

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.

EOT Committee

D. Erdman, Chair
M. Camacho, Vice Chair
D. Alvarez
G. Bryant
J. Crawford
B. Dennstedt
S. Faessel
L. Fong-Sakai
R. Lefevre
J. McMillan
C. Miller
J. Morris
M. Petersen
K. Seckel
T. Smith

Engineering, Operations, and Technology Committee

Meeting with Board of Directors *

September 9, 2024

9:00 a.m.

Agendas, live streaming, meeting schedules, and other board materials are available here:

**<https://mwdh2o.legistar.com/Calendar.aspx>. Written public comments received by 5:00 p.m. the business days before the meeting is scheduled will be posted under the Submitted Items and Responses tab available here:
<https://mwdh2o.legistar.com/Legislation.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: 862 4397 5848.

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 to join by computer [click here](#).

Monday, September 9, 2024 Meeting Schedule

**09:00 a.m. EOT
11:15 a.m. Break
11:45 a.m. LEG
01:15 p.m. LEGAL
02:15 p.m. OWS**

MWD Headquarters Building • 700 N. Alameda Street • Los Angeles, CA 90012

Teleconference Locations:

525 Via La Selva • Redondo Beach, CA 90277

Marriott Desert Springs Villa II • 1091 Pinehurst Lane • Palm Desert, CA 92260

Western Municipal Water District • 14205 Meridian Parkway • Riverside, CA 92518

Cedars Sinai Medical Center • 8700 Beverly Boulevard, Room M 313 • Los Angeles, CA 90048

5481 Lago Vista Lane • Frisco, TX 75034

* The Metropolitan Water District's meeting of this Committee is noticed as a joint committee meeting with the Board of Directors for the purpose of compliance with the Brown Act. Members of the Board who are not assigned to this Committee may participate as members of the Board, whether or not a quorum of the Board is present. In order to preserve the function of the committee as advisory to the Board, members of the Board who are not assigned to this Committee will not vote on matters before this Committee.

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

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

2. CONSENT CALENDAR OTHER ITEMS - ACTION

- A. Approval of the Minutes of the Engineering, Operations, and Technology Committee for August 19, 2024 (Copies have been submitted to each Director, any additions, corrections, or omissions) **21-3727**

Attachments: [09092024 EOT 2A \(08192024\) Minutes](#)

3. CONSENT CALENDAR ITEMS - ACTION

- 7-1 Authorize an agreement with IDS Group Inc. in an amount not to exceed \$400,000 for design services to rehabilitate the heating, ventilation, and air conditioning system at Metropolitan Headquarters Building; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA **21-3721**

Attachments: [09102024 EOT 7-1 B-L](#)
[09092024 EOT 7-1 Presentation](#)

- 7-2 Adopt the Mitigated Negative Declaration for the West Valley Feeder No. 1 Stage 3 Improvements Project and take related CEQA actions **21-3724**

Attachments: [09102024 EOT 7-2 B-L](#)
[09092024 EOT 7-2 Presentation](#)

- 7-3 Award a \$1,285,000 contract to Resource Environmental Incorporated for abatement and roof replacement of houses at four Colorado River Aqueduct Pumping Plant villages; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA **21-3725**

Attachments: [09102024 EOT 7-3 B-L](#)
[09092024 EOT 7-3 Presentation](#)

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

4. OTHER BOARD ITEMS - ACTION

- 8-1** Authorize a \$40 million increase to an existing agreement with J.F. Shea Construction Inc. to purchase long-lead equipment for the Sepulveda Feeder Pump Stations Project, for a new not-to-exceed amount of \$50.4 million; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (This action is part of a series of projects that are being undertaken to improve the supply reliability for State Water Project dependent areas.) **[21-3722](#)**

Attachments: [09102024 EOT 8-1 B-L](#)
[09092024 EOT 8-1 Presentation](#)

- 8-2** Authorize an amended and restated agreement with the Los Angeles County Sanitation District for shared implementation of the advanced water purification facility for Pure Water Southern California; the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA **[21-3723](#)**

Attachments: [09102024 EOT 8-2 B-L](#)
[09092024 EOT 8-2 Presentation](#)

5. BOARD INFORMATION ITEMS

NONE

6. COMMITTEE ITEMS

- a.** Capital Investment Plan quarterly report for period ending June 2024 **[21-3730](#)**

Attachments: [09092024 EOT 6a Report](#)
[09092024 EOT 6a Presentation](#)

- b.** Quarterly Cybersecurity Update [Conference with Metropolitan Director of Info Tech Services, Information Technology, Jacob Margolis, or designated agents on threats to public services or facilities; to be heard in closed session pursuant to Gov. Code Section 54957(a)] **[21-3731](#)**

- c.** Emergency Management Program Update **[21-3812](#)**

Attachments: [09092024 EOT 6c Presentation](#)

7. MANAGEMENT ANNOUNCEMENTS AND HIGHLIGHTS

- a. Engineering Services activities **21-3728**
Information Technology activities
Water System Operations activities

Attachments: [09092024 EOT 7a Engineering Services Group Monthly Activities](#)
[09092024 EOT 7a Information Technology Group Monthly Activities](#)
[09092024 EOT 7a Water System Operations Activity](#)
[09092024 EOT 7a Presentation](#)

8. SUBCOMMITTEE REPORTS AND DISCUSSION

- a. Discuss and provide direction to Subcommittee on Pure Water **21-3729**
Southern California and Regional Conveyance

9. FOLLOW-UP ITEMS

NONE

10. FUTURE AGENDA ITEMS

11. ADJOURNMENT

NOTE: This committee reviews items and makes a recommendation for final action to the full Board of Directors. Final action will be taken by the Board of Directors. Committee agendas may be obtained on Metropolitan's Web site <https://mwdh2o.legistar.com/Calendar.aspx>. This committee will not take any final action that is binding on the Board, even when a quorum of the Board is present.

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.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

MINUTES

ENGINEERING, OPERATIONS & TECHNOLOGY COMMITTEE

August 19, 2024

Chair Erdman called the meeting to order at 9:00 a.m.

Members present: Directors Alvarez, Bryant, Camacho, Dennstedt (entered after roll call), Erdman, Faessel, Fong-Sakai, Lefevre (teleconference posted location, entered after roll call), McMillan, Miller (entered after roll call), Morris, Petersen (entered after roll call), Seckel, and Smith.

Members absent: None.

Other Board members present: Chair Ortega, Directors Ackerman, Armstrong, Dick, Douglas, Goldberg, Gray (teleconference location posted), Kurtz, and Sutley.

Committee staff present: Hattar, Chapman, Nobriga, Eckstrom, Lahouti, and Parsons.

1. OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO ADDRESS THE COMMITTEE ON MATTERS WITHIN THE COMMITTEE'S JURISDICTION

None

Directors Lefevre and Miller entered the meeting.

CONSENT CALENDAR ITEMS – ACTION

2. CONSENT CALENDAR OTHER ITEMS ACTION

- A.** Approval of the Minutes of the Engineering, Operations, and Technology Committee for July 8, 2024.

Director Fong-Sakai recused herself on Item 7-1, as she currently owns AECOM stock.

3. CONSENT CALENDAR OTHER ITEMS – ACTION

7-1 Subject: Authorize on-call agreements with AECOM, RHA LLC, Strategic Value Solutions Inc., and Value Management Strategies Inc., in amounts not to exceed \$1.5 million each, for a maximum of three years for value engineering and related technical services in support of Capital Investment Plan projects; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Presented by: No presentation requested

Motion: Authorize on-call agreements with AECOM, RHA LLC, Strategic Value Solutions Inc., and Value Management Strategies Inc., in amounts not to exceed \$1.5 million each, for a maximum period of three years for value engineering and related technical services.

7-2 Subject: Authorize an agreement to Carollo Engineers Inc. in an amount not to exceed \$1.3 million for owner’s advisor services to assist with progressive design build project delivery on the Lake Mathews Pressure Control Structure and Electrical System Upgrades; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Presented by: Cathy Chau

Motion: Authorize an agreement with Carollo Engineers Inc. for a not-to-exceed amount of \$1.3 million to perform owner’s advisor services for progressive design-build delivery of the Lake Mathews Pressure Control Structure and Electrical System Upgrades.

The following Directors provided comments or asked questions.

1. Faessel
2. Erdman
3. Seckel
4. Smith

Staff responded to Directors’ questions and comments.

- 7-3 Subject:** Authorize an increase of \$840,000 in change order authority to an existing contract with Steve P. Rados for the installation of an isolation valve for the Wadsworth Pump Plant Bypass Pipeline; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (This action is part of a series of projects that are being undertaken to improve the supply reliability for State Water Project dependent member agencies)
- Presented by:** No presentation requested
- Motion:** Authorize an increase of \$840,000 in change order authority for a new maximum change order authority of \$1,581,025 to an existing contract with Steve P. Rados for the installation of an isolation valve at the Wadsworth Pumping Plant Bypass Pipeline.
- 7-4 Subject:** Adopt the Mitigated Negative Declaration for the Inland Feeder-Foothill Pump Station Intertie Project and take related CEQA actions; adopt a resolution to accept \$5 million in funding from U.S. Bureau of Reclamation's WaterSMART Drought Response Program: Drought Resiliency Projects grant for Fiscal Year 2024 to support the Inland Feeder/San Bernardino Valley Municipal Water District Foothill Pump Station Intertie project; and authorize the General Manager to accept grant funds, if awarded; designate Metropolitan's Group Manager of Engineering Services to be the signatory to execute actions for reimbursement by U.S. Bureau of Reclamation
- Presented by:** No presentation requested
- Motion**
- a. Adopt the Mitigated Negative Declaration for the Inland Feeder-Foothill Pump Station Intertie Project and take related CEQA actions.
 - b. Adopt a resolution to accept \$5 million in funding from the U.S. Bureau of Reclamation to support the Inland Feeder/San Bernardino Valley Municipal Water District Foothill Pump Station Intertie Project.
 - c. Designate the Group Manager of Engineering Services to be the signatory to execute actions related to the funds.
 - d. Appropriate \$5 million in funding from the U.S. Bureau of Reclamation for use on the Inland Feeder/San Bernardino Valley Municipal Water District Foothill Pump Station Intertie Project.

7-5 Subject: Amend an existing agreement with Procure America Inc. for a new annual maximum amount of \$340,000 per year for a new not-to-exceed amount of \$1.7 million over the term of the agreement for the audit of Metropolitan's telecommunications circuits; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Presented by: No presentation requested

Motion Amend an existing agreement with Procure America Inc. for a new annual maximum amount of \$340,000 per year for a new not-to-exceed amount of \$1.7 million over the term of the agreement for the audit of Metropolitan's telecommunications circuits.

7-6 Subject: Authorize a \$875,000 increase to an existing agreement with Computer Aid Incorporated to a new not to exceed amount of \$2,625,000 for staff augmentation support services for the operation and maintenance of the Metropolitan Cybersecurity Operations Center for an additional six months; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Presented by: No presentation requested

Motion Authorize a \$875,000 increase to an existing agreement with Computer Aid Incorporated to a new not-to-exceed amount of \$2,625,000 for staff augmentation support services for the operation and maintenance of the Metropolitan Cybersecurity Operations Center for an additional six months.

Director Smith made a motion, seconded by Director Morris, to approve the consent calendar consisting of items 2A, 7-1, 7-2, 7-3, 7-4, 7-5 and 7-6.

The vote was:

Ayes: Directors Alvarez, Bryant, Camacho, Erdman, Faessel, Fong-Sakai, Lefevre, McMillan, Miller, Morris, Seckel, and Smith.

Noes: None

Abstentions: None

Recusals: Fong-Sakai Item 7-1

Absent: Directors Dennstedt and Petersen

The motion for Items 2A, 7-2, 7-3, 7-4, 7-5, and 7-6 passed by a vote of 12 ayes, 0 noes, 0 abstention, and 2 absent.

The motion for Item 7-1 passed by a vote of 11 ayes, 0 noes, 0 abstention, 1 recusal, and 2 absent.

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

4. OTHER BOARD ITEMS – ACTION

None

5. BOARD INFORMATION ITEMS

None

Directors Dennstedt and Petersen entered the meeting.

6. COMMITTEE ITEMS

- a. Subject: Proposed agreement amendment with the County Sanitation District No. 2 of Los Angeles County for shared implementation of the Pure Water Southern California Program
- Presented by: Bruce Chalmers, Pure Water Southern California Program Manager, Engineering Services Group

Mr. Chalmers reported on the following:

- Proposed restated and amended agreement with the County Sanitation District No. 2 of Los Angeles County for shared implementation of the Pure Water Southern California Program
- Information on proposed changes to an existing agreement with LA County Sanitation District (LACSD) for the Pure Water Southern California (PWSC) Program
- Board action to authorize amending this agreement

The following Directors provided comments or asked questions.

1. Smith
2. Seckel
3. Faessel
4. Petersen
5. Miller
6. Ortega

Staff responded to the Directors' questions and comments.

- b. Subject: Federal grant funding available from the U.S. Bureau of Reclamation to advance the Pure Water Southern California Program

Presented by: Rajen Budhia, Sr Engineer, Engineering Services Group

Mr. Budhia reported on the following:

- Federal grant funding available from the U.S. Bureau of Reclamation to advance the Pure Water Southern California Program (PWSC)
- Update on USBR's intent to award a Large-Scale Water Recycling Program (LSWRP) grant to PWSC
- Board action to adopt a resolution to accept grant funding

The following Directors provided comments or asked questions.

1. Dennstedt
2. Armstrong
3. Fong-Sakai
4. Smith
5. Miller
6. Ortega
7. Alvarez

Staff responded to the Directors' questions and comments.

- c. Subject: Prestressed Concrete Cylinder Pipe Program Update

Presented by: Presentation deferred.

- d. Subject: Emergency Management Program Update

Presented by: Presentation deferred.

- e. Subject: Zero Emissions Vehicle Update
- Presented by: Ron Taraporewala, Operations Program Manager, Integrated Operations, Planning, and Support Services Group

Mr. Taraporewala reported on the following:

- Update for transition to zero emission vehicles (ZEV)
- An overview of various ZEV transition strategies balancing regulations, condition of existing fleet, and available funding
- Seeking Board input on ZEV transition plan and return with options later in 2024

The following Directors provided comments or asked questions

1. Petersen
2. Smith
3. Fong-Sakai
4. Faessel
5. Seckel
6. Camacho
7. Ortega
8. Dick
9. Dennstedt

Staff responded to the Directors' questions and comments

7. MANAGEMENT ANNOUNCEMENTS AND HIGHLIGHTS

- a. Subject: Engineering Services, Information Technology, and Water System Operations Activities
- Presented by: John Bednarski, Interim Assistant General Manager and Shane Chapman, Assistant General Manager

Mr. Bednarski reported on the following:

- Update on EO&T Committee Annual Field Inspection Trip
- Completion of tunneling under I-215 for Perris Valley Pipeline Project

Mr. Chapman directed committee members to the report and presentation provided in the board packet.

No Directors provided comments or asked questions.

8. SUBCOMMITTEE REPORTS AND DISCUSSION

- a. Discuss and provide direction to Subcommittee on Pure Water Southern California and Regional Conveyance

No report provided.

9. FOLLOW-UP ITEMS

Director Alvarez requested a status report on the design of the first pipeline reaches of the Pure Water conveyance projects.

Chair Ortega recommended use of SharePoint system to share original LSWRP grant application with committee members.

10. FUTURE AGENDA ITEMS

Director Erdman noted that deferred items 6c. and 6d. will be brought back to the committee at a future date.

11. ADJOURNMENT

The next meeting will be held on September 9, 2024.

Meeting adjourned at 11:19 a.m.

Dennis Erdman
Chair



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

9/10/2024 Board Meeting

7-1

Subject

Authorize an agreement with IDS Group Inc. in an amount not to exceed \$400,000 for design services to rehabilitate the heating, ventilation, and air conditioning system at Metropolitan Headquarters Building; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

The heating, ventilating, and air conditioning (HVAC) system at Metropolitan Headquarters Building includes a centralized cooling system which provides cool air through a system that includes chillers, air-handling units, cooling towers, air disinfection system, and associated mechanical, electrical, and control systems. After 26 years of continuous operation, the three existing chillers and other HVAC system components throughout the building have reached the end of their useful life and require replacement.

This action authorizes an agreement with IDS Group Inc. in an amount not to exceed \$400,000 to provide design services for the rehabilitation of the HVAC system at Metropolitan Headquarters Building. See **Attachment 1** for the Allocation of Funds and **Attachment 2** for the Location Map.

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

Staff Recommendation: Option #1

Option #1

Authorize an agreement with IDS Group Inc. in an amount not to exceed \$400,000 for preliminary design to rehabilitate the HVAC system at Metropolitan Headquarters Building.

Fiscal Impact: Expenditure of \$790,000 in capital funds will be incurred in the current biennium and have been previously authorized.

Business Analysis: This option will enhance reliability and efficiency of the HVAC system at the Headquarters Building and will provide greater system flexibility, resiliency, energy, and water savings.

Option #2

Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: Under this option, staff would continue to operate the Headquarters Building's HVAC system in its current condition and inspect and perform localized equipment repairs as required.

This approach would lead to further deterioration of critical components of the system and potentially building-wide outages of the cooling system.

Alternatives Considered

Alternatives considered to complete the preliminary design of the HVAC system rehabilitation at the Metropolitan Headquarters Building included assessing the availability and capability of in-house Metropolitan staff to complete 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) utilize consultants for long-term rehabilitation projects when resource needs exceed available in-house staffing or require specialized technical expertise.

Staff has determined that specialized technical expertise is required to complete the preliminary design for the rehabilitation of the Headquarters HVAC system at Metropolitan Headquarters. Metropolitan staff does not routinely perform detailed design of this equipment. After assessing the current workload for in-house staff, the relative priority of this project, and the specialized technical expertise required, staff recommends the use of a professional services agreement to complete the subject project. This approach will allow for the 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 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 53318, dated July 11, 2023, the Board awarded a contract for the repair of the HVAC Chiller #2 at Metropolitan Headquarters Building.

