associates
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Other Listings:
Review Codes:_____ Reviewer:_____ Date:_____

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx
NRHP Status Code: _____

Page 1 **of** 22 * **Resource Name or #** (Assigned by recorder): **P1081-19/H**

P1. **Other Identifier:** "19/H Locus A"

P2.* **Location:** _____ **Not for Publication** ___X___ **Unrestricted**

a. *County: San Bernardino **(P2b and P2c or P2d; attach location map)**

b. *USGS Quad: Cucamonga Peak **Dated:** 1980. **Photorev. :** ____.

Township: 1 North **Range:** 10 West **. Section:** 21 **.(SBBM)**

Elevation: 1820 feet above mean sea level (centerpoint)

c. Address: none **City:** _____ **Zip:** _____.

d.* **UTM:** (Give more than one for large and/or linear resources)

Zone:	**11S:**	**451857mE**	/	**3779709mN**	**(NW point, NAD 1983)**
	11S:	**452141mE**	/	**3779724mN**	**(NE point, NAD 1983)**
	11S:	**451870mE**	/	**3779607mN**	**(SW point, NAD 1983)**
	11S:	**452129mE**	/	**3779611mN**	**(SE point, NAD 1983)**

UTM Derivation: ___X___ USGS Quad _____GPS

GPS UTM Corrected: _____Yes ___X___No **GPS brand/Model:** _____

e. Other Locational Data (e.g. parcel number, directions to resource, etc. as appropriate):

From the intersection of Etiwanda Avenue and Wilson Avenue, the site is approximately 550 meters north and 300 meters east. Located within an open field of coastal chaparral.

P3a.* **Description** *(Describe resource and its major elements; include design, materials, condition, alterations, size, setting, and boundaries):*

Locus A consists of structures and features that appear to be of later construction than those within the other ranch complex (Locus B, East). At the northernmost side of Locus A is an aging eucalyptus wind break with a low cobble wall that parallels it just to the north (Feature 1). Both are about 240 meters long and run east to west. Running perpendicular to the south of the windbreak is an irregular row of eucalyptus trees about 110 meters long (Feature 2). At the south end of the property is another cobble wall, about 140 meters long, running east to west (Feature 3). There is a dirt access road running east to west through this property; Locus B shares this road.

There are also remnants of two wall structures, one building, and a cobblestone and concrete trough at this ranch complex (Locus A, West). The wall structures are of cobble wall construction with mortar, and are located at the west end of the complex. Of the two, the one to the north of the dirt road is approximately 45 meters long. (Feature 4). The other to the south of the dirt road (Feature 5), has a symmetrical rectangular plan with an extension to the north. The areas within the wall remnants for both are filled with chaparral growth. The building is of cobblestone construction with cement mortar (Feature 6) and supported by rebar; it has a concrete floor that has cracks, but is generally intact; although basically of similar construction as Locus B, the use of rebar and concrete floor reflects a higher level of structural sophistication. It is located to the northeast of the two wall structures. This building has an irregular floor plan, and appears to have had three rooms. Although some lower portions of the walls still stand, many do not, especially toward the west end of the structure; there are not enough remains to help determine fenestration or door openings. The west wall does, however, have the remnants of a chimney, with a broken clay flue inside. Scattered throughout Locus A are historic midden concentrations exhibiting concrete rubble, ceramic pipe fragments, wood, bricks, metal and glass fragments.

Earlier researchers did not include this extensive set of features on the original 19/H site description.

P3b.* **Resource Attributes** (List attributes and codes): AH2, AH3, AH4, AH7, AH11.

P4.* **Resources Present:** _____Building ___X___Structure _____Object ___X___Site _____District

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Other Listings:
Review Codes:_____ Reviewer:_____ Date:_____

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx
NRHP Status Code: _____

Page 2 of 22 * **Resource Name or #** (Assigned by recorder): **P1081-19/H**

_____Element of District _____Isolate _____Other

P5a. **Photograph or Drawing** (Required for **HRI** buildings, structures, and objects): Digital photos are found on the Photograph record page.

P5b. **Description of Photo** (View, date, accession #): See photograph record.

P6.* **Date Constructed/Age and Source:** _____Prehistoric __X__Historic _____Both
Likely built during the first quarter of the twentieth century.

P7.* **Owner and Address:** City of Rancho Cucamonga

P8. **Recorded by:** Dustin Kay, B.S.
Project #: MBA# 00180027

P9.* **Date recorded:** May 27, 2003

P10.* **Type of Survey** (Describe): "Phase 1" intensive block

P11.* **Report Citation** (Documents, consultants, maps, and other references):

A) Rupp Aerial AXM-5K-90 (9-22-53): U.S. Dept of Agriculture overflight.
B) An Archaeological And Paleontological Resource Evaluation And Significance Assessment For Tract 16072, Located Near Wilson and East Avenues, City of Rancho Cucamonga Sphere Of Influence
C) Modern aerial photo- site map overlay
D) 1938 aerial photograph

Attachments:

__X__Location Map (7.5'USGS quadrangle)
__X__Archaeological Site Record
__X__Sketch Map
_____Linear Feature Record
_____ Milling Station Record
_____ Artifact Record
_____ Illustration Sheet
__X__Photograph Record (digital photos attached)
_____Building, Structure, and Object Record
_____ District Record
_____ Other (List): _____

ARCHAEOLOGICAL SITE RECORD

Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 3 of 22 * **Resource Name or # (Assigned by recorder): P1081-19/H**

A1.* **Dimensions:** **Length:** 135m (N-S) **Width:** 245m (E-W)

Method of measurement: X Paced ____Taped ____Visual Estimate X Other (topo map measurement)

Method of determination (Check any that apply): ____Artifacts X Features ____Soil ____Vegetation ____Topography ____Cut bank ____Animal burrow ____Excavation ____Property boundary ____Other (Explain):

Reliability of determination: X High ____Medium ____Low Explain:

Limitations (Check any that apply): ____Restricted access ____Paved/built over ____Site limits incompletely defined ____Disturbances ____Vegetation ____ Other(Explain):

A2. **Depth:** ____None ____Unknown. **Method of Determination:** Depth of site is likely less than 5 feet below modern grade because the foundation excavations were sunk perhaps 5 feet into the topsoil.

A3.* **Human Remains:** ____Present X Absent ____Possible ____Unknown (explain):

A4.* **Features** (Number, describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map):

1. Windbreak and cobblestone wall
2. Eucalyptus windbreak
3. Cobblestone boundary wall
4. Cobblestone wall
5. Cobblestone wall enclosure
6. Cobblestone and concrete residential building remains

no feature #: concentrations of historic debris through the site

A5.* **Cultural Constituents** (Describe and quantify artifacts, human-introduced organic residues, etc. not associated with features): Glass, ceramics, structural remains (concrete, bricks, wood), roofing paper, metal fragments, cans, ceramic pipe fragments, and remains of an abandoned automobile.

A6.* **Were Specimens Collected?** X No ____Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated).

A7.* **Site Condition:** ____Good X Fair ____Poor (Describe disturbances). The remains of homes are in ruins while the rock walls are in fairly good condition.

A8.* **Nearest Water** (Type, distance, and direction): Intermittent creeks from Day and East Etiwanda Canyon. One intermittent creek is located about 10 meters east of the eastern boundary of the site.

A9.* **Elevation:** (see P2b) 1820 feet above mean sea level

A10. **Environmental Setting**

Vegetation (Site and vicinity): Coastal chaparral

Soil (Site and surrounding): Coarse sandy loam and numerous granite boulders

Landform: Coarse alluvial fan

Geology: Alluvium is likely composed of eroded granitic basement rock and some aeolian silt.

Exposure/Slope: Exposed to the north on a 5-degree slope (average).

Other Associations: Coastal Chaparral includes white sage, and introduced Eucalyptus and Pepper trees. Soil consists of a sandy loam with decomposing granites and rounded river cobbles. Located on a 5° slope in an open exposure.

ARCHAEOLOGICAL SITE RECORD

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 * **Resource Name or #** (Assigned by recorder): **P1081-19/H**

A11.

Historical Information: An exact construction date could not be determined at this time, although the complex does exist in a 1938 aerial photograph . This photograph suggests tbat Locus A is younger than Locus B based on the size of the eucalyptus in each locus. Based on visual inspection, Locus A was most likely constructed during the first quarter of the twentieth century, some time after Locus B was built. It is possible that Locus A constructed by a member of the Perdew family, since they constructed the ranch in Locus B, and this property was under their ownership until 1917. By 1917, however, the property came into the hands of W. F. Courtright, et al. In 1919, A. H. Laurence became the owner until the property transferred to Lila M. Lawrence, who owned it from 1922 to 1942. From 1945 to 1953, C. D. and Emma M. Zuppan were the owners. From 1961 to at least 1974, Claudia L. Darington owned this ranch complex.

According to Larry Perdew, a life long resident of Etiwanda, Locus A was abandoned for a period of time until 1958 when Lucky and Gerry Humphrey repaired and moved into the complex with their family; they lived in what is today the building ruin with the concrete floor. According to the County Archives, Claudia Darington was the owner at that time. They had some horses, but did not participate in any agricultural activities. In 1961, however, a fire destroyed their home, along with the abandoned remnants of Locus B. The complex has since remained unused.

A12.* **Age:** _____Prehistoric _____1542-1769 _____1769-1848 _____1848-1880 _____1880-1914 _X_1914-1945 _____Post 1945 _____Undetermined.

Factual or estimated dates of occupation (Explain): The cobblestone walls and foundations of this ranch complex were most likely constructed during the first quarter of the twentieth century. Locus A appears younger than Locus B.

A13. **Interpretations** (Discuss scientific, interpretive, ethnic, and other values of site, if known):

Probably represents an agricultural complex and a set of structure foundations for tractors and possible mobile homes.

A14. **Remarks:**

A15. **Reference** (Documents, consultants, maps, and other references):

A) Rupp Aerial AXM-5K-90 (9-22-53): U.S. Dept of Agriculture overflight.
B) An Archaeological And Paleontological Resource Evaluation And Significance Assessment For Tract 16072, Located Near Wilson and East Avenues, City of Rancho Cucamonga Sphere Of Influence
C) Modern aerial photo- site map overlay
D) 1938 aerial photograph

A16. **Photographs** (List subject(s), direction of view, and accession numbers or attach a Photograph Record):

see photograph record page.

Accession numbers: See photographic record.

LOCATION MAP

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Primary# xx-xxxxx
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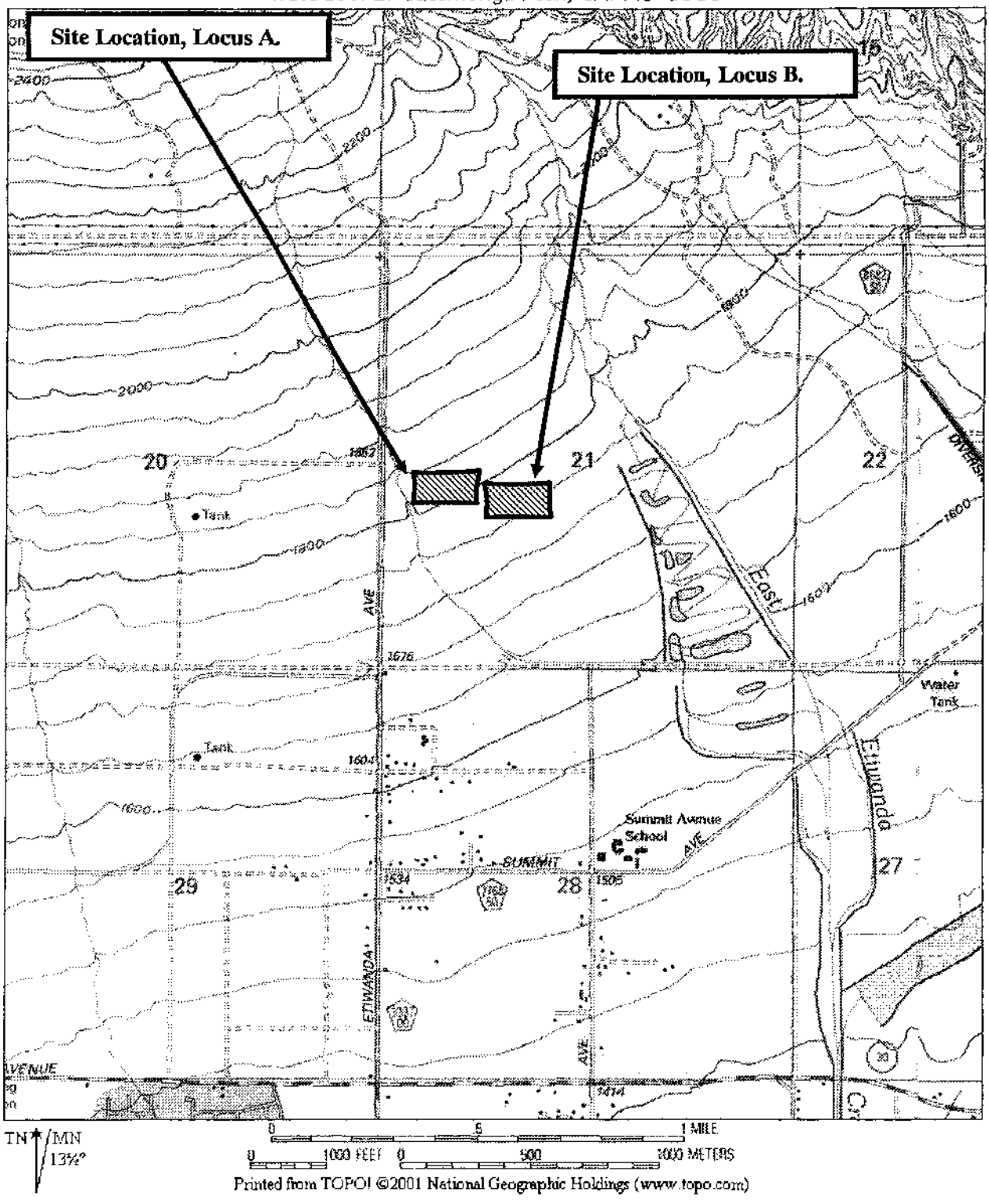
Page 5 **of** 22

***Resource Name or #** (Assigned by recorder): P1081-19/H

***Map Name:** Cucamonga Peak, CA. **Scale:** 1:24,000 **Date of Map:** 1980

Tract 16072: Cucamonga Peak, CA. 7.5' USGS



SKETCH MAP

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Primary# xx-xxxxx
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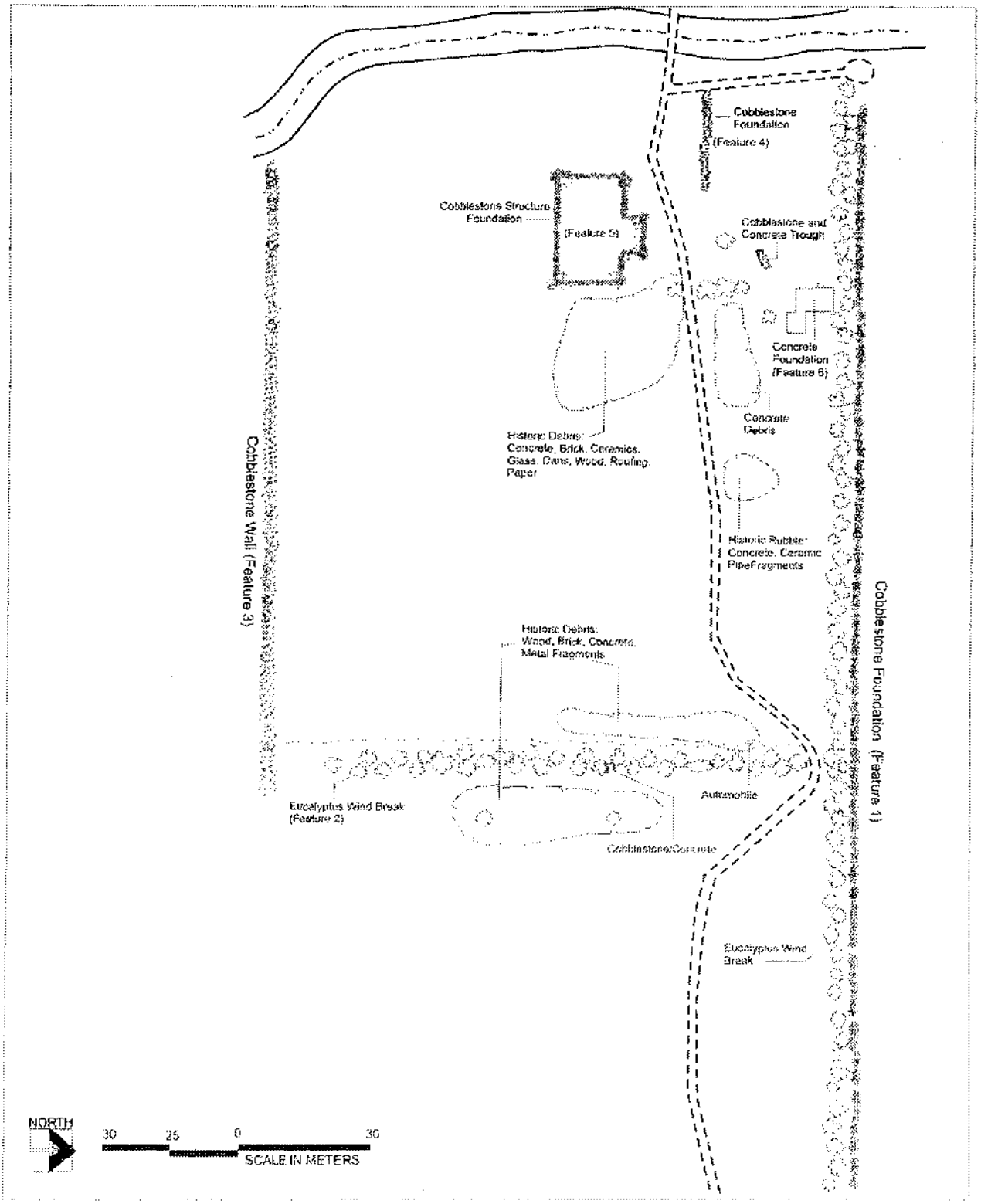
Trinomial: CA-SB-xxxxx

Page 6 **of** 22 * **Resource Name or #** (Assigned by recorder): P1081-19/H

***Drawn by:** Dustin Kay **Date of Map:** 5/27/03 **North is to right.** Scale: 1"=33m



PHOTOGRAPHIC RECORD

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 7 **of** 22 * **Resource Name or #** (Assigned by recorder): P1081-19/H

Camera format: Toshiba digital **Lens size:**
Film type and speed: **Negative on file at:**

Month	Day	Time	Exp/Frame	Subject/Description	View	Accession#
5	27		1	Wall of concrete pad structure	W	
5	27		2	Wall of concrete pad structure	S	
5	27		3	Concrete pad	E	
5	27		4	Cobblestone trough	W	
5	27		5	Structural remains	S	
5	27		6	Cobblestone structural foundation	SW	
5	27		7	Cobblestone structural foundation w/ break in background	W	
5	27		8	Cobblestone structural foundation w/ break in background	N	
5	27		9	Cobblestone structural foundation w/ water tank in background	S	
5	28		10	Southern boundary wall	W	
5	28		11	Southern boundary wall w/ locus B in background	E	
5	28		12	Overview w/ tree break	W	
5	28		13	Overview w/ structure wall in background	W	
5	28		14	North rock foundation w/ tree break	E	
5	28		15	North rock foundation w/ tree break	W	

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HRI#:
Trinomial: CA-SB-xxxxx

Page 8 **of** 22 * **Resource Name or #** (Assigned by recorder): P1081-19/H

Image 1

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 9 of 22 * **Resource Name or # (Assigned by recorder):** P1081-19/H

Image 2

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Page 10 **of** 22 * **Resource Name or #** (Assigned by recorder): P1081-19/H

Image 3

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 11 of 22 * **Resource Name or # (Assigned by recorder):** P1081-19/H

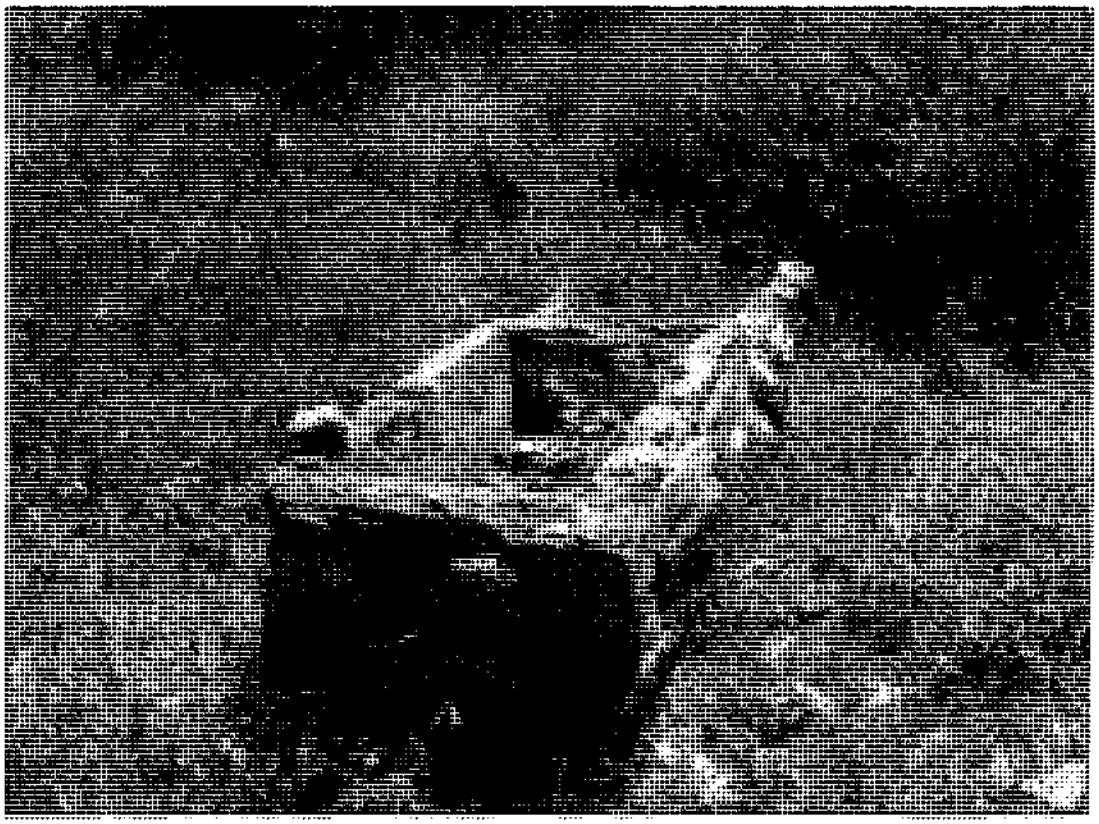

Image 4

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Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 12 **of** 22 * **Resource Name or #** (Assigned by recorder): P1081-19/H

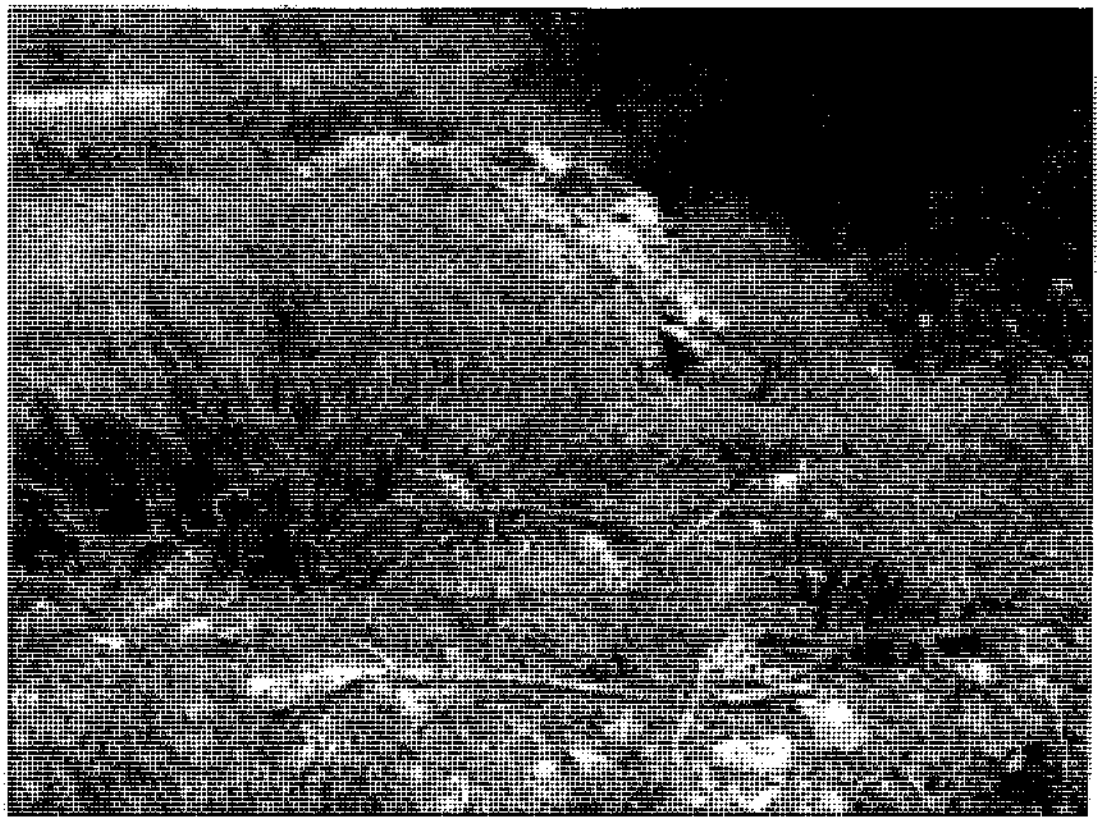

Image 5

PHOTOGRAPHIC RECORD

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 13 of 22 * **Resource Name or #** (Assigned by recorder): P1081-19/H

Image 6

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Primary# xx-xxxxx
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Trinomial: CA-SB-xxxxx

Page 14 **of** 22 * **Resource Name or #** (Assigned by recorder): P1081-19/H

Image 7

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 15 **of** 22 * **Resource Name or # (Assigned by recorder):** P1081-19/H

Image 8

PHOTOGRAPHIC RECORD

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Primary# xx-xxxxx
HRI#:
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Page 16 **of** 22

* **Resource Name or #** (Assigned by recorder): P1081-19/H

Image 9

PHOTOGRAPHIC RECORD

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Page 17 **of** 22 * **Resource Name or #** (Assigned by recorder): P1081-19/H

Image 10

PHOTOGRAPHIC RECORD

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Primary# xx-xxxxx
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Trinomial: CA-SB-xxxxx

Page 18 of 22 * **Resource Name or #** (Assigned by recorder): P1081-19/H

Image 11

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Page 19 **of** 22 * **Resource Name or #** (Assigned by recorder): P1081-19/H

Image 12

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Primary# xx-xxxxx
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Page 20 of 22 * **Resource Name or #** (Assigned by recorder): P1081-19/H

Image 13

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Trinomial: CA-SB-xxxxx

* **Resource Name or #** (Assigned by recorder): **P1081-19/H**

Image 14

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HRI#:
Trinomial: CA-SB-xxxxx

Page 22 **of** 22

* **Resource Name or #** (Assigned by recorder): P1081-19/H

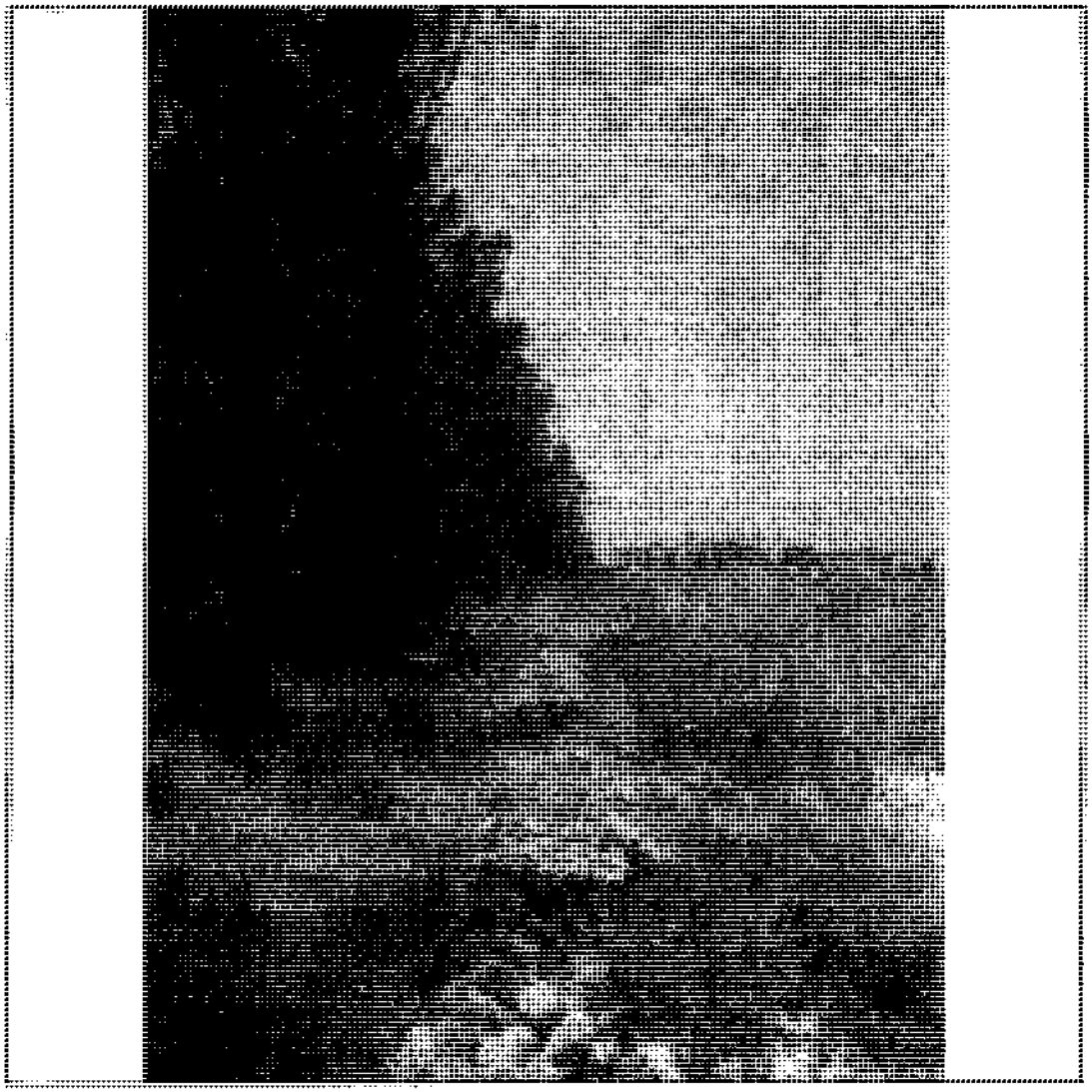

Image 15

PRIMARY RECORD

Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602
Other Listings:
Review Codes:_____ Reviewer:_____ Date:_____

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx
NRHP Status Code: _____

Page 1 of 26 * **Resource Name or # (Assigned by recorder): P1081-19/H**

P1. **Other Identifier:** "19/H Locus B"

P2.* **Location:** _____Not for Publication ___X__Unrestricted

a. *County: San Bernardino **(P2b and P2c or P2d; attach location map)**

b. *USGS Quad: Cucamonga Peak **Dated:** 1980. **Photorev. :**____.