By Minute Item 53598, dated April 9, 2024, the Board appropriated a total of \$636.5 million for projects identified in the CIP for Fiscal Years 2024/2025 and 2025/2026.

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.)

CEQA determination for Option #2:

None required

Details and Background

Background

Metropolitan Headquarters Building is a 522,682 square-foot, concrete-frame structure with a 12-story high-rise tower attached to a five-story wing. The building houses up to 850 Metropolitan staff and provides meeting space for the Board of Directors and members of the public. The business functions located in this building are critical for maintaining the continuity of Metropolitan's day-to-day operations.

The building has an HVAC system that uses a chiller plant to circulate chilled water to cool the building. The HVAC equipment and the chiller plant were installed during the original building construction and have been in operation for over 26 years. The central chiller plant is in a dedicated chiller room on the building's top floor. Three 450-ton water-cooled, centrifugal chillers with variable frequency drives provide cooling for the building.

Cool air is distributed through 29 custom air-handling units distributed within the 12 stories of the building. Air-handling units feature return and supply air connections, a single supply air fan, chilled water-cooling coil, and chilled water control valves. The units are also equipped with a UV-C light filtration system downstream of the cooling coils, which was installed in 2022.

After 26 years of continuous operation, the system has become increasingly difficult to maintain due to obsolete equipment components which require frequent repairs. Chillers and associated equipment typically have a lifespan of approximately 25 years. The central plant's efficiency and reliability decrease yearly due to equipment

age and proprietary electronic components, which are no longer supported or available. An assessment of the condition of the HVAC system performed by staff in early 2023 concluded that the chillers and critical support equipment associated with the HVAC system have reached the end of their useful life and require replacement. In addition, the refrigerant used by the building's existing cooling equipment is being phased out by the U. S. Environmental Protection Agency and will soon become cost-prohibitive and impractical to obtain.

In recent years, Metropolitan staff conducted a comprehensive study evaluation of the Headquarters HVAC system based on the current building layout, intended usage, review of original historical contract documents, and cooling load analyses while also considering energy efficiency, maintenance requirements, reliability, and integration with existing infrastructure. The study determined that upgrading the chiller plant and total refurbishment of the air-handling units, fluid coolers, and associated mechanical, electrical, and control systems will provide a reliable and energy-efficient HVAC system for the next 25 years. Staff also investigated the availability of rebates from the energy provider and found that there are currently no rebates available; however, as part of preliminary design, staff will investigate whether rebates are available for selected equipment. Staff recommends proceeding with preliminary design to rehabilitate the Headquarters HVAC system, including upgrades to the chiller plant and total refurbishment of the air-handling units, fluid coolers, and associated mechanical, electrical, and control systems. Staff recommends that the preliminary design be conducted by a specialized consultant under a new professional services agreement, which is the subject of this action.

Headquarters HVAC System Rehabilitation – Preliminary Design

Planned improvements to the HVAC system include replacing the three chillers and air-handling units. Field investigations will also be conducted to confirm whether other HVAC components, including the control system, need to be replaced.

Planned activities to complete preliminary design include: (1) detailed field inspections of existing equipment; (2) evaluation of industry standards and characteristics of recommended assemblies and replacement equipment; (3) preparation of an installation sequencing plan to maintain the headquarters in operation during replacement of the equipment; (4) preparation of preliminary design drawings and three-dimensional models; (5) initiation of permitting activities; (6) development of construction cost estimates and schedules; and (7) preparation of a preliminary design report. These activities will be performed by IDS Group Inc. as discussed below. Metropolitan staff will perform overall project management, conduct surveys, provide technical oversight, and review the consultant's work.

A total of \$790,000 is required for this work. Allocated funds include \$400,000 for preliminary design activities by IDS Group Inc. under a new agreement as described below. Other allocated funds for professional services include \$60,000 for value engineering and environmental services, which specialty firms will perform under contracts planned to be executed under the General Manager's Administrative Code authority. Allocated funds for Metropolitan staff activities include \$147,000 for design services described above; \$113,000 for project management, environmental support, and project controls; and \$70,000 for remaining budget. **Attachment 1** provides the allocation of the required funds. The total estimated cost to complete this project, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from \$17 million to \$19 million.

Engineering Services (IDS Group Inc.) – New Agreement

IDS Group Inc. is recommended to complete preliminary design for the rehabilitation of the HVAC system equipment at Metropolitan Headquarters, as described above. IDS Group Inc. was selected through a competitive process under Request for Proposals No. 1361. IDS Group Inc. was selected for this project based on its staff qualifications, experience in the design of similar projects, and technical approach and methodology.

This action authorizes an agreement with IDS Group Inc for a not-to-exceed amount of \$400,000 to provide engineering services to complete preliminary design for the rehabilitation of the Headquarters HVAC system, including upgrades to the chiller plant and total refurbishment of the air-handling units, fluid coolers, and associated mechanical, electrical and control systems. For this agreement, Metropolitan has established a

Small Business Enterprise (SBE) participation level of 25 percent. IDS Group is a certified SBE firm and thus achieves 100 percent SBE participation.

Project Milestone

August 2025 – Completion of preliminary design for the HVAC system rehabilitation



Mai M. Hattar
Interim Manager/Chief Engineer
Engineering Services
8/19/2024
Date



Deven Upadhyay
Interim General Manager
8/27/2024
Date

Attachment 1 – Allocation of Funds

Attachment 2 – Location Map

Ref# es12695931

Allocation of Funds for Headquarters HVAC System Rehabilitation

	Current Board Action (Sep. 2024)
Labor	
Studies & Investigations	\$ 147,000
Final Design	-
Owner Costs (Program mgmt., envir. support)	113,000
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
IDS Group Inc.	400,000
Value Engineering	40,000
Environmental Services	20,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	70,000
Total	\$ 790,000

The total amount expended to date to rehabilitate the Headquarters HVAC system is approximately \$286,000. The total estimated cost to complete this project, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from \$17 million to \$19 million.





Engineering, Operations, & Technology Committee

Metropolitan Headquarters HVAC System Upgrades

Item 7-1

September 9, 2024

Item 7-1 Metropolitan Headquarters HVAC System Upgrades

Subject

Authorize an agreement with IDS Group Inc. in an amount not to exceed \$400,000, for design services to rehabilitate the heating, ventilation, and air conditioning system at Metropolitan Headquarters Building

Purpose

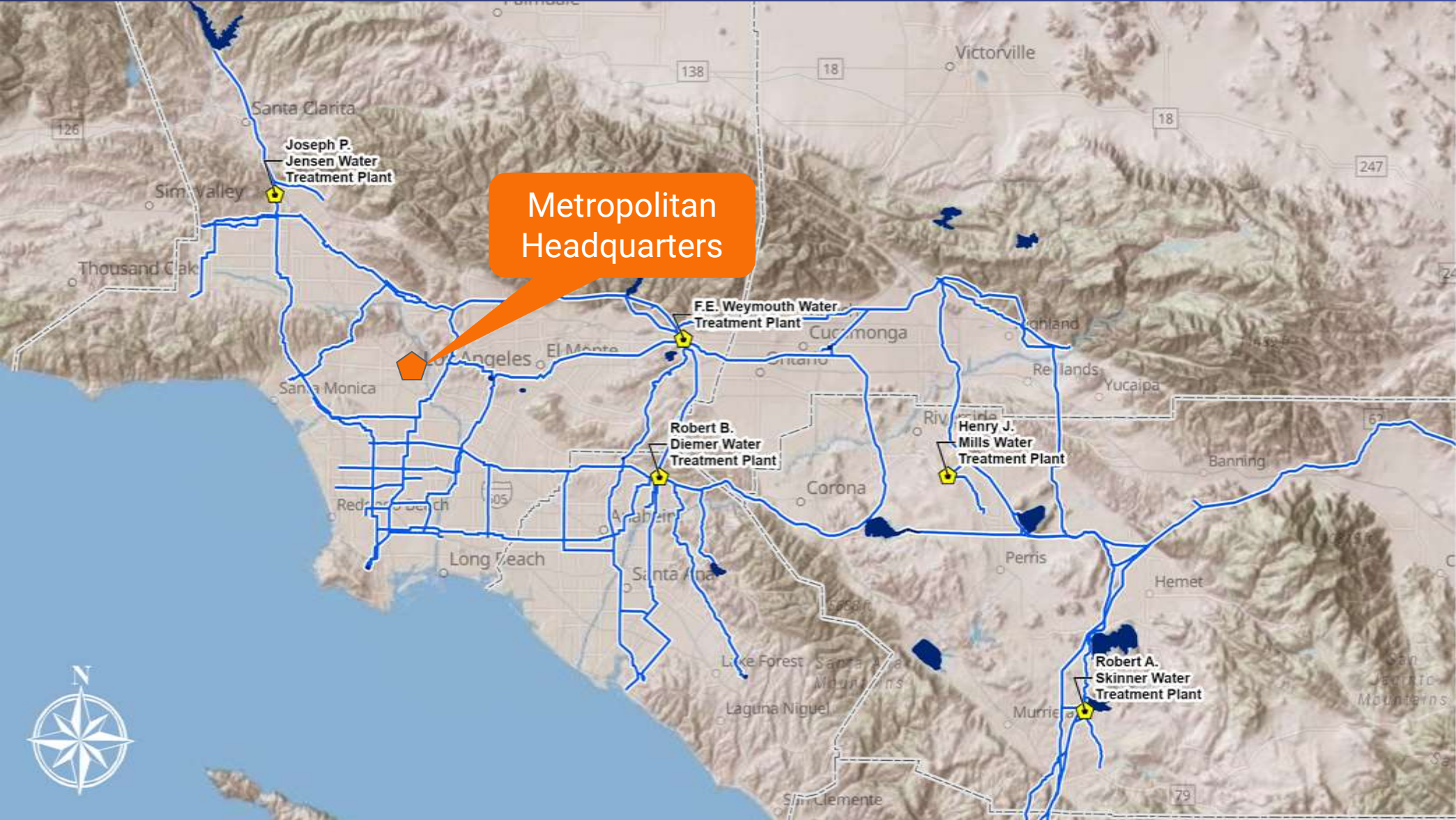
Rehabilitation of the heating, ventilation, and air conditioning system to improve operational functionality and reliability

Recommendation and Fiscal Impact

Authorize an agreement for design services
Fiscal Impact of \$790,000

Budgeted

Location Map



Background – Metropolitan Headquarters HVAC System

- Building HVAC System
 - Original building infrastructure
 - Provides cooling for critical systems & climate safety standards
 - Uses three 450-ton chillers to cool building
 - 29 custom air handling units distribute cool air



Chillers



Air Handler

Background

- Building HVAC System deteriorating after 26 years of service
 - Efficiency & reliability of HVAC system decreasing
 - Frequent repairs are now needed
 - July 23 board action to repair a chiller
- Refrigerant is being phased out by the U. S. Environmental Protection Agency
- Staff recommends preliminary design to rehabilitate the HVAC system

Metropolitan Headquarters HVAC System Upgrades

Alternatives Considered

- Metropolitan staff to complete all preliminary design activities
 - Resource needs exceed staff availability
 - Specialized technical expertise required
- Selected Alternative – Use consultant services with specialized expertise

Metropolitan Headquarters HVAC System Upgrades

Project Scope

- Replace key equipment
 - Fluid coolers & associated mechanical, electrical & control system
 - Upgrade existing chillers
 - Refurbish existing air handling units
- Provide a more energy-efficient system

Metropolitan Headquarters HVAC System Upgrades

Metropolitan Scope of Work

- Perform surveys
- Provide technical oversight & review consultant's work
- Provide project management, project controls, & environmental documentation
- Oversee field inspections
- Obtain permits

Metropolitan Headquarters HVAC System Upgrades

New Agreement – IDS Group Inc.

- Selected through RFP No. 1361
- Scope of Work
 - Preliminary design services for HVAC system rehabilitation
 - Evaluation of industry standards for replacement equipment
 - Design criteria & cost estimates
 - Preliminary design
- NTE amount: \$400,000
- SBE participation level: 100%

Allocation of Funds

HVAC System Rehabilitation

Metropolitan Labor

Studies & Investigations	\$ 147,000
--------------------------	------------

Owner Costs (Proj. Mgmt., Envir. Support)	113,000
---	---------

Professional/Technical Services

IDS Group Inc.	400,000
----------------	---------

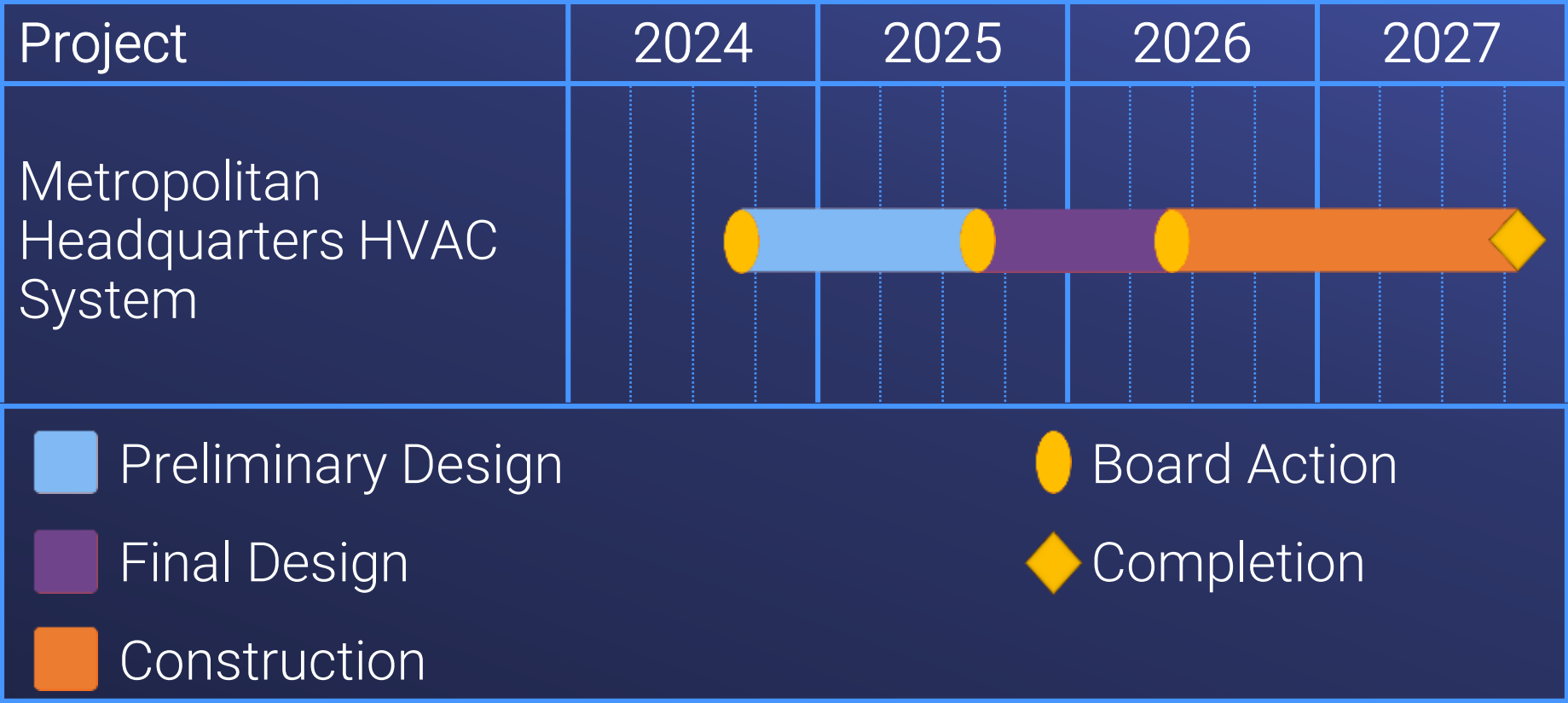
Value Engineering	40,000
-------------------	--------

Environmental Services	20,000
------------------------	--------

Remaining Budget	70,000
------------------	--------

Total	\$ 790,000
-------	------------

Project Schedule



Board Options

- Option #1
Authorize an agreement with IDS Group Inc. in an amount not to exceed \$400,000 for preliminary design to rehabilitate the HVAC system at Metropolitan Headquarters Building.
- Option #2
Do not proceed with the project at this time.

Staff Recommendation

- Option #1





- Board of Directors
Engineering, Operations, and Technology Committee

9/10/2024 Board Meeting

7-2

Subject

Adopt the Mitigated Negative Declaration for the West Valley Feeder No. 1 Stage 3 Improvements Project and take related CEQA actions

Executive Summary

The West Valley Feeder No. 1 Stage 3 Improvements Project involves replacing deteriorated valves, adding valve structures, and improving access for maintenance and repairs. The existing valves were installed when the line was constructed in 1962 and no longer seal properly. Further, many valves were directly buried and cannot be accessed without excavating the pipeline. Work was implemented in three stages. Stages 1 and 2 have been completed, while final design for Stage 3 is ongoing. Stage 3 work includes: (1) the addition of new vaults to house valves that at present are directly buried at three locations: near a streambed, adjacent to a patrol road, and at the top of the hill; (2) replacement of existing deteriorated valves; (3) installation of enclosures for air release/vacuum valves; and (4) grading of an all-weather access road to support patrol and maintenance activities at the structures.

This action proposes the adoption of a Mitigated Negative Declaration (MND) for Stage 3 of the West Valley Feeder No. 1 Improvements Project in accordance with the California Environmental Quality Act (CEQA). See **Attachment 1** for the Location Map, **Attachment 2** for the Initial Study (IS) and MND, **Attachment 3** for the comment letters received during the public review period and Metropolitan's responses to those comments, and **Attachment 4** for the Mitigation Monitoring and Reporting Program (MMRP).

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

Staff Recommendation: Option #1

Option #1

Adopt the Mitigated Negative Declaration for the West Valley Feeder No. 1 Stage 3 Improvements Project and take related CEQA actions.

Fiscal Impact: None

Business Analysis: Adoption of the Mitigated Negative Declaration allows Metropolitan to proceed with obtaining additional project clearances and approvals.

Option #2

Do not adopt the Mitigated Negative Declaration at this time.

Fiscal Impact: None

Business Analysis: This option would forego the opportunity to obtain additional project clearances and approvals.

Alternatives Considered

Not applicable

Applicable Policy

Metropolitan Water District Administrative Code Section 11100: Environmental Matters

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

By Minute Item 50987, dated October 10, 2017, the Board authorized preliminary design of Stage 3 improvements for West Valley Feeder No. 1.

By Minute Item 51283, dated August 21, 2018, the Board authorized final design of Stage 3 improvements for West Valley Feeder No. 1.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

Acting as the Lead Agency, Metropolitan conducted an IS for the proposed action. The IS indicated that, with the incorporation of appropriate mitigation measures, the proposed action would not have a significant impact on the environment. Accordingly, Metropolitan prepared an MND, which together with the IS was circulated for public review beginning on June 13, 2024. Metropolitan also prepared a program for reporting on and monitoring the changes that are required to mitigate or avoid significant environmental effects (MMRP).

Attachment 2 includes the IS and MND. **Attachment 3** includes comment letters received during the public review period and Metropolitan's responses to those comments, and **Attachment 4** includes the MMRP. These documents, as well as any other materials that constitute the record of proceedings upon which the Lead Agency decision is based, are on file at Metropolitan's headquarters located at 700 North Alameda Street, Los Angeles, CA 90012.

The Board has reviewed and considered all the materials described above. Based on the whole record before it, the Board finds that there is no substantial evidence that the proposed action will have a significant impact on the environment and that the MND reflects the Lead Agency's independent judgment and analysis. Therefore, the Board adopts the MND and MMRP for the proposed action. (State CEQA Guidelines Sections 15070-15075.)

CEQA determination for Option #2:

None required

Details and Background

The West Valley Feeder No. 1 delivers treated water from the Joseph Jensen Water Treatment Plant in Granada Hills to Calleguas Municipal Water District (Calleguas), Las Virgenes Municipal Water District, and the Los Angeles Department of Water and Power. This 8.3-mile-long feeder was constructed in 1962 by Calleguas and was acquired by Metropolitan in 1970. The line is comprised of prestressed concrete cylinder pipe with a diameter varying from 48 inches to 57 inches. The feeder has a capacity of 100 cubic feet per second and serves five-member agency service connections.

In 2001, a condition assessment of West Valley Feeder No. 1 identified that most of the blowoff valves, air release/vacuum valves, and sectionalizing valves were deteriorating and needed to be replaced. Work was prioritized and divided into three stages over multiple shutdown seasons to minimize the duration of pipeline outages. The first stage, which addressed the valves within 42 structures over four shutdown seasons, was completed in 2006. The second stage, which addressed 14 structures over two shutdown seasons, was completed in 2012.


The Stage 3 portion of the work is located within Chatsworth Park South. In 2008, the park was closed to the public for remediation of hazardous materials that were discovered within the park boundaries. Due to the resulting restrictions that impeded access and pipeline construction activities by a contractor, the final stage of improvements to West Valley Feeder No. 1 was deferred. In August 2017, the remediation work within the park was completed, allowing Metropolitan to proceed with the final improvements to the feeder.

Stage 3 work includes: (1) the addition of new vaults to house valves that at present are directly buried at three locations: near a streambed, adjacent to a patrol road, and at the top of the hill; (2) replacement of existing deteriorated valves; (3) installation of enclosures for air release/vacuum valves; and (4) grading of an all-weather access road to support patrol and maintenance activities at the structures.

Adoption of the MND and MMRP will allow Metropolitan to proceed with obtaining necessary easements, project clearances, and other approvals.

Project Milestone

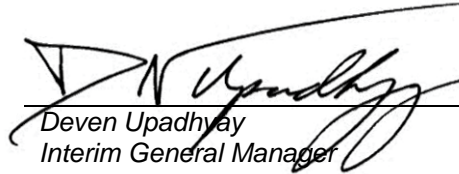
June 2025 – Completion of design and right-of-way acquisition



Elizabeth Crosson
Chief Sustainability, Resilience &
Innovation Officer

8/20/2024

Date



Deven Upadhyay
Interim General Manager

8/21/2024

Date

Attachment 1 – Location Map

Attachment 2 – Initial Study and Mitigated Negative Declaration

Attachment 3 – Comment Letters and Responses to Comments

Attachment 4 – Mitigation Monitoring and Reporting Program

Ref# sri12700637



West Valley Feeder No. 1 Stage 3 Improvements Project

Proposed Initial Study-Mitigated Negative Declaration



Metropolitan Report No. 1582

June 2024

West Valley Feeder No. 1 Stage 3 Improvements Project

Proposed Initial Study-Mitigated Negative Declaration

The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, California 90012

Report No. 1582

June 2024

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
Section 1.0 Project Description	1-1
1.1 Project Background and Purpose	1-1
1.2 Project Location	1-1
1.3 Surrounding Land Use.....	1-1
1.4 Project Description.....	1-2
1.4.1 Structure Modifications	1-2
1.4.2 Access Road Improvements, New Access Road and Vehicle Turnaround	1-3
1.5 Project Construction	1-4
1.5.1 Timing and Duration.....	1-4
1.5.2 Staging.....	1-4
1.5.3 Equipment.....	1-4
1.5.4 Operations	1-4
1.6 Metropolitan Standard Practices.....	1-4
Section 2.0 Initial Study	2-1
2.1 Legal Authority and Findings	2-1
2.2 Impact Analysis and Significant Classification.....	2-1
2.3 Initial Study and Environmental Checklist Form	2-2
2.4 Environmental Factors Potentially Affected	2-3
2.5 Determination:	2-3
Section 3.0 Evaluation of Environmental Impacts	3-1
I. Aesthetics	3-1
II. Agriculture and Forest Resources	3-3
III. Air Quality	3-5
IV. Biological Resources	3-15
V. Cultural Resources	3-27
VI. Energy	3-30
VII. Geology and Soils.....	3-32
VIII. Greenhouse Gas Emissions	3-36
IX. Hazards and Hazardous Materials	3-40
X. Hydrology and Water Quality.....	3-43
XI. Land Use and Planning	3-46
XII. Mineral Resources.....	3-47
XIII. Noise	3-48

XIV.	Population and Housing.....	3-54
XV.	Public Services	3-55
XVI.	Recreation	3-57
XVII.	Transportation/Traffic.....	3-58
XVIII.	Tribal Cultural Resources	3-60
XIX.	Utilities and Service Systems	3-62
XX.	Wildfire.....	3-64
XXI.	Mandatory Findings of Significance.....	3-66
Section 4.0	Report Preparers	4-1
4.1	Lead Agency	4-1
4.2	Consultants.....	4-1
Section 5.0	References	5-1

TABLES

<u>Table</u>	<u>Page</u>
1	California and Federal Ambient Air Quality Standards.....
2	Criteria Pollutant Designations in the South Coast Air Basin
3	SCAQMD Air Quality Significance Thresholds.....
4	Air Quality Levels Measured at the Reseda Monitoring Station
5	Estimated Maximum Daily Construction Emissions (lbs/day)
6	Localized Construction Pollutant Emissions (lbs/day).....
7	Jurisdictional Water Resources Impacts in the Survey Area
8	Energy Use During Construction.....
9	Estimated Annual Greenhouse Gas Emissions From Construction.....
10	Typical Noise Levels
11	City of Los Angeles Presumed Ambient Noise Levels
12	Anticipated Vibration Levels Per Construction Equipment Types
13	Construction Noise Levels at Noise-Sensitive Uses
14	Vibration Annoyance Criteria at Sensitive Uses.....
15	Vibration Levels at Sensitive Uses.....

EXHIBITS

<u>Exhibit</u>	<u>Follows Page</u>
1 Regional Location	1-1
2 Local Vicinity	1-1
3 Existing Metropolitan Facilities	1-1
4a-c Proposed Project Area and Easements	1-1
5a-d Existing Facilities.....	1-2
6a-b Site Photographs.....	3-2
7 Vegetation Map	3-18
8 Jurisdictional Resources	3-18
9 Vegetation Impacts	3-22
10 Jurisdictional Resources Impacts.....	3-22
11 Flood Zone	3-45

APPENDICES

Appendix

A Metropolitan Standard Practices
B CalEEMod Calculations
C Updated Biological and Jurisdictional Waters Resources Assessment
D Archaeological Inventory
E Energy Analysis
F Report of Geotechnical Study
G Paleontological Records Search
H Phase I Environmental Site Assessment
I Hydrology and Hydraulic Analyses
J Project Noise Calculations

This page intentionally left blank

LIST OF ACRONYMS

µg/m ³	Micrograms per cubic meter
AAM	Annual Arithmetic Mean
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ALUC	Airport Land Use Commission
APEFZ	Alquist-Priolo Earthquake Fault Zone
APN	Assessor Parcel Number
AQMP	Air Quality Management Plan
BMPs	Best Management Practices
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CGS	California Geological Survey
CMWD	Calleguas Municipal Water District
CNDDDB	California Natural Diversity Database
CNEL	Community noise equivalent level
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO ₂ e	Carbon dioxide equivalents
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
cy	Cubic yards
CYA	C. Young Associates
dB	Decibel
dBA	A-weighted decibel
DTSC	Department of Toxic Substances Control
EMD	Emergency Management Department
EMFAC	EMissions FACtor model
ESA	Endangered Species Act
Farmland	Farmland of Statewide Importance
FESA	Federal Endangered Species Act
GHG	Greenhouse gas
HCP	Habitat Conservation Plan
ID	Inside diameter

Km	Kilometer
LA100	Los Angeles 100% Renewable Energy Study
LACDPW	Los Angeles County Department of Public Works
LACM	Natural History Museum of Los Angeles County
LADRAP	Los Angeles Department of Recreation and Parks
LAFD	Los Angeles Fire Department
LAPD	Los Angeles Police Department
LAUSD	Los Angeles Unified School District
Lbs/day	Pounds per day
LCA	Land Conservation Act
Leq	Equivalent sound level
LST	Localized significance threshold
MEI	Maximally exposed individual
Metropolitan	The Metropolitan Water District of Southern California
Mg/m ³	Milligrams per cubic meter
MM	Mitigation Measure
MND	Mitigated Negative Declaration
MS4	Municipal separate storm sewer system
MT	Metric tons
MT/yr	Metric tons per year
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen oxides
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O ₃	Ozone
OHWM	Ordinary High Water Mark
OPR	Office of Planning and Research
OS	Open Space
PCCP	Prestressed concrete cylinder pipe
PEIR	Program Environmental Impact Report
PI	Plasticity index
PM10	Particulate Matter with a diameter of 10 microns or less
PM2.5	Particulate Matter with a diameter of 2.5 micros or less
Ppm	Parts per million
ppv	Peak particle velocity
PRC	Public Resources Code
RAP	Remedial Action Plan
ROG	Reactive organic gas

ROW	Right-of-way
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCCIC	South Central Coastal Information Center
SMARA	Surface Mining and Reclamation Act
SO ₂	Sulfur Dioxide
SO _x	Sulfur oxides
SR	State Route
STA	Station
SWPPP	Storm Water Pollution Prevention Plan
TAC	Toxic air contaminants
TNW	Traditional Navigable Water
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VCP	Voluntary Cleanup Program
VDB	Velocity decibels
VMT	Vehicle miles travelled
VOC	Volatile organic compound
WPCP	Water Pollution Control Plan
WVF1	West Valley Feeder No. 1

This page intentionally left blank

SECTION 1.0 PROJECT DESCRIPTION

1.1 PROJECT BACKGROUND AND PURPOSE

The Metropolitan Water District of Southern California (Metropolitan) is a regional wholesaler that provides water for 26 public member agencies that, in turn, provide drinking water to approximately 19 million people in Southern California in parts of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. The mission of Metropolitan is to provide its service area with an adequate and reliable supply of high-quality water to meet present and future needs in an environmentally and economically responsible way.

The West Valley Feeder No. 1 (WVF1) was constructed in 1962 by Calleguas Municipal Water District (CMWD) and acquired by Metropolitan in 1970. WVF1 is a 54-inch inside diameter (ID) prestressed concrete cylinder pipe (PCCP) that conveys treated water to two member agencies, the Las Virgenes Municipal Water District and the CMWD.

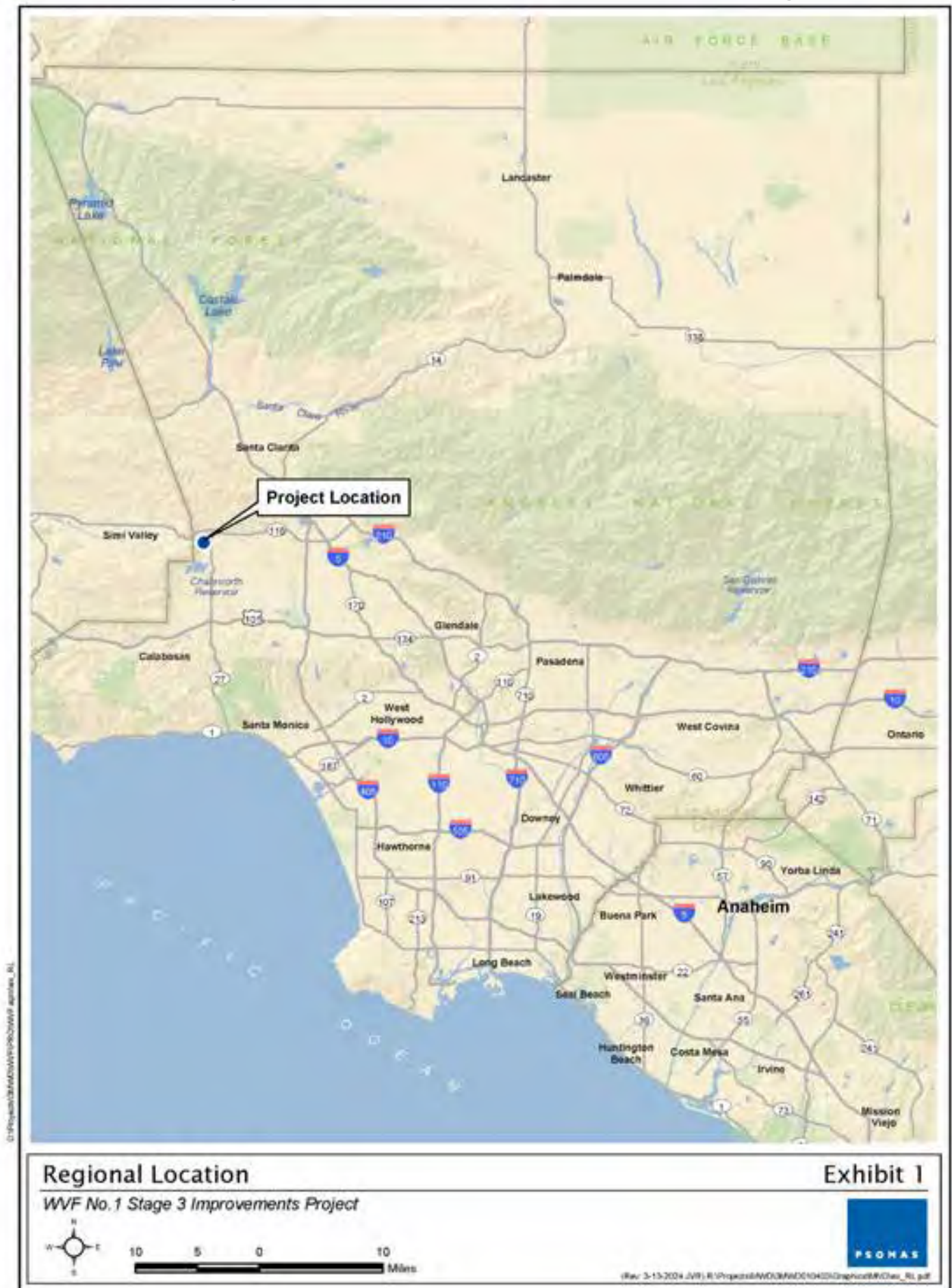
Improvements to the WVF1 have been divided into three stages. Stages 1 and 2 were completed outside of Chatsworth Park South as part of pipeline maintenance work; however, access to Chatsworth Park South was restricted for many years due to lead remediation conducted by the City of Los Angeles. The lead remediation efforts were completed in 2017. The purpose of the proposed Project is to complete Stage 3 of the pipeline maintenance work within Chatsworth Park South by completing pipeline valve modifications, including replacing valves, relocating valves, and modifying structures at four locations along the WVF1, making improvements to the existing access road, and constructing a new access road where no vehicular access currently exists.