Township: 1 North **Range:** 10 West **. Section:** 21 **.(SBBM)**

Elevation: 1770 feet above mean sea level (centerpoint)

c. Address: none **City:** _____ **Zip:** _____.

d.* **UTM:** (Give more than one for large and/or linear resources)

Zone:	**11S:**	**452146mE**	/	**3779670mN**	**(NW point, NAD 1983)**
	11S:	**452411mE**	/	**3779669mN**	**(NE point, NAD 1983)**
	11S:	**452145mE**	/	**3779540mN**	**(SW point, NAD 1983)**
	11S:	**452405mE**	/	**3779544mN**	**(SE point, NAD 1983)**

UTM Derivation: __X__ USGS Quad _____GPS

GPS UTM Corrected: _____Yes __X__No **GPS brand/Model:** _____

e. Other Locational Data (e.g. parcel number, directions to resource, etc. as appropriate):

From the intersection of Etiwanda Avenue and Wilson Avenue, the site is approximately 475 meters north and 625 meters east. Located within an open field of coastal chaparral.

P3a.* **Description** *(Describe resource and its major elements; include design, materials, condition, alterations, size, setting, and boundaries):*

Locus B exhibits the remains of two cobble wall and mortar structures, along with other features surrounding the foundations. One fonndation is near the center of the property (Feature 1) with low irregular wall remnants; its ground plan or use could not be determined. The second foundation (Feature 2) was most likely the main building on the property. It is located at the north end of Locus B, and has an irregular floor plan. This building remnant is relatively intact and retains some definition. Although the foundation outline remains, the walls of the eastern portion of the building, however, no longer exist. The primary entrance for this structure appears to be on the north elevation, facing the dirt access road; there are remnants of steps and a walkway leading up to it. Another door was found at the east elevation. There are various outlines for windows throughout the walls. A west-facing wall near the access road still has what appears to be a concrete sill. There is no longer any evidence of the roof or flooring material.

There are remnants of a concrete trough near the northwest end of the property (Feature 3). A nearly square shaped cobble wall surrounds the property (Feature 4). At the northeast corner of this wall, there is another small cobble wall enclosure (Feature 5) within the larger one; there is extensive chaparral growth within this smaller area. Both walls are low and the stones are now irregularly laid with no visible mortar. The property shares the same dirt access road running east and west as Locus A. There are eucalyptus and pepper trees planted throughout. Currently, the complex is being used informally as a paint ball course, resulting in extensive paint stains and some graffiti on the remains of the main building and nearby wall enclosure surfaces. In addition, there are various padded boards and other paint ball related gear and debris scattered throughout. This activity appears to have also resulted in there being less vegetation overgrowth within the complex as compared to the surrounding areas, including Locus A.

Earlier researchers included only this extensive set of features on the original 19/H site description.

P3b.* **Resource Attributes** (List attribntes and codes): AH2, AH3, AH4, AH7, AH11.

P4.* **Resources Present:** _____Building __X__Structure _____Object __X__Site _____District _____Element of District _____Isolate _____Other

ARCHAEOLOGICAL SITE RECORD

Michael Brandman Associates
220 Commerce, Suite 200
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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 3 of 26 * **Resource Name or #** (Assigned by recorder): **P1081-19/H**

A1.* **Dimensions:** **Length:** 75m (N-S) **Width:** 80m (E-W)

Method of measurement: X Paced ____ Taped ____ Visual Estimate X Other (topo map measurement)

Method of determination (Check any that apply): ____ Artifacts X Features ____ Soil ____ Vegetation ____ Topography ____ Cut bank ____ Animal burrow ____ Excavation ____ Property boundary ____ Other (Explain):

Reliability of determination: X High ____ Medium ____ Low Explain:

Limitations (Check any that apply): ____ Restricted access ____ Paved/built over ____ Site limits incompletely defined ____ Disturbances ____ Vegetation ____ Other(Explain):

A2. **Depth:** ____ None ____ Unknown. **Method of Determination:** Depth of site is likely less than 5 feet below modern grade because the foundation excavations were sunk perhaps 5 feet into the topsoil.

A3.* **Human Remains:** ____ Present X Absent ____ Possible ____ Unknown (explain):

A4.* **Features** (Number, describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map):

1. Cobblestone/concrete foundation
2. Cobblestone residential structure foundation
3. Concrete trough
4. Cobblestone boundary wall
5. Interior boundary wall

A5.* **Cultural Constituents** (Describe and quantify artifacts, human-introduced organic residues, etc. not associated with features): Glass, ceramics, structural remains (concrete, bricks, wood), roofing paper, metal fragments, cans.

A6.* **Were Specimens Collected?** X No ____ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated).

A7.* **Site Condition:** ____ Good X Fair ____ Poor (Describe disturbances). The remains of homes are in ruins while the rock walls are in fairly good condition. The structure complex is currently being used as an informal paintball court.

A8.* **Nearest Water** (Type, distance, and direction): Intermittent creeks from Day and East Etiwanda Canyons. One intermittent creek is located about 200 meters west of the eastern boundary of the site.

A9.* **Elevation:** (see P2b) 1,750 feet above mean sea level

A10. **Environmental Setting**

Vegetation (Site and vicinity): Coastal chaparral

Soil (Site and surrounding): Coarse sandy loam and numerous granite boulders

Landform: Coarse alluvial fan

Geology: Alluvium is likely composed of eroded granitic basement rock and some aeolian silt.

Exposure/Slope: Exposed to the north on a 5-degree slope (average).

Other Associations: Coastal Chaparral includes white sage, and introduced Eucalyptus and Pepper trees. Soil consists of a sandy loam with decomposing granites and rounded river cobbles. Located on a 5° slope in an open exposure.

LOCATION MAP

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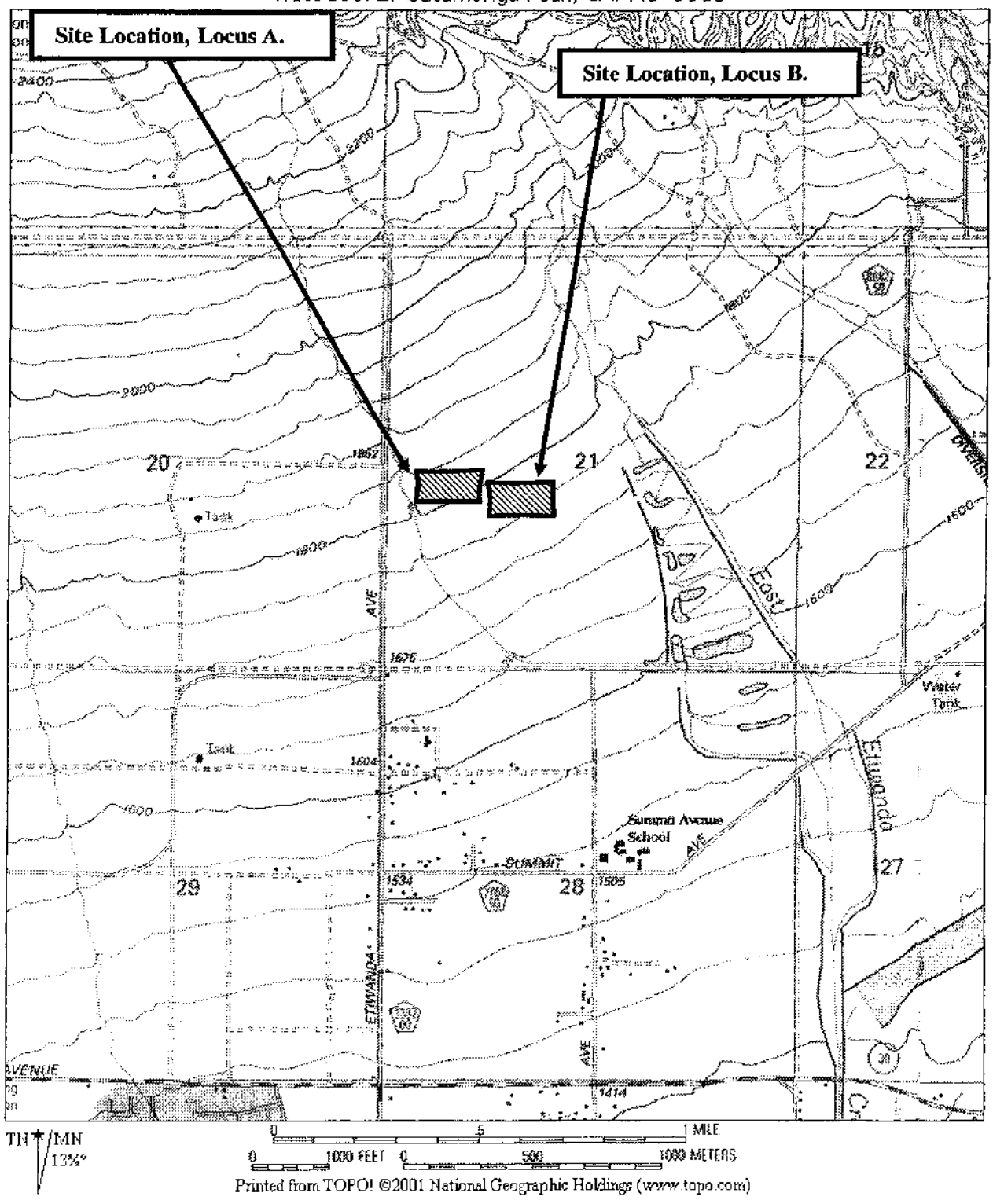
Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 5 **of** 26

***Resource Name or #** (Assigned by recorder): P1081-19/H

***Map Name:** Cucamonga Peak, CA. **Scale:** 1:24,000 **Date of Map:** 1980

Tract 16072: Cucamonga Peak, CA. 7.5' USGS



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SKETCH MAP

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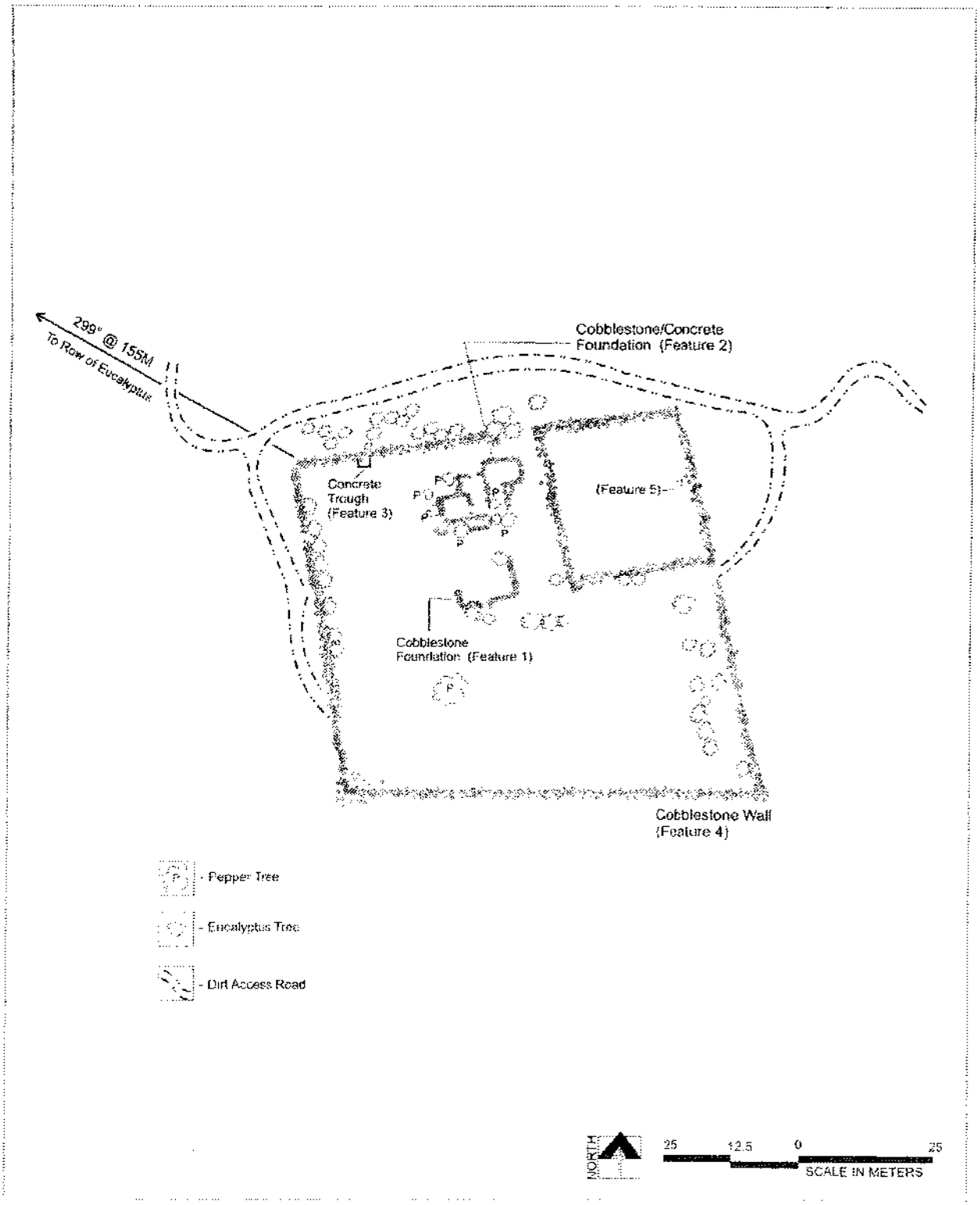
Page 6 of 26 * **Resource Name or #** (Assigned by recorder): P1081-19/H

***Drawn by:** Dustin Kay **Date of Map:** 5/27/03 **North is to right.** Scale: 1"=30m



1/95; updated 1/98 *Required Information

PHOTOGRAPHIC RECORD

Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 7 **of** 26 * **Resource Name or #** (Assigned by recorder): P1081-19/H

Camera format: Toshiba digital **Lens size:**
Film type and speed: **Negative on file at:**

Month	Day	Time	Exp/Frame	Subject/Description	View	Accession#
5	26		1	North boundary wall	NE	
5	26		2	View of locus with debris	E	
5	26		3	West boundary wall w/ tree break	E	
5	26		4	Structure with cobblestone walls	E	
5	26		5	Structure with cobblestone walls	N	
5	26		6	Structure foundation with stairs	N	
5	27		7	Structure with cobblestone walls	W	
5	27		8	Southern boundary wall	E	
5	27		9	NE corner of boundary wall	E	
5	27		10	Structure with cobblestone walls	SW	
5	27		11	Structure with cobblestone walls	S	
5	27		12	Structure with cobblestone walls	SW	
5	27		13	Internal wall of structure w/ slot for wood frame	S	
5	27		14	Internal wall of structure w/ slot for wood frame	W	
5	27		15	North boundary wall w/ tree break	SE	
5	27		16	North boundary wall with tree breaks	E	
5	27		17	Overview w/ wall and structure	SW	
5	27		18	Concrete trough	-	
5	27		19	Concrete trough	N	

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 8 of 26 * **Resource Name or # (Assigned by recorder):** P1081-19/H

Image 1

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 9 of 26 * **Resource Name or # (Assigned by recorder): P1081-19/H**

Image 2

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Primary# xx-xxxxx
HRI#:
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Page 10 of 26 * **Resource Name or #** (Assigned by recorder): **P1081-19/H**

Image 3

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 11 **of** 26 * **Resource Name or #** (Assigned by recorder): P1081-19/H

Image 4

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HRI#:
Trinomial: CA-SB-xxxxx

Page 12 of 26 * **Resource Name or #** (Assigned by recorder): **P1081-19/H**

Image 5

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 13 of 26 * **Resource Name or # (Assigned by recorder): P1081-19/H**

Image 6

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Page 14 of 26 * **Resource Name or # (Assigned by recorder): P1081-19/H**

Image 7

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HRI#:
Trinomial: CA-SB-xxxxx

Page 15 of 26 * **Resource Name or # (Assigned by recorder):** P1081-19/H

Image 8

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Primary# xx-xxxxx
HRI#:
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Page 16 of 26 * **Resource Name or #** (Assigned by recorder): **P1081-19/H**

Image 9

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 17 of 26 * **Resource Name or #** (Assigned by recorder): P1081-19/H

Image 10

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 18 of 26 * **Resource Name or #** (Assigned by recorder): P1081-19/H

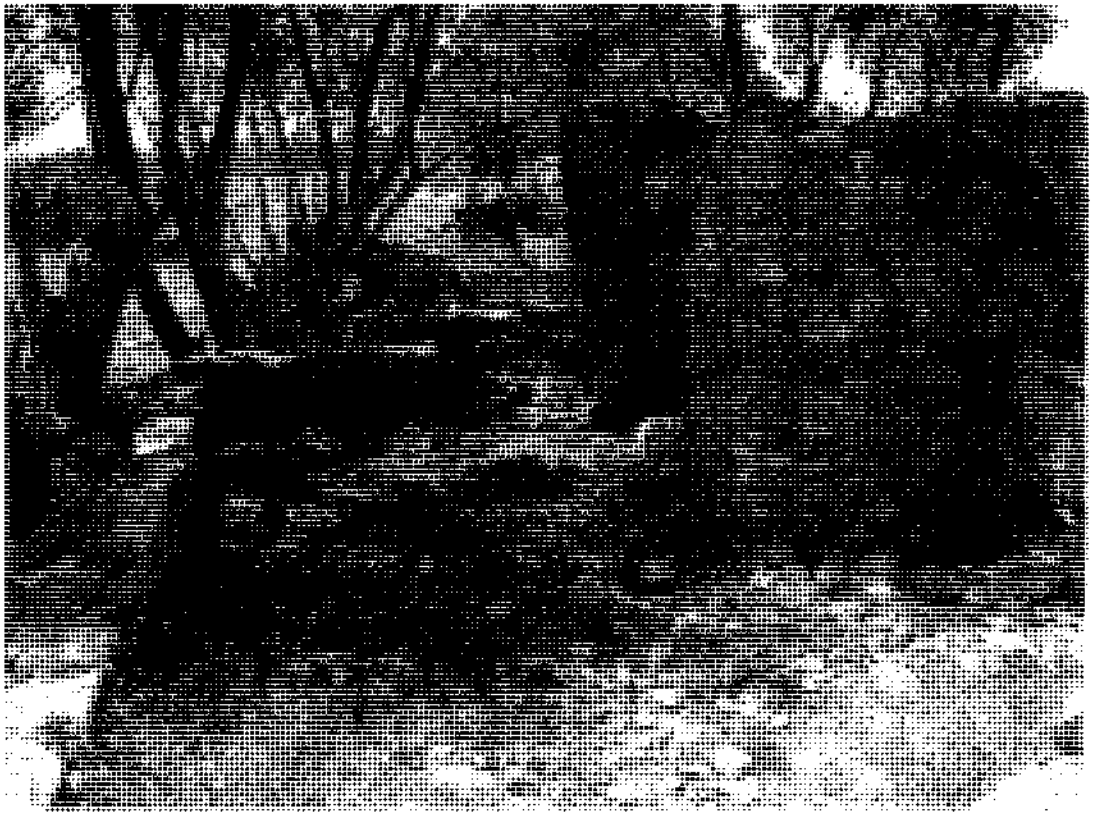

Image 11

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 19 of 26 * **Resource Name or # (Assigned by recorder): P1081-19/H**

Image 12

PHOTOGRAPHIC RECORD

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Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 20 of 26 * **Resource Name or # (Assigned by recorder): P1081-19/H**

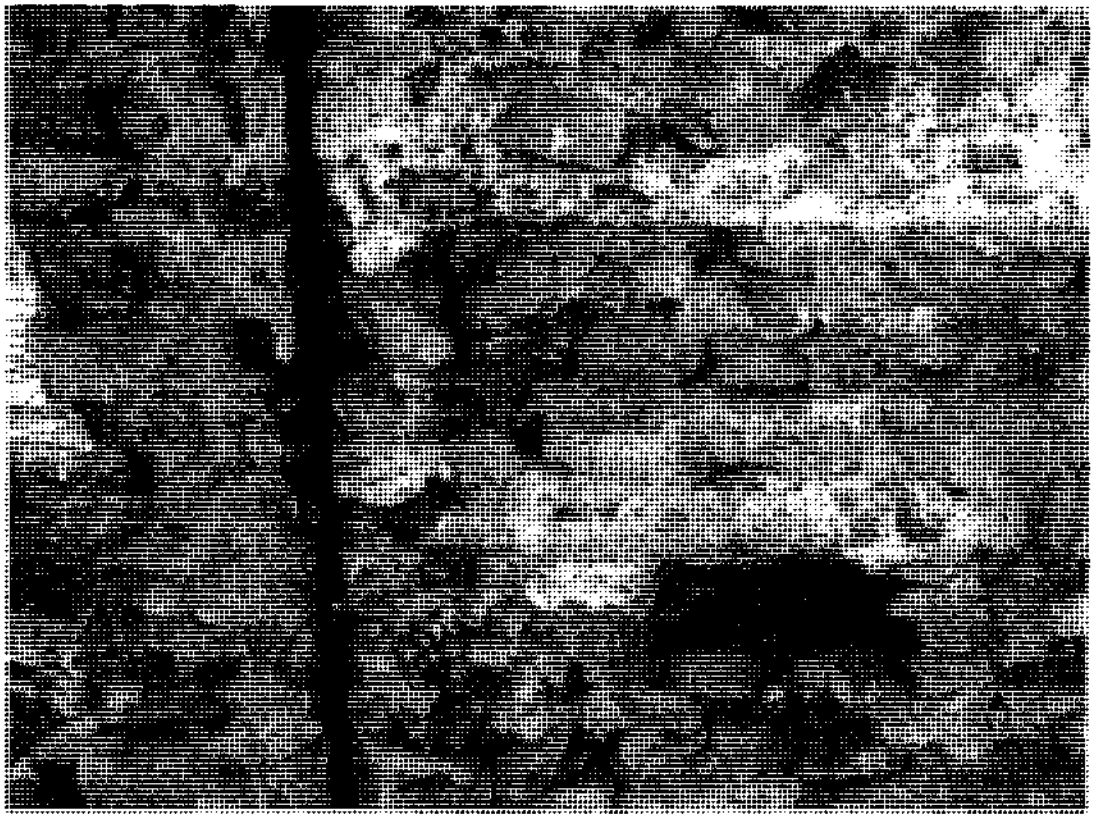

Image 13

PHOTOGRAPHIC RECORD

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Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 21 **of** 26 * **Resource Name or #** (Assigned by recorder): P1081-19/H

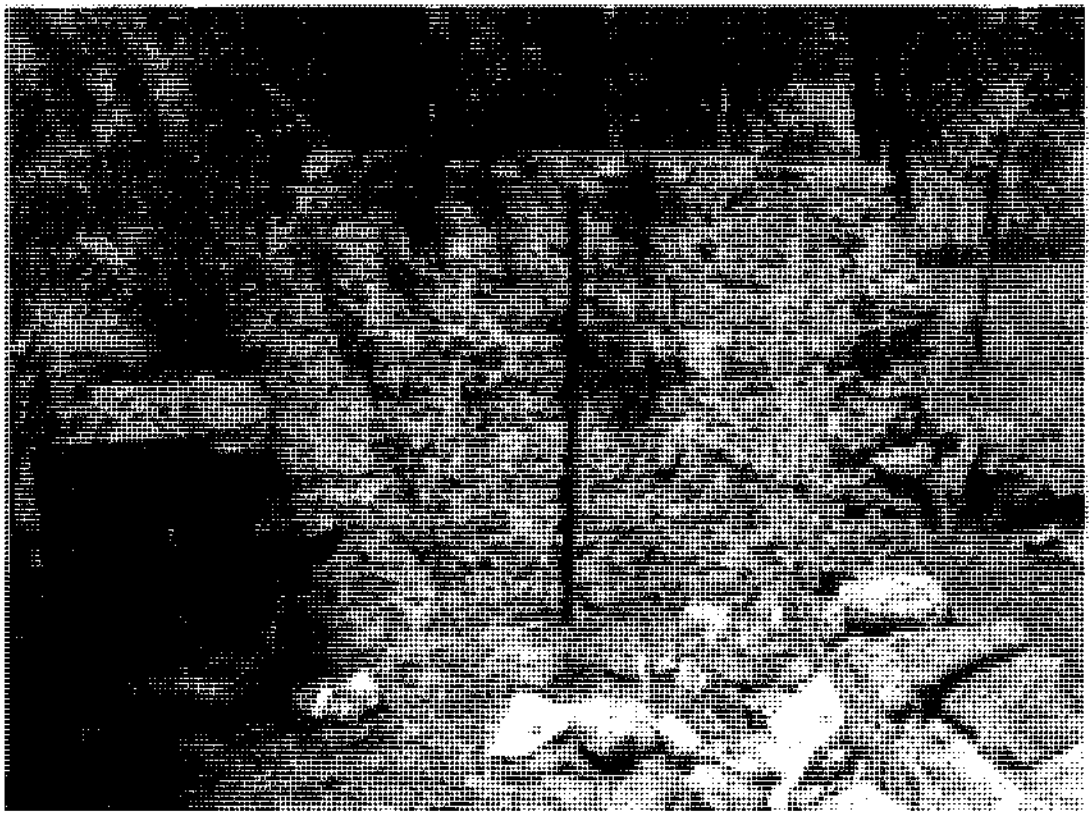

Image 14

PHOTOGRAPHIC RECORD

Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 22 of 26 * **Resource Name or # (Assigned by recorder): P1081-19/H**

Image 15

PHOTOGRAPHIC RECORD

Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 23 of 26

* **Resource Name or #** (Assigned by recorder): **P1081-19/H**

Image 16

PHOTOGRAPHIC RECORD

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Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 24 **of** 26

* **Resource Name or #** (Assigned by recorder): P1081-19/H

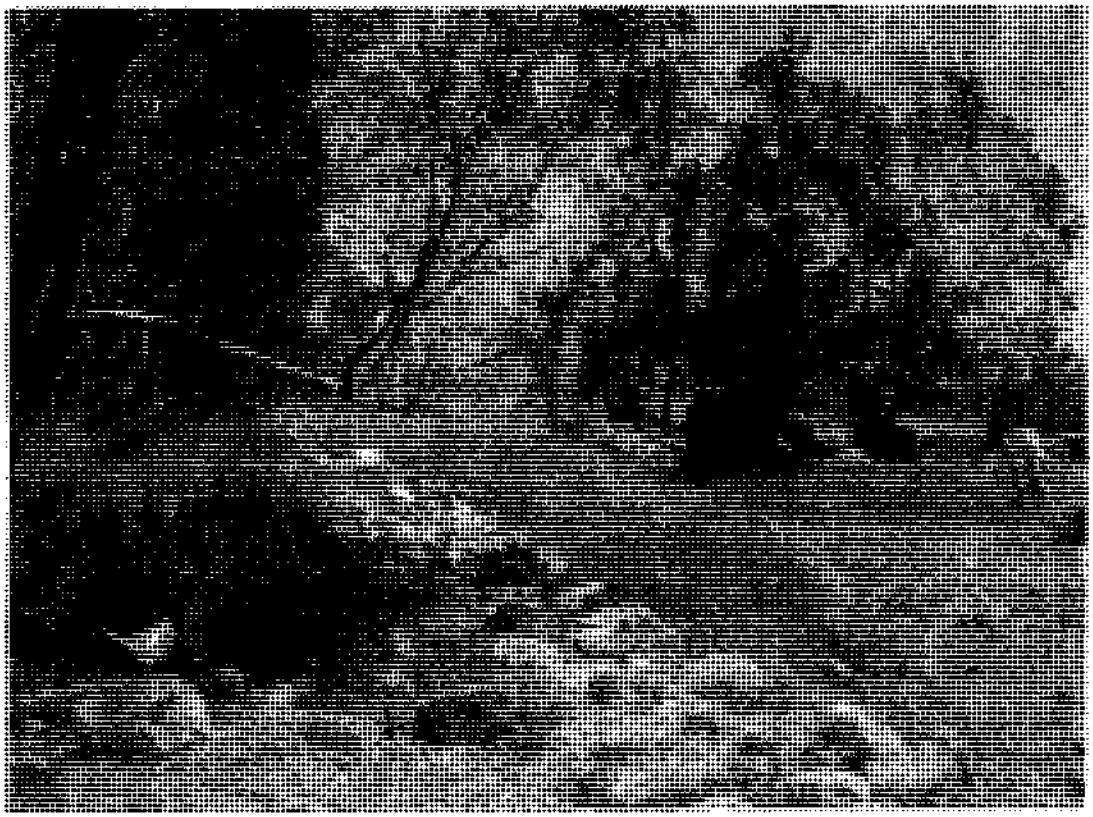

Image 17

PHOTOGRAPHIC RECORD

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220 Commerce, Suite 200
Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 25 of 26 * **Resource Name or #** (Assigned by recorder): P1081-19/H

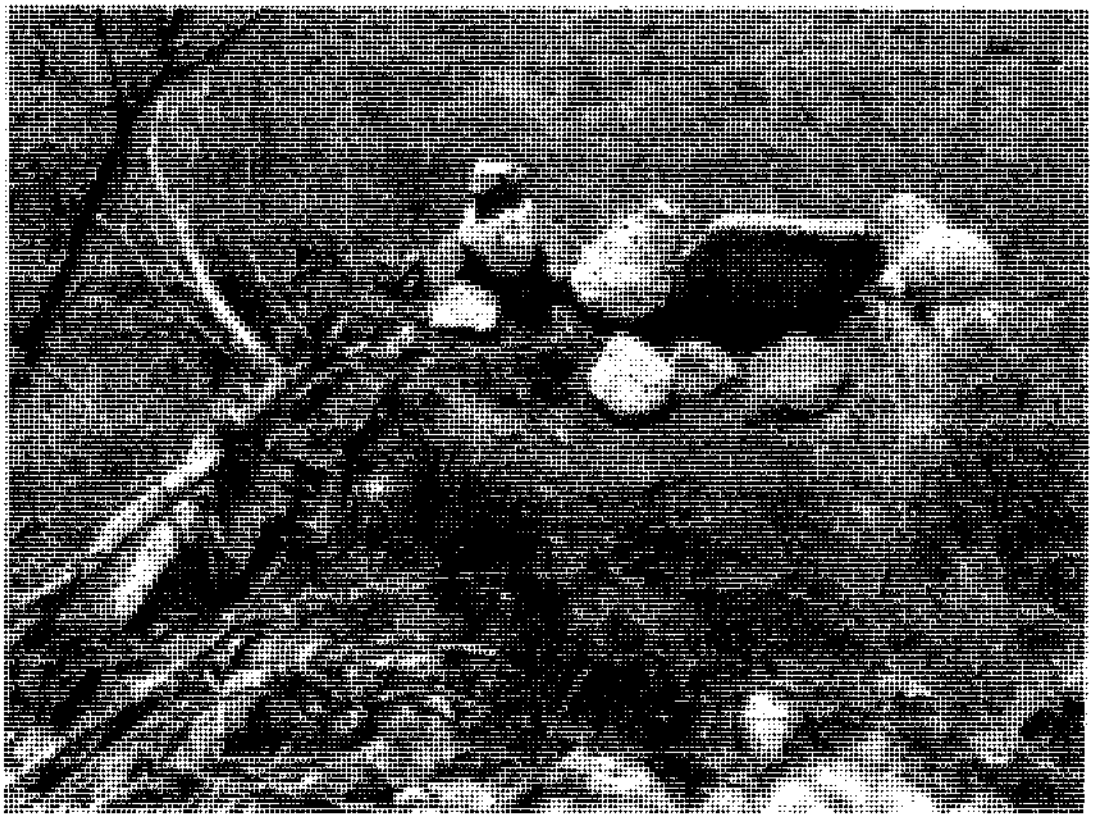

Image 18

PHOTOGRAPHIC RECORD

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Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 26 of 26 * **Resource Name or #** (Assigned by recorder): **P1081-19/H**

Image 19

PRIMARY RECORD

Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602
Other Listings:
Review Codes:_____ Reviewer:_____ Date:_____

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx
NRHP Status Code: _____

Page 1 **of** 12 * **Resource Name or #** (Assigned by recorder): Temp #1

P1. **Other Identifier:**

P2.* **Location:** _____**Not for Publication** ___X___**Unrestricted**

a. *County: San Bernardino **(P2b and P2c or P2d; attach location map)**

b. *USGS Quad: Cucamonga Peak **Dated:** 1980. **Photorev. :** ____.