1.2 PROJECT LOCATION

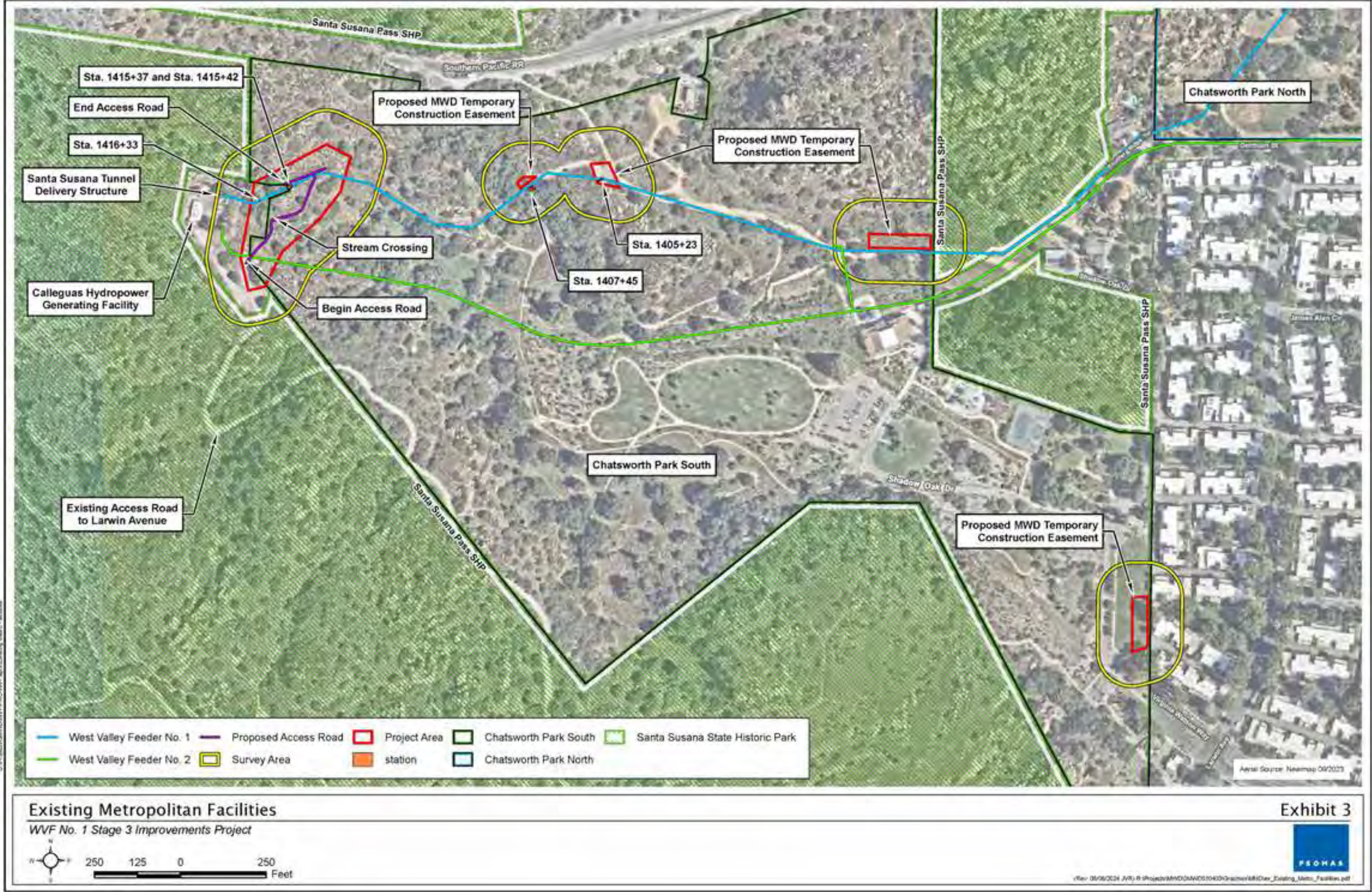
The WVF1 begins at the intersection of Hayvenhurst Avenue and Rinaldi Street in Granada Hills and travels westerly, terminating at the CMWD's Santa Susana Tunnel – East Portal in Chatsworth Park South. Exhibit 1 depicts the Regional Location and Exhibit 2 depicts the Local Vicinity. The Project Area includes four locations along the WVF1, improvements to the existing WVF1 access road, and construction of a new access road where no vehicular access currently exists. Exhibit 3 depicts existing Metropolitan facilities in the Project Area. The combined Project Area totals approximately 1.98 acre within the north/northwestern portion of Chatsworth Park South in the community of Chatsworth, in the city of Los Angeles, county of Los Angeles, California (refer to Exhibit 3, Existing Metropolitan Facilities). The Project is located on Assessor Parcel Numbers (APNs) 2723010904, 2723010270, and 2723010902. Exhibits 4a through 4c provide a visual overview of the Project Area, including temporary and permanent easements.

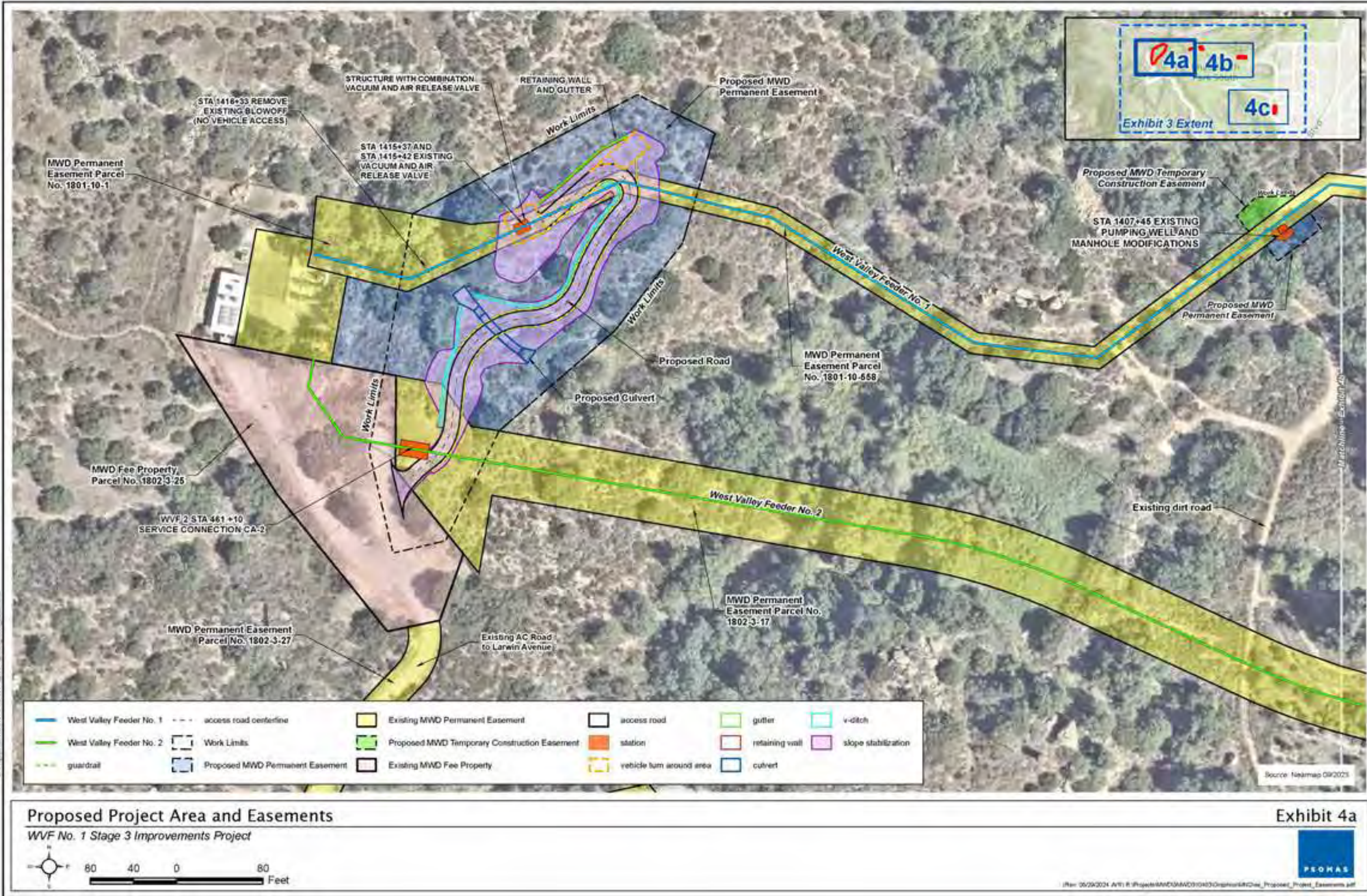
1.3 SURROUNDING LAND USE

The Project Area is surrounded by Chatsworth Park South to the south and southeast, single-family residences to the east, and undeveloped hillside terrain within the Santa Susana Pass State Historic Park to the north and west (refer to Exhibit 2, Local Vicinity). Railroad right-of-way (ROW) is located north of the Project Area, and informal multi-use trails are located throughout the Project Area that serve pedestrian, bicycling, and equestrian uses.

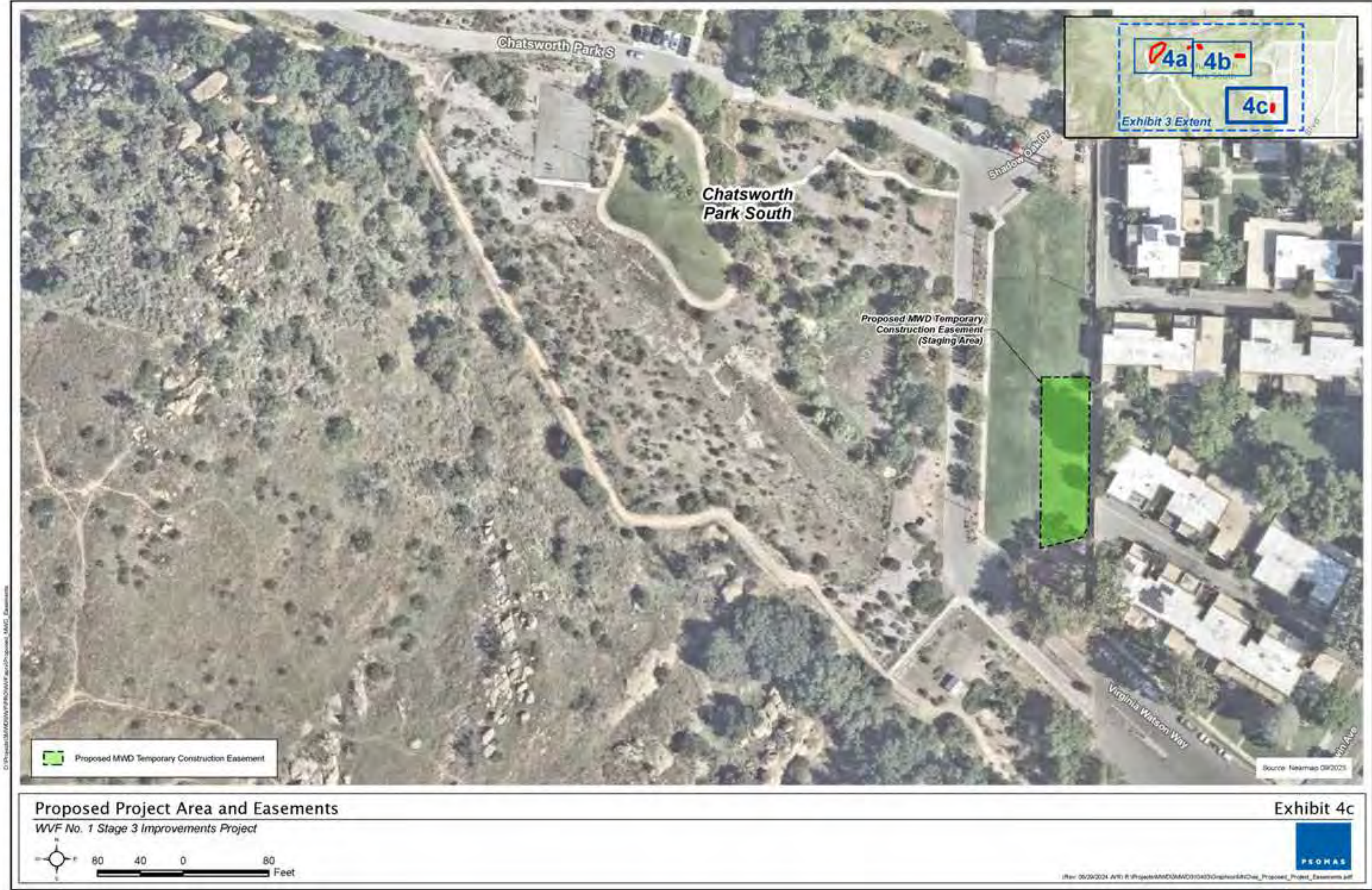












1.4 **PROJECT DESCRIPTION**

The Project proposes modifications to WVF1 structures at four locations along the pipeline alignment, improvements to the existing access road, and construction of a new access road and vehicle turn around areas within Chatsworth Park South. A detailed project description is below in Sections 1.4.1 and 1.4.2. Photographs of existing facilities are included in Exhibits 5a-5d.

1.4.1 **STRUCTURE MODIFICATIONS**

- (1) **WVF1 Station 1405+23.** WVF1 Station 1405+23 is an existing valve enclosure surrounded by four concrete posts. This structure is located on a paved roadway area and includes an air valve, isolation valve, and buried gate valve with a valve stem protruding at ground surface as shown in Exhibit 5a.

The Project proposes to relocate and replace the valve enclosure and associated piping, located within the paved roadway, approximately seven feet south of its current location, also within the paved roadway. The new air valve would be installed within a cabinet on a concrete pad with protective guard posts (bollards) placed around it. Additionally, a new manhole structure with seven-foot interior diameter and a street type lid/cover would be constructed directly over the top of the WVF1 to house a new isolation valve plug valve, check valve, and associated piping. All construction activities would occur within the existing paved roadway. Bollards would be placed around the new manhole structure to protect it from vehicular traffic.

- (2) **WVF1 Station 1407+45.** WVF1 Station 1407+45 is an existing manhole structure and below ground vault which houses a blow-off valve and pump well structure. The manhole interior is visible in Exhibit 5b. The manhole is located on the edge of an eroded asphalt pad and access road, adjacent to an ephemeral drainage with a loose riprap bank.

The Project proposes to replace the existing manhole structure by raising the access point of the structure and expanding the interior diameter of the manhole from six to seven feet. The Project would also replace the existing pump well valve and valve stem within the structure in kind and replace associated piping and fittings. The drainage side slope would be cleared of any vegetation within the riprap, and regraded and re-armored with riprap to protect the structure from direct water flow. Bollards would be placed around the existing manhole structure along the asphalt side of the structure, as needed, to protect the structure from vehicular traffic.

- (3) **WVF1 Station 1415+37 and Station 1415+42.** WVF1 Station 1415+37 is an existing, enclosed air release and vacuum valve located next to a buried gate valve with a valve stem protruding at the surface. The valve enclosure is weathered and made of thin, metal sheeting as shown in Exhibit 5c. This structure is located on an unpaved, undeveloped hillside, and is only accessible by foot with no formal trails or access paths. The site is immediately adjacent to a chain-link fence and surrounded by ruderal shrubs and grasses.

The Project proposes to construct a new manhole and underground concrete vault structure to provide access to a buried 20-inch flanged outlet at Station 1415+37 and a buried 10-inch air release and vacuum valve at Station 1415+42. The flanged outlet and air release and vacuum valve are located approximately five feet apart, and the new vault structure would house both. The inside dimensions of the underground concrete vault structure would be approximately 13-feet-long by 9-feet-wide by 7-feet-high with the manhole structure extending at least 2 feet above the finish grade. An existing retaining wall would be protected in place. The flanged outlet would be converted to a pump well.



WWF1 Station 1405+23, facing south.



WWF1 Station 1405+23, Air Release and Vacuum Valve enclosure, facing north.

Existing Facilities – WWF1 Station 1405+23

Exhibit 5a

WWF No.1 Stage 3 Improvements Project



(04/17/2023 JVR) R:\Projects\MND\15MWD0104030\Graphics\MND\Existing_Facilities.pdf



WVF1 Station 1407+45, facing south/west.



WVF1 Station 1407+45, manhole interior.

Existing Facilities – WVF1 Station 1407+45

Exhibit 5b

WVF No.1 Stage 3 Improvements Project



[04/17/2023 JV] R:\Project\MWD\UMWD\010420\Graphics\MND\Ex_Existing_Facilities.pdf



WVF1 Station 1415+37 and 1415+42, exposed valve, facing north/west.



WVF1 Station 1415+37 and 1415+42, Air Release and Vacuum Valve enclosure, facing south.

Existing Facilities – WVF1 Station 1415+37 and Station 1415+42 Exhibit 5c

WVF No.1 Stage 3 Improvements Project



[04/17/2023 JV] R:\Project\MMWR\MMWD\1042\fig\aplic\MMDoc_Existing_Facilities.pdf



WVF1 Station 1416+33, exposed valve, facing west.



WVF1 Station 1416+33, exposed valve, facing north.

Existing Facilities – WVF1 Station 1416+33

WVF No.1 Stage 3 Improvements Project

Exhibit 5d



- (4) **WVF1 Station 1416+33.** WVF1 Station 1416+33 is an existing blow-off valve structure located on a concrete pedestal at ground level within a streambed, as shown in Exhibit 5d. The site is located at the base of a ravine and is accessible only by foot via a series of wooden stairs that descend along the southwestern wall of the ravine. The site is densely vegetated and surrounded by leaf litter and debris; the blow-off valve structure is exposed and periodically covered by debris.

The Project proposes to abandon the existing blow-off valve structure by removing or permanently capping the various valve components and converting the piping to a flange. Once the flange is installed, the area would be backfilled, and the finish grade restored to its present elevation. Conversion of the blow-off structure to a blind flange would require an approximate 10-foot by 10-foot construction work area. An existing 40-foot by 5-foot stairway would be used as a temporary route to access this site.

1.4.2 ACCESS ROAD IMPROVEMENTS, NEW ACCESS ROAD AND VEHICLE TURNAROUND

The proposed Project would repave portions of the existing access road and construct a new paved access road including two vehicle turnaround areas and access gates to accommodate a full-size maintenance truck (for continued operations, maintenance, and security). The new paved access road would be approximately 14 feet wide, 600 feet in length, and provide for one-way vehicle traffic. The new paved access road would start at a turn off from the existing paved access road (located along the west side of Chatsworth Park South), cross a stream, and end at the WVF1 proposed vault structure at Station 1415+37 and Station 1415+42 (see description in Section 1.4.1 and Exhibit 4a). The two vehicle turnaround areas would be located immediately adjacent to the Station 1415+37 and Station 1415+42 vault structure.

Construction of the new access road would require clearing and grubbing of the access road path, removal of rocks and debris, and grading the access road alignment. The new road would be constructed from a combination of asphalt and concrete with a cement treated base. Concrete-lined v-ditches would be installed along the shoulder of the road, as required, to direct runoff away from the access road. The construction would also include a 100-foot long by 6-foot-high retaining wall along the northwest section of the road and guard rails along the eastern portion of the road.

To construct the stream crossing, the drainage area would be cleared and grubbed of vegetation, and existing rocks or boulders would be removed. A 72-inch concrete pipe culvert with headwall would be installed within the streambed, and the drainage side slopes stabilized with compacted soil placed within a geogrid system. The areas adjacent to the culvert inlet and outlet would contain armored riprap to protect the pipe and roadway from erosion. As shown on Exhibit 4a, the constructed culvert would replace a 90-foot long section of the natural drainage, while vegetation removal and slope stabilization to support the new road would result in an additional disturbance of approximately 90 feet in length of the drainage. The total length of stream disturbance at the crossing would be approximately 229 feet.

Two vehicle turnaround areas are proposed. One turnaround area is an existing 15-foot by 15-foot dirt pad that would be expanded to approximately 30-foot by 30-foot and located directly adjacent to the new vault structure proposed for Station 1415+37 and 1415+42. A second, new vehicle turnaround area would be located approximately 60 feet directly east of the vault structure at Station 1415+37 and 1415+42 and would be approximately 20-foot by 30-foot with a concrete down drain and riprap apron along the eastern edge.

1.5 PROJECT CONSTRUCTION

1.5.1 TIMING AND DURATION

Construction of the proposed Project is anticipated to start in 2027 and would last approximately 9 months. During construction, a portion of the informal, multi-use trails within Chatsworth Park South may be closed to pedestrians and bicyclists to allow for construction activities within the Project Area. The closure would be temporary and coordinated with the City of Los Angeles and the park manager. Signage would be posted prior to start of construction to alert park users of impending closure of the area and include a detour map.

1.5.2 STAGING

Construction staging areas are shown on Exhibits 4b and 4c and would be used for storage of construction equipment and vehicles. Construction worker parking would be on Germaine Street northeast of the Chatsworth Park South entrance.

1.5.3 EQUIPMENT

Project construction would require a variety of equipment types typical for a construction project. The following is a list of equipment assumed as part of this analysis:

- Tractors
- Loaders
- Backhoes
- Excavators
- Crane
- Motor Grader
- Paver
- Paving equipment
- Rubber Tire Dozer

1.5.4 OPERATIONS

Operations and maintenance activities, including the frequency of staff visits, maintenance, and shutdowns, would be similar to existing conditions once construction activities are completed. The WVF1 and all pipelines and structures within the proposed Project Area are unmanned. Any operations and maintenance activities to the WVF1 or associated infrastructure would be performed by existing Metropolitan employees.

1.6 METROPOLITAN STANDARD PRACTICES

Metropolitan implements standard practices, in addition to stormwater Best Management Practices (BMPs), as part of its standard design and contractor specifications. Standard practices are implemented where applicable, regardless of project size. Metropolitan standard practices are described for each environmental impact category in Section 3, when applicable. Appendix A contains the complete list and description of Metropolitan standard practices.

SECTION 2.0 INITIAL STUDY

2.1 LEGAL AUTHORITY AND FINDINGS

Pursuant to Section 15367 of the State California Environmental Quality Act (CEQA) Guidelines, Metropolitan is the lead agency for the Project. The lead agency is the public agency that has the principal responsibility for carrying out or approving a project that may have a significant effect on the environment. Metropolitan, as the lead agency, has the authority for Project approval and adoption of the accompanying environmental documentation.

This proposed Mitigated Negative Declaration (MND) complies with Section 15071 of the *CEQA Guidelines*. The Initial Study, Environmental Checklist, and evaluation of the potential environmental effects were completed in accordance with Section 15063(d)(3) of the *CEQA Guidelines* to determine if the project would have a significant effect on the physical environment.

An MND may be used to satisfy the requirements of CEQA when a proposed project would have no significant, unmitigable effects on the environment. As discussed further in subsequent sections of this document, implementation of the proposed Project would not result in any significant effects on the environment that cannot be reduced to below a level of significance with the mitigation measures (MMs) included herein.

2.2 IMPACT ANALYSIS AND SIGNIFICANT CLASSIFICATION

The following sections of this document provide discussions of the possible environmental effects of the proposed Project for specific environmental factors as identified on the CEQA Environmental Checklist Form in Appendix G of the *CEQA Guidelines*. For each environmental factor, potential effects are discussed and evaluated.

A “significant effect on the environment” is defined by Section 15382 of the *CEQA Guidelines* as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by a project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.” According to the *CEQA Guidelines*, “an economic or social change by itself shall not be considered a significant effect on the environment but may be considered in determining whether the physical change is significant.”

Following the evaluation of each environmental effect determined to be potentially significant is a discussion of mitigation measures and the residual effects or level of significance remaining after the implementation of the measures.

2.3 INITIAL STUDY AND ENVIRONMENTAL CHECKLIST FORM

1. Project Title: West Valley Feeder No. 1 Stage 3 Project
2. Lead Agency Name and Address: The Metropolitan Water District of Southern California
700 North Alameda Street, Los Angeles, California 90012
3. Contact Person and Phone Number: Michelle Morrison, Environmental Planning Section
Metropolitan Water District of Southern California
213.217.7906
4. Project Location: The proposed Project Area is 1.98-acres, non-contiguous, and located in the community of Chatsworth, in the city of Los Angeles, within APNs 2723010904, 2723010270, and 2723010902.
5. Project Proponent's Name and Address: The Metropolitan Water District of Southern California
700 North Alameda Street, Los Angeles, California 90012
6. General Plan Designation: The General Plan and Community Plan land use designation is Open Space.
7. Zoning: The Project Area is currently zoned Open Space (OS-1XL).
8. Description of Project: Modifications to the existing infrastructure and new access road. Refer to Section 1.4 (Project Description).
9. Surrounding Land Uses and Setting: Section 1.2 (Project Location) and Section 1.3 (Surrounding Land Use) describe the surrounding land uses and setting of the proposed Project.
10. Other Public Agencies Whose Approval May Be Required: California Department of Fish and Wildlife (CDFW) Section 1602 Streambed Alteration Agreement

California Regional Water Quality Control Board (RWQCB)
Clean Water Act Section 401 Certification

City of Los Angeles Temporary and Permanent Easements

Unites States Army Corps of Engineers (USACE) Clean Water Act Section 404 Permit
11. Have California Native American Tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun? Yes, Metropolitan has conducted consultation pursuant to *California Public Resources Code* (PRC) section 21080.3.1 and has made an impact determination. See Section 3.18 (Tribal Cultural Resources).

2.4 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by the proposed Project, requiring implementation of mitigation as indicated by the checklist on the following pages that is "Less Than Significant With Mitigation Incorporated."

- | | | |
|--|---|--|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources | <input type="checkbox"/> Energy |
| <input checked="" type="checkbox"/> Geology /Soils | <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Hazards & Hazardous Materials |
| <input type="checkbox"/> Hydrology / Water Quality | <input type="checkbox"/> Land Use / Planning | <input type="checkbox"/> Mineral Resources |
| <input type="checkbox"/> Noise | <input type="checkbox"/> Population / Housing | <input type="checkbox"/> Public Services |
| <input type="checkbox"/> Recreation | <input type="checkbox"/> Transportation | <input type="checkbox"/> Tribal Cultural Resources |
| <input type="checkbox"/> Utilities / Service Systems | <input type="checkbox"/> Wildfire | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

2.5 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 is required.
- ☐ 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 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) 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.


 Jennifer Harriger
 Manager, Environmental Planning Section

06-05-2024

Date

This page intentionally left blank

SECTION 3.0 EVALUATION OF ENVIRONMENTAL IMPACTS

This section includes the completed Environmental Checklist Form. The checklist form is used to assist in evaluating the potential environmental impacts of the proposed Project. The Environmental Checklist Form identifies potential Project effects as follows: (1) Potentially Significant Impact, (2) Less Than Significant With Mitigation Incorporated, (3) Less Than Significant Impact, and (4) No Impact. Substantiation and clarification for each checklist response is provided immediately following the checklist questions. Included in each discussion are mitigation measures, as appropriate, that are recommended for implementation as part of the proposed Project.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS. Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public view of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning or other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IMPACT ANALYSIS

Would the Project:

a) Have a substantial adverse effect on a scenic vista?

Less Than Significant Impact. No, the proposed Project would not have a substantial adverse effect on a scenic vista. A scenic vista is defined as a viewpoint that provides panoramic or focused views of a highly valued landscape or scenic resource for the benefit of the general public. The Project is located within Chatsworth Park South and near the foothills of the Santa Susana Mountains. The Chatsworth-Porter Ranch Community Plan includes objectives directed at the preservation of views, natural character, and topography of mountainous parts of the Chatsworth-Porter Ranch Plan area (City of Los Angeles 1993), including the views of Chatsworth Peak ridgeline which are visible from the Project Area and surrounding vicinity. The proposed Project includes modification to existing valve structures, replacement of valves, access road improvements, and construction of a new access road and vehicle turnaround areas. There is existing Metropolitan aboveground infrastructure in the vicinity and improvements made as part of the proposed Project would look similar to what is currently existing. No new buildings would be constructed as part of the proposed Project. Although Project construction activities would be

temporarily visible in foreground views of the ridgeline, views of the ridgeline would not be obstructed. Therefore, impacts to scenic vistas would be less than significant.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

No Impact. No, the proposed Project would not substantially damage scenic resources within a State scenic highway. According to the California Department of Transportation (Caltrans), there are no officially designated or eligible State scenic highways within or in proximity to the Project (Caltrans 2024). The nearest Caltrans designated State Scenic Highway is State Route (SR) 27 Topanga Canyon Boulevard, located approximately 7.5 miles southwest of the Project Area. Therefore, there would be no impact to scenic resources within a State scenic highway.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public view of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning or other regulations governing scenic quality?

Less Than Significant Impact. No, the proposed Project would not conflict with applicable zoning or other regulations governing scenic quality. The proposed Project is located in an urbanized area. Exhibits 6a and 6b include photographs that show the existing site conditions at the proposed Project Area. The proposed project includes modification to existing valve structures, replacement of valves, access road improvements, and construction of a new access road and vehicle turnaround areas. No new buildings would be constructed as part of the proposed Project. The proposed access road would be constructed at grade or with a minor change in grade at the proposed 30-foot-wide turnaround area, and only be used when pipeline maintenance is required. As noted in I(a), the Project is located within Chatsworth Park South and near the foothills of the Santa Susana Mountains. The Chatsworth-Porter Ranch Community Plan includes objectives directed at the preservation of views, natural character, and topography of mountainous parts of the Chatsworth-Porter Ranch Plan area (City of Los Angeles 1993), including the views of Chatsworth Peak ridgeline which is visible from the Project Area and surrounding vicinity. However, no zoning changes are proposed as part of the Project, and the scenic quality will remain largely similar to existing conditions following Project construction because there is already pipeline infrastructure present and visible. Therefore, the Project would not substantially degrade the visual character of the site and its surroundings, and impacts would be less than significant.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

No Impact. No, the proposed Project would not create new sources of substantial light or glare which would adversely affect day or nighttime views in the area. The Project would only involve periodic daytime work. Additionally, the Project does not propose to add any new lighting sources within the Project Area. No impacts related to new sources of lighting or glare would occur.



View 1 - View of project area looking west from Chatsworth Park South.



View 2 - View of project area looking west from parking lot at Chatsworth Park South.

Aerial Source: LAR-IAC 2014

Site Photographs

Exhibit 6a

WVF No. 1 Stage 3 Improvements Project



(Rev. 5-09-2024 JWR) R:\Projects\WVF\WVF01\Stage3\Graphics\SitePhotos.pptx



View 3 - View of gate and access road to project area looking west from Larwin Avenue.



View 4 - View of project area looking southwest from Germain Street/Boulder Ridge Terrace.

Aerial Source: LAR-IAC 2014

Site Photographs

WVF No. 1 Stage 3 Improvements Project



Exhibit 6b



(Rev. 5-09-2024 JVR) \\R:\Projects\WVF\WVF015420\Graphics\H1\Draw_SitePhotos.pdf

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FOREST RESOURCES. 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. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the State's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220[g]), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104[g])?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to nonagricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IMPACT ANALYSIS

Would the Project:

- 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?**

No Impact. No, the proposed Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. The Project Area is located within Chatsworth Park South in Los Angeles County. No Prime Farmland, Unique Farmland, or Farmland of Statewide Importance are mapped within the Project Area (California Department of

Conservation 2018). As such, no impact to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance would occur as a result of the proposed Project.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. No, the proposed Project would not conflict with existing zoning for agricultural use, or a Williamson Act contract. The Project Area is located in Chatsworth Park South in Los Angeles County. According to the City of Los Angeles General Plan and Chatsworth-Porter Ranch Community Plan, the Project Area is zoned OS (Open Space) and the areas immediately surrounding the Project Area are zoned Open Space and low density residential (City of Los Angeles 1993). Additionally, based on a review of the Department of Conservation Land Conservation Act (LCA) maps for Los Angeles County, the Project Area is designated as non-enrolled land and is not covered under a Williamson Act Contract (California Department of Conservation 2022). The Project Area is neither zoned for agricultural use nor under a Williamson Act contract, and no zoning changes are proposed. No impact would occur.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? and

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. No, the proposed Project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned as Timberland Production. The Project Area is located within Chatsworth Park South in Los Angeles County and is zoned as Open Space. The Project Area is not located within a designated National Forest under the U.S. Forest Service (USFS 2024) nor is it zoned as forest land as defined by Section 1220(g) of the *California Public Resources Code* (PRC), as timberland as defined by Section 4526 of the PRC, or as timberland zoned for timberland production as defined by Section 51104(g) of the PRC. The Project Area is not zoned for forest land or timberland, and no zoning changes are proposed. Therefore, no impact pertaining to zoning for forest land or timberland would occur.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. No, the proposed Project does not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use. The Project Area is located in Chatsworth Park South. The Project Area and its surroundings do not contain farmland or forest land (California Department of Conservation 2018); therefore, the proposed Project would not result in the conversion or loss of agriculture or forest land, and no impact would occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY. 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. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in other emissions (such as those leading odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

OVERVIEW OF AIR POLLUTION, AIR QUALITY STANDARDS, ATTAINMENT STATUS, AND AIR QUALITY MANAGEMENT

The following discussion is based on CalEEMod calculations prepared for the Project and included in Appendix B.

The proposed Project is located within the South Coast Air Basin (SCAB) and is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). Regional air quality is defined by whether the area has attained or not attained State and federal air quality standards, as determined by air quality data from various monitoring stations. Areas that are considered in “nonattainment” are required to prepare plans and implement measures that will bring the region into “attainment.” When an area has been reclassified from nonattainment to attainment for a federal standard, the status is identified as “maintenance,” and a plan and measures must be established that will keep the region in attainment for the following ten years.

The effects from air pollution can be significant, both in the short-term during smog alerts, but also from long-term exposure to pollutants. Both the State of California and the United States Environmental Protection Agency (USEPA) have established health-based Ambient Air Quality Standards (AAQS) for air pollutants, which are known as “criteria pollutants” emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory, etc.) into the atmosphere, including carbon monoxide (CO), volatile organic compounds (VOC)/reactive organic gases (ROG), nitrogen oxides, particulate matter with diameters of 10 microns or less (PM10) and 2.5 microns or less (PM2.5), sulfur dioxide, and lead. Other pollutants are created indirectly through chemical reactions in the atmosphere, such as ozone, which is created by atmospheric chemical and photochemical reactions primarily between VOC and nitrogen oxides. Secondary pollutants include oxidants, ozone, and sulfate and nitrate particulates (smog). The local air quality management agency, SCAQMD, is required to monitor air pollutant levels to ensure that the National AAQS and California AAQS are met and, if they are not met, to develop strategies to meet the standards. Depending on whether the standards are met or exceeded, the SCAB is classified as being in “attainment” or “nonattainment.” The AAQS are designed to protect the health and welfare of the populace within a reasonable margin of safety. The State and federal ambient air quality standards for various pollutants are shown in Table 1.

Table 2 summarizes the attainment status of the SCAB for the criteria pollutants.

**TABLE 1
CALIFORNIA AND FEDERAL AMBIENT AIR QUALITY STANDARDS**

Pollutant	Averaging Time	California Standards	Federal Standards Primary ^a	Federal Standards Secondary ^b
O ₃	1 Hour	0.09 ppm (180 µg/m ³)	–	–
O ₃	8 Hour	0.070 ppm (137 µg/m ³)	0.070 ppm (137 µg/m ³)	Same as Primary
PM ₁₀	24 Hour	50 µg/m ³	150 µg/m ³	Same as Primary
PM ₁₀	AAM	20 µg/m ³	–	Same as Primary
PM _{2.5}	24 Hour	–	35 µg/m ³	Same as Primary
PM _{2.5}	AAM	12 µg/m ³	12.0 µg/m ³	15.0 µg/m ³
CO	1 Hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	–
CO	8 Hour	9.0 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	–
CO	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)	–	–
NO ₂	AAM	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	Same as Primary
NO ₂	1 Hour	0.18 ppm (339 µg/m ³)	0.100 ppm (188 µg/m ³)	–
SO ₂	24 Hour	0.04 ppm (105 µg/m ³)	0.14 ppm (for certain areas)	–
SO ₂	3 Hour	–	–	0.5 ppm (1,300 µg/m ³)
SO ₂	1 Hour	0.25 ppm (655 µg/m ³)	0.075 ppm (196 µg/m ³)	–
Lead	30-day Avg.	1.5 µg/m ³	–	–
Lead	Calendar Quarter	–	1.5 µg/m ³	Same as Primary
Lead	Rolling 3-month Avg.	–	0.15 µg/m ³	Same as Primary
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per km – visibility ≥ 10 miles (0.07 per km – ≥30 miles for Lake Tahoe)	No Federal Standards	No Federal Standards
Sulfates	24 Hour	25 µg/m ³	No Federal Standards	No Federal Standards
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	No Federal Standards	No Federal Standards
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m ³)	No Federal Standards	No Federal Standards

O₃: ozone; ppm: parts per million; µg/m³: micrograms per cubic meter; PM₁₀: respirable particulate matter; AAM: Annual Arithmetic Mean; –: No Standard; PM_{2.5}: fine particulate matter; CO: carbon monoxide; mg/m³: milligrams per cubic meter; NO₂: nitrogen dioxide; SO₂: sulfur dioxide; km: kilometer.