Township: 1 North **Range:** 10 West **Section:** 21 **.(SBBM)**

Elevation: 1720 feet above mean sea level (centerpoint)

c. Address: none **City:** _____ **Zip:** _____.

d.* UTM: (Give more than one for large and/or linear resources)

Zone: 11S: 451878mE / 3779368mN **(northwest end point, NAD 1983)**
11S: 452211mE / 3778976mN **(southeast end point, NAD 1983)**

UTM Derivation: X USGS Quad _____GPS

GPS UTM Corrected: _____Yes ___X___No **GPS brand/Model:** _____

e. Other Locational Data (e.g. parcel number, directions to resource, etc. as appropriate):

From the intersection of Etiwanda Avenue and Wilson Avenue, the southeast end of the site is approximately 11 meters north and 615 meters east. Located within an open field of coastal chaparral and south of the drainage.

P3a.* **Description** *(Describe resource and its major elements; include design, materials, condition, alterations, size, setting, and boundaries):* This man made flood control berm is approximately 18 meters wide, 520 meters long and 2 meters high. It may have been initially used as a firebreak and later for control of water that runs through the intermittent stream channel that crosses the project area from northwest to southeast. Two circular concrete bench markers were detected during the survey. They have inscribed metal plates indicating that the structure was built in 1949 by the San Bernardino County Flood Control District ("S.B.C., F.C.D., 1949"). There is one marker each with pole on either side of the berm and water way located about 245 meters north of Wilson Avenue.

P3b.* **Resource Attributes** (List attributes and codes): HP11.

P4.* **Resources Present:** _____Building _____Structure _____Object ___X___Site _____District _____Element of District _____Isolate _____Other

P5a. **Photograph or Drawing** (Required for **HRI** buildings, structures, and objects): Digital photos are found on the Photograph record page.

P5b. **Description of Photo** (View, date, accession #): See photograph record.

P6.* **Date Constructed/Age and Source:** _____Prehistoric ___X___Historic ____Both
1949.

P7.* **Owner and Address:** City of Rancho Cucamonga

P8. **Recorded by:** Dustin Kay, B.S.
Project #: MBA# 00180027

P9.* **Date recorded:** May 27, 2003

P10.* **Type of Survey** (Describe): "Phase 1" intensive block

ARCHAEOLOGICAL SITE RECORD

Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 3 **of** 12 * **Resource Name or #** (Assigned by recorder): **Temp #1**

A1.* **Dimensions:** **Length:** 520m (N-S) **Width:** 20m (E-W)
Method of measurement: X Paced Taped Visual Estimate X Other (topo map measurement)
Method of determination (Check any that apply): Artifacts X Features Soil Vegetation Topography Cut bank Animal burrow Excavation Property boundary Other (Explain):
Reliability of determination: X High Medium Low Explain:
Limitations (Check any that apply): Restricted access Paved/built over Site limits incompletely defined Disturbances Vegetation Other(Explain):

A2. **Depth:** X None Unknown. **Method of Determination:**

A3.* **Human Remains:** Present X Absent Possible Unknown (explain):

A4.* **Features** (Number, describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map):
1) rock flood control berm (not noted as "Feature 1" on the sketch map)

A5.* **Cultural Constituents** (Describe and quantify artifacts, human-introduced organic residues, etc. not associated with features): Rock berm and two bench marker caps, which date the site at 1949.

A6.* **Were Specimens Collected?** X No Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated).

A7.* **Site Condition:** X Good Fair Poor (Describe disturbances). None.

A8.* **Nearest Water** (Type, distance, and direction): One intermittent creek is located paralleling the site to the northeast..

A9.* **Elevation:** (see P2b) 1720 feet above mean sea level (centerpoint).

A10. **Environmental Setting**
Vegetation (Site and vicinity): Coastal chaparral
Soil (Site and surrounding): Coarse sandy loam and numerous granite boulders
Landform: Coarse alluvial fan
Geology: Alluvium is likely composed of eroded granitic basement rock and some aeolian silt.
Exposure/Slope: Exposed to the north on a 5 degree slope (average).
Other Associations: Coastal Chaparral includes white sage, and introduced Eucalyptus and Pepper trees. Soil consists of a sandy loam with decomposing granites and rounded river cobbles. Located on a 5° slope in an open exposure.

LOCATION MAP

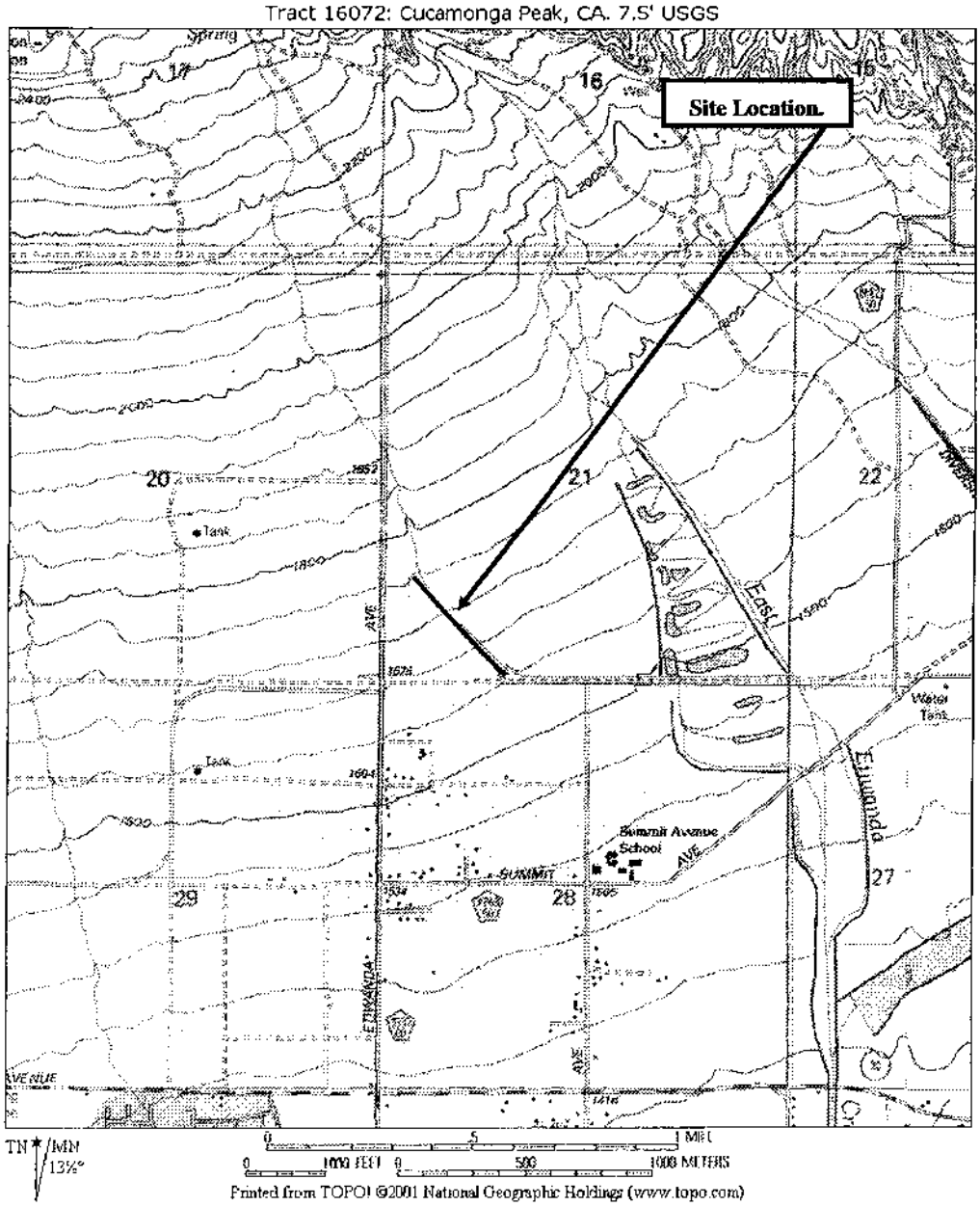
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 5 **of** 12 * **Resource Name or #** (Assigned by recorder): Temp #1

***Map Name:** Cucamonga Peak, CA **Scale:** 1:24,000 **Date of Map:** 1980

Tract 16072: Cucamonga Peak, CA. 7.5' USGS



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SKETCH MAP

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Primary# xx-xxxxx
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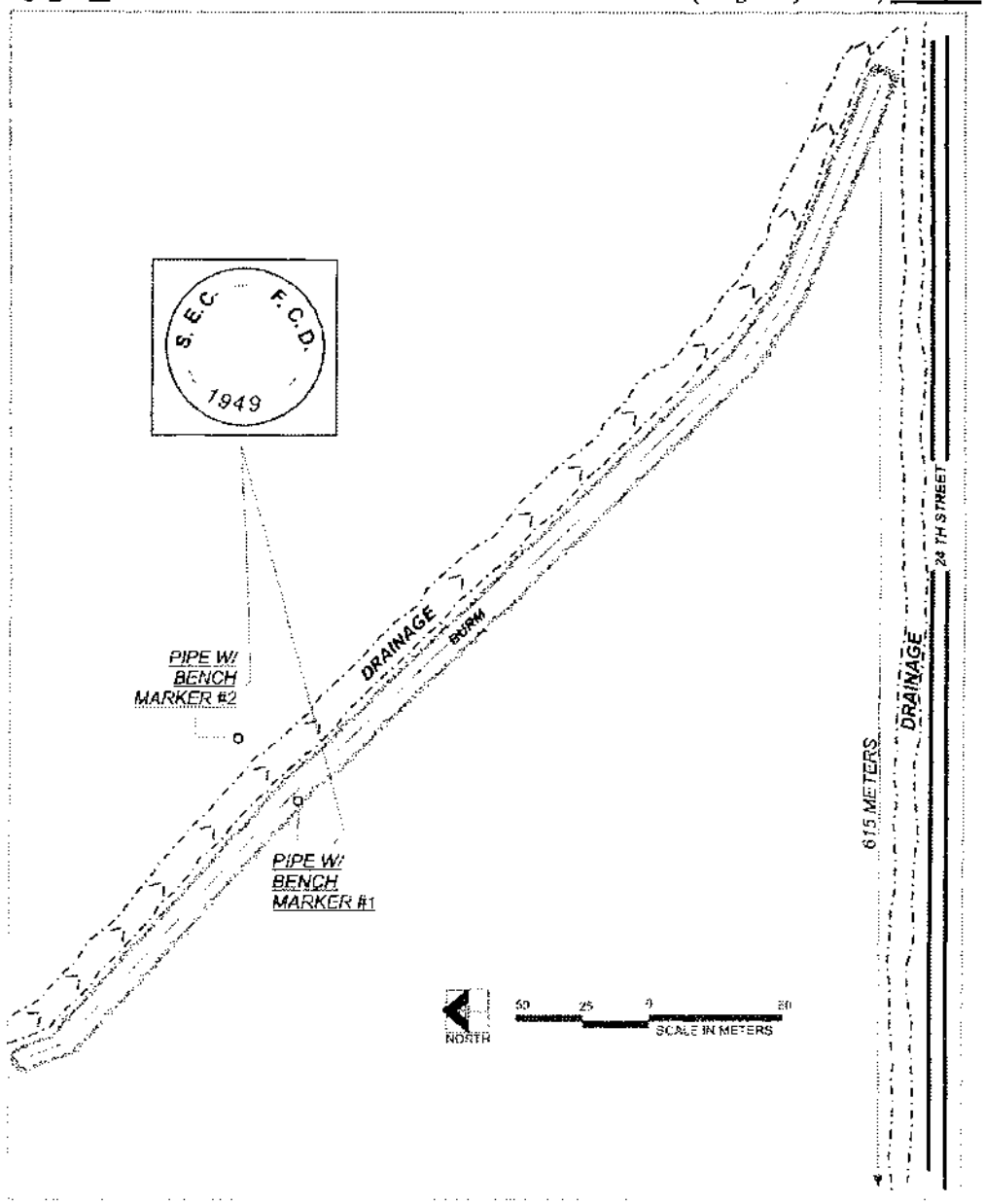
Trinomial: CA-SB-xxxxx

Page 6 **of** 12 * **Resource Name or #** (Assigned by recorder): Temp #1



*Drawn by: Dustin Kay Date of Map: 5/27/03 North is to left. Scale: 1"=55m

1/95; updated 1/98 *Required Information

PHOTOGRAPHIC RECORD

Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 7 **of** 12

* **Resource Name or #** (Assigned by recorder): Temp #1

Camera format: Toshiba digital
Film type and speed: _____

Lens size: _____
Negative on file at: _____

Month	Day	Time	Exp/Frame	Subject/Description	View Toward	Accession#
5	27	11am	1	View to the northwest of the swale created by the berm. The thick coastal chaparral covers both the base of the drainage and the berm itself.	Northwest	None
5	27	11am	2	View to the southwest of the swale created by the berm. The thick coastal chaparral covers both the base of the drainage and the berm itself.	Southwest	None
5	27	11am	3	View of berm feature from the southern end of the project area toward the north, with P#1081-19/H in the background. The berm can be seen in the center of the picture as a swale of vegetation.	Uncertain	None
5	27	11am	4	Bench marker #1 (S.B.C-F.C.D.-1949)	Down	None
5	27	11am	5	Bench marker #2 (S.B.C-F.C.D.-1949)	Down	None

PHOTOGRAPHIC RECORD

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220 Commerce, Suite 200
Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 8 of 12 * **Resource Name or #** (Assigned by recorder): **Temp #1**

Image 1

PHOTOGRAPHIC RECORD

Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 9 of 12 * **Resource Name or # (Assigned by recorder):** Temp #1

Image 2

PHOTOGRAPHIC RECORD

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Irvine, CA 92602

Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 10 **of** 12 * **Resource Name or #** (Assigned by recorder): Temp #1

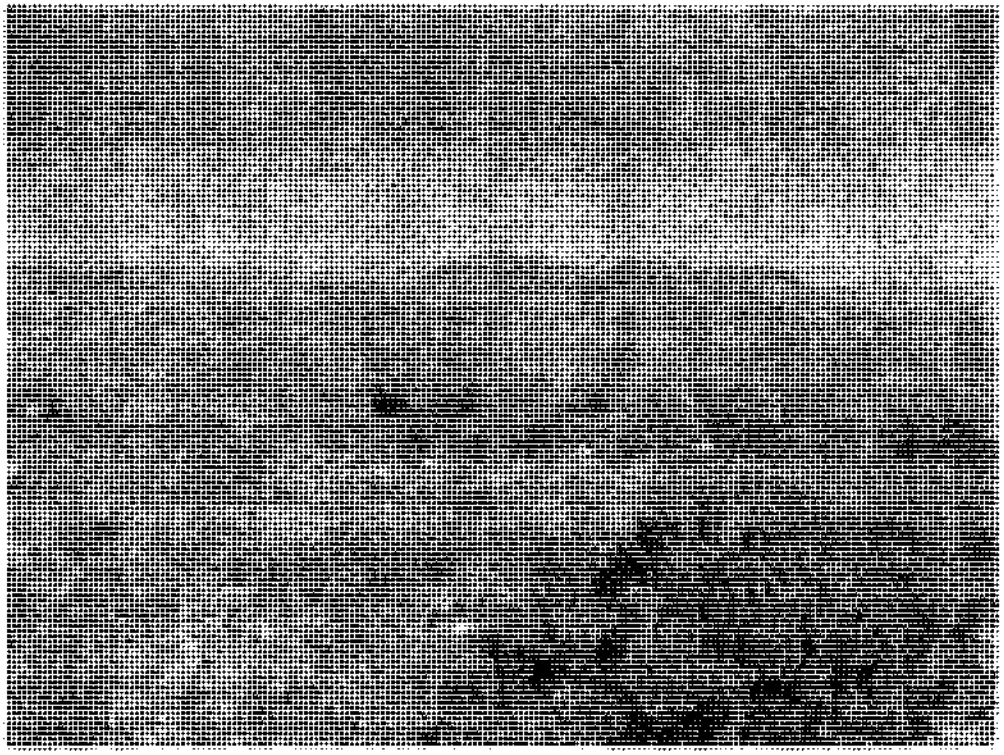

Image 3

PHOTOGRAPHIC RECORD

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 11 **of** 12 * **Resource Name or #** (Assigned by recorder): Temp #1

Image 4

PHOTOGRAPHIC RECORD

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Primary# xx-xxxxx
HRI#:
Trinomial: CA-SB-xxxxx

Page 12 **of** 12

* **Resource Name or #** (Assigned by recorder): **Temp #1**

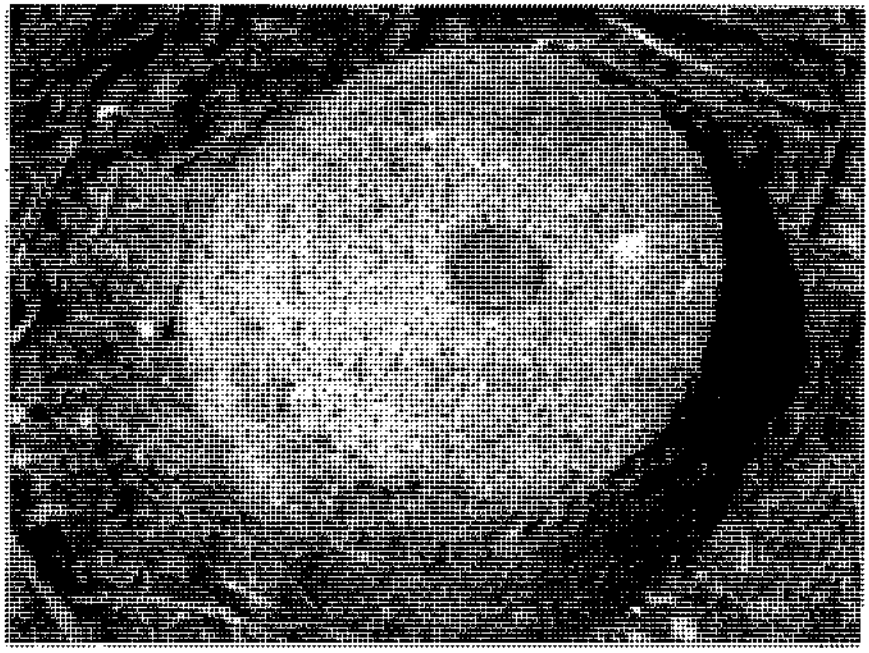
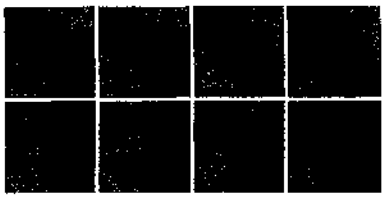


Image 5



Michael Brandman Associates ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

September 16, 2003

Mr. Larry Henderson
Principal Planner
City of Rancho Cucamonga
P.O. Box 807
Rancho Cucamonga, CA. 91729

Subject: **Addendum Cultural Resource Survey Results for Tract 16072, Located Near Wilson and East Avenues, City of Rancho Cucamonga Sphere Of Influence, County of San Bernardino, California**

Dear Mr. Henderson:

At the request of the City of Rancho Cucamonga, Michael Brandman Associates (MBA) has conducted an additional cultural resource survey on a proposed single-family residential tract currently located within the County of San Bernardino. Tract 16072 is located near the corner of Wilson and East Avenues and is considered to be the full cultural resource study area. The total amount of land covered by the original study area is 150.8 acres. The purpose of the survey is to identify cultural resources (prehistoric and historic archaeological sites, historic buildings, structures, objects, or districts) within an area of potential effect, as required by CEQA and Section 106 of the National Historic Preservation Act (NHPA) of 1966 and its implementing regulations, 36 CFR Part 800.

A Phase 1 cultural resource survey document and a Phase 2 historical significance evaluation document was previously issued by MBA in support of this project. Once it was determined that additional lands would be impacted by construction, a qualified archaeologist surveyed the areas of direct impact. Exhibit 1 shows the original project area associated with the Phase 1 and Phase 2 cultural resource reports, and shows the additional areas (11.4 acres) surveyed as part of this addendum. Photographs of the newly surveyed areas are attached below.

Survey Results

On September 7 2003, MBA staff archaeologist Marnie (Vianna) Aislin Kay surveyed the addendum project areas. Ms. Kay was also involved with the first Phase 1 survey, which had taken place in 2002. Ms. Kay divided the new areas into "areas" and labeled the photographs from each area accordingly. Following is a description of each area.

- Area 1 is located east of the original survey area and encompasses 0.28 acres proposed for a storm channel.

220 Commerce, Suite 200, Irvine, CA 92602 714 . 508 . 4100 FAX 714 . 508 . 4110
Inland Empire 909.884.2255 Bay Area 925.830.2733 Kern County 661.334.2755
www.brandman.com EMAIL mba@brandman.com

We at MBA appreciate the opportunity to assist you on this project. If we can be of any further assistance, or if you have any questions concerning this letter, please do not hesitate to contact Michael Dice at 714.508.4100 ext. 111 or via his e-mail, mdice@brandman.com.

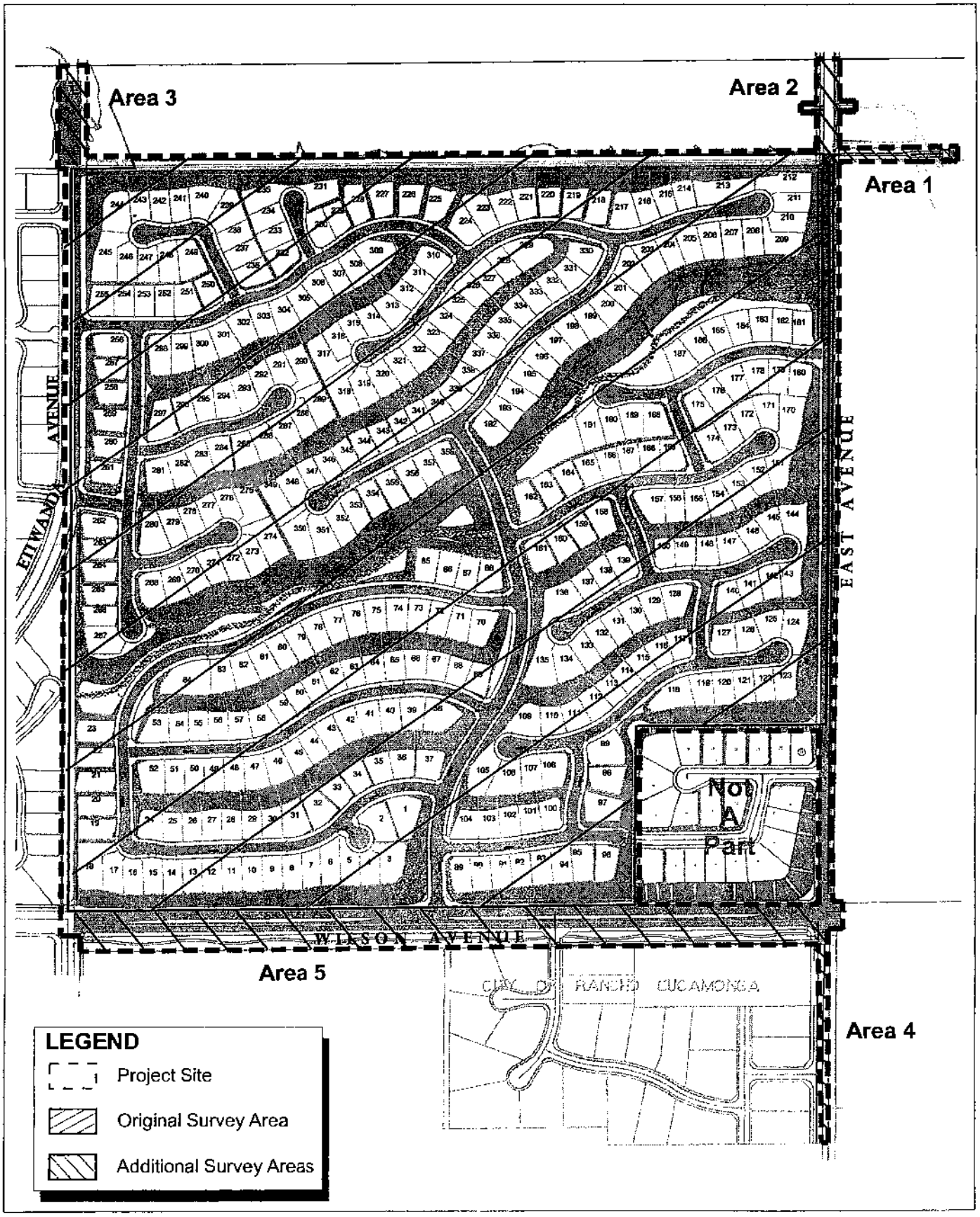
Sincerely,

MICHAEL BRANDMAN ASSOCIATES

Michael Dice, M.A.
Senior Archaeologist

Attachments: Exhibit 1

MD/mh/tmg/slt
H:\Client (PN-JN)\0018\00180027\Addendum Survey CR102 draft.doc



SOURCE:

NORTH

470 235 0 470

SCALE IN FEET

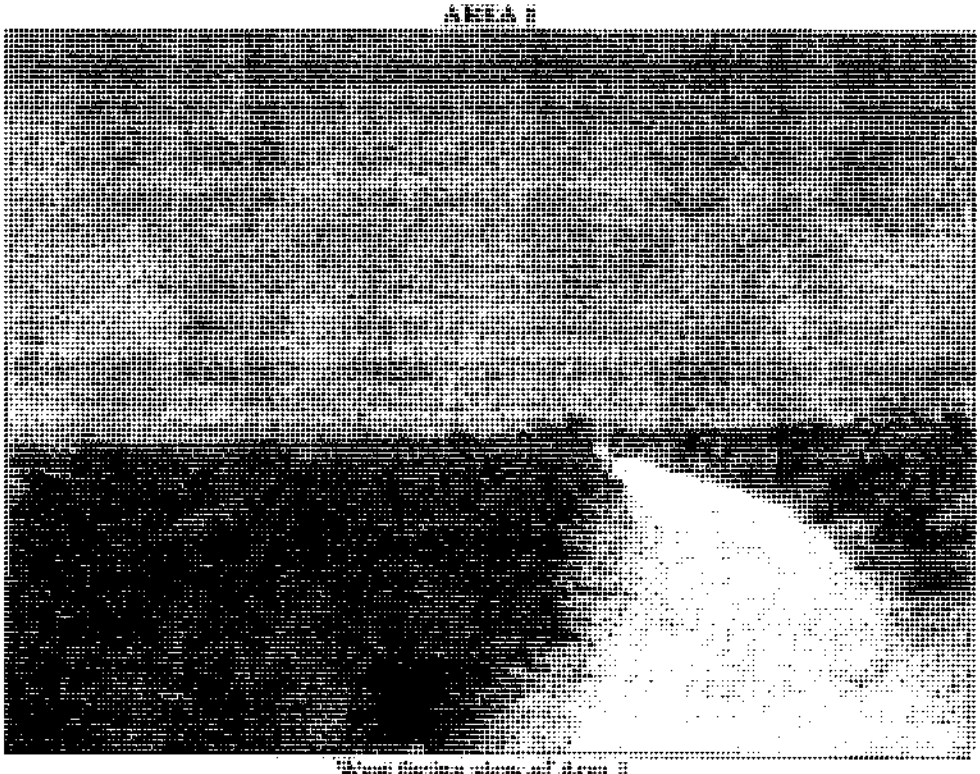
Michael Brandman Associates

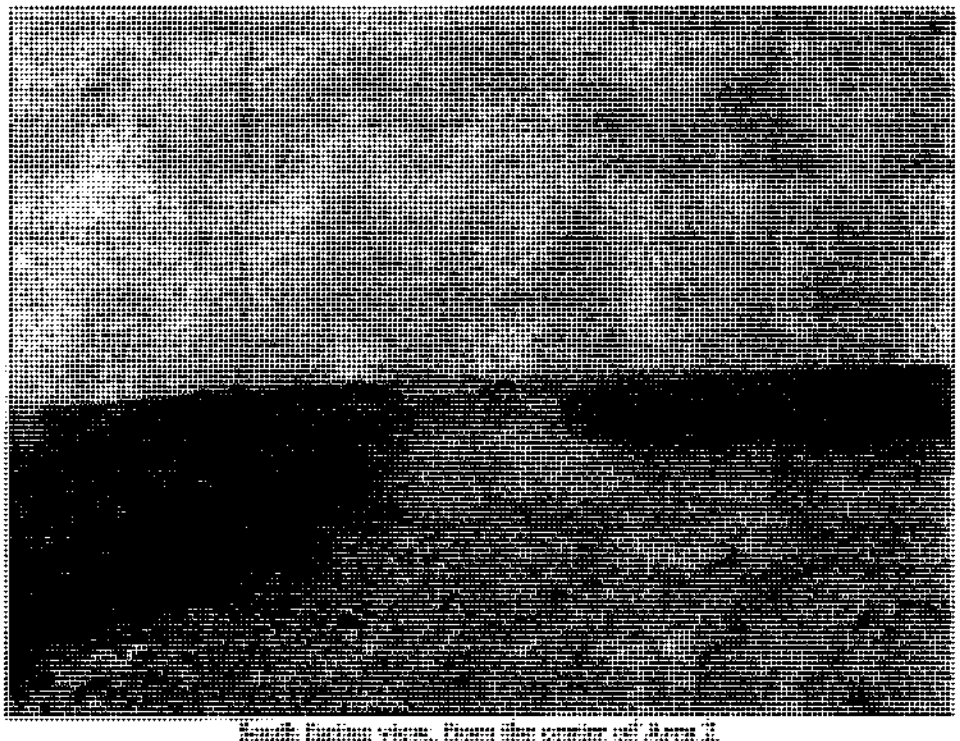
Exhibit 1

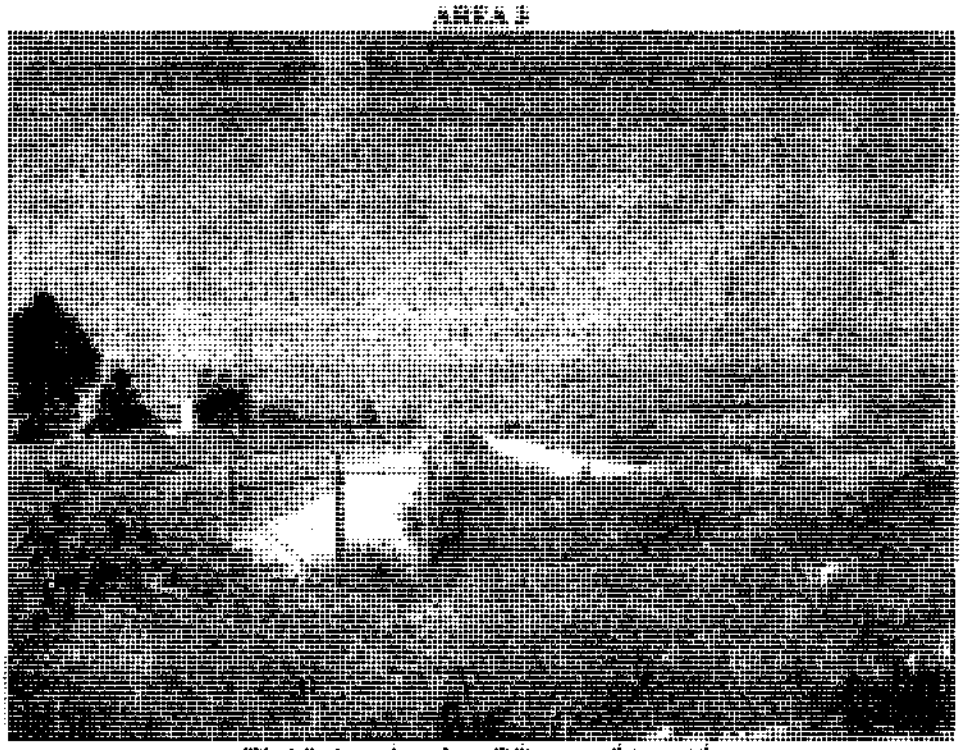
Survey Areas

00180027 • 09/2003 | 3-3_Site Plan.cdr

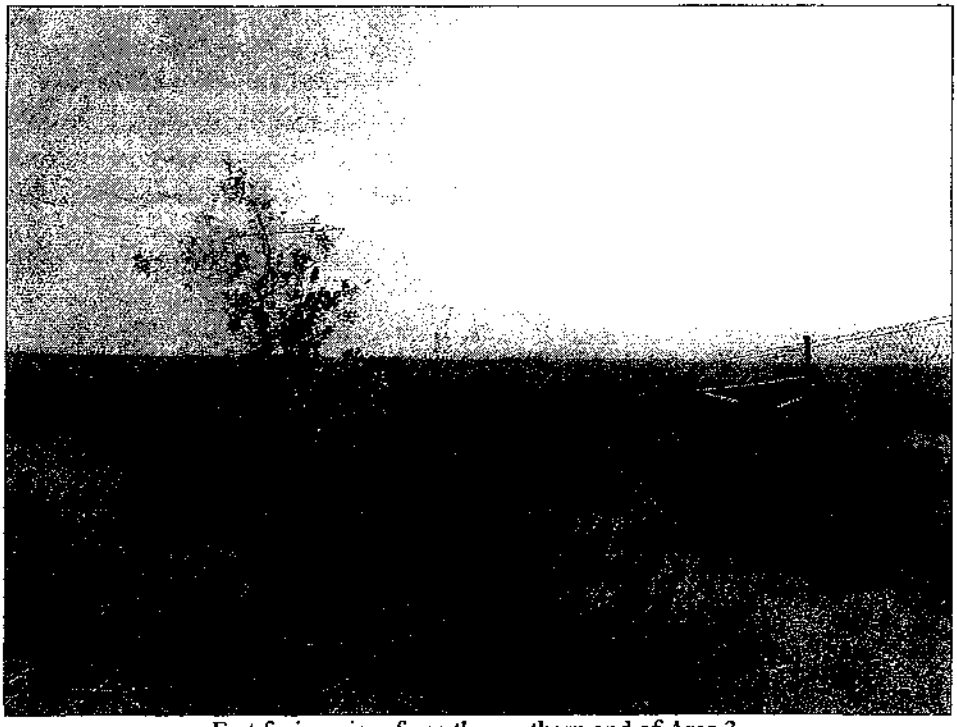
RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072





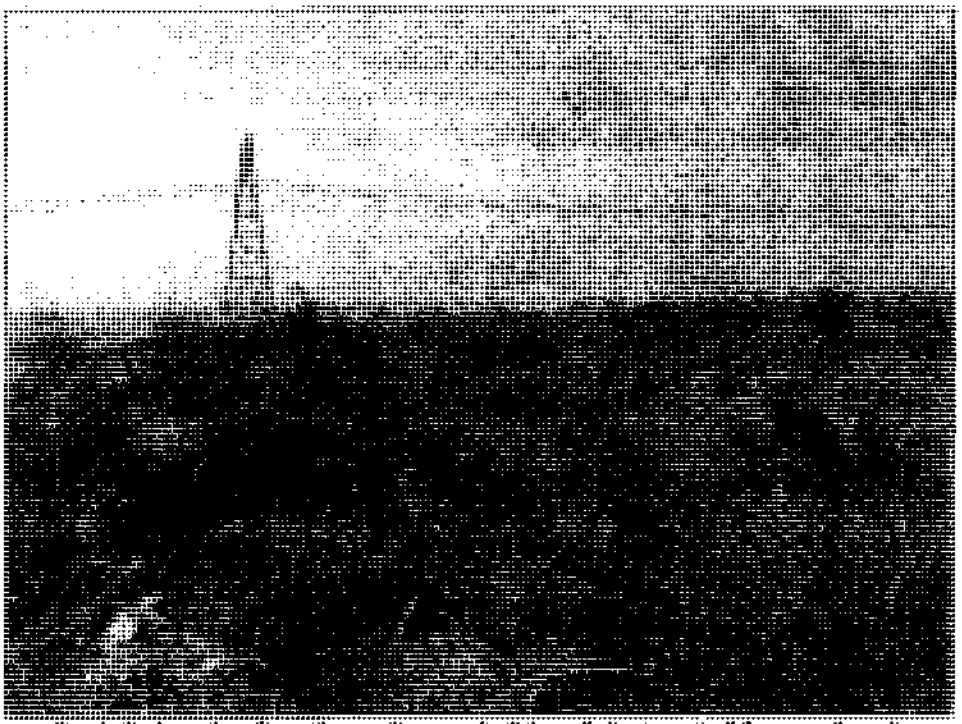


West facing view from the southern end.



East facing view from the southern end of Area 3.

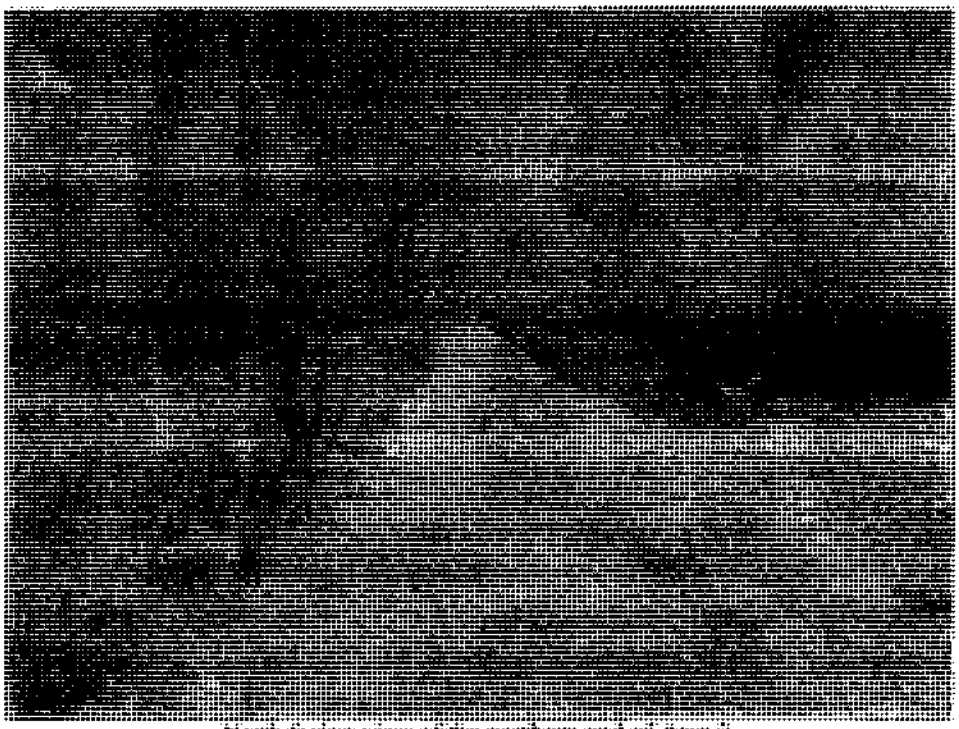
North facing view from the southern end of Area 3.

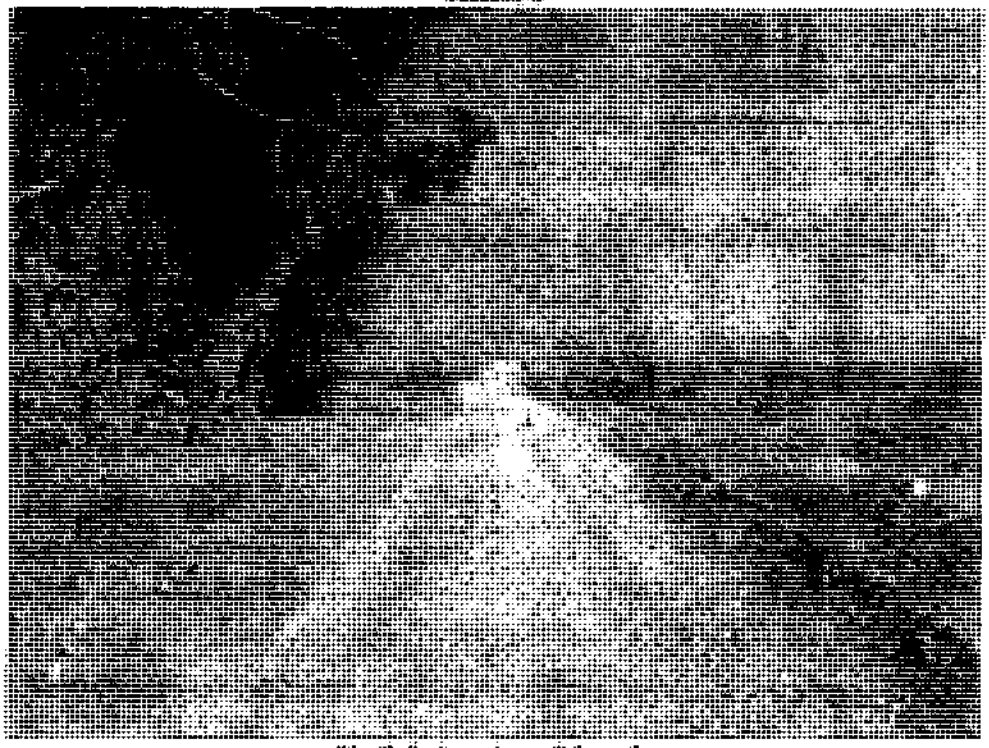


South facing view from the northern end of Area 1, just west of the paved road.

Southeast facing view from the northern end of Area 3, just east of the paved road.

Southeast facing view from the northern end of Area 3.





Tract 16072 Addendum Survey
September 16, 2003
Page 11

AREA 5

[illegible] view of Wilson Avenue from the intersection of East Avenue.

Area 5: [illegible] in ditch.

West facing view of Wilson Ave., from near the corner of Area 5.

Area 5: East facing view of Wilson Ave., from the corner of Etiwanda.

FINDINGS OF FACT IN SUPPORT OF FINDINGS FOR SINGIFICANT ENVIRONMENTAL EFFECTS OF THE RANCHO CUCAMONGA TENTATIVE TRACT MAP 16072

PREVIOUSLY DISTRIBUTED UNDER SEPARATE COVER
(MAY 25, 2004)

EXHIBIT "F"

FINDINGS OF FACT IN SUPPORT OF FINDINGS FOR SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072 PROJECT AND STATEMENT OF OVERRIDING CONSIDERATIONS
(May 6, 2004)

INTRODUCTION

The California Environmental Quality Act (CEQA) Public Resources Code Section 21081, and the CEQA Guidelines Section 15091 provide that:

> "No public agency shall approve or carry out a project for which an environmental impact report has been certified which identifies one or more significant effects on the environment that would occur if the project is approved or carried out unless the public agency makes one or more of the following findings:
>
> a. Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.
>
> b. Those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency.
>
> c. Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final environmental impact report."

Because the Rancho Cucamonga Tentative Tract Map Number 16072 project Environmental Impact Report (EIR) identified significant effects that may occur as a result of the project, and in accordance with the provisions of CEQA and CEQA Guidelines, the City of Rancho Cucamonga hereby adopts these findings as part of the approval of the Rancho Cucamonga Tentative Tract Map Number 16072 project and related applications.

The City of Rancho Cucamonga has prepared an EIR for the project in accordance with CEQA and CEQA Guideline requirements. The EIR was subject to review and approval by the Rancho Cucamonga City Council. At a public hearing held on _____, 2004, the EIR was certified as adequate in accordance with CEQA procedures.

After adopting this Statement of Findings of Fact, the Rancho Cucamonga City Council can approve the Tentative Tract Map Number 16072 project. All subsequent, grading permits, mitigation implementation, and regulatory agreements and permits will be reviewed based on the documentation in the EIR.

MITIGATED ADVERSE IMPACTS

The potential significant adverse impacts that would be mitigated are listed in the following sections. The Rancho Cucamonga City Council finds that these potential adverse impacts would be mitigated to

11 F 11 6-16-04 CC

a level that is considered less than significant after implementation of the project design features and recommended mitigation measures.

GEOLOGY AND SOILS

Seismic Hazards

Fault-Induced Ground Rupture

Significant Impact

Development of the proposed project will result in the potential for fault-induced ground rupture at the project site.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to issuance of a building permit for structures adjacent to the Etiwanda Avenue Scarp thrust fault on the project site, all structures north of this fault shall be set back 100 feet from the faulted zone and all structures south of this fault shall be set back 50 feet from the fault zone.

Seismically-Induced Slope Instability

Significant Impact

Development of the proposed project including the interim detention basins will include graded slopes of up to 40 feet in height and gradients of 3:1 or less. Strong ground motions could induce slope instability.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to the issuance of a grading permit, engineered slopes of the project site shall be designed in accordance with the Uniform Building Code to resist seismically induced failures. Slope design shall be based on pseudo-static stability analyses using soil-engineering parameters established for the site.

Ground Lurching

Significant Impact

Colluvial soils and loose cohesionless soils are present at the surface of the project site. Ground lurching due to seismic shaking could result in impacts to structures.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to the issuance of a grading permit, the grading plans shall state that the loose, cohesionless soils located on the surface of the site shall be removed and recompacted during grading operations.

Seismically-Induced Settlement

Significant Impact

Strong ground shaking can cause settlement by allowing greater compaction of the soil particles.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to the issuance of a grading permit, the grading plans shall state that the native surficial and artificial fills on the project site that are of low density, shall be removed and recompacted or exported offsite.

Slope Stability

Significant Impact

Implementation of the proposed project would result in slopes at 40 feet in height.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to the issuance of a final grading approval, potentially unstable graded slopes that exceed approximately 15 feet in height will require additional stabilization measures such as buttressing cut slopes with compacted fill, adding geogrid reinforcement to fill slopes, using a higher compaction standard, and/or using retaining walls.

Foundation Stability

Compressible Soils

Significant Impact

The upper few feet of the native soil onsite is potentially compressible. Uncontrolled fills that exists on the project site due to old road fills and backfills from exploratory trenches are also compressible. These materials are of low density and would settle under the weight of the proposed fills and structures.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to the issuance of a grading permit, the grading plans shall state that potentially compressible soils that are located on the project site shall be removed and recompacted in accordance with standard grading procedures.

Collapsible Soils

Significant Impact

Due to the potential for variation in grain size within the alluvial fan deposits located on the project site, localized areas could result in potential collapse of soil material.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to the issuance of a grading permit, the project's soil engineer shall identify the method(s) of eliminating the potential for collapsible soils on the grading plan. Potential methods include excavation and recompaction and presaturation and pre-loading of the susceptible soils in-place to induce collapse prior to construction. After construction, infiltration of water into the subsurface soils shall be minimized by proper surface drainage which directs excess runoff from the proposed slopes and structures.

Rippability and Oversize Rock

Significant Impact

Because there is no bedrock at or within hundreds of feet from the surface, rippability of the onsite soils is less than significant. However, due to the presence of large cobbles and boulders in the onsite alluvium, special handling of oversize rocks will be required. The removal of boulders from the site could result in deficiencies of fill material in the proposed balanced cut and fill grading design. Therefore, the presence of oversize rock could result in a potential significant impact.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to the issuance of a grading permit, the grading plans shall state that during grading operations, the soil engineer shall be consulted to relocate oversize rocks on the project site to reduce the potential deficiency of fill materials that could result from the removal of oversize rocks on the project site.

BIOLOGICAL RESOURCES

Natural Communities

Significant Impact

The proposed project will result in the loss of 147.7 acres of RAFSS. RAFSS is considered sensitive by the California Department of Fish and Game and loss of this plant community is considered significant.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- The project proponent will acquire and convey to the County of San Bernardino at a ratio of 1:1 (or 147.7 acres) of land within or near the North Etiwanda Open Space and Habitat Preservation Program (NEOSHPP) that supports similar RAFSS habitat. This measure will mitigate the loss of habitat that may support sensitive plants and animals as well as raptor foraging habitat. The quality of offsite mitigation land may affect the total acres needing to be acquired. If the offsite mitigation area contains a higher quality habitat, less land may need to be acquired, likewise, if a lower quality habitat is acquired, more land may need to be set aside as mitigation.

  If the proponent is unable to acquire all or a portion of the offsite mitigation land, the proponent will deposit the equivalent mitigation cost of $10,000 per developable acre with City-approved agency, which acquires and maintains open space. These funds will be used to purchase and manage mitigation lands.

- To reduce impacts on adjacent offsite habitat during site preparation, grading and clearing limits shall be staked prior to issuance of the grading permits. The limits of grading and clearing shall be staked at 50-foot intervals with suitable indicators such as white PVC (polyvinylchloride) pipe with steel bases. Construction equipment shall not be operated beyond the grading and clearing limits, and a restoration program shall be incorporated to restore any disturbed offsite areas.

- Landscaping adjacent to natural areas offsite shall use native and drought-tolerant plant species. Such species shall be reflected on Project landscape plans. The use of species known to be weedy invasives, such as German ivy (Senecio milkaniodes), periwinkle (Vinca major), or iceplant (Carpobrotus spp.), shall be prohibited.

- In areas where night lighting may have adverse impacts on sensitive wildlife habitat, one or more of the following alternatives shall be utilized, recognizing the constraints of roadway lighting requirements: (1) low-intensity street lamps, (2) low-elevation light poles, or (3) shielding of internal silvering of the globes or external opaque reflectors.

- Provide residents of the future development literature pertaining to sensitive wildlife in the area and provide ways the residents can reduce effects on the wildlife, including effects pets have on native wildlife. A list of invasive plants that are commonly planted in landscaping will be included in this literature and it will be recommended that certain plants be avoided, such as giant reed (Arundo donax) castor bean (Ricinus communis) and Pampas grass (Cortaderia selloana). This literature shall be approved by the City of Rancho Cucamonga and included within the conditions, covenants, and restrictions (CC&Rs).

Common Plant Species

Significant Impact

The City of Rancho Cucamonga has a local tree preservation ordinance that requires a City permit to remove any tree over 15 feet high and 15 inches in circumference. A total of 213 trees meet the City's "heritage tree" criteria. Approximately 175 eucalyptus trees, 11 ornamental trees, 14 pepper trees, 9 southern California black walnut trees, and 4 western sycamore trees occur on-site. All trees within the project boundary were assessed as being of fair to poor condition physiologically, structurally, and aesthetically.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- All 213 "heritage trees" shall be removed and replaced with native trees within the proposed development. Replacements have been proposed at a 1:1 ratio.

Sensitive Plant Species

Significant Impact

Fifteen sensitive plant species have been identified as occurring within the general vicinity of the project site. Thirteen of these plants are listed as sensitive (List 1B) by the CNPS and are considered sensitive by CDFG. However, only Plummer's mariposa lilies were observed during field inventories.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to issuance of a grading permit, focused surveys for Plummer's mariposa lily shall be conducted by a qualified biologist. Surveys shall be conducted during flowering period (May to July) in all portions of the project site containing suitable habitat. If present, the number and location(s) will be documented and the resource agencies will be notified for consultation and possible collection and relocation.

Sensitive Wildlife Species

Coastal California Gnatcatcher

Potentially Significant Impact

The project site is within the known range and within designated Critical Habitat of the federally listed threatened coastal California gnatcatcher. Although the protocol surveys conducted in both 2001and 2002 were negative, 6 recent sightings have been documented within the immediate vicinity. Because the project site supports suitable habitat for this species, and the recent sighting on adjacent lands the potential for this species to use the project site is still considered high. Therefore, the loss or fragmentation of potential coastal California gnatcatcher habitat is considered significant.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- A follow-up focused survey shall be conducted to confirm the absence of the coastal California gnatcatcher. Special focus will be placed in the northwest corner of the project site, which was not previously surveyed. If this species is determined to be present onsite, consultation with USFWS under the Endangered Species Act shall occur and USFWS-approved mitigation measures shall be implemented.

Other Rodents

Significant Impact

Three species of rodents that were detected on the property are considered Species of Concern by CDFG. The three species present within the RAFSS habitat, include the Northwestern San Diego pocket mouse, San Diego desert woodrat, and the Los Angeles little pocket mouse. Because these three species are present onsite, the impacts to the habitat is considered significant.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- The project proponent will have a qualified biological monitor present during initial brush clearing to reduce mortality to sensitive species, specifically sensitive rodent species, as well as incidental species.

Jurisdictional Areas

Significant Impact

A jurisdictional delineation was conducted by PCR on the project site on September 8, 2001 (Appendix C of the Draft EIR). Subsequent field surveys were also conducted by PCR in 2002. The survey revealed that there are three drainages found on the property that are considered under the jurisdiction of USACE and CDFG. Impacts to USACE areas would result in the removal of 1.13 acres of "waters of the U.S.", and no loss of wetlands. Total area of jurisdiction under the CDFG would also be approximately 1.13 acres.

Jurisdictional determinations were also made for off-site portions of these drainages to the extent that they may be impacted by the proposed project. Drainages measured adjacent to the site include approximately 4,342 linear feet and 0.98 acre of ACOE and CDFG jurisdictional streambed. None of these off-site areas meet the ACOE definition of a jurisdiction wetland. The proposed project would result in the loss of jurisdictional areas, both on and off site, of 2.01 acres of "waters of the U.S." and no loss of wetlands. Compliance with the mitigations that are required through the 404 process would reduce impacts to less than significant.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- The project proponent shall obtain a Section 404 of the Clean Water Act permit from the U.S. Army Corps of Engineers and a 1603 Streambed Alteration Permit from California Department of Fish and Game prior to grading or any other groundbreaking activities, and shall comply with the permit's mitigation requirements.

TRAFFIC AND CIRCULATION

Trip Generation

Opening Year (Year 2004)

Significant Impact

The traffic generation for this project has been estimated, based upon the specific land use that has been planned for the proposed development. The proposed project consists of 358 single-family dwelling units. The proposed development is projected to generate approximately 3,436 daily trips.

The following intersections would operate at an LOS F in the AM peak hour without and with the project.

- Etiwanda Avenue at Banyan Street
- Etiwanda Avenue at Highland Avenue
- East Avenue at Banyan Street

Although the project would not change the level of service, the contribution of project traffic to these three intersections during the AM peak hour represent a significant traffic impact.

Without project traffic, all intersections would operate at LOS D or better during the PM peak hour which represents a less than significant impact. Except for the following intersection, all study area intersections operate at LOS D or better with the project during the PM peak hour.

- Etiwanda Avenue at Banyan Avenue

The intersection of Etiwanda Avenue at Banyan Avenue will operate at LOS E with the project which exceeds the City's standard and is considered a significant impact.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

241

- The project applicant shall contribute its fair share toward local off-site traffic improvements. On-site improvements will be required in conjunction with the phasing of the proposed development to ensure adequate circulation within the project itself. The fair share contribution of all off-site improvements and timing of all onsite traffic improvements shall be subject to an agreement with the City of Rancho Cucamonga. This agreement shall be in place prior to tract map approval.
- The project applicant shall update construction cost estimates and prepare a current cost of the project's fair share contribution toward traffic improvements.
- The project applicant shall construct Wilson Avenue from Etiwanda Avenue to East Avenue as a Special Divided Secondary Arterial (165 ft. Right-of-way) in conjunction with development of the proposed project or as determined by the Development Agreement with the City.
- The project applicant shall construct the extension of East Avenue from the south project boundary with a minimum 36-foot two-way paved access to the project in conjunction with development of the proposed project or as determined by the Development Agreement with the City.
- The project applicant shall construct East Avenue from the north project boundary to Wilson Avenue to provide 44-foot two-way paved access and the full shoulder (curb, gutter, street lights, and side walks) on west side of the street in conjunction with development of the proposed project or as determined by the Development Agreement with the City.
- The project applicant shall construct Etiwanda Avenue from the north project boundary to Golden Prairie Drive at its ultimate half-section width as a Secondary Arterial (96 ft. Right-of-way) in conjunction with development of the proposed project or as determined by the Development Agreement with the City.

Buildout Year 2020

Significant Impact

Table 5.3-6 depicts the level of service at the study area intersections at buildout year (Year 2020) without and with the project. Table 5.3-6 shows the following intersections would operate at an LOS F in the AM peak hour without and with the project.

- Etiwanda Avenue at Banyan Street
- Etiwanda Avenue at Highland Avenue
- East Avenue at Wilson
- East Avenue at Banyan Street

The project traffic contributed to these four study area intersections during the AM peak hour represent a significant traffic impact. Except for the following intersections, all study area intersections operate at LOS D or better during the PM peak hour without the project.

- Etiwanda Avenue (South) at Wilson Avenue
- Etiwanda Avenue at Banyan Street
- East Avenue at Banyan Street

These three intersections would operate at LOS F which exceeds the City's standard and is considered a significant impact. Except for the following intersections, all study area intersections would operate at LOS D or better during the PM peak hour with the project.