^a *National Primary Standards*: The levels of air quality necessary, within an adequate margin of safety, to protect the public health.

^b *National Secondary Standards*: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

Note: More detailed information in the data presented in this table can be found at the CARB website (www.arb.ca.gov).

Source: CARB 2024a.

TABLE 2
CRITERIA POLLUTANT DESIGNATIONS
IN THE SOUTH COAST AIR BASIN

Pollutant	State	Federal
O ₃ (1-hour)	Nonattainment	Nonattainment
O ₃ (8-hour)	Nonattainment	Nonattainment
PM ₁₀	Nonattainment	Attainment/Maintenance
PM _{2.5}	Nonattainment	Nonattainment
CO	Attainment	Attainment/Maintenance
NO ₂	Attainment	Attainment/Maintenance
SO ₂	Attainment	Attainment
Lead	Attainment	Nonattainment/Attainment ^a
All others	Attainment/Unclassified ^b	No Standards

O₃: ozone; PM₁₀: respirable particulate matter with a diameter of 10 microns or less; PM_{2.5}: fine particulate matter with a diameter of 2.5 microns or less; CO: carbon monoxide; NO₂: nitrogen dioxide; SO₂: sulfur dioxide.

^a Los Angeles County is classified as nonattainment for lead; the remainder of the SCAB is in attainment of State and federal standards.

^b "Unclassified" designation indicates that the air quality data for the area are incomplete and do not support a designation of attainment or nonattainment.

Source: SCAQMD 2016.

On March 3, 2017, the SCAQMD adopted the 2016 Air Quality Management Plan (AQMP), which is a regional and multi-agency effort (SCAQMD, California Air Resources Board [CARB], Southern California Association of Governments [SCAG], and the USEPA). The 2016 AQMP incorporates the latest scientific and technical information and planning assumptions, including the 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), updated emission inventory methodologies for various source categories, and SCAG's latest growth forecasts. The main purpose of an AQMP is to bring an area into compliance with the requirements of federal and State air quality standards.

AIR POLLUTANT EMISSION THRESHOLDS

The proposed Project has been evaluated under the current air quality standards and air pollutant emission thresholds. As noted above, air quality in Los Angeles County is regulated by the SCAQMD, which is the agency principally responsible for comprehensive air pollution control in the SCAB. The SCAQMD has recommended quantitative regional significance thresholds for temporary Project construction activities and long-term Project operation within its jurisdictional boundaries. The SCAQMD develops rules and regulations; establishes permitting requirements for stationary sources; inspects emissions sources; and enforces such measures through educational programs or fines, when necessary. The SCAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources. It has responded to this requirement by preparing a chronological sequence of AQMPs; the latest being the 2016 AQMP, as noted above. Table 3 presents the current SCAQMD air quality significance thresholds.

TABLE 3
SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS

Mass Daily Thresholds^a	-	-
Pollutant	Construction	Operation
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
TACs, Odor, and GHG Thresholds	-	-
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	Project creates an odor nuisance pursuant to SCAQMD Rule 402
GHG	10,000 MT/yr CO ₂ e for industrial facilities	10,000 MT/yr CO ₂ e for industrial facilities
Ambient Air Quality Standards for Criteria Pollutants^{b, c}	-	-
NO ₂ 1-hour average annual arithmetic mean	The SCAQMD is in attainment; the Project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (State) 0.03 ppm (State) and 0.0534 ppm (federal)	The SCAQMD is in attainment; the Project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (State) 0.03 ppm (State) and 0.0534 ppm (federal)
PM10 24-hour average annual average	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^c & 2.5 $\mu\text{g}/\text{m}^3$ (operation) 1.0 $\mu\text{g}/\text{m}^3$	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^c & 2.5 $\mu\text{g}/\text{m}^3$ (operation) 1.0 $\mu\text{g}/\text{m}^3$
PM2.5 24-hour average	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^c & 2.5 $\mu\text{g}/\text{m}^3$ (operation)	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^c & 2.5 $\mu\text{g}/\text{m}^3$ (operation)
SO ₂ 1-hour average 24-hour average	0.25 ppm (State) & 0.075 ppm (federal – 99 th percentile) 0.04 ppm (State)	0.25 ppm (State) & 0.075 ppm (federal – 99 th percentile) 0.04 ppm (State)
Sulfate 24-hour average	25 $\mu\text{g}/\text{m}^3$ (State)	25 $\mu\text{g}/\text{m}^3$ (State)
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20.0 ppm (State) and 35 ppm (federal) 9.0 ppm (State/federal)	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20.0 ppm (State) and 35 ppm (federal) 9.0 ppm (State/federal)
Lead 30-day average Rolling 3-month average	1.5 $\mu\text{g}/\text{m}^3$ (State) 0.15 $\mu\text{g}/\text{m}^3$ (federal)	1.5 $\mu\text{g}/\text{m}^3$ (State) 0.15 $\mu\text{g}/\text{m}^3$ (federal)

NOx: nitrogen oxides; lbs/day: pounds per day; VOC: volatile organic compound; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; SOx: sulfur oxides; CO: carbon monoxide; TACs: toxic air contaminants; SCAQMD: South Coast Air Quality Management District; GHG: greenhouse gases; MT/yr CO₂e: metric tons per year of carbon dioxide equivalents; NO₂: nitrogen dioxide; ppm: parts per million; µg/m³: micrograms per cubic meter; SO₂: sulfur dioxide.

^a Source: SCAQMD CEQA Handbook (SCAQMD 1993)

^b Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated

^c Ambient air quality threshold is based on SCAQMD Rule 403

Source: SCAQMD 2023

METHODOLOGY

Air pollutant emissions associated with the proposed Project were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 computer program (CAPCOA 2016). CalEEMod uses Project-specific information, including the Project's land uses and location, to estimate a Project's emissions. CalEEMod is designed to model construction and operational emissions for land development projects and allows for the input of project- and County-specific information. CalEEMod has separate databases for specific counties and air districts. The Los Angeles County database was used for the proposed Project.

For the purposes of estimating emissions associated with construction activities, a nine-month time frame was used for the analysis. Dust control by watering was assumed, consistent with the requirements of SCAQMD Rule 403, which requires that fugitive dust be controlled with the best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. Project-specific inputs can be found in the CalEEMod output data, located in Appendix B.

The quantity, duration, and the intensity of construction activity influence the amount of construction emissions and their related pollutant concentrations that occur at any one time. As such, the emission forecasts provided herein reflect a specific set of conservative assumptions based on the expected construction scenario wherein a large amount of construction is occurring in an intensive manner. Because of this conservative assumption, actual emissions could be less than those forecasted. If construction is delayed or occurs over a longer period, emissions could be reduced because of (1) a more modern and cleaner-burning construction equipment fleet mix than incorporated in the CalEEMod, and/or (2) a less intensive buildout schedule (i.e., fewer daily emissions occurring over a longer time interval).

Air quality data for the Project Area is represented by the Reseda Monitoring Station located at 18330 Gault Street, Reseda. The monitoring station is located approximately 7 miles southeast of the proposed Project Area. Pollutants measured at the Reseda Monitoring Station include ozone (O₃), PM2.5, and nitrogen dioxide (NO₂). The monitoring data presented in Table 4, Air Quality Levels Measured at the Reseda Monitoring Station, were obtained from CARB (CARB 2024b). The Reseda monitoring data shows that O₃ is the air pollutant of primary concern in the Project Area. Federal and State air quality standards are presented with the frequency that may be exceeded.

TABLE 4
AIR QUALITY LEVELS MEASURED AT THE
RESEDA MONITORING STATION

Pollutant	California Standard	National Standard	Year	Max. Level ^a	Days State Standard Exceeded	Days National Standard Exceeded
O ₃ (1 hour)	0.09 ppm	None	2015	0.119	11	0
O ₃ (1 hour)	0.09 ppm	None	2016	0.122	9	0
O ₃ (1 hour)	0.09 ppm	None	2017	0.140	26	4
O ₃ (8 hour)	0.070 ppm	0.070 ppm	2015	0.095	34	32
O ₃ (8 hour)	0.070 ppm	0.070 ppm	2016	0.099	23	23
O ₃ (8 hour)	0.070 ppm	0.070 ppm	2017	0.115	67	64
PM2.5 (24 Hour)	None	35 µg/m ³	2015	65.1	N/A	1
PM2.5 (24 Hour)	None	35 µg/m ³	2016	41.5	N/A	0
PM2.5 (24 Hour)	None	35 µg/m ³	2017	61.3	N/A	0
NO ₂ (1 hour)	0.18 ppm	0.10 ppm	2015	0.072	0	0
NO ₂ (1 hour)	0.18 ppm	0.10 ppm	2016	0.055	0	0
NO ₂ (1 hour)	0.18 ppm	0.10 ppm	2017	0.062	0	0

O₃: ozone; ppm: parts per million; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; µg/m³: micrograms per cubic meter; N/A: no applicable standard; NO₂: nitrogen dioxide.

^a California maximum levels were used.

Source: CARB 2024b.

IMPACT ANALYSIS

Would the Project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

No Impact. No, the proposed Project would not conflict with or obstruct implementation of the applicable air quality plan. The Project is subject to the SCAQMD AQMP and would be consistent with the AQMP if it complies with all applicable air district rules and regulations, complies with all proposed control measures not yet adopted from the AQMP, and is consistent with the growth forecasts used in development of the AQMP.

The proposed Project includes modification to existing valve structures, replacement of valves, and construction of a new access road and vehicle turnaround. The proposed Project does not include permanent stationary emissions sources and would not generate long-term emissions of VOCs, oxides of nitrogen (NO_x), or fine particulate matter that could potentially cause an increase in the frequency or severity of existing air quality violations. Therefore, no SCAQMD regulations pertaining to permanent emission sources apply to the Project. With respect to regulations that

apply to temporary emission sources, such as SCAQMD Rule 403 (Fugitive Dust), the proposed Project would comply with those applicable rules and regulations. During construction, short-term emissions would occur from operation of construction equipment; grading and earth-moving activities, which would generate fugitive dust; export of excavated soil; import of construction materials; and operation of vehicles driven to and from the site by construction workers. As indicated below in Table 5, Estimated Maximum Daily Construction Emissions, short term emissions resulting from Project construction would be below their respective thresholds. No new facilities are proposed, and the proposed Project would not increase water supply to the area or otherwise directly or indirectly induce population growth. Therefore, the proposed Project would not conflict with or obstruct the applicable air quality plan, and no impact would occur.

TABLE 5
ESTIMATED MAXIMUM DAILY CONSTRUCTION EMISSIONS
(LBS/DAY)

	VoC	NOx	CO	SOx	PM10	PM2.5
Maximum daily emissions in 2019	2	20	11	<1	1	1
Maximum daily emissions in 2020	2	21	14	<1	1	1
Maximum of All Construction Years	2	21	14	<1	1	1
SCAQMD Daily Thresholds (Table 3)	75	100	550	150	150	55
Exceeds SCAQMD Thresholds?	No	No	No	No	No	No

lbs/day: pounds per day; VOC: volatile organic compound(s); NOx: nitrogen oxides; CO: carbon monoxide; SOx: sulfur oxides; PM10: inhalable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; SCAQMD: South Coast Air Quality Management District.

Source: CalEEMod data in Appendix B.

b) 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?

Less than Significant Impact. No, the proposed Project would not 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.

The SCAQMD has developed significance thresholds to determine whether State and federal air quality standards would be violated or whether a substantial contribution to a violation would occur. These significance thresholds have been developed for the construction and operation phases of the Project and examine the potential impacts of the Project's emissions on both a regional and local context. Cumulative air quality impacts are assessed based on the use of the SCAQMD's project-level thresholds. Consequently, if a project's emissions are below the project-level thresholds, it would likewise be considered not to result in a cumulative air quality impact. This approach is based on the SCAQMD's 2003 White Paper "Potential Control Strategies to Address Cumulative Impacts from Air Pollution" which states, "Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."

Construction Emissions – Regional

The proposed Project includes modification to existing valve structures, replacement of valves, and construction of a new access road and vehicle turnaround. No new facilities are proposed,

and the proposed Project would not increase water supply to the area or otherwise directly or indirectly induce population growth. Criteria pollutant emissions would occur during construction from operation of construction equipment; grading, and earth-moving activities, which would generate fugitive dust; export of excavated soil; import of construction materials; and operation of vehicles driven to and from the site by construction workers. Emissions would vary from day to day, depending on the level of activity; the specific type of construction activity occurring; and prevailing weather conditions for fugitive dust.

A construction-period emissions inventory was compiled based on an estimate of construction equipment as well as scheduling and Project phasing assumptions. More specifically, the emissions analysis considers the following:

- Combustion emissions from operating mobile construction equipment
- Fugitive dust emissions from demolition, site preparation, and grading phases
- Mobile-source combustion emissions and fugitive dust from worker commute and truck travel

The emissions thresholds (see Table 3) are based on the rate of emissions (i.e., pounds of pollutants emitted per day). Therefore, the quantity, duration, and intensity of construction activity are important in ensuring the analysis of worst case (i.e., maximum daily emissions) scenarios. The Project activities (e.g., grading, construction) are identified by start date and duration. Each activity has associated off-road equipment (e.g., dozers, backhoes, cranes) and on-road vehicles (e.g., haul trucks, concrete trucks, worker commute vehicles). Maximum daily emissions for the peak workday are shown above in Table 5, Estimated Maximum Daily Construction Emissions. The Project construction has been delayed due to changes in Project staging locations and easement acquisition, thus the construction emissions modeling is for 2019 and 2020. If construction is delayed or occurs over a longer period, emissions could be reduced because of (1) a more modern and cleaner-burning construction equipment fleet mix and/or (2) a less intensive buildout schedule (i.e., fewer daily emissions occurring over a longer time interval). As shown, all criteria pollutant emissions during construction would be less than their respective SCAQMD daily thresholds. Thus, regional construction impacts would be less than significant.

Construction Emissions – Local/Ambient Air Quality

The localized effects from the on-site portion of daily emissions (emissions generated on-site through the operation of construction equipment as opposed to emissions related to off-site delivery/haul truck activity and employee trips, which are not considered in the evaluation of localized impacts consistent with the SCAQMD's localized significance threshold (LST) method guidelines) were evaluated at receptor locations potentially impacted by the proposed Project according to the SCAQMD's LST method, which utilizes LST mass emissions rate look up tables for on-site emissions and project-specific modeling, where appropriate. LSTs are applicable to the following criteria pollutants: NO₂, CO, PM₁₀, and PM_{2.5}. LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or State ambient air quality standard and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest receptor. For the LST CO and NO₂ exposure analysis, receptors that could be exposed for one hour or more are considered, including park and trail users. For PM₁₀ and PM_{2.5} exposure analysis, receptors who could be exposed for 24 hours or more are considered. The SCAQMD mass rate look-up tables were developed for each source receptor area and can be used to determine whether a project may generate significant adverse localized air quality impacts. The SCAQMD provides LST mass rate look-up tables for projects that are less than or

equal to 5 acres, which is applicable for the proposed Project. When quantifying mass emissions for localized analysis, only emissions that occur on site are considered.

As shown in Table 6, localized emissions for all criteria pollutants would be less than their respective SCAQMD LSTs for all pollutants. Thus, local construction emissions impacts would be less than significant.

**TABLE 6
LOCALIZED CONSTRUCTION POLLUTANT EMISSIONS
(LBS/DAY)**

	NOx	CO	PM10	PM2.5
Maximum Daily Emissions	20	11	1	1
SCAQMD LSTs*	153	1,897	38	13
Exceeds SCAQMD Thresholds?	No	No	No	No

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; SCAQMD: South Coast Air Quality Management District; LST: Localized Significance Threshold.

* Thresholds for Source Receptor Area 13, Santa Clarita Valley, 1-acre site, 150-meter receptor distance

Source: SCAQMD 2008b.

Operational Emissions

For analysis purposes, and as a conservative estimate, it is anticipated that Metropolitan staff would visit the WVF1 facilities for routine inspection and maintenance activities daily. This routine inspection would occur concurrent with the existing inspection schedule, and no additional trips would occur. Therefore, new pollutant emissions would be negligible, and impacts would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. No, the proposed Project would not expose sensitive receptors to substantial pollutant concentrations. Sensitive receptors include schools, playgrounds, childcare centers, long-term health care facilities, rehabilitation centers, convalescent homes, hospitals, retirement homes, and residences. The Project Area is located Chatsworth Park South in Los Angeles County, and the closest residences are approximately 0.43-mile from the Project Area. Exposure of sensitive receptors is addressed for the following situations: CO hotspots; criteria pollutants from on-site construction; and Toxic Air Contaminants (TACs) from on-site construction.

Carbon Monoxide Hotspot

A CO hotspot is an area of localized CO pollution caused by severe vehicle congestion on major roadways, typically near intersections. The proposed Project would result in minor increases in vehicle traffic during construction, but largely be relegated to within Chatsworth Park South, not public roads. Project operations would be consistent with existing conditions and not generate any new vehicle trips; therefore, traffic and traffic congestion from the proposed Project would be negligible. Thus, it may be inferred that the Project would neither cause new severe congestion nor significantly worsen existing congestion. There would be no potential for a CO hotspot or exposure of sensitive receptors to substantial, Project-generated local CO emissions, and impacts would be less than significant.