- Etiwanda Avenue (South) at Wilson Avenue
- Etiwanda Avenue at Banyan Street

- East Avenue at Wilson Avenue
- East Avenue at Banyan Street

These four intersections would operate at LOS F which exceeds the City's standard and is considered a significant impact.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to issuance of building permits, the applicant shall provide funds in accordance with the City's Transportation Development Fee. Collection of these fees shall represent the project's "fair-share" toward the following transportation improvements required for opening year (Year 2004):
  - Installation of a traffic signal at Etiwanda Avenue at Banyan Street.
  - Installation of a traffic signal at East Avenue at Banyan Street.
  - Construction of a southbound right turn lane at the intersection of Etiwanda Avenue at Highland Avenue.
- Prior to the issuance of building permits, the applicant shall provide funds in accordance with the City's Trasportation Development Fee. Collection of these fees shall represent the project's "fair share" toward the following transportation improvements required for Buildout Year 2020.
  - Construction of one additional northbound lane to provide a shared left and through lane, and a shared right and through northbound lane on East Avenue at Banyon Street
  - Construction of one additional southbound lane to provide a shared left and through and a shared right and through southbound lane on East Avenue at Banyon Street.
  - Construction of a westbound through lane on Highland Avenue at Etiwanda Avenue.
  - Installation of a traffic signal at the intersection of Etiwanda Avenue (North) at Wilson Avenue.
  - Add an eastbound and westbound left turn lane and install a traffic signal at the intersection of Etiwanda Avenue (South) at Wilson Avenue.
  - Installation of a traffic signal at the intersection of East Avenue at Wilson Avenue.

NOISE

Long-Term Operational Impacts

Onsite Impacts

Significant Impact

An impact may be significant if the project sites a land use (i.e., residential) in an incompatible area due to excessive noise. The City has set a desirable daytime level of 60 dBA CNEL for residences. Based on the future (Buildout Year 2020) traffic volumes identified in Section 5.3, noise levels were calculated along the existing and future streets adjacent to the project site. These streets include Etiwanda Avenue, Wilson Avenue, and East Avenue. All of the residences proposed on the perimeter of the project site will be exposed to future year 2020 vehicular noise that range between 64.3 to 68.4 dBA CNEL. These future noise levels would result in significant noise impacts to the residences proposed on the perimeter of the site and adjacent to Etiwanda Avenue, Wilson Avenue, and East Avenue.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- The project applicant shall construct sound barriers adjacent to the project lots as shown in Exhibit 5.5-2 in the Draft EIR. The heights of the sound barriers shall be between 3 and 6.5 feet and placed at the top of the proposed slope and at the edge of pads on the residential lots that border Etiwanda Avenue, Wilson Avenue, and East Avenue. The sound barriers may be constructed of earthen berms, masonry, wood, or other similar materials, or combination of these materials to attain the total height required. These sound barriers shall be solid, with no openings from the ground to the indicated height.
- Prior to the issuance of a building permit, residential structures proposed on all lots adjacent to Etiwanda Avenue, Wilson Avenue, and East Avenue will require mechanical ventilation so that windows can remain closed. Furthermore, these residential lots will require upgraded windows such as double-pane windows, if these lots have second story structures. To ensure the specific type of mechanical ventilation and paned windows are included in the building plans, a final acoustical study shall be prepared for City approval prior to approval of Development Review applications for product development. The final acoustical study shall identify the specific requirements to reduce future interior noise levels to 45 dB CNEL or less.

AESTHETICS

Significant Impact

Implementation of the proposed residential community will substantially alter the existing character of the project site as well as views of the San Gabriel Mountains.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- The applicant shall install landscaping and perimeter walls prior to issuance of building permits for the following phases and locations as shown on the Project Phasing Plan (Exhibit 3-8 in the Draft EIR):
    - Phase 1-Along Wilson and Etiwanda Avenues.
    - Phase 2-Along Wilson Avenue
    - Phase 3-Along Etiwanda Avenue
    - Phase 4 Along East Avenue
- Prior to approval of a landscape plan, the project applicant shall provide transitions between the developed and natural (unbuilt) environment through landscaping techniques
- Prior to approval of a landscape plan, the project applicant shall ensure that streetscape design along the roadways adjacent to the project site create a strong landscaped edge, provides a coherent high-quality appearance along a particular route, and enhances the image of adjacent development.
- The project applicant shall provide for the undergrounding of utility lines and facilities, wherever feasible, to minimize the unsightly appearance of overhead utility lines and utility enclosures.
- Prior to approval of a landscape plan, trees and structures shall be used to frame and orient such views at key locations, and obstruction of views should be kept to a minimum along Etiwanda Avenue and East Avenue.

CULTURAL RESOURCES

Archeological/Historical Resources

Potentially Significant Impact

The results of the records search indicated that three archeological sites are within the project area, including the new site located during the site visit. It is also likely that prehistoric remains may still be buried.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to the issuance of a grading permit, the project applicant shall retain a City-approved archaeologist to develop an archaeological mitigation plan and a discovery clause/treatment plan. Both of these plans shall be reviewed and approved by the City. The archaeological mitigation plan shall include monitoring 50 percent of the excavation activities on the project site by a City-approved archaeologist and/or their representative. The discovery clause/treatment plan shall include recovery and subsequent treatment of any archaeological or historical remains and associated data uncovered by brushing, grubbing or excavation. The treatment plan shall provide procedures for the curation of any detected cultural specimens. Any recovered cultural resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard professional archaeological practices. Examination by an archaeological specialist shall be included where necessary, dependent upon the artifacts, features, or sites that are encountered. Specialists will identify, date and/or determine significance potential.

- If the archaeological monitor discovers cultural deposits, earthmoving shall be diverted temporarily around the deposits until the deposits have been evaluated, recorded, excavated and/or recovered, as necessary, and in accordance with a City-approved recovery plan. Earthmoving shall be allowed to proceed through the area after the archaeologist determines the artifacts are recovered and/or site mitigated to the extent necessary.

- If a previously unknown cultural site is encountered during monitoring and it is determined by the archaeologist that a significance determination is required, the site shall be evaluated and recorded in accordance with requirements of the State Office of Historic Preservation (i.e., DPR 523 form). In this case, if the site is not determined to be significant, no measures subsequent to recording the site on appropriate forms are required. If any of the sites are determined to be significant, an adequate amount of artifacts at the specific archaeological site shall be collected by the City-approved archaeologist. The archaeologist shall determine the amount of artifacts needed to be collected.

246

- If human remains are encountered during excavations associated with this project, all work shall halt and the County Coroner shall be notified (Section 5097.98 of the Public Resources Code). The Coroner will determine whether the remains are of forensic interest. If the coroner, with the aid of the City-approved archaeologist, determines that the remains are prehistoric, he/she will contact the Native American Heritage Commission (NAHC). The NAHC will be responsible for designating the most likely descendant (MLD), who will be responsible for the ultimate disposition of the remains, as required by Section 7050.5 of the California Health and Safety Code. The MLD will make his/her recommendations within 24 hours of their notification by the NAHC. This recommendation may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials (Section 7050.5 of the Health and Safety Code).

- Any recovered archaeological resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard archaeological practices. Examination by an archaeological specialist should be included where necessary, dependent upon the artifacts, features or sites that are encountered. Specialists will identify, date and/or determine significance potential.

- A final report of findings will be prepared by the City-approved archaeologist for submission to the City, project applicant, and the Archaeological Information Center of the San Bernardino County Museum. The report will describe the history of the project area, summarize field and laboratory methods used, if applicable, and include any testing or special analysis information conducted to support the resultant findings.

Paleontological Resources

Potentially Significant Impact

According to the paleontological records search, the project area lies on surface exposures of Pleistocene older fan deposits. These deposits have high potential to contain fossil resources throughout their extent. No fossil resources are known for the project area and the nearest resources found in similar deposits are located approximately eight miles to the south. However, there is the likelihood of potential buried fossilized remains.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to the issuance of a grading permit, the project applicant shall retain a City-approved paleontologist. The City-approved paleontologist shall monitor all excavation activities in

areas of the project underlain by previously undisturbed sediments. Earthmoving in areas of the site where previously undisturbed sediments will be buried but not disturbed will not be monitored. Monitoring shall begin once earthmoving reaches five (5) feet below the original ground surface.

- Monitoring shall be conducted on a full-time basis in areas of the project underlain by sensitive rock units associated with older alluvium being encountered by earthmoving.

- Should fossils be found within an area being cleared or graded, divert earth-disturbing activities elsewhere until the monitor has completed salvage. If construction personnel make the discovery, the grading contractor should immediately divert construction and notify the monitor of the find. If too few fossil remains are found after 50 percent of earthmoving has been completed, monitoring can be reduced or discontinued in those areas at the project paleontologist's direction.

- If paleontological resources are detected. Prepare, identify, and curate all recovered fossils for documentation in the summary report and transfer to an appropriate depository (i.e., San Bernardino County Museum).

- A final report of findings will be prepared by the City-approved paleontologist for submission to the City, project applicant, and the San Bernardino County Museum. All collected specimens and the final report shall be provided to the San Bernardino County Museum..

PUBLIC SERVICES AND UTILITIES

Water Service

Significant Impact

The proposed project will result in the demand for approximately 220,760 gallons of water per day which represents a 0.7 percent increase in water currently demanded from existing development within the City's General Plan Planning Area. The project's demand for water is nominal; however, it will contribute to the potential significant cumulative impacts on water services.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to the issuance of building permits, the project applicant will be required to submit a water services development fee to ensure that adequate water supplies and facilities are available to meet the project demand.

- Prior to the issuance of a building permit for each phase, the project applicant shall submit a landscaping and irrigation plan for common areas to the City for approval. Landscaping and irrigation within common areas shall be designed to conserve water through the principles of Xeriscape as defined in Chapter 19.16 of the Rancho Cucamonga Municipal Code.

Wastewater Service

Significant Impact

Implementation of the proposed project will result in the generation of 96,930 gallons of wastewater per day.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to the issuance of occupancy permits, the applicant shall provide funding to the Cucamonga County Water Agency for sewer service.

HYDROLOGY AND WATER QUALITY (NOTICE OF PREPARATION)

Significant Impact

The proposed residential uses have the potential to create contaminated runoff containing compounds such as landscape chemicals and automotive fluids.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

- Prior to the issuance of a grading permit, the project applicant will be required to prepare a Storm Water Pollution Protection Plan (SWPPP) and file a Notice of Intent with the Regional Water Quality Control Board (RWQCB). As part of standard construction practices, the City and RWQCB will require compliance with best management practices (BMPs) to ensure potentially harmful chemicals or pollutants are not discharged from the site. Such measures may include sandbags, temporary drainage diversion and temporary containment areas.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

The potential significant adverse impacts associated with the implementation of the Tentative Tract Map Number 16072 project are listed below. The Rancho Cucamonga City Council finds that these potential significant adverse impacts would be reduced with the implementation of the project-related design features and recommended mitigation measures; however, the impacts cannot be reduced to a level less than significant. The Rancho Cucamonga City Council is adopting a Statement of Overriding Consideration per Section 15093 of the CEQA Guidelines.

GEOLOGY AND SOILS

Seismic Hazards

Seismic Ground Shaking

Significant Impact

The proposed residential structures on the project site would be exposed to potentially high accelerations of ground motion.

Finding

Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR.

Facts in Support of Finding

Implementation of the following mitigation measures will serve to lessen project impacts; however, the impacts would remain significant. While the No Project/No Development Alternative would avoid significant and unavoidable seismic impacts, this alternative would not meet any of the project objectives. The Retention of Riversidian Alluvial Fan Sage Scrub Alternative (RAFSS) would decrease the amount of development, but would not meet any of the project objectives. The Less intense development alternative would avoid the significant and unavoidable air quality impact, but does not meet any of the project objectives.

- Prior to the issuance of a building permit, structures will be designed and constructed in accordance with the Uniform Building Code and general engineering standards for seismic safety for development within Seismic Zone 4.

The significant and unavoidable adverse impacts related to seismic hazards by the proposed project are considered to be acceptable in light of the Statement of Overriding Considerations provided herein as Attachment A.

AIR QUALITY

Short-Term Construction-Related Emissions

Significant Impact

Short-term emissions will include fugitive dust and other particulate matter, as well as exhaust emissions, generated by earthmoving activities and operation of grading equipment during site preparation (demolition and grading). Short-term emissions will also include emissions generated during construction of the buildings as a result of operation of equipment, operation of personal vehicles by construction workers, electrical consumption, and coating and paint applications. Projected NOx, ROC, and PM10 emissions are above the SCAQMD recommended daily thresholds and NOx and ROC are above the quarterly thresholds during construction of the first phase of the project. The primary sources of NOx emissions are trucks used for rock removal and importation of concrete. The primary source of ROC emissions is the application of architectural coatings, and the primary source of PM10 is fugitive dust from earthmoving activities. Even with the reductions associated with implementation of construction related mitigation measures, the daily and quarterly emissions of NOx and ROC remain above the SCAQMD suggested thresholds.

Finding

Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR.

Facts in Support of Finding

Implementation of the following mitigation measures will serve to lessen project impacts; however, the impacts would remain significant. The No Project/No Development Alternative would avoid significant and unavoidable short-term construction related emission impacts; this alternative would not meet any of the project objectives. The Retention of Riversidian Alluvial Fan Sage Scrub Alternative (RAFSS) would decrease the amount of development, but would also not meet any of the project objectives. The Less Intense Development alternative would avoid the significant and

unavoidable air quality impact, but does not meet any of the project objectives and is not considered feasible.

- The site shall be treated with water or other soil-stabilizing agents (approved by SCAQMD and RWQCB) daily to reduce PM10 emissions, in accordance with SCAQMD Rule 403.
- During construction, all haul roads shall be swept according to a schedule established by the City to reduce PM10 emissions associated with vehicle tracking of soil off-site. Timing may vary depending upon time of year of construction.
- Grading operations shall be suspended when wind speeds exceed 25 mph to minimize PM10 emissions from the site during such episodes.
- Chemical soil stabilizers (approved by SCAQMD and RWQCB) shall be applied to all inactive construction areas that remain inactive for 96 hours or more to reduce PM10 emissions.
- The construction contractor shall select the construction equipment used on-site based on low emission factors and high-energy efficiency. The construction contractor shall ensure the construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.
- The construction contractor shall utilize electric or clean alternative fuel powered equipment, where feasible.
- The construction contractor shall ensure that construction-grading plans include a statement that work crews will shut off equipment when not in use.
- The construction contractor shall use low VOC architectural coating during the construction phase of the project.
- During construction of the proposed improvements, temporary traffic control (e.g., flag person) will be provided during soil transport activities. Contractor will be advised not to idle trucks on site for more than ten minutes.
- During construction of the proposed improvements, only low volatility paints and coatings as defined in SCAQMD Rule 1113 shall be used. All paints shall be applied using either high volume low pressure (HVLP) spray equipment or by hand application.

The significant and unavoidable adverse impacts related to short-term construction emissions associated with the proposed project are considered to be acceptable in light of the Statement of Overriding Considerations provided herein as Attachment A.

Long-Term Emissions

Significant Impact

Long-term impacts for the proposed residential subdivision consist of mobile emissions and stationary emissions. Mobile emissions estimates are derived from motor vehicle traffic. Stationary emissions estimates are derived from the consumption of natural gas, electricity, the use of landscape equipment, and the storage and use of consumer products. When unmitigated emissions projections are compared with the SCAQMD suggested thresholds for significance, it is shown that long-term emissions exceed

the applicable thresholds for NOx, CO and ROC. The primary source of these emissions is mobile emissions from vehicles. Even with the mitigation incorporated into the project NOx, CO and ROC emissions remain above the SCAQMD recommended threshold, and therefore the project may be expected to violate an ambient air quality standard.

Finding

Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR.

Facts in Support of Finding

Implementation of the following mitigation measures will serve to lessen project impacts; however, the impacts would remain significant. The No Project/No Development Alternative would avoid significant and unavoidable long-term emission impacts; this alternative would not meet any of the project objectives. The Retention of Riversidian Alluvial Fan Sage Scrub Alternative (RAFSS) would decrease the amount of development, but would also not meet any of the project objectives. The Less Intense Development alternative would avoid the significant and unavoidable air quality impact, but does not meet any of the project objectives and is not considered feasible.

- The proposed project will participate in the cost of off-site traffic signal installation and synchronization through payment of the traffic signal fair-share mitigation fee. This fee will be collected and utilized by the City to install and synchronize traffic lights as needed to prevent congestion of traffic flow on East Avenue between Banyan Street and the project boundary, and Etiwanda Avenue between Highland Avenue and the north terminus of Etiwanda Avenue.
- All appliances within the residential units of the project shall be energy-efficient as defined by SCAQMD.
- The project proponent shall contact local transit agencies to determine bus routing in the project area that can accommodate bus stops at the project access points and determine locations and feasibility of bus stop shelters provided at project proponent's expense.

The significant and unavoidable adverse impacts related to long-term air emissions associated with the proposed project are considered to be acceptable in light of the Statement of Overriding Considerations provided herein as Attachment A.

Consistency Analysis

Significant Impact

The proposed project complies with the City of Rancho Cucamonga General Plan, which is consistent with the land use information that was the basis for the current AQMP. However, it is noted that the

specific analysis indicates that both short-term and long-term emissions as a result of the project are above the SCAQMD thresholds. These emissions remain above the thresholds after implementation of mitigation measures. For this reason, it is appropriate to conclude that the proposed project is not in compliance with the AQMP.

Finding

Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR.

Facts in Support of Finding

Implementation of the following mitigation measures will serve to lessen project impacts; however, the impacts would remain significant. The No Project/No Development Alternative would avoid significant and unavoidable impacts; this alternative would not meet any of the project objectives. The Retention of Riversidian Alluvial Fan Sage Scrub Alternative (RAFSS) would decrease the amount of development, but would also not meet any of the project objectives. The Less Intense Development alternative would avoid the significant and unavoidable air quality impact, but does not meet any of the project objectives and is not considered feasible.

- All feasible mitigation measures for reduction of air quality impacts have been incorporated into the project. However, short-term and long-term emissions remain above threshold levels for several pollutants after implementation.

The significant and unavoidable adverse impacts related to air emissions by the proposed project are considered to be acceptable in light of the Statement of Overriding Considerations provided herein as Attachment A.

AESTHETICS

Significant Impact

Development of the proposed project and cumulative development in the project vicinity will result in the permanent alteration of the visual landscape of the San Gabriel Mountains.

Finding

Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR.

Facts in Support of Finding

Implementation of the following mitigation measures will serve to lessen project impacts; however, the impacts would remain significant. The No Project/No Development Alternative would avoid significant and unavoidable long-term aesthetic impacts; this alternative would not meet any of the project objectives. The Retention of Riversidian Alluvial Fan Sage Scrub Alternative (RAFSS) would decrease the amount of development, but would also not meet any of the project objectives. The Less Intense Development alternative would avoid the significant and unavoidable air quality impact, but does not meet any of the project objectives.

- The applicant shall install landscaping and perimeter walls prior to issuance of building permits for the following phases and locations as shown on the Project Phasing Plan (Exhibit 3-8):
    - Phase 1-Along Wilson and Etiwanda Avenues.
    - Phase 2-Along Wilson Avenue
    - Phase 3-Along Etiwanda Avenue
    - Phase 4 Along East Avenue
- Prior to approval of a landscape plan, the project applicant shall provide transitions between the developed and natural (unbuilt) environment through landscaping techniques
- Prior to approval of a landscape plan, the project applicant shall ensure that streetscape design along the roadways adjacent to the project site create a strong landscaped edge, provides a coherent high-quality appearance along a particular route, and enhances the image of adjacent development.
- The project applicant shall provide for the undergrounding of utility lines and facilities, wherever feasible, to minimize the unsightly appearance of overhead utility lines and utility enclosures.
- Prior to approval of a landscape plan, trees and structures shall be used to frame and orient such views at key locations, and obstruction of views should be kept to a minimum along Etiwanda Avenue and East Avenue.

The significant and unavoidable adverse impacts on aesthetics and views by the proposed project are considered to be acceptable in light of the Statement of Overriding Considerations provided herein as Attachment A.

STATEMENT OF OVERRIDING CONSIDERATIONS

The California Environmental Quality Act (CEQA) requires the lead agency to balance the benefits of a proposed project against its unavoidable environmental risks in determining whether to approve the project. The City of Rancho Cucamonga proposes to approve the Tentative Tract Map Number 16072 project although unavoidable adverse geology and soils, air quality, and aesthetic impacts have been identified in the EIR. Even though these adverse impacts are not reduced to a level considered less than significant, the Rancho Cucamonga City Council finds that those impacts are outweighed by the benefits of the Tentative Tract Map Number 16072 project. Further, the alternatives which were identified in the EIR would not provide the project benefits, as summarized below, to the same extent as the proposed project:

1. To provide single-family housing units consistent with the intent of the City's General Plan and the Etiwanda North Specific Plan.

2. To annex the proposed 150-acre tentative tract and an adjacent 10-acre area at the northwest corner of Wilson and East Avenue into the City of Rancho Cucamonga.

3. To be consistent with, and implement, the policies and goals of the City of Rancho Cucamonga General Plan, Etiwanda North Specific Plan, City Development Code, and all other City development guidelines.

4. To create a project that is generally consistent and compatible with other existing and proposed uses in the vicinity of the project and community of Etiwanda in general.

5. To provide project infrastructure including streets, water and sewer mains, and flood control consistent with City and regional plans related to these services.

6. To phase the development of the proposed project to ensure adequate utilities are provided.

7. Provide a system of public/community facilities, including parks, trails, open space areas, and landscaping to support the residents of the project and surrounding area in an efficient and timely manner.

8. To design and landscape the proposed project to create an aesthetically pleasing living environment.

Therefore, the Rancho Cucamonga City Council, having reviewed and considered the information contained in the EIR and the public record, adopts the Statement of Overriding Considerations which has been balanced against the unavoidable adverse impacts in reaching a decision on this project.

RESOLUTION NO. 04-204

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF RANCHO CUCAMONGA, CALIFORNIA, CERTIFYING THE FINAL ENVIRONMENTAL IMPACT REPORT PREPARED FOR THE RICHLAND-PINEHURST RESIDENTIAL PROJECT, WHICH INCLUDES ANNEXATION OF APPROXIMATELY 160 ACRES, TENTATIVE TRACT MAP SUBTT16072, AND ASSOCIATED DEVELOPMENT AGREEMENT, FOR A RESIDENTIAL SUBDIVISION OF 150.8 ACRES INTO 358 LOTS FOR SINGLE FAMILY DEVELOPMENT, WITHIN THE LOW (2-4 DWELLING UNITS PER ACRE) AND VERY LOW RESIDENTIAL DISTRICTS (.1-2 DWELLING UNITS PER ACRE), IN THE UPPER ETIWANDA NEIGHBORHOOD OF THE ETIWANDA NORTH SPECIFIC PLAN, LOCATED ON THE NORTH SIDE OF WILSON AVENUE BETWEEN ETIWANDA AVENUE AND EAST AVENUE – APN: 0225-083-01, 12, 13, 15, 16, AND 20.

A. RECITALS.

1. Richland Pinehurst, Inc. (the "Applicant") seeks approval of a series of actions related to the annexation of land from unincorporated San Bernardino County into the City of Rancho Cucamonga, the approval of Tentative Tract Map SUBTT16072, and associated Development Agreement. The actions also include the development of 358 single-family housing units on approximately 150.8 acres. The total area to be annexed is approximately 160 acres. The average density of the development is approximately 2.38 dwelling units per gross acre for the entire site. These series of actions and approvals are hereinafter defined in this Resolution as the "Project."

2. The Applicant has submitted the following applications relating to the Project: Annexation DRC2002-00865, Tentative Tract Map SUBTT16072, and Development Agreement DRC2002-00156 (collectively the "Project Applications"). These Project Applications, as well as the appeal of the Planning Commission's approval of Tentative Tract Map SUBTT16072, constitute the matters involving the Project which are submitted to the City Council of the City of Rancho Cucamonga for decision and action.

3. The City of Rancho Cucamonga analyzed the Project's potential impacts on the environment in accordance with the California Environmental Quality Act ("CEQA") (Cal. Pub. Res. Code § 21000 *et seq.)* and the State CEQA Guidelines (the "Guidelines") (14 Cal. Code Regs. § 15000 *et seq.*) promulgated with respect thereto.

4. The City prepared an Initial Environmental Study (the "Initial Study") for the Project pursuant to Section 15063 of the Guidelines. The Initial Study concluded that there was evidence that the Project may have a significant environmental impact on several specifically identified resources, including aesthetics, land use and planning, population and housing, air quality, biological resources, noise, public services, transportation and traffic, cultural resources, hydrology and water quality, geology and soils, and utilities and service systems.

5. Based upon the information contained in the Initial Study, the City ordered the preparation of an Environmental Impact Report (the "EIR") for the Project in accordance with the provisions of Guidelines Sections 15064 and 15081. The City prepared and issued a Notice of Preparation of the EIR on September 11, 2002.

6. The City sent the Notice of Preparation to the State Clearinghouse in the Office of Planning and Research for the State of California (the "State Clearinghouse") and to other interested agencies and groups in accordance with Guidelines Section 15082(a).

7. The City, acting as the lead agency, prepared the Draft EIR for the Project, including certain technical appendices (the "Appendices") to the Draft EIR (State Clearinghouse No. 2002091053).

8. The City circulated the Draft EIR and the Appendices to the public, the State Clearinghouse, and other interested persons for a 45-day public review and comment period from December 2, 2003 through January 21, 2004.

9. In accordance with Guidelines Section 15083, the Planning Commission conducted a duly noticed public comment session concerning the EIR on December 10, 2003, to provide an introduction to the Project and CEQA process and to afford an opportunity for the public and interested agencies to comment on the issues to be analyzed in the Draft EIR.

10. The City received nine written comments in response to the Draft EIR and received oral comments regarding the Draft EIR at the Planning Commission's public comment session concerning the Draft EIR on December 10, 2003.

11. The City prepared written responses to all comments and made revisions and additions to the Draft EIR in response to the comments.

12. The City completed the responses to comments on the Draft EIR and preliminary revisions to the Draft EIR in March 2004, and distributed those responses to commenting agencies and to the public. Those comments and the responses thereto have been included in the Final EIR, as have the Appendices to the Draft EIR. Those documents together comprise the Final EIR. The Final EIR was distributed in accordance with the provisions of Public Resources Code section 21092.5, and at least ten (10) days prior to any Planning Commission consideration of the Final EIR.

13. On May 12, 2004, the Planning Commission of the City of Rancho Cucamonga conducted a duly noticed public hearing on the Project, and after the receipt of public testimony, closed the hearing on that date. On May 12, 2004, the Planning Commission adopted the following resolutions: (a) Resolution No. 04-56, certifying the Final EIR for purposes of approval of Tentative Tract Map SUBTT16072 and approving Tentative Tract Map SUBTT16072; and (b) Resolution No. 04-57, recommending that the City Council enter into Development Agreement DRC2002-00156.

14. On May 19, 2004, Craig A. Sherman, attorney for the Spirit of the Sage Council and the Habitat Trust for Wildlife, Inc., filed an appeal of the Planning Commission's approval of Tentative Tract Map SUBTT16072.

15. On June 2, 2004, the City Council of the City of Rancho Cucamonga conducted a duly noticed public hearing on the Final EIR and the Project, at which time all interested parties were given an opportunity to be heard and to present evidence regarding the Final EIR and the Project. After the receipt of public testimony, the City Council continued the public hearing on the Final EIR and the Project to its regularly scheduled meeting of June 16, 2004.

16. On June 16, 2004, the City Council of the City of Rancho Cucamonga conducted a continued public hearing on the Final EIR and the Project, at which time all interested parties were given an opportunity to be heard and to present evidence regarding the Final EIR and the Project, and after the receipt of public testimony, closed the hearing.

17. All legal prerequisites prior to the adoption of this Resolution have occurred.

B. RESOLUTION.

NOW, THEREFORE, it is hereby found, determined, and resolved by the City Council of the City of Rancho Cucamonga as follows:

1. The City Council hereby specifically finds that all of the facts set forth in the Recitals, Part A of this Resolution, are true and correct.

2. Each finding herein is based upon the substantial evidence in the administrative record of proceedings before the Planning Commission and the City Council, including testimony at the City Council's public hearings on June 2, 2004, and June 16, 2004, the Final EIR, and written and oral staff reports.

3. The City Council certifies that the Final EIR has been completed in compliance with CEQA and the Guidelines.

4. The City Council certifies that the Final EIR was presented to the City Council and that the City Council has reviewed and considered the contents of the Final EIR prior to approving the Project. The City Council has reached its own conclusions with respect to the Project and as to whether and how to approve each of the various applications comprising the Project.

5. The City Council certifies that the Final EIR represents the independent judgment and analysis of the City Council.

6. The City Council finds that the Final EIR adequately addresses the impacts of the Project and imposes appropriate mitigation measures for the Project.

7. The City Council finds that the additional information provided in the staff report, in attachments to the staff report, in the comments to the Draft EIR, and presented at the Planning Commission and City Council's public hearings, does not represent significant new information so as to require re-circulation of the Final EIR pursuant to Public Resources Code Section 21092.1.

8. The City Council hereby certifies the Final EIR as the environmental document for the Project and for the City Council's action in approving Annexation DRC2002-00865, Tentative Tract Map SUBTT16072, and Development Agreement DRC2002-00156.

9. The documents and other materials that constitute the record of the proceedings upon which the City Council's decision is based, which include, but are not limited to, the staff reports for the Project, as well as all of the materials that comprise and support the Final EIR and all of the materials that support the staff reports for the Project, are located in the office of the City Planner of the City of Rancho Cucamonga, at 10500 Civic Center Drive, Rancho Cucamonga, California 91730. The custodian of these documents is the City Planner of the City of Rancho Cucamonga.

10. The City Clerk shall certify to the adoption of this Resolution.

Please see the following page
for formal adoption, certification and signatures

PASSED, APPROVED, AND ADOPTED this 16th day of June 2004.

AYES: Alexander, Gutierrez, Howdyshell, Kurth, Williams

NOES: None

ABSENT: None

ABSTAINED: None

William J. Alexander, Mayor

ATTEST:

Debra J. Adams, CMC, City Clerk

I, DEBRA J. ADAMS, CITY CLERK of the City of Rancho Cucamonga, California, do hereby certify that the foregoing Resolution was duly passed, approved and adopted by the City Council of the City of Rancho Cucamonga, California, at a Regular Meeting of said City Council held on the 16th day of June 2004.

Executed this 17th day of June 2004, at Rancho Cucamonga, California.

Debra J. Adams, CMC, City Clerk

CITY OF RANCHO CUCAMONGA
NOTICE OF DETERMINATION

TO: Clerk of the Board
County of San Bernardino
385 N. Arrowhead, 2nd Floor
San Bernardino, CA 92415-0130

FROM: City of Rancho Cucamonga
Planning Division
P. O. Box 807
Rancho Cucamonga, CA 91729

Documentary Handling Fee ($35.00) Receipt Number 249379

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

PROJECT DESCRIPTION: DEVELOPMENT AGREEMENT DRC2002-00156 - RICHLAND PINEHURST INC. - A proposed annexation of 160.0 acres of land into the City of Rancho Cucamonga including a proposed subdivision of approximately 150.8 acres and development agreement to address specific conditions of development and annexation.

PROJECT LOCATION: Located within the Etiwanda North Specific Plan on the north side of Wilson Avenue between Etiwanda Avenue and East Avenue - APN - 0225-083-01, 12, 13, 14, 15, 16 and 20.

APPLICANT: (Name /Address & Phone) Richland Pinehurst, Inc.
4100 Newport Place, Suite 800
Newport Beach, CA 92660
(949) 261-7010

STATE CLEARINGHOUSE NUMBER: N/A

This is to advise that the **City of Rancho Cucamonga** approved the above described project on July 7, 2004 with an effective date of July 7, 2004, and has made the following determinations regarding the above project. A previous Certificate of Fee exemption was filed and posted as per attached receipt dated June 17, 2004.

1. The project _X_ will, _ will not, have a significant effect on the environment.
2. _X_ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ___ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures _X_ were, __ were not, made a condition of the approval of this project.
4. A statement of overriding considerations _X_ was, _ was not, adopted for this project.
5. Findings _X_ were, __ were not, made pursuant to the provisions of CEQA.

This is to certify that the final EIR or Negative Declaration and record of project approval is available to the General Public at: **City of Rancho Cucamonga, 10500 Civic Center Drive, Rancho Cucamonga, California.**

(Signature)	July 8, 2004 (Date)	City Planner (Title)	(909) 477-2750 (Telephone)

DATE FILED & POSTED

Rpt. #245971

CITY OF RANCHO CUCAMONGA
NOTICE OF DETERMINATION

TO: Clerk of the Board
County of San Bernardino
385 N. Arrowhead, 2nd Floor
San Bernardino, CA 92415-0130

FROM: City of Rancho Cucamonga
Planning Division
P. O. Box 807
Rancho Cucamonga, CA 91729

Documentary Handling Fee ($35.00)

Receipt Number

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

PROJECT DESCRIPTION: ANNEXATION DRC2002-00865, TENTATIVE TRACT MAP SUBTT16072 AND DEVELOPMENT AGREEMENT DRC2002-00156 - RICHLAND PINEHURST INC. - A proposed annexation of 160.0 acres of land into the City of Rancho Cucamonga including a proposed subdivision of approximately 150.8 acres and development agreement to address specific conditions of development and annexation.

PROJECT LOCATION: Located within the Etiwanda North Specific Plan on the north side of Wilson Avenue between Etiwanda Avenue and East Avenue - APN - 0225-083-01, 12, 13, 14, 15, 16 and 20.

APPLICANT: (Name /Address & Phone) Richland Pinehurst, Inc.
4100 Newport Place, Suite 800
Newport Beach, CA 92660
(949) 261-7010

STATE CLEARINGHOUSE NUMBER: N/A

This is to advise that the **City of Rancho Cucamonga** ~~approved the above described~~ project on June 16, 2004 with an effective date of June 16, 2004, and has made the following determinations regarding the above project.

1. The project X will, _ will not, have a significant effect on the environment.
2. X An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ___ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures X were, __ were not, made a condition of the approval of this project.
4. A statement of overriding considerations X was, _ was not, adopted for this project.
5. Findings X were, __ were not, made pursuant to the provisions of CEQA.

This is to certify that the final EIR or Negative Declaration and record of project approval is available to the General Public at: **City of Rancho Cucamonga, 10500 Civic Center Drive, Rancho Cucamonga, California.**

(Signature)	June 17, 2004 (Date)	City Planner (Title)	(909) 477-2750 (Telephone)

DATE FILED & POSTED

STATE OF CALIFORNIA - THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME
ENVIRONMENTAL FILING FEE CASH RECEIPT
DFG 753.5a (8-03)

245971

Lead Agency: City of Rancho Cucamonga Planning Division Date: 6/17/04
County / State Agency of Filing: County of San Bernardino Document No.:
Project Title: Annexation DRC2003-00565 Tentative Tract Map Sub TT 16072 (949)
Project Applicant Name: Richland Pinehurst, Inc. Phone Number: 261-7010
Project Applicant Address: 4100 Newport Place, Suite 800 Newport Beach Ca 92660
Project Applicant *(check appropriate box)*: Local Public Agency ☐ School District ☐ Other Special District ☐
State Agency ☐ Private Entity ☒

CHECK APPLICABLE FEES:

☒	Environmental Impact Report	Check No. 1004704 $850.00	$ 850.00
☐	Negative Declaration	$1,250.00	$
☐	Application Fee Water Diversion *(State Water Resources Control Board Only)*	$850.00	$
☐	Projects Subject to Certified Regulatory Programs	$850.00	$
☒	County Administrative Fee	~~$25.00~~	$ 35.00
☐	Project that is exempt from fees		

TOTAL RECEIVED $ 485.00

Signature and title of person receiving payment: John W. Zepp, Deputy Clerk

WHITE-PROJECT APPLICANT YELLOW-DFG/FASB PINK-LEAD AGENCY GOLDENROD-STATE AGENCY OF FILING

STATE OF CALIFORNIA - THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME
ENVIRONMENTAL FILING FEE CASH RECEIPT
DFG 753.5a (8-03)

249329

Lead Agency: City of Rancho Cucamonga Planning Division Date: 7/12/04
County / State Agency of Filing: County of San Bernardino Document No.:
Project Title: Development Agreement DRC2003-00157 - Richland Pinehurst
Project Applicant Name: Richland Pinehurst, Inc. Phone Number: 949-261-7010
Project Applicant Address: 4100 Newport Place, Suite 800, Newport Beach Ca 92660
Project Applicant *(check appropriate box)*: Local Public Agency ☐ School District ☐ Other Special District ☐
State Agency ☐ Private Entity ☒

CHECK APPLICABLE FEES:

☐	Environmental Impact Report	Check No. 117 $850.00	$
☒	Negative Declaration	$1,250.00	$
☐	Application Fee Water Diversion *(State Water Resources Control Board Only)*	$850.00	$
☐	Projects Subject to Certified Regulatory Programs	$850.00	$
☒	County Administrative Fee	~~$25.00~~	$ 35.00
☐	Project that is exempt from fees		

TOTAL RECEIVED $ 35.00

Signature and title of person receiving payment: John W. Zepp, Deputy Clerk

WHITE-PROJECT APPLICANT YELLOW-DFG/FASB PINK-LEAD AGENCY GOLDENROD-STATE AGENCY OF FILING

CALIFORNIA DEPARTMENT OF FISH AND GAME

CERTIFICATE OF FEE EXEMPTION

De Minimus Impact Finding

Rpt # 249329

Project Title/Location Name and Address of Project Proponent (include county):

DEVELOPMENT AGREEMENT DRC2002-00156 - RICHLAND PINEHURST - Located within the Etiwanda North Specific Plan on the north side of Wilson Avenue between Etiwanda Avenue and East Avenue, City of Rancho Cucamonga, County of San Bernardino - APN - 0225-083-01, 12, 13, 14, 15, 16 and 20.

Project Proponent: Richland Pinehurst, Inc.
4100 Newport Place, Suite 800
Newport Beach, CA 92660

CLERK OF THE BOARD OF SUPERVISORS
04 JUL 12 AM 10:01
CALIFORNIA

Project Description:

A proposed annexation of 160.0 acres of land into the City of Rancho Cucamonga including a proposed subdivision of approximately 150.8 acres and development agreement to address specific conditions of development and annexation.

Findings of Exemption:

1. The City of Rancho Cucamonga has prepared an initial study to evaluate the potential for adverse environmental impact; and

2. When considering the record as a whole, there is no evidence before the City of Rancho Cucamonga that the proposed project will have potential for an adverse effect on wildlife resources or the habitat upon which the wildlife depends.

3. The City of Rancho Cucamonga has, on the basis of substantial evidence, rebutted any presumption of adverse effect on fish and wildlife resources or the habitat upon which the wildlife depends.

DATE FILED & POSTED

Certification:

I hereby certify that the lead agency has made the above findings of fact and that based upon the initial study and hearing record, the project will not individually or cumulatively have an adverse effect on wildlife resources, as defined in Section 711.2 of the Fish and Game Code.

Brad ~~Buller~~ (Chief Planning Official)
Title: City Planner
Lead Agency: City of Rancho Cucamonga
Date: July 8, 2004

Responses to Comments
on the Draft Environmental Impact Report
for
City of Rancho Cucamonga
Tentative Tract Map Number 16072

State Clearinghouse No. 2002091053

Prepared for:

City of Rancho Cucamonga
Planning Department
10500 Civic Center Drive
Rancho Cucamonga, CA 91730

Contact: Debra Meier, Associate Planner

Prepared by:

Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602
714.508.4100

Contact: Michael E. Houlihan, AICP, Manager of Environmental Services

Michael Brandman Associates

May 6, 2004

TABLE OF CONTENTS

SECTION 1:
INTRODUCTION

PURPOSE

The Draft Environmental Impact Report for the City of Rancho Cucamonga Tentative Tract Map Number 16072 was circulated for public review and comment beginning on November 27, 2003 and ending on January 21, 2004. As required by the California Environmental Quality Act (CEQA), this document responds to comments received on the Draft EIR.

As required by Section 15132 of the State CEQA Guidelines, the Final EIR must respond to comments regarding significant environmental points raised in the review and consultation process. This document provides responses to comments on significant environmental points describing the disposition of the issue, explaining the EIR analysis, supporting EIR conclusions, or providing new information or corrections, as appropriate. This document, however, need not, and should not, attempt to respond to comments about the merits of the project.

This document is organized as follows:

- **Section 1 -** This section provides a discussion of the relationship of this document with the Draft EIR. It also discusses the structure of this document.
- **Section 2 -** This section lists the agencies/individuals that commented on the contents of the Draft EIR.
- **Section 3 -** This section includes the written comments and the responses to the comments that were received on the Draft EIR as well as the verbal comments received during the Planning Commission hearing on December 10, 2003.

This Response to Comments Document is part of the Final EIR, which includes the Draft EIR and the technical appendices. These documents, and other information contained in the environmental record, constitute the Final EIR for the City of Rancho Cucamonga Tentative Tract Map Number 16072.

SECTION 2:
LIST OF COMMENTORS

A list of public agencies, organizations, and individuals that provided comments on the Draft EIR is presented below. Each comment letter has been assigned an alphabetical designation (A through I). Each comment within each letter has been assigned a numerical designation so that each comment could be crossed-referenced with an individual response. Responses follow each comment letter. One individual provided verbal comments during the December 10, 2003 Planning Commission hearing on the project. The comments have been reiterated and responses follow each verbal comment.

COMMENT LETTERS RECEIVED ON DRAFT EIR

A. Terry Roberts, Director, State Clearinghouse, State of California Governor's Office of Planning and Research

B. Rita A. Kurth, Water Resource Administrator, Cucamonga County Water District

C. Garth Morgan, Ph.D, Water Resource Engineer, Inland Empire Utilities Agency

D. Steve Smith, P.E., Principal Transportation Analyst, San Bernardino Associated Governments

E. Jonathan J. Mott, Parker & Covert LLP

F. Steve Dunivin, Technical Supervisor, The Gas Company

G. James Quisimo, South Coast Air Quality Management District

H. Kathleen Rollings-McDonald, Executive Director, Local Agency Formation Commission

I. Laura J. Simonek, Manager, Environmental Planning Team, Metropolitan Water District of Southern California

ORAL COMMENTS RECEIVED DURING PLANNING COMMISSION HEARING

J. Craig Sherman, Spirit of the Sage

SECTION 3:
RESPONSES TO COMMENTS

Following are the responses to the written and oral comments that were received during the public review period on the Draft EIR. Where a comment results in a change to the Draft EIR, the response provides specific page, paragraph, and sentence reference, along with the new EIR text.

A. Terry Roberts, Director, State Clearinghouse, State of California Governor's Office of Planning and Research

A1. This comment is noted and acknowledges the closing of the public review period for the Draft EIR. No specific comments on the Draft EIR were provided, therefore, no further response is necessary.

B. Rita A. Kurth, Water Resource Administrator, Cucamonga County Water District

B1. This comment regarding the need for additional water storage capacity at the District's Reservoir 5C site is noted. Page 5.8-5 in the Draft EIR identifies a mitigation measures that requires the project applicant to submit a water services development fee.

B2. The project applicant is proposing to construct the full width of Wilson Avenue (i.e., 165 feet wide) adjacent to the project site as identified in the first paragraph on page 3-10 in the Draft EIR. The construction of the full width will also result in the coordination of the development of all utilities planned within Wilson Avenue adjacent to the project site. At this time, the project does not expect to affect the existing 16-inch water line along Wilson Avenue.

C. Garth Morgan, Ph.D, Water Resource Engineer, Inland Empire Utilities Agency

C1. At this time, the City of Rancho Cucamonga understands that a future recycle water distribution system is anticipated to occur in the vicinity of the City's Industrial Area Specific Plan area which is located in the southern portion of the City. This specific plan area is anticipated to provide recycled water to the existing Empire Lakes Golf Course. Tentative Tract Map Number 16072 is located in the northern portion of the City, north of State Route 210. "The applicant shall comply with all standard requirements of the Cucamonga Valley Water District at the time of construction."

C2. As identified on page 3-10 in the Draft EIR, the project includes the full-width improvement of Wilson Avenue which includes improvements to the 85-foot wide Metropolitan Water District (MWD) easement. The project applicant and the City will be coordinating with MWD regarding the plan for improvement within the easement. This specific coordination would occur during design review.

D. Steve Smith, P.E., Principal Transportation Analyst, San Bernardino Associated Governments

D1. This comment regarding the need to include the revised pages to the traffic study is noted. The traffic report in Appendix D in Volume II of the Draft EIR is hereby revised with the inclusion of pages 6-1, 6-2, and 6-3. Except for a typographical error for East Avenue at Wilson Avenue on Table 5.3-10 on page 5.3-18 in the Draft EIR, the project's fair share contribution to offsite intersection improvements is correctly identified in the Draft EIR. Table 5.3-10 on page 5.3-18 in the Draft EIR is revised as follows:

Delete: "$120,000" under the Total Cost column for East Avenue at Wilson Avenue.

Add: "$220,000" under the Total Cost column for East Avenue at Wilson Avenue.

Delete: "$15,172" under the Project's Fair Share Cost column for East Avenue at Wilson Avenue.

Add: "$27,816" under the Project's Fair Share Cost column for East Avenue at Wilson Avenue.

The revisions to pages 6-1, 6-2, and 6-3 in Appendix D result in a revision to Mitigation Measure TT-8 on pages 5.3-17 and 5.3-18 of the Draft EIR.

Delete: "TT-8 - Prior to the issuance of building permits, the applicant shall provide funds in accordance with the City's Transportation Development Fee. Collection of these fees shall represent the project's "fair share" toward the following transportation improvements required for Buildout Year 2020.

- Construction of one additional northbound lane to provide a shared left and through lane, and a shared right and through northbound lane, and one additional southbound lane to provide a shared left and through and a shared right and through southbound lane on East Avenue at Banyon Street.
- Construction of a westbound through lane on Highland Avenue at Etiwanda Avenue.
- Installation of a traffic signal at the intersection of Etiwanda Avenue (North) at Wilson Avenue.
- Installation of a traffic signal at the intersection of Etiwanda Avenue (South) at Wilson Avenue.
- Installation of a traffic signal at the intersection of East Avenue at Wilson Avenue.

Add: "TT-8 - Prior to the issuance of building permits, the applicant shall provide funds in accordance with the City's Transportation Development Fee. Collection of these fees shall represent the project's "fair share"

toward the following transportation improvements required for Buildout Year 2020.

- Construction of one additional northbound lane to provide a shared left and through lane, and a shared right and through northbound lane on East Avenue at Banyan Street.
- Construction of one additional southbound lane to provide a shared left and through and a shared right and through southbound lane on East Avenue at Banyan Street.
- Construction of a westbound through lane on Highland Avenue at Etiwanda Avenue.
- Installation of a traffic signal at the intersection of Etiwanda Avenue (North) at Wilson Avenue.
- Installation of a traffic signal at the intersection of Etiwanda Avenue (South) at Wilson Avenue.
- Add an eastbound and westbound left turn lane and install a traffic signal at the intersection of East Avenue at Wilson Avenue.

In addition to Mitigation Measure TT-8, Table 5.3-9 is revised as follows:

Delete:

Table 5.3-1: Required Offsite Project Area Intersection Improvements

Intersection/Segment	Improvement	Total Cost
Etiwanda Ave.-North (NS) at:		
Wilson Ave. (EW)	Install Traffic Signal	$ 120,000
Etiwanda Ave.-South- (NS) at:		
Wilson Ave. (EW)	Install Traffic Signal	$ 120,000
Summit Ave. (EW)	Install Traffic Signal	$ 120,000
Highland Ave. (EW)	Construct SB right turn lane	$ 50,000
	Construct WB through lane	$ 259,000
	Construct one additional SB lane to provide shared left and through, and shared right and through lane.	$ 259,000
	Construct EB left turn lane	$ 50,000
	Construct WB left turn lane	$ 50,000
Total		**$ 1,527,000**

Source: RK Engineering Group, Inc. 2002.
Notes: SB = Southbound
WB = Westbound
NB = Northbound
EB = Eastbound

Add:

Table 5.3-2: Required Offsite Project Area Intersection Improvements

Intersection/Segment	Improvement	Total Cost
Etiwanda Ave.-North (NS) at:		
Wilson Ave. (EW)	Install Traffic Signal	$ 120,000
Etiwanda Ave.-South- (NS) at:		
Wilson Ave. (EW)	Install Traffic Signal	$ 120,000
Summit Ave. (EW)	Install Traffic Signal	$ 120,000
Highland Ave. (EW)	Construct SB right turn lane	$ 50,000
	Construct an additional WB through lane	$ 259,000
East Avenue (NS) at		
Wilson Avenue (EW)	Install Traffic Signal	$ 120,000
	Add EB and WB Left Turn Lane	$ 100,000
Summit Avenue (EW)	Install Traffic Signal	$ 120,000
	Construct one additional NB Lane to Provide a Shared Left and Through Lane and Shared Right and Through Lane	$ 259,000
	Construct one Additional SB Lane to Provide a Shared Left and Through Lane and Shared Right and Through Lane	$ 259.000
	Construct EB left turn lane	$ 50,000
	Construct WB left turn lane	$ 50,000
Total		**$ 1,627,000**

Source: RK Engineering Group, Inc. 2002.
Notes: SB = Southbound
WB = Westbound
NB = Northbound
EB = Eastbound

The above revisions do not substantially alter the conclusions presented in Section 5.3.5 because Mitigation Measure TT-8 still identifies that the applicant will provide funds in accordance with the City's Transportation Development Fee and the intersections that require improvements are those shown on Table 5.3-10 in the Draft EIR.

E. Jonathan J. Mott, Parker & Covert LLP

E1. This comment regarding funding for new schools is noted. As stated in Mitigation Measure S-1 on page 5.8-8 of the Draft EIR, the project applicant will be required to pay developer impact fees in accordance with the Etiwanda School District approved impact fees. The State Legislature has determined through state bills that payment of school impact fees is adequate mitigation for new residential project such as Tentative Tract Map Number 16072.

F. Steve Dunivin, Technical Supervisor, The Gas Company

F1. This comment regarding the Southern California Gas Company's ability to provide gas service to the project without any significant impact on the environment is noted. No further response is required.

G. James Quisimo, South Coast Air Quality Management District

G1. This comment regarding the use of new air quality models is noted. Please note that the air quality analysis was prepared in the year 2002 prior to the approval of the new air models. This analysis was completed after the Notice of Preparation was sent out for public review on September 11, 2002. To understand the modifications that could occur with the new air models, the air quality emissions were inputted into the new models (EMFAC2002 and URBEMIS2002).

The model runs are provided in Attachment A. These runs show that no new significant carbon monoxide (CO) hotspots impacts or criteria pollutant impacts would occur with the implementation of the project compared to the evaluation of air quality impacts with the previous versions of the air models presented in Section 5.4 in the Draft EIR. Therefore, the air quality findings present in the Draft EIR adequately identifies the air emissions impacts that would occur with the development of the proposed project.

G2. This comment regarding the use of a protocol Caltrans analysis is noted. Although not required to use such a protocol for non-Caltrans project, the air quality analysis was re-evaluated using the Caltrans protocol to understand if the level of impacts identified in the Draft EIR would increase. As shown in Attachment A, the re-evaluation did not identify any new significant impacts that were not already addressed in the Draft EIR. Therefore, the findings presented in the Draft EIR adequately identifies the impacts that would occur with the implementation of the proposed project.

G3. The emissions rate used from the health risk assessment for the back-up diesel fueled generator at the Rancho Cucamonga County Water District Plant is 0.4 grams per brake horsepower hour as found in the SCAQMD rules for Best Available Control Technology (BACT). However, the standby generator is test run for 15-minutes one day a week. The emissions factor in grams per second used in the Screen3 model reflects the fact that the 600-horsepower generator is running for only 900 seconds per day on the day that it is tested.

G4. State CEQA Guidelines Section 15064 (i)(3) addresses evaluation of cumulative effects. For an impact involving a resource that is addressed by an approved air quality management plan or mitigation program, the CEQA Guidelines provide that a lead agency may determine that a project's incremental contribution is not cumulatively considerable if the project complies with the adopted plan or program. As noted in the Draft EIR, the cumulative analysis analyzed the conformity of the proposed project with the adopted Air Quality Management Plan (AQMP) for the South Coast Air Basin and concluded that the proposed project did not comply with the AQMP and was, therefore, cumulatively significant to air quality resources. An analysis using the list approach that included the Tracy Development as requested by SCAQMD would come to the same conclusion and is not necessary.

G5. Please see response to comment G1 regarding the use of the new updated URBEMIS2002 model.

H. Kathleen Rollings-McDonald, Executive Director, Local Agency Formation Commission

H1. The project applicant anticipates that the temporary onsite detention basins will be maintained by a special landscape district or a homeowners association.

H2. This comment regarding the current City boundary west and northwest of the project site is noted. An additional area northwest of the project site and north of the Edison easement is currently within the City of Rancho Cucamonga. This modification to Exhibit 3-1 is hereby incorporated into the Draft EIR. This revision does not affect the findings provided in the Draft EIR.

H3. In accordance with Mitigation Measure B-1 on page 5.2-29 in the Draft EIR, the project applicant will be required to obtain land within or near the North Etiwanda Open Space and Habitat Preservation Program (NEOSHPP) that support RAFFS habitat. If the applicant can not obtain the land, the applicant will pay an offsite mitigation cost to a City-approved agency to purchase and manage mitigation lands. The project site is not included within lands designated for the NEOSHPP, therefore, the implementation of the proposed project will not adversely impact the program.

H4. This comment regarding the City's existing police protection contract is noted. The project site is currently within the unincorporated area and served by the Sheriff. There is not an existing contract between the City and the Sheriff to serve the project site. This information does not alter any findings in the Draft EIR.

H5. The specific financial arrangement between the City and the State Department of Forestry for future wildland fires is not known at this time. This financial arrangement does not result in any new environmental impacts associated with the project.

I. Laura J. Simonek, Manager, Environmental Planning Team, Metropolitan Water District of Southern California

I1. Please see response to comment C2 regarding the Metropolitan Water District (MWD) easement and existing pipeline. The width of the easement is 85 feet. The third sentence on page 3-10 is revised as follows:

Delete: "…includes improvements to the adjacent 65-foot wide Metropolitan Water District (MWD) easement."

Add: "…includes improvements to the adjacent 85-foot wide Metropolitan Water District (MWD) easement

J. Craig Sherman, Spirit of the Sage (Public Comment)

J1. Comment: Mr. Sherman was concerned that the public hearing to receive comments on the Draft EIR was too close to the time that the document was distributed for public review.

Response: This comment regarding the timing of the City of Rancho Cucamonga Planning Commission hearing on the Draft EIR is noted. The provision of a public hearing to receive comments on a Draft EIR is not a requirement of CEQA; however, the City has provided an additional opportunity to provide comments, and has provided an extended comment period due to anticipated office closures for Christmas and New Year's Day holidays.

J2. Comment: Mr. Sherman felt that the mitigation ratio for the Riversidean Alluvial Fan Sage Scrub (RAFSS) should be higher than the recommended ratio of 1:1.

Response: The mitigation ratio of 1:1 was recommended for the affected RAFSS habitat because this ratio is consistent with the mitigation ratio agreed by the California Department of Fish and Game on other projects in the project vicinity.

J3. Comment: Mr. Sherman asked why the Holland Classification was not used in identifying plant communities onsite.

Response: Two plant community identification systems were used for the proposed project. However, the Holland Classification system was used to determine impacts and mitigation measures. The plant communities classified with the Holland system is shown in Exhibit 5.2-2 in the Draft EIR.

J4. Comment: Mr. Sherman requested that the loss of California Black Walnuts and Plumber's Mariposa Lily should be mitigated.

Response: Mitigation Measure B-6 identifies the need to replace "heritage trees." The California Black walnut is considered a "heritage tree"; therefore these trees will be mitigated at a 1:1 ratio.

Mitigation Measure B-7 in the Draft EIR includes a re-evaluation of Plumber's Mariposa Lily. If found, the number and location will be identified and the resource agencies will be notified for consultation and possible collection and relocation.

J5. Comment: Mr. Sherman was concerned that public safety impacts such as landslides and flooding were not addressed.

Response: Landslides and flooding issues were addressed in Section 5.1 (Geology and Soils) and Section 1.3 (Hydrology and Water Quality), respectively.

J6. Comment: Mr. Sherman was concerned that the Alternatives that were evaluated were considered not feasible. He questioned what level of economic return was considered feasible.

Response: Economic feasibility was not reviewed as part of the alternative analysis. The term feasibility related to whether the alternatives could feasibly attain most of the basic objectives of the project while avoiding or substantially lessen the

significant effects of the project. The alternatives that were selected were those that attempt tried to substantially lessen a significant impact. These alternatives resulted in not meeting the basic objectives of the proposed project.

J7. Comment: Mr. Sherman was concerned that a portion of the project was not consistent with the density set forth in the Etiwanda North Specific Plan (ENSP).

Response: The project site has a land use designation of Low Residential (2-4 dwelling units per acre) on the southern portion of the site, and Very Low Residential (0.1 to 2 dwelling units per acre) on the northern portion of the site; the City Planner determined that the overall project density of 2.4 dwelling units per acre (as averaged over the entire project) was consistent with the land use goals of the Etiwanda North Specific Plan.

J8. Comment: Mr. Sherman requested that the Development Agreement be made available to the public.

Response: The Development Agreement is currently being prepared by the City of Rancho Cucamonga. For the City to approve the Development Agreement, the environmental impacts associated with the implementation of the Development Agreement is required to be consistent with the environmental impacts addressed in the EIR.

Finance, Audit, Insurance, & Real Property Committee

City of Rancho Cucamonga Road Easement

Item 7-10

January 9, 2024

Overview of the Easement Conveyance

Subject

- To grant a permanent easement to the city of Rancho Cucamonga for public road purposes on Metropolitan fee-owned property in the city of Rancho Cucamonga

Purpose

- The road improvements are being constructed to accommodate a residential development located just north of the Rialto Pipeline.

Distribution System Map

General Location Map

Site Map

Key Provisions

- Compatible use with prior rights provisions for Metropolitan.
- City of Rancho Cucamonga is responsible for the construction, operation, and maintenance of the public road and related facilities and for indemnifying Metropolitan.
- All plans shall be reviewed and approved by Metropolitan before the commencement of work.
- Metropolitan will receive the fair market value for the proposed easement of $1,361,000 and a one-time processing fee of $8,500.

Board Options

Option No. 1

- Review and consider the Final Environmental Impact Report certified by the city of Rancho Cucamonga and authorize the General Manager to grant a permanent easement to the city of Rancho Cucamonga for public road and trail purposes

Option No. 2

- Do not approve the permanent easement.

Board Options

Staff Recommendation

- Option No. 1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Action

- **Board of Directors**
  Legislation, Regulatory Affairs, and Communications Committee

1/9/2024 Board Meeting

7-11

Subject

Adopt Legislative Priorities and Principles for 2024; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

This letter presents the final 2024 legislative priorities and principles recommended by staff with input received for the Board of Directors' consideration and adoption.

Proposed Action(s)/Recommendation(s) and Options

Staff Recommendation: Option #1

Option #1

Adopt the Legislative Priorities and Principles for 2024

Fiscal Impact: None
Business Analysis: Adoption of these legislative priorities and principles supports staff's ability to address matters in a timely fashion related to legislation in 2024.

Option #2

Take no action
Fiscal Impact: None
Business Analysis: Absence of these legislative priorities and principles could hinder staff's ability to respond in a timely manner to legislation in 2024.

Alternatives Considered

Not Applicable

Applicable Policy

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Related Board Action(s)/Future Action(s)

The draft 2024 priorities and principles were presented to the Legislation, Regulatory Affairs, and Communication Committee as an information item on November 14, 2023.

Summary of Outreach Completed

The draft 2024 Legislative Priorities and Principles (LPP) was presented to the Member Agency Legislative Coordinators Annual Planning Meeting on November 2, 2023, and to the Member Agency Managers' Meeting on November 3, 2023. Feedback on the priorities and principles was requested and received and is provided to the Board in the Summary of Comments (December 2023) (**Attachment 1**). All input received was reviewed and

either incorporated or received a response from staff. The redline of changes to the draft 2024 LPP is also provided for reference (**Attachment 2**).

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is not defined as a project under CEQA because it involves legislative proposals that do not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment (Public Resources Code Section 21065 and Section 15378(b)(1) of the State CEQA Guidelines). The proposed action is also not defined as a project under CEQA because it involves continuing administrative activities, such as general policy and procedure making (Section 15378(b)(2) of the State CEQA Guidelines). In addition, where it can be seen with certainty that there is no possibility that the proposed action in question may have a significant effect on the environment, the proposed action is not subject to CEQA (Section 15061(b)(3) of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Details and Background

Background

This board letter presents the 2024 LPP as recommended by staff for the Board's adoption. It lays out an integrated "One Water" collaborative approach on legislatively active issues related to managing Southern California's watersheds, water resources, and water infrastructure to ensure long-term resilience and reliability for communities and ecosystems. Once adopted, staff uses this document to determine Metropolitan's positions and advocate for these priorities and principles at the state and federal level through Metropolitan-sponsored legislation, engaging on bills, or pursuing state and federal funding. Updated legislative priorities and principles are presented annually to the Board of Directors. Final, board-approved annual legislative priorities and principles are publicly available on the Metropolitan website.