Criteria Pollutants from On-Site Construction

Exposure of persons to NO₂, CO, PM₁₀, and PM_{2.5} emissions is discussed in the construction LST analysis under Response III.b above. As discussed, there would be a less than significant impact.

Toxic Air Contaminant (Diesel PM) Emissions from On-Site Construction

TACs are a diverse group of air pollutants that may cause or contribute to an increase in deaths or serious illness, or that may pose a present or potential hazard to human health. TACs generally consist of four types: organic chemicals, such as benzene, dioxins, toluene, and perchloroethylene; inorganic chemicals such as chlorine and arsenic; fibers such as asbestos; and metals such as mercury, cadmium, chromium, and nickel. Construction activities would result in short-term, Project-generated emissions of diesel PM from the exhaust of off-road, heavy-duty diesel equipment used for site preparation (e.g., demolition, excavation, and grading); paving; and construction. The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Thus, the risks estimated for a maximally exposed individual (MEI) are higher if a fixed exposure occurs over a longer period. According to the Office of Environmental Health Hazard Assessment, health risk assessments—which determine the exposure of sensitive receptors to TAC emissions—should be based on a 30- to 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with a project.

For the Project, off-road, heavy-duty diesel equipment would be operated during Project construction, and the construction period would be short (approximately nine months) when compared to a 30- to 70-year exposure period. When considering these facts combined with the highly dispersive properties of diesel PM and additional reductions in particulate emissions from newer construction equipment, as required by USEPA and CARB regulations, it can be concluded that TAC emissions during construction of the Project would not expose sensitive receptors to substantial emissions of TACs. Therefore, impacts would be less than significant.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

No Impact. No, the proposed Project would not result in other emissions adversely affecting a substantial number of people. The Project Area is located within Chatsworth Park South in Los Angeles County. Objectionable odors are generally associated with agricultural activities, landfills, and transfer stations; the generation or treatment of sewage; the use or generation of chemicals; food processing; or other activities that generate unpleasant odors (SCAQMD 1993). The proposed Project would involve modifications and upgrades to existing infrastructure and construction of a new access road. None of the proposed Project elements would generate objectionable odors, and no impact would occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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 Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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 Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on state or 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinances?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

OVERVIEW OF BIOLOGICAL RESOURCES

Regulated or sensitive biological resources studied and analyzed herein include special status plant and wildlife species, nesting birds and raptors, sensitive plant communities, jurisdictional waters and wetlands, wildlife movement, and locally protected resources, such as protected trees. The Project analysis is based on the Updated Biological and Jurisdictional Waters Resources Assessment for the Metropolitan Water District West Valley Feeder No. 1 Stage 3 Improvements Project in the City of Los Angeles, California, prepared in May 2024 (included in Appendix C). The following Focused Protocol Survey Reports are included as appendices to the Updated Biological and Jurisdictional Water Resources Assessment:

- Results of Least Bell's Vireo Focused Protocol Surveys for the Metropolitan Water District West Valley Feeder No. 1 Stage 3 Improvements Project in the City of Los Angeles, California, prepared in October 2022;
- Results of 2022 Focused Protocol Surveys for the California red-legged frog (*Rana draytonii*) for the Metropolitan Water District West Valley Feeder No. 1 Project, Los Angeles, California, prepared in October 2022; and

- Results of Focused Protocol Presence/Absence Surveys for the Coastal California Gnatcatcher for the Metropolitan Water District West Valley Feeder No. 1 Stage 3 Improvements Project in the City of Los Angeles, California, prepared in August 2022.

REGULATORY FRAMEWORK

The following is a summary of the regulatory context under which biological resources are managed at the federal, State, and local levels. Many federal and state statutes provide a regulatory structure that guides the protection of biological resources. Agencies with the responsibility for protection of biological resources within the Project Area include:

- USACE (wetlands and other waters of the United States);
- RWQCB (waters of the State);
- United States Fish and Wildlife Service (USFWS) (federally listed species and migratory birds); and
- CDFW (Trustee Agency over the State's fish, wildlife, and plant resources; riparian areas and other waters of the State; State listed species).

California Species of Special Concern is an informal designation used by the CDFW for some declining wildlife species that are not State Candidates for listing. This designation does not provide legal protection but signifies that these species are recognized as special status by the CDFW. Special status habitats are vegetation types, associations, or sub-associations that support concentrations of special status plant or wildlife species, are of relatively limited distribution, or are of particular value to wildlife and are similarly recognized by the CDFW.

Listed species are those taxa that are formally listed as endangered or threatened by the federal government, pursuant to the Federal Endangered Species Act (FESA) or as endangered, threatened, or rare (for plants only) by the State of California pursuant to the California Endangered Species Act (CESA) or the California Native Plant Protection Act. Species are also considered rare under CEQA if they are not formally listed but exist in such small numbers throughout a significant portion of their range that they may become endangered if their environment worsens or is likely to become endangered throughout all or a significant portion of their range.

METHODOLOGY

Biological resource conditions were evaluated by confirming applicable regulations, policies, and standards; reviewing biological literature and databases pertinent to the Project Area; and conducting a vegetation mapping survey, a general biological survey, focused protocol surveys for special status species, and a jurisdictional delineation of the Project Area. The survey area consisted of the work limits of the construction areas, staging areas, and a 100-foot survey buffer.

Literature Review

A literature review was conducted to identify special status plants, wildlife, and habitats that have been reported to occur in the vicinity of the survey area. The Project vicinity for evaluating impacts to biological resources is comprised of the Project Area centered within nine surrounding United States Geological Survey (USGS) 7-minute topographic quadrangles including: Simi Valley West, Simi Valley East, Oat Mountain, Thousand Oaks, Calabasas, Canoga Park, Van Nuys, San Fernando, and Val Verde. The California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2023) and the CDFW California Natural Diversity Database (CDFW

2023a) were reviewed within these nine quadrangles. Resources reviewed to assist in the delineation of jurisdictional features included the U.S. Department of Agriculture, Natural Resources Conservation Service's (USDA NRCS) Web Soil Survey, the USDA NRCS Hydric Soils List (USDA NRCS 2024), and the USFWS National Wetlands Inventory (NWI) Wetland Mapper (USFWS 2024).

Vegetation Mapping and Biological Survey

Psomas Biologist Allison Rudalevige conducted an initial general plant and wildlife survey, mapped vegetation, and performed a jurisdictional delineation for the project on June 4, 2018. The general survey was repeated in 2022 and a number of focused protocol surveys were conducted in 2022 including a rare plant focused protocol survey, least Bell's vireo focused protocol survey, California gnatcatcher focused protocol survey, and a California red-legged frog focused protocol survey. A general survey and updated vegetation mapping survey were conducted in October 2023 due to the addition of previously unsurveyed project staging areas. The survey area included a 100-foot buffer around all project impact areas.

All wildlife species detected during the course of the surveys were documented in field notes. Active searches for reptiles and amphibians included lifting, overturning, and carefully replacing rocks and debris. Birds were identified by visual and auditory recognition. Surveys for mammals were conducted during the day and included searching for and identifying diagnostic signs, including scat, footprints, scratch-outs, dust bowls, burrows, and trails. Taxonomy and nomenclature for wildlife generally follows the Special Animals List (CDFW 2023b) for special status species and, for other species, Center for North American Herpetology (2015) for amphibians and reptiles, the American Ornithological Society (2023) for birds, and the Smithsonian National Museum of Natural History (2011) for mammals.

Jurisdictional Delineation

Resources reviewed to assist in the delineation of jurisdictional features included the U.S. Department of Agriculture, USDA NRCS Web Soil Survey, the USDA NRCS Hydric Soils List (USDA NRCS 2024), and the USFWS NWI Wetland Mapper (USFWS 2024).

A delineation of jurisdictional water resource boundaries was conducted concurrently with vegetation mapping and general biological surveys in order to describe the type and extent of waters regulated by the USACE, the RWQCB, and CDFW. Jurisdictional features were mapped on an aerial map. Non-wetland waters of the United States under the jurisdiction of the USACE were assessed based on the presence of an Ordinary High Water Mark (OHWM). The presence of wetland waters of the United States was assessed using the relatively permanent standard rule and the three-parameter approach for wetland hydrology, hydrophytic vegetation, and hydric soils, as described in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008).

EXISTING CONDITIONS

This assessment provides the existing biological conditions of the Project Area and survey area at the time of the literature reviews and surveys.

Vegetation Types and Other Areas

Thirteen vegetation types and other areas (non-natural modified areas) occur within the survey area. Naturally occurring vegetation types include California sagebrush–deerweed scrub, California sagebrush–bush mallow scrub, semi-natural herbaceous stand, wild oats grassland,

bush mallow scrub, laurel sumac scrub, red willow/arroyo willow thicket, coast live oak woodland, coast live oak–California sycamore woodland, and eucalyptus grove. Other areas identified included disturbed, developed, and ornamental non-natural modified land cover. Red willow/arroyo willow thicket, is classified as a sensitive natural community by CDFW. A vegetation map is included as Exhibit 7, Vegetation Map.

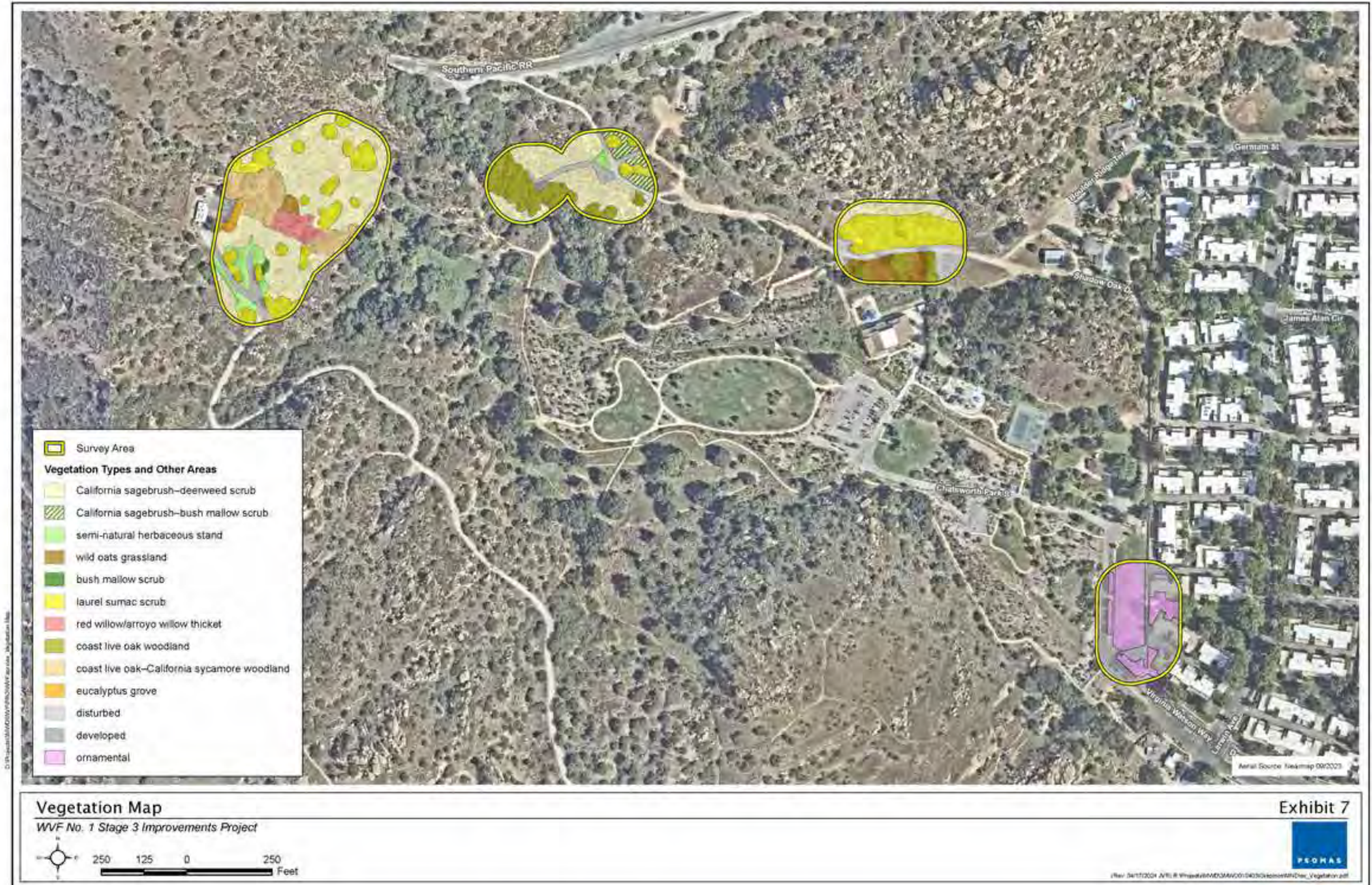
Jurisdictional Resources

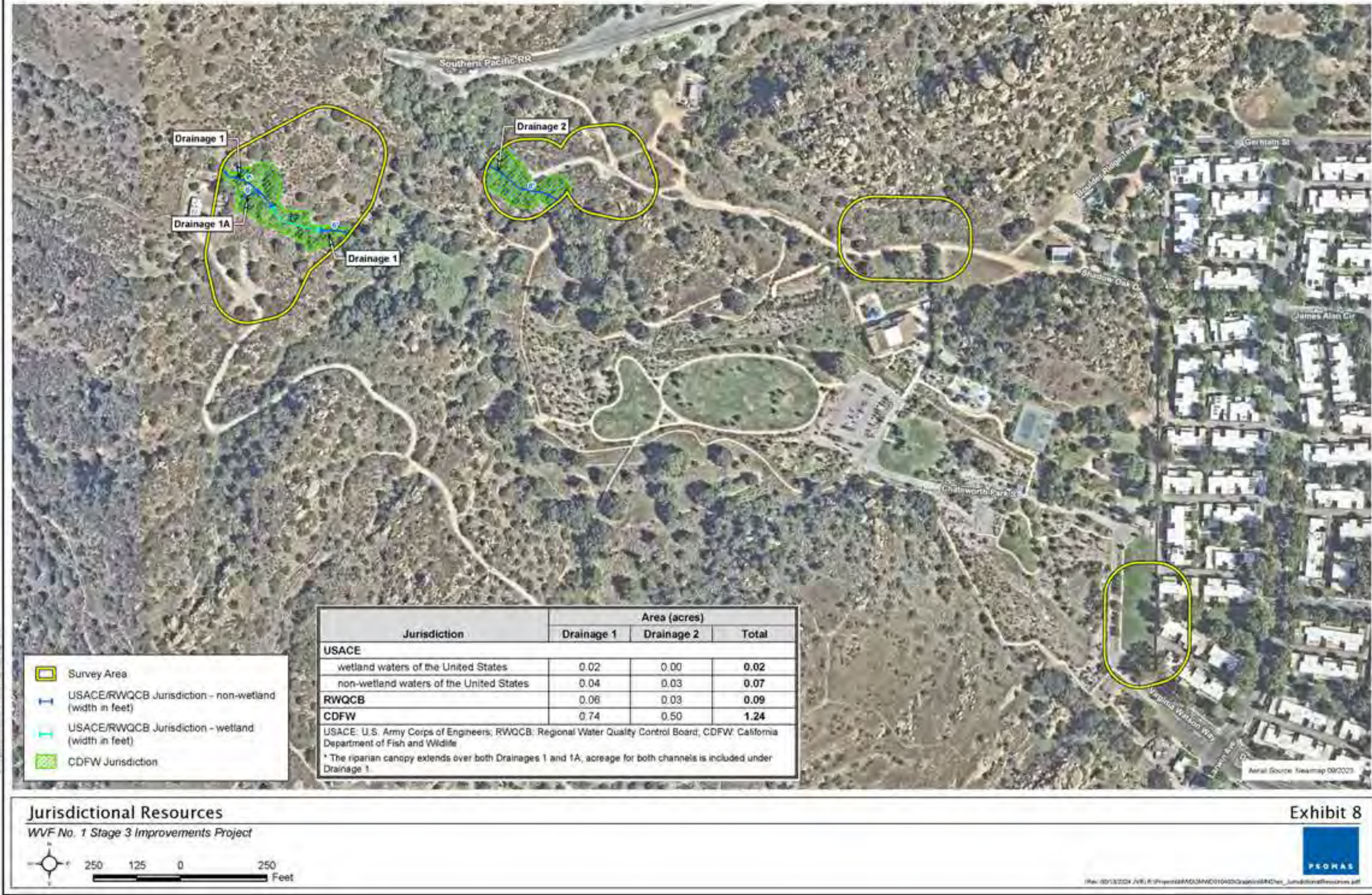
Jurisdictional resources in the survey area include two main drainage channels (Drainage 1 and 2) with one tributary channel (Drainage 1A). The NWI maps Drainage 1 as a Riverine, intermittent streambed that is temporarily flooded and Drainage 2 as a Palustrine, forested wetland that is temporarily flooded. Soils in the survey area are not listed as hydric (USDA NRCS 2024). A map depicting jurisdictional drainages on the site is included as Exhibit 8. The presence of surface water observed during the dry season indicates that Drainage 1 may be considered to be relatively permanent, non-navigable tributaries to a Traditional Navigable Water (TNW). Therefore, Drainage 1 would be considered waters of the United States. Drainage 1A exhibits the features of an ephemeral body. Ephemeral waters are no longer jurisdictional under Section 404 of the Clean Water Act. However, Drainage 1A remains under the jurisdiction of the RWQCB, an isolated water of the State, and CDFW. Drainage 2 similarly carries flow to the Los Angeles River and is considered jurisdictional waters of the United States because the Los Angeles River discharges into the Pacific Ocean, a TNW.