For the coming year, which is year two of the two-year state and federal legislative cycles, staff updated the document to reflect developments and new laws on the state and federal arenas, and to be consistent with internal Metropolitan initiatives, including the General Manager's Business Plan, the Metropolitan Climate Action Plan, and the new Board-led planning effort on the Climate Adaptation Master Plan for Water. The body of this letter includes the staff-recommended 2024 draft document incorporating (or responding to) input received since November 1, 2023.

Recommended updates to the language presented in November, after feedback from the Board and member agencies, can be seen in the Summary of Comments (December 2023). This board action letter presents a clean version of the legislative priorities and principles for 2024 with staff's recommended revisions, incorporating technical and policy input received. In November 2023, the Board authorized a bill proposal for 2024 regarding an amendment to the Surface Mining and Reclamation Act.

The 2024 Legislative Priorities and Principles below are respectfully submitted for adoption by the Board.

2024 Legislative Priorities

To help adapt to a changing climate, protect water resources, and partner with communities we serve, Metropolitan will work to support administrative/legislative actions and federal and state funding for the following priorities in 2024:

A. Top Legislative Priorities:

1. Continue support for imported water supply resiliency and reliability, including planning for the Delta Conveyance Project, Sites Reservoir Project, Agreements to Support Healthy Rivers and Landscapes (Voluntary Agreements), and the development of near-term and post-2026 Colorado River operating guidelines.

2. Conserve existing water supplies and prepare for climate change by supporting demand management and water use efficiency, long-term non-functional turf conversion, and a federal tax exemption for water conservation rebates.
3. Advance Pure Water Southern California and other water recycling projects and long-term supply reliability improvements.
4. Support funding for regional conveyance and water storage improvements to ensure the region's water supply reliability is equitable to all member agencies.
5. Protect drinking water quality and access to safe and reliable drinking water, including upholding the polluter pays principle and ensuring the continued cleanup of sites along the Colorado River.
6. Support adaptive management for ecosystem restoration in the Bay-Delta and Colorado River watersheds that takes into consideration evolving climate conditions, risk analyses, and best available science.
7. Improve water affordability throughout the region, especially for disadvantaged communities, without burdening existing ratepayers.

B. Metropolitan-Sponsored State Bill (Board-approved in November 2023)

1. Support administrative/legislative actions to amend the Surface Mining and Reclamation Act to eliminate the sunset date to allow Metropolitan to continue operating under its existing master reclamation plan.

2024 Legislative Policy Principles

The 2024 Legislative Policy Principles will guide and inform Metropolitan's engagement on state and federal legislative and regulatory activities. They were developed in consultation with subject matter experts at Metropolitan. The principles holistically address six strategic areas of policy that inform Metropolitan's One Water Vision and the Board-led process for developing the Climate Adaptation Master Plan for Water (CAMP4W). These policy areas include: (1) drinking water; (2) regional water resource management; (3) imported water supply; (4) sustainability, resiliency, and innovation; (5) infrastructure; and (6) system resiliency.

I. Drinking Water – Metropolitan provides to the Southern California region high-quality, reliable drinking water in an economically responsible way that surpasses all federal and state drinking water regulations.

A. Water Quality and Treatment

1. Support administrative/legislative actions that utilize best available science, occurrence and health effects data, and appropriate cost-benefit analyses or economic feasibility to protect public health and improve water quality. Apply these principles when setting maximum contaminant levels, health advisories, or notification/response levels, in addition to assessing laboratory capacity, analytical methods, and other regulatory standards or guidance levels.
2. Support application of the "polluter pays" principle such that parties responsible for introducing contaminants, such as per- and polyfluoralkyl substances, in or near drinking water sources are held liable for cleanup, and not drinking water and wastewater facilities that subsequently store, transport, or treat the water.
3. Support administrative/legislative actions and funding for treatment and mitigation measures to comply with any new regulatory standards, develop risk communication tools, as well as provide adequate time for implementation.
4. Support administrative/legislative actions and funding to protect source water quality, reduce threats from invasive species, and mitigate harmful algal blooms.

5. Support administrative/legislative actions and funding for the constituents of emerging concern (CEC) Action Fund to improve the State Water Resource Control Board's knowledge of CEC in waters of the state and drinking water.

B. Water Governance, Affordability, and Funding -- Metropolitan supports efforts to provide access to safe, reliable and affordable drinking water to all residents.

1. Support administrative/legislative actions that prioritize providing safe, reliable and affordable drinking water to disadvantaged communities.
2. Support administrative/legislative actions and funding that improve water affordability throughout the region, especially for disadvantaged communities, without burdening existing ratepayers.
3. Support funding to help water systems provide low-income ratepayer assistance programs.
4. Support administrative/legislative actions that improve governance and long-term sustainability of non-compliant water systems and provide assistance for voluntary consolidations that improve their technical, managerial, or financial capacity, while ensuring that all receiving public water systems are consulted on changes of organization, including proposed consolidations or extensions of service area.
5. Support administrative/legislative actions that provide local agencies flexibility in determining fees for service and assessment amounts.
6. Support administrative/legislative actions that ensure the limited resources of the Safe and Affordable Drinking Water Fund are allocated to advance projects, operation and maintenance costs, infrastructure improvements, and/or consolidation actions that will achieve long-term sustainability for water systems and the communities that rely on those systems.

II. Regional Water Resource Management – Metropolitan's One Water Vision and the Board-led CAMP4W process promote collaboration with member agencies to plan for future water supply needs and the challenges ahead in a reliable, cost-effective, and environmentally responsible manner. This involves protecting imported water supplies and quality, supporting local resource development, advancing water use efficiency, and supporting ecosystem protection and restoration.

A. Conservation

1. Support tax exemptions and/or credits for water conservation or efficiency incentives, including but not limited to long-term conversion of non-functional turf (NFT), local stormwater capture, and other measures to reduce consumption of water or enhance the absorption and infiltration capacity of the landscape.
2. Support administrative/legislative actions and federal/state funding to encourage equitable water use efficiency and recycled water use among agricultural, industrial, and urban sectors.
3. Support administrative/legislative actions and funding to advance conservation as a California Way of Life in a manner that maintains flexibility and local control. Support efforts to ensure new statutes and regulations are based on science; recognize regional distinctions (i.e., climate, land use, population, and hydrology); water affordability; and potential impacts to wastewater operations and recycled water projects.
4. Support administrative/legislative actions and federal/state funding for leak detection and water loss reduction. Support the development and implementation of flexible water loss standards for both retail and wholesale water systems.

5. Support administrative/legislative actions and federal/state funding for the long-term conversion of NFT in residential, commercial, industrial, and institutional landscapes and ban installation of NFT in new construction.

B. Desalination & Groundwater Remediation

1. Support administrative/legislative actions, funding, and partnerships for brackish groundwater and seawater desalination projects, consistent with the Governor's Water Resilience Portfolio and 2022 Water Supply Strategy and Metropolitan's CAMP4W goals.
2. Support administrative/legislative actions and funding for salinity control projects, including but not limited to source control, treatment, and concentrate management.
3. Support administrative/legislative actions and funding for research, pilot tests, and demonstration studies to encourage the development of environmentally sustainable and climate-resilient desalination technologies.

C. Recycled Water

1. Support actions to advance and secure funding for the Pure Water Southern California Program and related projects.
2. Support efforts to improve flexibility of the State's water recycling grant program.
3. Support implementation of the National Water Reuse Action Plan and California Water Reuse Action Plan while protecting local flexibility and encouraging local, state, and federal coordination, research, and innovation.
4. Support administrative/legislative actions and funding that facilitate the adoption of direct potable reuse regulations by December 31, 2023. These actions include but are not limited to planning, development, and implementation of local and regional potable reuse projects; and initiatives to fill research gaps and advance the science to promote the further development of potable reuse.
5. Support administrative/legislative actions to promote voluntary on-site water treatment systems if they maintain compliance with Title 22 and do not negatively affect municipal water recycling systems.
6. Support administrative/legislative actions that maximize voluntary use of recycled water.

D. Local Supply Development

1. Support administrative/legislative actions that protect and advance local flexibility and responsiveness in developing locally appropriate, climate-resilient, diverse resource portfolios.
2. Continue to support and promote integrated water resources development by advocating for clear, concise, and expedited regulations/policies that are easily understandable by the regulated community and public.
3. Support administrative/legislative actions and funding to expedite the development of new local resources (including recycled water, direct potable reuse, groundwater, stormwater, desalination projects, and groundwater remediation) without compromising the operational, financial, water quality, regulatory, environmental, and customer interests of Metropolitan and other water and wastewater agencies.
4. Support administrative/legislative actions that advance stormwater as a beneficial resource and facilitate the funding and permitting of stormwater capture projects to augment local and regional water supplies and promote holistic watershed health.

5. Support administrative/legislative actions and funding that advance Metropolitan's surface and groundwater storage and/or recovery programs with member agencies.

E. Watershed Management

1. Support administrative/legislative actions and funding to enhance watershed management in Southern California, the Bay-Delta, and Colorado River watersheds that provide broad public benefits, including water quality and water supply reliability, reduced wildfire risks, greater scientific understanding, and other environmental improvements.
2. Support administrative/legislative actions that help advance implementation of watershed management plans, including watershed research and multi-benefit forestry management projects.
3. Support implementation of the California Water Resiliency Portfolio and the Water Supply Strategy, as consistent with Metropolitan goals and objectives, to ensure improved watershed-scale coordination, watershed management and planning, and programs and funding that provide water resilience and improve watershed functions.

III. Imported Water Supply – Metropolitan provides imported water supplies to its member agencies from two primary sources, the Colorado River via the Colorado Aqueduct and Northern California watersheds via the Sacramento-San Joaquin Delta and the State Water Project.

A. Bay-Delta Initiatives– Metropolitan is involved in several key regulatory and planning processes in the Sacramento-San Joaquin Delta related to the operation of the State Water Project (SWP). The goal is to advance water supply reliability and ecosystem restoration concurrently by modernizing the state's water infrastructure with the proposed Delta Conveyance Project and improving the habitat and function of the Delta estuary for the benefit of threatened and endangered species. To advance these goals, Metropolitan supports collaborative scientific efforts to better understand how to restore and manage the Bay-Delta while reducing reliance consistent with the 2009 Delta Reform Act (Delta Reform Act).

1. Support administrative/legislative actions to advance Delta Conveyance and EcoRestore in support of California's coequal goals of water supply reliability and Delta ecosystem restoration and the Governor's California Water Resilience Portfolio.
2. Support administrative/legislative actions and funding to improve scientific understanding of listed Delta fish and wildlife species and water project operations in the Delta, including data collection, real-time monitoring, and modeling. Promote the use of best available science to protect and restore aquatic species and habitats, and enhance flexibility for water project operations while maintaining regulatory and statutory protections for species listed under the state and federal Endangered Species Act.
3. Continue support for implementation of state policies adopted as part of the Delta Reform Act and water management package, including clarification of the monitoring, reporting, and enforcement provisions related to in-Delta diversions.
4. Support administrative/legislative actions to consolidate review and oversight of anadromous species protection under the U.S. Department of the Interior.
5. Support administrative/legislative actions that protect water quality for beneficial uses and that are implemented consistent with California water rights priorities.
6. Support administrative/legislative actions and funding to advance the Delta Freshwater Pathway, levee improvements (including levee modernization for the existing Delta levee system), levee maintenance programs (including real-time

monitoring for the existing Delta levee system), and secure Delta flood-fighting materials and stockpiles.

7. Support administrative/legislative actions in the Delta watershed to account for and administer the California water rights system, including protecting stored water releases.

8. Support administrative/legislative actions and funding to advance Sites Reservoir and the Agreements to Support Healthy Rivers and Landscapes (Voluntary Agreements), consistent with the Board's action to advance these efforts.

B. Colorado River Resources – The Colorado River is a critical resource for the entire Southwest and many diverse ecosystems. Degradation of the Colorado River's water quality can cause significant economic, environmental, and human health impacts across the West. Metropolitan and other interested parties work to ensure we can continue to supply our communities with a safe and reliable water supply.

1. Support administrative/legislative actions and funding of conservation and efficiency projects to enhance the resiliency of the Colorado River System and Metropolitan's Colorado River supplies.

2. Support administrative/legislative actions and funding to ensure that sufficient water is stored and delivered from Lake Mead to meet regional water supply needs while acknowledging the evolving Law of the River.

3. Support administrative/legislative actions and funding for the cleanup of contaminated sites along the Colorado River. This includes, but is not limited to, uranium remediation in Moab, Utah; perchlorate remediation in Henderson, Nevada; hexavalent chromium remediation near Topock, Arizona; and a waste disposal site near Hoover Dam.

4. Promote continued coordination between states and federal agencies to further the Colorado River Basin Salinity Control Program (Program) and work to include water conservation as a criterion in the selection of salinity control projects. Support actions to stabilize the financial position of the Program. Maintain the operation of the United States Bureau of Reclamation's Paradox Valley Unit salinity control project at a safe level.

5. Secure funding and support administrative/legislative actions for the implementation of the Lower Colorado River Multi-Species Conservation Program to promote the recovery of threatened and endangered species in a manner that allows the Lower Basin States to conserve Colorado River water.

6. Support administrative/legislative actions and funding that advance binational water conservation programs that benefit Colorado River supply augmentation and habitat restoration objectives.

7. Support administrative/legislative actions and funding for the U.S. Bureau of Reclamation to update and apply reasonable and beneficial use determinations while acknowledging the evolving Law of the River.

C. State Water Project – About 30 percent of Southern California's water comes from the SWP in an average year. Metropolitan works with state and federal agencies as well as other SWP contractors to manage threats to the project and address environmental needs and augment water supplies through existing and potential collaborative transfers and groundwater banking agreements.

1. Support administrative/legislative actions and funding to address the impacts of subsidence on the SWP and prevent future damage caused by unsustainable groundwater pumping.
2. Support funding for joint state and federal facility repairs, rehabilitation, and improvements, and ensure funding is equitably distributed between partners while maintaining SWP supply reliability.
3. Support administrative/legislative actions and funding for the cleanup of contaminated groundwater storage basins used for Metropolitan water banking programs along the California Aqueduct.
4. Support funding for the public share of costs, including recreation, flood protection, mitigation, environmental enhancement, and rehabilitation for multi-purpose SWP facilities.

IV. Sustainability, Resiliency, and Innovation – Metropolitan supports policies and funding that encourage sustainable practices that improve water and power system resilience and adapt to a rapidly changing environmental landscape. Metropolitan strives to fulfill the needs of the current generation without compromising the needs of future generations in an environmentally and economically responsible way.

A. Carbon Neutrality

1. Support administrative/legislative actions and funding to implement Metropolitan's Climate Action Plan to reduce Metropolitan's greenhouse gas emissions and reach carbon neutrality by 2045.
2. Support administrative/legislative actions and funding to assist the Department of Water Resources in reaching carbon neutrality for the State Water Project by 2045 in a cost-effective and environmentally responsible manner.
3. Support administrative/legislative actions and funding to improve, develop, and promote innovative climate adaptation solutions and support science-based strategies and tools that benefit the environment by restoring healthy soils, conserving water, and capturing and/or sequestering carbon.
4. Support administrative/legislative actions and funding that assists public agencies in the transition to zero-emission fleets and equipment.

B. Water/Energy Nexus

1. Support administrative/legislative actions and funding for energy efficiency and storage projects, and programs to reduce greenhouse gases and develop renewable resources.
2. Support administrative/legislative actions that remove barriers and encourage energy sector investments in water conservation and energy management programs.
3. Support administrative/legislative or regulatory activities that preserve Metropolitan's ability to pursue a diverse set of supply options and oppose constraints on supply development, such as water resource loading orders based solely on energy intensity.
4. Support efforts to ensure power costs are appropriate and proportional to the benefits received, and that water system operations are not adversely affected by power-related legislation/administrative actions.
5. Support administrative/legislative actions that provide state funding from the Greenhouse Gas Reduction Fund for water/energy nexus projects and maintain Cap-

and-Trade allowances for Metropolitan and Department of Water Resources (i.e., State Water Contractors).

6. Support administrative/legislative actions that maintain Board authority over energy-related matters (e.g., system reserve margin or resource adequacy requirements).

C. Renewable Energy

1. Support administrative/legislative actions that define hydropower generation as renewable energy irrespective of a facility's nameplate generating capacity and include the provision of renewable energy credits for hydroelectric generation.

2. Work to ensure that administrative/legislative actions seeking to enhance or expand hydropower at existing dams do not adversely impact those dams, either financially or operationally, or entities with rights to the power from the existing resources that directly or indirectly impact Metropolitan's service area.

3. Support administrative/legislative actions to improve federal hydropower relicensing for existing facilities, including SWP resources.

4. Support administrative/legislative actions and funding for the SWP and the Colorado River Aqueduct (CRA) to incorporate renewable energy resources, such as pumped hydroelectric energy, that contribute to the state's climate goals without impacting the projects' primary purpose, provided consideration is given to transmission limitations, cost and portfolio availability, and unrelated impacts are not shifted to SWP or CRA facilities.

D. Environmental Stewardship

1. Support administrative/legislative actions for environmental compliance to improve clarity and workability of the requirements and promote consistency and reduce regulatory duplication, while protecting public health and the environment.

2. Support administrative/legislative actions and funding to facilitate non-mitigation habitat restoration projects that benefit endangered and threatened species.

3. Support administrative/legislative actions and funding for research and partnerships on water science, including snowpack and streamflow monitoring, runoff, drinking water quality, salinity control, source water protection, soil moisture monitoring, healthy soils, and watershed research.

E. Workforce Development – Metropolitan is committed to ensuring the resiliency of its workforce and to advancing diversity, equity, and inclusion to promote the physical and mental safety and well-being of its workforce and the communities it serves.

1. Support administrative/legislative actions, funding, and partnerships to improve educational opportunities in the water sector, including career technical education and workforce development.

2. Support administrative/legislative actions and funding that improve water system staff training and certification processes.

F. Innovation – Supporting and promoting innovation and emerging technologies continues Metropolitan's long tradition of creatively solving difficult challenges.

1. Support administrative/legislative actions and funding for the research and development of new and emerging technologies such as satellite- and computer-based technologies to monitor source water quality, ecosystem health, state- and federal-threatened and endangered fish species; measure and predict agricultural water use, urban outdoor water use, and reservoir evaporation; and expand

coordination with technology incubators, research institutions, and other stakeholder groups.

2. Support administrative/legislative actions and funding to promote open water data platforms and sharing, including improving access to agency data, streamlining the collection and submission of water agency data, and promoting collaboration among federal, state, and local stakeholders.

V. Infrastructure – Metropolitan has a strategic priority to invest in key capital projects in our region to enable long-term, reliable water deliveries. Key capital projects identified in Metropolitan's Capital Investment Plan focus on improvements to the CRA, treatment plants, and distribution systems.

A. Support administrative/legislative actions to initiate, expedite, and secure funding to defray the costs of planning, financing, constructing, repairing, and rehabilitating water infrastructure projects, including but not limited to general obligation bonds, tax-exempt municipal bonds, grants, low-interest loans, and direct appropriations. Ensure equitable cost-sharing of water infrastructure projects.

B. Support administrative/legislative efforts to expand funding programs, expedite project approval and reporting processes, and prevent project backlogs in state and federal funding or financing.

C. Support the "beneficiaries pay" approach as a financing mechanism for statewide projects and programs and oppose public goods charges, or other charges levied on water agencies for funding broader public benefits.

D. Support funding for the public share of costs, including mitigation, rehabilitation, and recreation, for multi-purpose water infrastructure.

E. Support administrative/legislative actions and funding for new or expanded water infrastructure or programs that complement existing water supplies to ensure reliability for all member agencies.

VI. System Resiliency – Metropolitan diligently maintains and significantly invests to safeguard a region-wide water supply system that is a cornerstone of Southern California's $1.6 trillion economy. Changes in the climate and accompanying weather extremes are serious challenges facing Metropolitan. Additionally, Metropolitan needs to be prepared to respond rapidly to natural disasters and security threats. Resiliency ensures the water supply and delivery system is strong, can return to service quickly, and is prepared to address future challenges

A. Climate Resiliency

1. Support legislative/administrative actions and funding for local and regional drought resiliency projects to improve system flexibility.

2. Support legislative/administrative actions and funding for planning and research into the potential water resource and quality effects of climate change.

3. Support administrative/legislative actions and funding for imported source watershed protection and enhancement of water quality, supply, and demand-side management actions to help offset the effects of climate change.

4. Support administrative/legislative actions and pursue funding opportunities that recognize and help mitigate the significant differences in the capability and needs of communities and regions to withstand the impacts of climate change.

5. Support administrative/legislative actions and funding for local drought contingency planning areas in the state that have increased concern about wholesale water system delivery constraints.

6. Support administrative/legislative actions and funding that facilitate the integration of existing and planned local water supply, distribution systems, and regional water facilities.

B. Emergency Preparedness

1. Support administrative/legislative actions that assist the water industry in preparing for, responding to, and recovering from extreme weather events and natural disasters, including earthquakes and wildfires, catastrophic accidents, and physical or cyber sabotage. These actions may include, but are not limited to, actions to provide funding for emergency responses and planning and post-emergency restoration of service.
2. Support administrative/legislative actions that assist the water industry to address the effects of wildfires and power outages, including the impacts of public safety power shutoff events.
3. Support additional funding for the Federal Emergency Management Agency programs to assist with emergency repairs and improvements, including but not limited to dam safety, spillway improvements, and erosion control repairs.

C. Physical and Cyber Security

1. Support continued U.S. Environmental Protection Agency oversight of water system security in coordination with other federal and state agencies with expertise in security, including the Governor's Office of Emergency Services, the Cybersecurity and Infrastructure Security Agency, and the Chemical Security Analysis Center.
2. Support administrative/legislative actions that would provide funding or reimbursement for enhanced physical security and cybersecurity for water and power infrastructure.
3. Support trade associations and coalition efforts to share information and develop standard guidance and best management practices to protect water and power critical infrastructure from cyber vulnerabilities.
4. Support administrative/legislative actions that ensure Metropolitan's ability to reliably operate and maintain its facilities, infrastructure, and real estate assets, including rights of way, and to protect against encroachment.

D. Chemical Security

1. Support administrative/legislative actions to improve supply chain reliability, achieve tax-exempt status for water treatment chemicals, and ensure access to water treatment chemicals.
2. Support administrative/legislative actions to ensure the continued use of gaseous chlorine to protect public health.

12/27/2023
Susan Sims *Date*
Group Manager, External Affairs

12/27/2023
Adel Hagekhalil *Date*
General Manager

Attachment 1 – Summary of Comments (December 2023)

Attachment 2 – Redline Final Proposed 2024 Legislative Priorities and Principles

Ref# ea12698677

Summary of Comments (December 2023)

Commenter	Comment	Response	Suggested Revision
	2024 LEGISLATIVE PRIORITIES		
San Diego County Water Authority (SDCWA)	Legislative Priority 1 Reflect projects are still in the planning phases; Board has not determined participation in the implementation of the projects.	Noted.	Continue support for imported water supply resiliency and reliability, including planning for the Delta Conveyance Project, Sites Reservoir Project, Agreements to Support Healthy Rivers and Landscapes (Voluntary Agreements), and the development of near-term and post-2026 Colorado River operating guidelines.
Eastern Municipal Water District (EMWD)	Legislative Priority 4 EMWD supports the least expensive options to ensure equal reliability across the Metropolitan service area, especially for the SWPDA. We struggle with the concept that each member agency needs access to the exact same Met facilities as that approach appears very expensive and does not increase Met's overall water supply reliability. It seems more prudent and more aligned with Met's water affordability goals to invest in additional resource development in SWP dependent areas and continue water banking initiatives.	Initial language was taken from the Board's policy adopted in August 2022. (Resolution 9318, M.I. 52946) The definition of equitable access below is taken from the November 28, 2023 presentation, Item 3d, to the Subcommittee on PureWater Southern California and Regional Conveyance, as follows: "Definition of Equitable Access (draft), 'Member Agencies have adequate access to Metropolitan supply and storage assets and programs to provide uniform water supply reliability to prevent geographic-specific disparity, with fully operating infrastructure.'"	Support funding for regional conveyance and water storage improvements to ensure the region's water supply reliability ~~storage~~ is equitableely ~~accessible~~ to all member agencies.
EMWD	Legislative Priority 5 EMWD recognizes that Metropolitan is sensitive to the issue of ensuring equitable access to clean drinking water for all Californians, however, we believe that Metropolitan should limit the scope of their investment to their service area. For the sake of water affordability for member agencies and so as to not violate Prop 26, Metropolitan should limit this	Language had carried forward from 2023 LPP. Metropolitan should not restrict investments to its service area because it needs to protect its imported water sources.	Protect drinking water quality and ~~ensure~~ access to safe and reliable drinking water ~~for all Californians~~, including upholding the polluter pays principle and ensuring the continued cleanup of sites along the Colorado River.

Summary of Comments (December 2023)

Commenter	Comment	Response	Suggested Revision
	priority to the geographic scope of this priority to its service area.		
SDCWA	[C]onsider [adding] a priority seeking congressional exemptions for water utilities should PFAS be considered a hazardous substance under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).	This is addressed in Section I.A.2 in the Legislative Principles. Metropolitan has been advocating on this issue since 2020.	No change.
	Section I: Drinking Water		
EMWD	Drinking Water – introductory language This overarching principle should reference only Metropolitan's service area, and not the greater Southern California region.	Noted.	No change.
	Section I.A: Water Quality		
EMWD	Section I.A.2. EMWD would recommend specifying that this principle is also targeting PFAS, and other constituents of emerging concern.	Noted.	Support application of the "polluter pays" principle such that parties responsible for introducing contaminants, such as per- and polyfluoralkyl (PFAS) substances, in or near drinking water sources are held liable for cleanup, and not drinking water and wastewater facilities that subsequently store, transport, or treat the water.
	Section I.B. Water Governance, Affordability & Funding		
EMWD	Section I.B.2. EMWD would like clarification on Metropolitan's intent to improve water affordability at the water-system level. EMWD maintains the opinion that Metropolitan should not establish an affordability program for the retail customers of member agencies. EMWD continues to support Metropolitan's pursuit of grant funding to offset the cost burden of infrastructure investments. Eastern	Noted. Also revised Legislative Priority 7 for consistency.	Support administrative/legislative actions and funding that improve water affordability throughout the region ~~at both the individual and the water system level~~, especially for disadvantaged communities, without burdening existing ratepayers.

Summary of Comments (December 2023)

Commenter	Comment	Response	Suggested Revision
	requests clarification on what is meant by "individual."		
EMWD	Section I.B.3. This principle should specify that Metropolitan supports funding to help retail water systems provide low-income ratepayer assistance.	Adding the qualifier "retail" could narrow the advocacy efforts.	No change.
Cucamonga Valley Water District	Section I.B.3. Support in concept, but do not support a mandate or a general tax	Metropolitan includes language in I.B.2. to address this concern, "…without burdening existing ratepayers."	No change.
	Section II: Regional Water Resource Management		
	Section II.A. Conservation		
EMWD	Section II.A.3. As part of Metropolitan's efforts to support science-based conservation regulation, they should also encourage the regulations to consider the impacts to water affordability.	Noted.	Support administrative/legislative actions and funding to advance Conservation as a California Way of Life in a manner that maintains flexibility and local control. Support efforts to ensure new statutes and regulations are based on science; recognize regional distinctions (i.e., climate, land use, population, and hydrology); water affordability; and potential impacts to wastewater operations and recycled water projects.
	Section II.C. Recycled Water		
EMWD	Section II.C.6. EMWD believes that the word "voluntary" is unnecessary in this statement. By only promoting voluntary use, Metropolitan member agencies may be committing valuable potable water resources to uses where recycled water would be more appropriate.	Noted. Removal of "voluntary" is inconsistent with Metropolitan's position on SB 332 (Hertzberg, 2019) which would have mandated wastewater recycling.	No change.
	Section II.D. Local Supply Development		
SDCWA	Section II.D.5. Suggest expanding storage to include surface storage to keep the door open for new forms of partnerships	Noted.	Support administrative/legislative actions and funding that advance Metropolitan's surface and groundwater storage and/or recovery programs with member agencies.

Summary of Comments (December 2023)

Commenter	Comment	Response	Suggested Revision
	that MWD may consider and funding opportunities for surface storage.		
	Section III: Imported Water Supply		
	Section III.B Colorado River Resources		
SDCWA	Section III.B Suggest adding a principle supporting environmental protections as USBOR adopts and implements steps to address drought and climate change on the Colorado River.	Support is included in bullet III.B.5, "Secure funding and support administrative/legislative actions for the implementation of the Lower Colorado River Multi-Species Conservation Program to promote the recovery of threatened and endangered species in a manner that allows the Lower Basin States to conserve Colorado River water."	No change.
SDCWA	Section III.B Suggest adding a principle supporting opportunities to store water in Lake Mead, which would benefit the whole Basin.	This is a fundamental principle, and support for increasing storage is incorporated throughout the principles.	No change.
Staff	III.B.1	Correction.	Support administrative/legislative actions and funding of conservation and efficiency projects to enhance the resiliency of the Colorado River System and Metropolitan's Colorado River supplies~~Aqueduct~~.
SDCWA	Section III.B.2 Add language to specify: "while also recognizing and protecting the Law of the River."	Noted.	Support administrative/legislative actions and funding to ensure that sufficient water is stored and delivered from Lake Mead to meet human health and safety needs while acknowledging the evolving Law of the River.
EMWD	Section III.B.2 EMWD would like for Metropolitan to maximize Lake Mead supply, as it is one of the more affordable imported supplies available. Limiting this storage to only meet health and safety needs may be problematic in the event of low or nonexistent SWP allocations in future years.	Noted.	Support administrative/legislative actions and funding to ensure that sufficient water is stored and delivered from Lake Mead to meet regional water supply needs. ~~human health and safety needs~~.

Summary of Comments (December 2023)

Commenter	Comment	Response	Suggested Revision
Staff	III.B.4., 5, 6, 7	Revised to eliminate duplication.	4. Promote continued coordination between states and federal agencies to further the Colorado River Basin Salinity Control Program (Program) and work to include water conservation as a criterion in the selection of salinity control projects. Support actions to stabilize the financial position of the Program, and ~~5. Support efforts to~~ maintain ~~and enhance~~ the operation of the United States Bureau of Reclamation's Paradox Valley Unit salinity control project at a safe level. ~~while working to develop a viable alternative that provides long-term reductions in salt loads to the Colorado River.~~ ~~6. Support legislative efforts to revise the salinity standard for Colorado River water delivered under the U.S. treaty with Mexico to increase water conservation.~~ ~~7. Support legislative action to include water conservation as a criterion for selecting salinity control projects in the upper Colorado River Basin.~~
San Diego County Water Authority	Section III.B.10 Add language to specify "consistent with the Law of the River and priority system."	Noted.	Support administrative/legislative actions and funding for the U.S. Bureau of Reclamation to update and apply reasonable and beneficial use determinations while acknowledging the evolving the Law of the River.
	Section VI – System Resiliency		
	Section VI.A. Climate Resiliency		
Eastern Municipal Water District	Section VI.A.1 It should be specified that local and regional drought resiliency projects developed for system flexibility should consider affordability, and limit impacts to member agencies when possible.	Noted.	No change.

2024 LEGISLATIVE PRIORITIES & PRINCIPLES

The 2024 Legislative Priorities and Principles lay out an integrated “One Water” collaborative approach to managing Southern California’s watersheds, water resources, and water infrastructure to ensure long-term resilience and reliability for communities and ecosystems.

Staff use this document to advocate for these priorities and principles at the state and federal levels through advancing Metropolitan-sponsored legislation, engaging on bills or pursuing federal and state funding.

2024 Legislative Priorities

To help adapt to a changing climate, protect water resources, and partner with communities we serve, Metropolitan will work to support administrative/legislative actions and federal and state funding for the following priorities in 2024:

A. Top Legislative Priorities:

1. Continue support for imported water supply resiliency and reliability, including ~~progress~~planning for ~~on~~ the Delta Conveyance Project, Sites Reservoir Project, Agreements to Support Healthy Rivers and Landscapes (Voluntary Agreements), and the development of near-term and post-2026 Colorado River operating guidelines.
2. Conserve existing water supplies and prepare for climate change by supporting demand management and water use efficiency, long-term non-functional turf conversion, and a federal tax exemption for water conservation rebates.
3. Advance Pure Water Southern California and other water recycling projects and long-term supply reliability improvements.
4. Support funding for regional conveyance and water storage improvements to ensure the region's water ~~storage is equitably accessible~~supply reliability is equitable to all member agencies.
5. Protect drinking water quality and ~~ensure~~ access to safe and reliable drinking water ~~for all Californians~~, including upholding the polluter pays principle and ensuring the continued cleanup of sites along the Colorado River.
6. Support adaptive management for ecosystem restoration in the Bay-Delta and Colorado River watersheds that takes into consideration evolving climate conditions, risk analyses, and best available science.
7. Improve water affordability throughout the region, especially for disadvantaged communities, ~~at both the individual and water system level~~ without burdening existing ratepayers.

B. Metropolitan-Sponsored State Bill (Board authorized in November 2023)

1. Support administrative/legislative actions to amend the Surface Mining and Reclamation Act to eliminate the sunset date to allow Metropolitan to continue operating under its existing master reclamation plan.

2024 Legislative Policy Principles

The 2024 Legislative Policy Principles will guide and inform Metropolitan's engagement on state and federal legislative and regulatory activities. They were developed in consultation with subject matter experts at Metropolitan. The principles holistically address six strategic areas of policy that inform Metropolitan's One Water Vision and the Board-led process for developing the Climate Adaptation Master Plan for Water (CAMP4W). These policy areas include: (1) drinking water; (2) regional water resource management; (3) imported water supply; (4) sustainability, resiliency, and innovation; (5) infrastructure; and (6) system resiliency.

I. Drinking Water – Metropolitan provides to the Southern California region high-quality, reliable drinking water in an economically responsible way that surpasses all federal and state drinking water regulations.

A. Water Quality and Treatment

1. Support administrative/legislative actions that utilize best available science, occurrence and health effects data, and appropriate cost-benefit analyses or economic feasibility to protect public health and improve water quality. Apply these principles when setting maximum contaminant levels, health advisories, or notification/response levels, in addition to assessing laboratory capacity, analytical methods, and other regulatory standards or guidance levels.

2. Support application of the "polluter pays" principle such that parties responsible for introducing contaminants, such as per- and polyfluoralkyl substances, in or near drinking water sources are held liable for cleanup, and not drinking water and wastewater facilities that subsequently store, transport, or treat the water.

3. Support administrative/legislative actions and funding for treatment and mitigation measures to comply with any new regulatory standards, develop risk communication tools, as well as provide adequate time for implementation.

4. Support administrative/legislative actions and funding to protect source water quality, reduce threats from invasive species, and mitigate harmful algal blooms.

5. Support administrative/legislative actions and funding for the constituents of emerging concern (CEC) Action Fund to improve the State Water Resource Control Board's knowledge of CEC in waters of the state and drinking water.

B. Water Governance, Affordability, and Funding -- Metropolitan supports efforts to provide access to safe, reliable and affordable drinking water to all residents.

1. Support administrative/legislative actions that prioritize providing safe, reliable and affordable drinking water to disadvantaged communities.

2. Support administrative/legislative actions and funding that improve water affordability throughout the region ~~at both the individual and the water system level~~, especially for disadvantaged communities, without burdening existing

ratepayers.

3. Support funding to help water systems provide low-income ratepayer assistance programs.

4. Support administrative/legislative actions that improve governance and long-term sustainability of non-compliant water systems and provide assistance for voluntary consolidations that improve their technical, managerial, or financial capacity, while ensuring that all receiving public water systems are consulted on changes of organization, including proposed consolidations or extensions of service area.

5. Support administrative/legislative actions that provide local agencies flexibility in determining fees for service and assessment amounts.

6. Support administrative/legislative actions that ensure the limited resources of the Safe and Affordable Drinking Water Fund are allocated to advance projects, operation and maintenance costs, infrastructure improvements, and/or consolidation actions that will achieve long-term sustainability for water systems and the communities that rely on those systems.

II. Regional Water Resource Management – Metropolitan's One Water Vision and the Board-led CAMP4W process promote collaboration with member agencies to plan for future water supply needs and the challenges ahead in a reliable, cost-effective, and environmentally responsible manner. This involves protecting imported water supplies and quality, supporting local resource development, advancing water use efficiency, and supporting ecosystem protection and restoration.

A. Conservation

1. Support tax exemptions and/or credits for water conservation or efficiency incentives, including but not limited to long-term conversion of non-functional turf (NFT), local stormwater capture, and other measures to reduce consumption of water or enhance the absorption and infiltration capacity of the landscape.

2. Support administrative/legislative actions and federal/state funding to encourage equitable water use efficiency and recycled water use among agricultural, industrial, and urban sectors.

3. Support administrative/legislative actions and funding to advance Conservation as a California Way of Life in a manner that maintains flexibility and local control. Support efforts to ensure new statutes and regulations are based on science; recognize regional distinctions (i.e., climate, land use, population, and hydrology); water affordability; and potential impacts to wastewater operations and recycled water projects.

4. Support administrative/legislative actions and federal/state funding for leak detection and water loss reduction. Support the development and

implementation of flexible water loss standards for both retail and wholesale water systems.

5. Support administrative/legislative actions and federal/state funding for the long-term conversion of NFT in residential, commercial, industrial, and institutional landscapes and ban installation of NFT in new construction.

B. Desalination & Groundwater Remediation

1. Support administrative/legislative actions, funding, and partnerships for brackish groundwater and seawater desalination projects, consistent with the Governor's Water Resilience Portfolio and 2022 Water Supply Strategy and Metropolitan's CAMP4W goals.

2. Support administrative/legislative actions and funding for salinity control projects, including but not limited to source control, treatment, and concentrate management.

3. Support administrative/legislative actions and funding for research, pilot tests, and demonstration studies to encourage the development of environmentally sustainable and climate-resilient desalination technologies.

C. Recycled Water

1. Support actions to advance and secure funding for the Pure Water Southern California Program and related projects.

2. Support efforts to improve flexibility of the State's water recycling grant program.

3. Support implementation of the National Water Reuse Action Plan and California Water Reuse Action Plan while protecting local flexibility and encouraging local, state, and federal coordination, research, and innovation.

4. Support administrative/legislative actions and funding that facilitate the adoption of direct potable reuse regulations by December 31, 2023. These actions include but are not limited to planning, development, and implementation of local and regional potable reuse projects; and initiatives to fill research gaps and advance the science to promote the further development of potable reuse.

5. Support administrative/legislative actions to promote voluntary on-site water treatment systems if they maintain compliance with Title 22 and do not negatively affect municipal water recycling systems.

6. Support administrative/legislative actions that maximize voluntary use of recycled water.

D. Local Supply Development

1. Support administrative/legislative actions that protect and advance local flexibility and responsiveness in developing locally appropriate, climate-resilient diverse resource portfolios.
2. Continue to support and promote integrated water resources development by advocating for clear, concise, and expedited regulations/policies that are easily understandable by the regulated community and public.
3. Support administrative/legislative actions and funding to expedite the development of new local resources (including recycled water, direct potable reuse, groundwater, stormwater, desalination projects, and groundwater remediation) without compromising the operational, financial, water quality, regulatory, environmental, and customer interests of Metropolitan and other water and wastewater agencies.
4. Support administrative/legislative actions that advance stormwater as a beneficial resource and facilitate the funding and permitting of stormwater capture projects to augment local and regional water supplies and promote holistic watershed health.
5. Support administrative/legislative actions and funding that advance Metropolitan's surface and groundwater storage and/or recovery programs with member agencies.

E. Watershed Management

1. Support administrative/legislative actions and funding to enhance watershed management in Southern California, the Bay-Delta, and Colorado River watersheds that provide broad public benefits, including water quality and water supply reliability, reduced wildfire risks, greater scientific understanding, and other environmental improvements.
2. Support administrative/legislative actions that help advance implementation of watershed management plans, including watershed research and multi-benefit forestry management projects.
3. Support implementation of the California Water Resiliency Portfolio and the Water Supply Strategy, as consistent with Metropolitan goals and objectives, to ensure improved watershed-scale coordination, watershed management and planning, and programs and funding that provide water resilience and improve watershed functions.

III. Imported Water Supply – Metropolitan provides imported water supplies to its member agencies from two primary sources, the Colorado River via the Colorado Aqueduct and Northern California watersheds via the Sacramento-San Joaquin Delta and the State Water Project.

A. Bay-Delta Initiatives– Metropolitan is involved in several key regulatory and planning

processes in the Sacramento-San Joaquin Delta related to the operation of the State Water Project (SWP). The goal is to advance water supply reliability and ecosystem restoration concurrently by modernizing the state's water infrastructure with the proposed Delta Conveyance Project and improving the habitat and function of the Delta estuary for the benefit of threatened and endangered species. To advance these goals, Metropolitan supports collaborative scientific efforts to better understand how to restore and manage the Bay-Delta while reducing reliance consistent with the 2009 Delta Reform Act (Delta Reform Act).

1. Support administrative/legislative actions to advance Delta Conveyance and EcoRestore in support of California's coequal goals of water supply reliability and Delta ecosystem restoration and the Governor's California Water Resilience Portfolio.
2. Support administrative/legislative actions and funding to improve scientific understanding of listed Delta fish and wildlife species and water project operations in the Delta, including data collection, real-time monitoring, and modeling. Promote the use of best available science to protect and restore aquatic species and habitats, and enhance flexibility for water project operations while maintaining regulatory and statutory protections for species listed under the state and federal Endangered Species Act.
3. Continue support for implementation of state policies adopted as part of the Delta Reform Act and water management package, including clarification of the monitoring, reporting, and enforcement provisions related to in-Delta diversions.
4. Support administrative/legislative actions to consolidate review and oversight of anadromous species protection under the U.S. Department of the Interior.
5. Support administrative/legislative actions that protect water quality for beneficial uses and that are implemented consistent with California water rights priorities.
6. Support administrative/legislative actions and funding to advance the Delta Freshwater Pathway, levee improvements (including levee modernization for the existing Delta levee system), levee maintenance programs (including real-time monitoring for the existing Delta levee system), and secure Delta flood-fighting materials and stockpiles.
7. Support administrative/legislative actions in the Delta watershed to account for and administer the California water rights system, including protecting stored water releases.
8. Support administrative/legislative actions and funding to advance Sites Reservoir and the Agreements to Support Healthy Rivers and Landscapes

(Voluntary Agreements), consistent with the Board's action to advance these efforts.

B. Colorado River Resources – The Colorado River is a critical resource for the entire Southwest and many diverse ecosystems. Degradation of the Colorado River's water quality can cause significant economic, environmental, and human health impacts across the West. Metropolitan and other interested parties work to ensure we can continue to supply our communities with a safe and reliable water supply.

1. Support administrative/legislative actions and funding of conservation and efficiency projects to enhance the resiliency of the Colorado River System and Metropolitan's Colorado River ~~Aqueduct~~supplies.

2. Support administrative/legislative actions and funding to ensure that sufficient water is stored and delivered from Lake Mead to meet ~~human health and safety needs~~regional water supply needs while acknowledging the evolving Law of the River.

3. Support administrative/legislative actions and funding for the cleanup of contaminated sites along the Colorado River. This includes, but is not limited to, uranium remediation in Moab, Utah; perchlorate remediation in Henderson, Nevada; hexavalent chromium remediation near Topock, Arizona; and a waste disposal site near Hoover Dam.

~~4.~~ Promote continued coordination between states and federal agencies to further the Colorado River Basin Salinity Control Program (Program) and work to include water conservation as a criterion in the selection of salinity control projects. Support actions to stabilize the financial position of the Program.

~~5. Support efforts to~~ maintain ~~and enhance~~ the operation of the United States Bureau of Reclamation's Paradox Valley Unit salinity control project at a safe level. ~~while working to develop a viable alternative that provides long-term reductions in salt loads to the Colorado River.~~

~~6. Support legislative efforts to revise the salinity standard for Colorado River water delivered under the U.S. treaty with Mexico to increase water conservation.~~

~~7.~~4. ~~Support legislative action to include water conservation as a criterion for selecting salinity control projects in the upper Colorado River Basin.~~

~~8.~~5. Secure funding and support administrative/legislative actions for the implementation of the Lower Colorado River Multi-Species Conservation Program to promote the recovery of threatened and endangered species in a manner that allows the Lower Basin States to conserve Colorado River water.

~~9.~~6. Support administrative/legislative actions and funding that advance binational water conservation programs that benefit Colorado River supply augmentation and habitat restoration objectives.

7. Support administrative/legislative actions and funding for the U.S. Bureau of Reclamation to update and apply reasonable and beneficial use determinations while acknowledging the evolving Law of the River.

C. State Water Project – About 30 percent of Southern California's water comes from the SWP in an average year. Metropolitan works with state and federal agencies as well as other SWP contractors to manage threats to the project and address environmental needs and augment water supplies through existing and potential collaborative transfers and groundwater banking agreements.

1. Support administrative/legislative actions and funding to address the impacts of subsidence on the SWP and prevent future damage caused by unsustainable groundwater pumping.

2. Support funding for joint state and federal facility repairs, rehabilitation, and improvements, and ensure funding is equitably distributed between partners while maintaining SWP supply reliability.

3. Support administrative/legislative actions and funding for the cleanup of contaminated groundwater storage basins used for Metropolitan water banking programs along the California Aqueduct.

4. Support funding for the public share of costs, including recreation, flood protection, mitigation, environmental enhancement, and rehabilitation for multi-purpose SWP facilities.

IV. Sustainability, Resiliency, and Innovation – Metropolitan supports policies and funding that encourage sustainable practices that improve water and power system resilience and adapt to a rapidly changing environmental landscape. Metropolitan strives to fulfill the needs of the current generation without compromising the needs of future generations in an environmentally and economically responsible way.

A. Carbon Neutrality

1. Support administrative/legislative actions and funding to implement Metropolitan's Climate Action Plan to reduce Metropolitan's greenhouse gas emissions and reach carbon neutrality by 2045.

2. Support administrative/legislative actions and funding to assist the Department of Water Resources in reaching carbon neutrality for the State Water Project by 2045 in a cost-effective and environmentally responsible manner.

3. Support administrative/legislative actions and funding to improve, develop,

and promote innovative climate adaptation solutions and support science-based strategies and tools that benefit the environment by restoring healthy soils, conserving water, and capturing and/or sequestering carbon.

4. Support administrative/legislative actions and funding that assists public agencies in the transition to zero-emission fleets and equipment.

B. Water/Energy Nexus

1. Support administrative/legislative actions and funding for energy efficiency and storage projects, and programs to reduce greenhouse gases and develop renewable resources.
2. Support administrative/legislative actions that remove barriers and encourage energy sector investments in water conservation and energy management programs.
3. Support administrative/legislative or regulatory activities that preserve Metropolitan's ability to pursue a diverse set of supply options and oppose constraints on supply development, such as water resource loading orders based solely on energy intensity.
4. Support efforts to ensure power costs are appropriate and proportional to the benefits received and that water system operations are not adversely affected by power-related legislation/administrative actions.
5. Support administrative/legislative actions that provide state funding from the Greenhouse Gas Reduction Fund for water/energy nexus projects and maintain Cap-and-Trade allowances for Metropolitan and Department of Water Resources (i.e., State Water Contractors).
6. Support administrative/legislative actions that maintain Board authority over energy-related matters (e.g., system reserve margin or resource adequacy requirements).

C. Renewable Energy

1. Support administrative/legislative actions that define hydropower generation as renewable energy irrespective of a facility's nameplate generating capacity and include the provision of renewable energy credits for hydroelectric generation.
2. Work to ensure that administrative/legislative actions seeking to enhance or expand hydropower at existing dams do not adversely impact those dams, either financially or operationally, or entities with rights to the power from the existing resources that directly or indirectly impact Metropolitan's service area.

3. Support administrative/legislative actions to improve federal hydropower relicensing for existing facilities, including SWP resources.

4. Support administrative/legislative actions and funding for the SWP and the Colorado River Aqueduct (CRA) to incorporate renewable energy resources, such as pumped hydroelectric energy, that contribute to the state's climate goals without impacting the projects' primary purpose, provided consideration is given to transmission limitations, cost and portfolio availability, and unrelated impacts are not shifted to SWP or CRA facilities.

D. Environmental Stewardship

1. Support administrative/legislative actions for environmental compliance to improve clarity and workability of the requirements and promote consistency and reduce regulatory duplication, while protecting public health and the environment.

2. Support administrative/legislative actions and funding to facilitate non-mitigation habitat restoration projects that benefit endangered and threatened species.

3. Support administrative/legislative actions and funding for research and partnerships on water science, including snowpack and streamflow monitoring, runoff, drinking water quality, salinity control, source water protection, soil moisture monitoring, healthy soils, and watershed research.

E. Workforce Development – Metropolitan is committed to ensuring the resiliency of its workforce and to advancing diversity, equity, and inclusion to promote the physical and mental safety and well-being of its workforce and the communities it serves.

1. Support administrative/legislative actions, funding, and partnerships to improve educational opportunities in the water sector, including career technical education and workforce development.

2. Support administrative/legislative actions and funding that improve water system staff training and certification processes.

F. Innovation – Supporting and promoting innovation and emerging technologies continues Metropolitan's long tradition of creatively solving difficult challenges.

1. Support administrative/legislative actions and funding for the research and development of new and emerging technologies such as satellite- and computer-based technologies to monitor source water quality, ecosystem health, state- and federal-threatened and endangered fish species; measure and predict agricultural water use, urban outdoor water use, and reservoir evaporation; and expand coordination with technology incubators, research institutions, and other stakeholder groups.

2. Support administrative/legislative actions and funding to promote open water data platforms and sharing, including improving access to agency data, streamlining the collection and submission of water agency data, and promoting collaboration among federal, state, and local stakeholders.

V. Infrastructure – Metropolitan has a strategic priority to invest in key capital projects in our region to enable long-term, reliable water deliveries. Key capital projects identified in Metropolitan's Capital Investment Plan focus on improvements to the CRA, treatment plants, and distribution systems.

A. Support administrative/legislative actions to initiate, expedite, and secure funding to defray the costs of planning, financing, constructing, repairing, and rehabilitating water infrastructure projects, including but not limited to general obligation bonds, tax-exempt municipal bonds, grants, low-interest loans, and direct appropriations. Ensure equitable cost-sharing of water infrastructure projects.

B. Support administrative/legislative efforts to expand funding programs, expedite project approval and reporting processes, and prevent project backlogs in state and federal funding or financing.

C. Support the "beneficiaries pay" approach as a financing mechanism for statewide projects and programs and oppose public goods charges, or other charges levied on water agencies for funding broader public benefits.

D. Support funding for the public share of costs, including mitigation, rehabilitation, and recreation, for multi-purpose water infrastructure.

E. Support administrative/legislative actions and funding for new or expanded water infrastructure or programs that complement existing water supplies to ensure reliability for all member agencies.

VI. System Resiliency – Metropolitan diligently maintains and significantly invests to safeguard a region-wide water supply system that is a cornerstone of Southern California's $1.6 trillion economy. Changes in the climate and accompanying weather extremes are serious challenges facing Metropolitan. Additionally, Metropolitan needs to be prepared to respond rapidly to natural disasters and security threats. Resiliency ensures the water supply and delivery system is strong, can return to service quickly, and is prepared to address future challenges

A. Climate Resiliency

1. Support legislative/administrative actions and funding for local and regional drought resiliency projects to improve system flexibility.

2. Support legislative/administrative actions and funding for planning and research into the potential water resource and quality effects of climate change.

3. Support administrative/legislative actions and funding for imported source watershed protection and enhancement of water quality, supply, and demand-side management actions to help offset the effects of climate change.

4. Support administrative/legislative actions and pursue funding opportunities that recognize and help mitigate the significant differences in the capability and needs of communities and regions to withstand the impacts of climate change.

5. Support administrative/legislative actions and funding for local drought contingency planning areas in the state that have increased concern about wholesale water system delivery constraints.

6. Support administrative/legislative actions and funding that facilitate the integration of existing and planned local water supply, distribution systems, and regional water facilities.

B. Emergency Preparedness

1. Support administrative/legislative actions that assist the water industry in preparing for, responding to, and recovering from extreme weather events and natural disasters, including earthquakes and wildfires, catastrophic accidents, and physical or cyber sabotage. These actions may include, but are not limited to, actions to provide funding for emergency responses and planning and post-emergency restoration of service.

2. Support administrative/legislative actions that assist the water industry to address the effects of wildfires and power outages, including the impacts of public safety power shutoff events.

3. Support additional funding for the Federal Emergency Management Agency programs to assist with emergency repairs and improvements, including but not limited to dam safety, spillway improvements, and erosion control repairs.

C. Physical and Cyber Security

1. Support continued U.S. Environmental Protection Agency oversight of water system security in coordination with other federal and state agencies with expertise in security, including the Governor's Office of Emergency Services, the Cybersecurity and Infrastructure Security Agency, and the Chemical Security Analysis Center.

2. Support administrative/legislative actions that would provide funding or reimbursement for enhanced physical security and cybersecurity for water and power infrastructure.

3. Support trade associations and coalition efforts to share information and develop standard guidance and best management practices to protect water and power critical infrastructure from cyber vulnerabilities.

4. Support administrative/legislative actions that ensure Metropolitan's ability to reliably operate and maintain its facilities, infrastructure, and real estate assets, including rights of way, and to protect against encroachment.

D. Chemical Security

1. Support administrative/legislative actions to improve supply chain reliability, achieve tax-exempt status for water treatment chemicals, and ensure access to water treatment chemicals.

2. Support administrative/legislative actions to ensure the continued use of gaseous chlorine to protect public health.

Legislation, Regulatory Affairs and Communication Committee

Adopt Legislative Priorities and Principles for 2024

Item 7-11

January 8, 2024

Item 7-11 Adopt Legislative Priorities & Principles for 2024

Subject
Adopt Legislative Priorities and Principles for 2024

Purpose
Annual review of updates

Next Steps
Board adoption - January 2024

Purpose & Process

- Annual update
- Provide Board guidance & direction on current, timely issues
- Seek & incorporate and/or respond to updated internal and external input
- Identify seven Metropolitan & regional priorities
- Identify one Metropolitan-sponsored legislative initiative
- After Board adoption, posted publicly on Metropolitan website

Current Actions & Next Steps

- Present to Member Agency Legislative Coordinators (Nov 1)
- Board Information Item Posted (Nov 1)
- Present to Member Agency General Managers (Nov 3)
- Information Item to Board (Nov 14)
- Seek, receive & respond to input (Nov – Dec 2023)
- ➢ Action Item to Board for adoption (Jan 2024)

Summary of High-Level Changes since November 2023

Top Legislative Priorities Proposed Changes

- Priority 1. Specify support for **planning** of Delta conveyance, Sites Reservoir, etc.
- Priority 4. Add **water storage**, update with focus on supply **reliability**
- Priority 5. Simplify bullet and confirm CERCLA protections and ongoing advocacy included in Section I.A.2
- Priority 7. Update for consistency with principle I.B.2

Summary of High-Level Changes since November 2023

Proposed Changes to Legislative Principles

- I.A.2 - Specify PFAS, delete ambiguous language for clarity
- II.A.3 – Add water affordability as a consideration
- II.D. 5 - Add **surface storage**
- III.B. Colorado River Resources section
  - Eliminate duplication
  - Add **water conservation** as criterion
  - Provide for “regional water supply needs”
  - Recognize the evolving Law of the River

Top Legislative Priorities - Updates since November 2023

1. Imported water supply resiliency & reliability
   - specifies "planning for" Delta, Sites, etc.
2. Demand management and water use efficiency
3. Pure Water Southern California & long-term supply reliability improvements
4. Support funding for regional conveyance and water storage; and ensure supply reliability is equitable

Top Legislative Priorities - Updates since November 2023

5. Protection of drinking water quality & access to safe and reliable water ~~for all Californians~~; polluter pays principle
    *confirmed CERCLA protections & advocacy

6. Ecosystem restorations accounting for evolving climate and risk analyses

7. Improve water affordability, especially for disadvantaged communities, without burdening existing ratepayers/customers

MWD-sponsored Initiative (authorized November 2023)

- Support administrative/legislative actions to amend the Surface Mining and Reclamation Act to eliminate the sunset date to allow Metropolitan to continue operating under its existing master reclamation plan.

Strategic Policy Areas

I. Drinking Water
II. Regional Water Resource Management
III. Imported Water Supply
IV. Sustainability, Resiliency & Innovation
V. Infrastructure
VI. System Resiliency

I. Drinking Water

A. Water Quality & Treatment

I.A.2 - specify PFAS

I.A.5 – update to support implementation of SB 230 (Portantino): State Water Resources Control Board: Constituents of Emerging Concern in Drinking Water Program

B. Water Governance, **Affordability** & Funding

I.B.5 - added to protect local agency flexibility in determining fees for service and assessments

II. Regional Water Resource Management

A. Conservation

- II.A.3 - add water affordability as a consideration

B. Desalination and Groundwater Remediation

C. Recycled Water

D. Local Supply Development

- II.D.5 – add surface storage

E. Watershed Management

III. Imported Water Supply

A. Bay-Delta Initiatives

B. Colorado River Resources

- Reduce redundancies
- Add water conservation as criterion
- Provide for “regional water supply needs”
- Acknowledge the evolving Law of the River

C. State Water Project

IV. Sustainability, Resiliency, & Innovation

A. Carbon Neutrality

B. Water/Energy Nexus

C. Renewable Energy

D. Environmental Stewardship

E. Workforce Development

F. Innovation

V. Infrastructure

A. Funding and financing tools
B. Equitable cost-sharing
C. Expansion of funding; expedite approvals/reporting
D. Funding for public share of costs
E. Expanded water infrastructure principle to support infrastructure that complements existing water supplies to ensure reliability for all MAs (*former SWP focus)*

VI. System Resiliency

A. Climate Resiliency
B. Emergency Preparedness
C. Physical and Cyber Security
D. Chemical Security

Board Options

Option #1

Adopt the Legislative Priorities and Principles for 2024

Option #2

Take no action

Staff Recommendation

Option #1

Adopt the Legislative Priorities and Principles for 2024

Legislation, Regulatory Affairs and Communication Committee

Adopt Legislative Priorities & Principles for 2024

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THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Report

Board of Directors

- **Conservation Board Report January 2024**

Summary

This report provides a summary of conservation activity and expenditures for November 2023

Purpose

Informational

Detailed Report

Conservation Expenditures – FY2022/23 & FY2023/24 (1)

	Paid (2)	Committed (3)
Regional Devices	$9.9 M	$3.5 M
Member Agency Administered	$9.4 M	$5.3 M
Turf Replacement	$32.8 M	$24.5 M
Advertising	$7.8 M	$2.7 M
Other	$3.1 M	$1.6 M
TOTAL	$63.0 M	$37.6 M

(1) The Conservation Program biennial expenditure authorization is $86 million.
(2) Paid as of 7/1/2022 - 11/30/2023. Financial reporting on cash basis.
(3) Committed dollars as of December 10, 2023

Summary of Expenditures in November 2023: $2,620,632 (1)

Lifetime Water Savings to be achieved by all rebates in November 2023: 4,183 AF
FY2022/23-FY2023/24: 90,495 AF lifetime water savings

Turf Replacement Rebates:
November: 887,554 ft2 removed
FY2022/23-FY2023/24: 15,496,068 ft^2 removed

Clothes Washers:
November: 309 units rebated
FY2022/23-FY2023/24: 17,244 units rebated

Smart Controllers:
November: 275 units rebated
FY2022/23-FY2023/24: 13,650 units rebated

Toilets:
November: 1,343 units rebated
FY2022/23-FY2023/24: 31,871 units rebated

Rain Barrels and Cisterns:
November: 46 units rebated
FY2022/23-FY2023/24: 3,778 units rebated

Sprinkler Nozzles:
November: 869 units rebated
FY2022/23-FY2023/24: 32,450 units rebated

(1) Expenditures may include advertising and Water Savings Incentive Program activity in addition to the incentives highlighted above.

Date of Report: 1/9/24