Special Status Plant Species and Sensitive Natural Communities

Suitable habitat for special status plant species has been reported in the vicinity (nine USGS quadrangle area) of the survey area based on the CNPS Inventory (CNPS 2023). Of the 25 species reported, potentially suitable or marginally suitable habitat for 17 species occur within the survey area based on review of vegetation types and habitat conditions observed during biological surveys of the site, as described above, and documented species requirements. Species name and California Rare Plant Rank (CRPR) are listed below:

- Branton's milk-vetch (*Astragalus brauntonii*; CRPR 1B.1)
- Brewer's claudrinia (*Calandrinia breweri*; CRPR 4.2)
- Catalina mariposa lily (*Calochortus catalinae*; CRPR 4.2)
- slender mariposa lily (*Calochortus clavatus* var. *gracilis*; CRPR 1B.2)
- late-flowered mariposa lily (*Calochortus fimbriatus*; CRPR 1B.2)
- Plummer's mariposa lily (*Calochortus plummerae*; CRPR 4.2)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *Fernandina*; CRPR 1B.1)
- Small-flowered morning-glory (*Convolvulus simulans*; CRPR 4.2)
- Santa Susana tarplant (*Deinandra minthornii*; CRPR 1B.2)
- slender-horned spineflower (*Dodecahema leptoceras*; CRPR 1B.1)
- many-stemmed dudleya (*Dudleya multicaulis*; CRPR 1B.2)
- Palmer's grappling hook (*Harpagonella palmeri*; CRPR 4.2)
- mesa horkelia (*Horkelia cuneata* var. *puberula*; CRPR 1B.1)
- ocellated Humboldt lily (*Lilium humboldtii* ssp. *Ocellatum*; CRPR 4.2),
- Payne's bush lupine (*Lupinus paynei*; CRPR 1B.1)





- California Orcutt grass (*Orcuttia californica* var. *californica*; CRPR 1B.1)
- chaparral nolina (*Nolina cismontane*; CRPR 1B.2)

Four of these species are federally- and/or State-listed Endangered or Threatened:

- Braunton's milk-vetch (Federally Endangered)
- slender-horned spineflower (Federally and State Endangered)
- San Fernando Valley spineflower (Federal Candidate and State Endangered)
- California Orcutt grass (Federally and State Endangered)

None of the species were observed during the rare plant field surveys conducted in 2022. Additionally, one vegetation type within the survey area, red willow/arroyo willow thicket, is classified as a sensitive natural community by CDFW.

Special Status Wildlife Species

Twenty-five special status wildlife species have been reported within the California Natural Diversity Data Base (CNDDDB) (CDFW 2023a) as occurring in the vicinity of the survey area and an additional four species may occur in the region based on the biologist's knowledge of the species distributions and preferred habitat resulting from observations made during numerous field surveys conducted throughout the Project region. Of these species, nine are federally- and/or State-listed Endangered or Threatened or are candidates for listing:

- Crotch bumble bee (*Bombus crotchii*; *State Candidate Endangered*)
- monarch (California overwintering population) (*Danaus plexippus* pop. 1; Federal Candidate Endangered)
- arroyo toad (*Anaxyrus californicus*; *Federally Endangered and State Species of Special Concern*)
- California red-legged frog (*Rana draytonii*; *Federally Threatened and State Species of Special Concern*)
- tricolored blackbird (*Agelaius tricolor*; *State Threatened and Species of Special Concern*)
- Swainson's hawk (*Buteo swainsoni*; *State Threatened*)
- coastal California gnatcatcher (*Polioptila californica californica*; *Federally Threatened and State Species of Special Concern*)
- bank swallow (*Riparia riparia*; *State Threatened*)
- least Bell's vireo (*Vireo bellii pusillus*; *Federally and State Endangered*)

The golden eagle (*Aquila chrysaetos*), a State Fully Protected species, has been reported from the vicinity of the survey area and has potential to forage in the survey area (CDFW 2023a).

In addition to species listed under the State and federal Endangered Species Acts (ESAs), 13 species of special concern (designated by CDFW) have been reported in the vicinity (nine USGS quadrangle area) (CDFW 2023a) and have potential to occur due to potentially suitable or marginally suitable habitat presence as determined through review of vegetation types and habitat conditions observed during biological surveys, as described above, and documented species requirements.

- coast range newt (*Taricha torosa*)
- western spadefoot (*Spea hammondi*)
- California legless lizard (*Anniella* sp.)
- coast horned lizard (*Phrynosoma blainvillii*)
- coastal whiptail (*Aspidoscelis tigris stejnegeri*)
- two-striped garter snake (*Thamnophis hammondi*)
- spotted bat (*Euderma maculatum*)
- pallid bat (*Antrozous pallidus*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- western mastiff bat (*Eumops perotis californicus*)
- western red bat (*Lasiurus blossevillii*)
- western yellow bat (*Lasiurus xanthinus*)
- San Diego desert woodrat (*Neotoma lepida intermedia*)

IMPACT ANALYSIS

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 Wildlife or U.S. Fish and Wildlife Service?**

Less Than Significant with Mitigation Incorporated. The proposed Project may have a substantial adverse effect, either directly or through habitat modifications, on a species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Results of rare plant focused protocol surveys conducted simultaneously with least Bell's vireo protocol surveys, were negative for all special status plant species including federally and State listed species—Braunton's milk-vetch, San Fernando Valley spineflower, California Orcutt grass, and slender-horned spineflower. Due to their absence from the Project Area, these plant species are not expected to be impacted. Results of focused protocol surveys were negative for all special status wildlife species including federally and State listed species—California red-legged frog, least Bell's vireo, and coastal California gnatcatcher (see Appendix C). Due to their absence from the Project Area, these wildlife species are not expected to be impacted by the proposed Project.

The Project may impact the following other non-listed special status species or their habitat: coast range newt, western spadefoot, California legless lizard, coast horned lizard, coastal whiptail, two-striped garter snake, and San Diego desert woodrat. Impacts would be permanent within portions of the work limits being converted from vegetated, undeveloped areas to new access road, culvert, and other structures (approximately 0.55 acres). Additional impacts would be temporary in nature such as in work areas surrounding the proposed permanent features as well as the construction staging areas (approximately 0.43 acres). As shown on Exhibit 9, the combined permanent and temporary loss of habitat for these non-listed special status species, encompasses 1.98 acres. Due to the designation of these species as special status, project impacts would be considered significant, and mitigation would be required. Mitigation measures

BIO-1 through BIO-4, which require additional surveys and avoidance measures, would be incorporated into the project to reduce impacts on non-listed special status species to less than significant levels.

Although no candidate or listed species were observed within the survey area during focused surveys, project construction is not anticipated to begin until 2027 due to the acquisition of permanent and temporary easements from the City of Los Angeles. Should candidate or listed species, including the least Bell's vireo or the California gnatcatcher, be present at the time of construction, impacts would be significant. Mitigation measures **BIO-1 through BIO-5** would be incorporated into the project to reduce impacts to less than significant levels.

- 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 Wildlife or U.S. Fish and Wildlife Services?**

Less Than Significant with Mitigation Incorporated. The proposed Project may have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS. Approximately 11 acres of vegetation and other land cover types, including riparian habitat, occur in the survey area. The Project would result in a permanent impact of 0.17 acre (7,405 square feet; associated with the access road and culvert construction) to red willow/arroyo willow thicket. This vegetation type constitutes riparian habitat and is considered a sensitive natural community by CDFW and is also within limits of CDFW jurisdictional waters. Mitigation Measure **BIO-6**, requiring purchase of credits through an agency-approved mitigation bank, in-lieu fee program, or other agreement, would be incorporated into the Project to reduce impacts to less than significant levels.

- c) Have a substantial adverse effect on state or 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?**

Less Than Significant with Mitigation Incorporated. The proposed Project may have a substantial adverse effect on State or federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means. Jurisdictional waters regulated by State and federal agencies occur in the survey area including one main drainage channel (Drainage 1) with one tributary channel (Drainage 1A), as shown in Exhibit 8, Jurisdictional Resources. The National Wetlands Inventory identifies Drainage 1 as Riverine, an intermittent streambed that is temporarily flooded. Soils in the survey area are not listed as hydric (USDA NRCS 2024). As shown on Exhibit 10 and Table 7, approximately 0.09 acre of waters of the United States (0.02-acre wetland and 0.07-acre non-wetland) occur in the survey area, and approximately 0.02 acre wetland of the United States and State, and 0.01 acre of non-wetland waters of the United States and State would be impacted by the proposed Project. Additionally, 0.41-acre of waters considered jurisdictional by CDFW would be impacted by the proposed Project. Both permanent and temporary impacts are predominantly associated with construction of the access road and culvert.



Vegetation Impacts

WVF No. 1 Stage 3 Improvements Project

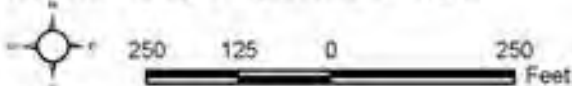


Exhibit 9



Rev: 08/13/2024 JNT: R:\Projects\WVF\WVF\03\Stage3\WVF_Stage3_Vegetation_Impacts.pdf

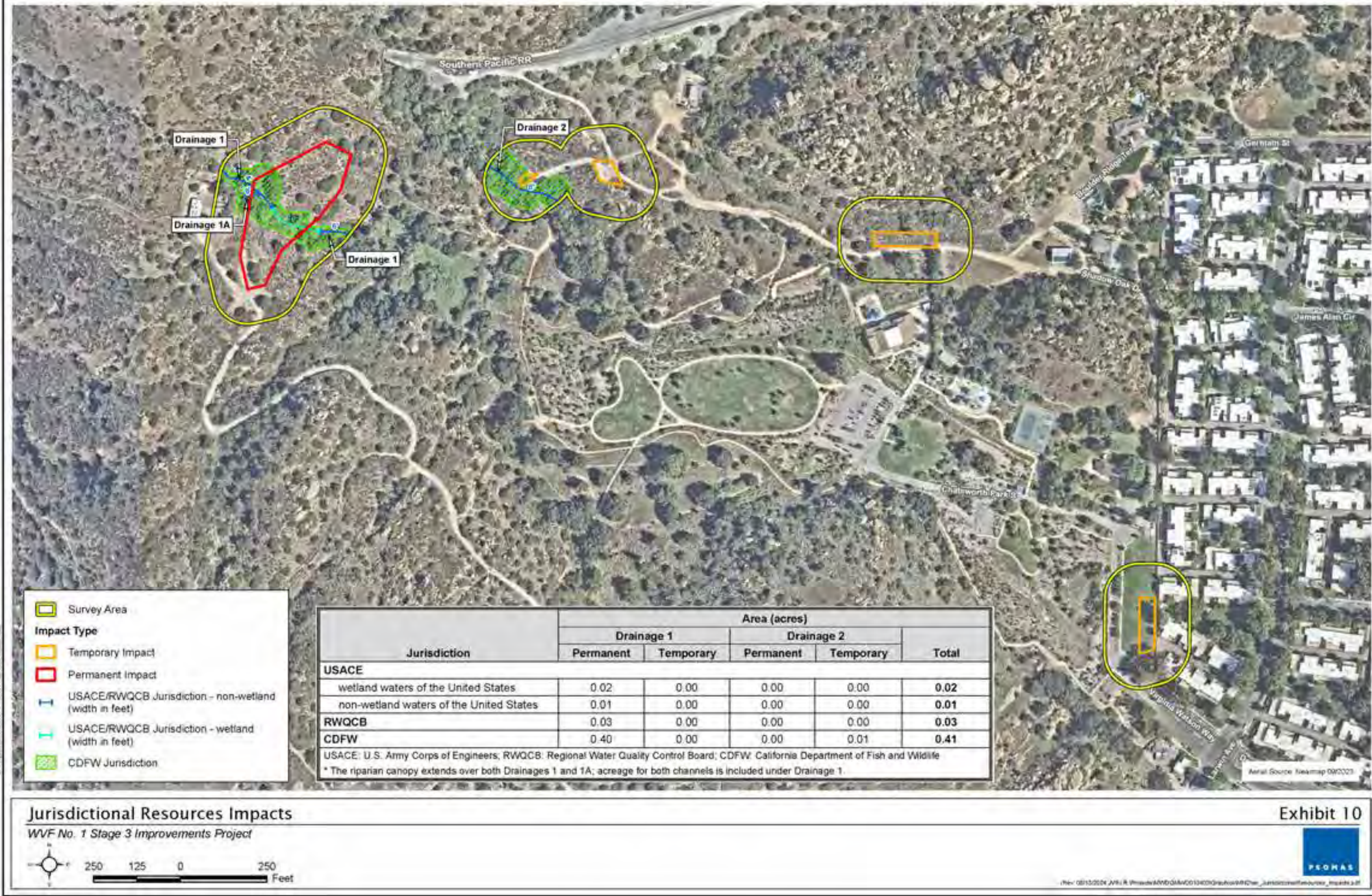


TABLE 7
JURISDICTIONAL WATER RESOURCES IMPACTS IN THE SURVEY AREA

Jurisdiction	Drainage 1 Permanent (acres)	Drainage 1 Temporary (acres)	Drainage 2 Permanent (acres)	Drainage 2 Temporary (acres)	Total
USACE	-	-	-	-	-
wetland waters of the United States	0.02	0.00	0.00	0.00	0.02
non-wetland waters of the United States	0.01	0.00	0.00	0.00	0.01
RWQCB	0.03	0.00	0.00	0.00	0.03
CDFW	0.40	0.00	0.00	0.01	0.41

USACE: U.S. Army Corps of Engineers; RWQCB: Regional Water Quality Control Board; CDFW: California Department of Fish and Wildlife.

* The riparian canopy extends over both Drainages 1 and 1A; acreage for both channels is included under Drainage 1.

The proposed Project would include consultation with the applicable resource agencies for impacts to jurisdictional resources (CDFW, USACE, and RWQCB), subsequent issuance of the appropriate regulatory permits, and adherence with associated permit conditions. Additionally, to reduce impacts to jurisdictional resources from the Project, Mitigation Measure **BIO-6** would be incorporated into the Project to reduce impacts to less than significant levels.

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?

Less Than Significant Impact. The proposed Project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or disrupt native nursery sites. With regards to wildlife movement, the proposed Project is located at an urban-wildland interface, with urban development to the east, large tracts of undeveloped open space to the west, and the developed portion of Chatsworth Park South as a buffer between the two. Due to its limited size and relatively short construction duration of nine months, wildlife is expected to move freely throughout the Project Area and surroundings. Additionally, the Project does not propose new buildings or surface structures that would prevent or deter wildlife from the area or disrupt native wildlife nursery sites.

In-stream structures and Project construction activities have very low potential to disrupt fish passage permanently or temporarily in areas containing fish habitat. Fish habitat in the Project Area was determined to be relatively poor due to the limited amount of surface water present and the isolated nature of the identified natural drainages. Although surface water is present, depths were observed during surveys to be less than one half inch consistently and water movement was negligible. Natural aboveground flow is present in the drainages but is limited to a distance of less than 1,000 contiguous feet. The drainages are also isolated from downstream fish populations because they connect with the City of Los Angeles' subsurface municipal separate storm sewer system (MS4). In addition, no special status fish species have been reported from the drainages on the Project Area or in the region, and no fish species were observed in the drainages during the plant and wildlife surveys in 2022 and 2023. Therefore, implementation of the Project would not interfere substantially with the movement of any native resident, migratory fish, or wildlife species, and impacts would be less than significant.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less Than Significant Impact. No, the Project will not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. The City of Los Angeles Municipal Code (Article 6 Preservation of Protected Trees Sections 46.00 to 46.06) provides for the protection of certain “protected trees,” defined as certain Southern California native tree species (i.e., all indigenous oak trees except scrub oak [*Quercus dumosa*], Southern California black walnut [*Juglans californica* var. *californica*], Western sycamore [*Platanus racemosa*], and California bay [*Umbellularia californica*]) which measure four inches or more in cumulative diameter at 4.5 feet above the ground level from the base of the tree. Protected trees are known to occur within the Project Area. If removal of a protected species was required as a result of the proposed Project, Metropolitan would comply with the existing City of Los Angeles Municipal Code ordinance regarding procedures and permits for removal. Thus, impacts would be less than significant.

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?

No Impact. No, the proposed Project would not conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or State HCP. The Project is not located within or near the boundaries of any designated HCP or NCCP and would not conflict with the provisions of any adopted HCP or NCCP. Therefore, no impact would occur.

MITIGATION MEASURES

BIO-1 If more than three years have elapsed since the Project rare plant survey was conducted, Metropolitan shall conduct a rare plant survey to confirm presence or absence of rare plant species. Surveys would be conducted to confirm presence or absence within the proposed Project’s disturbance areas previously determined to have the potential to support special status plant species. Surveys will be conducted in accordance with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018) and will occur during the appropriate time of year.

BIO-2 If more than three years have elapsed since the Project focused protocol wildlife surveys for potentially occurring listed species, the least Bell’s vireo and California gnatcatcher, Metropolitan shall conduct focused protocol surveys to ensure that the Project avoids impacts to these species. All surveys would be conducted to confirm absence within proposed Project disturbance areas that may support these species. Surveys would be conducted in accordance with the approved CDFW or USFWS protocol guidelines for each species. Additional surveys for the California red-legged frog would be unwarranted based on the determination of lack of potentially suitable habitat within the Project Area following initial focused protocol surveys.

BIO-3 Should special-status plants or wildlife be identified during BIO-1 or BIO-2, Metropolitan shall develop and implement appropriate monitoring and avoidance measures. Measures may include but are not limited to:

- Installation of Environmentally Sensitive Area/avoidance fencing.

- Flagging or fencing of any special-status species burrows or nests by a monitoring biologist to ensure avoidance.
- Monitoring by a biologist during all initial ground disturbing activities and vegetation removal. Once initial ground disturbing activities and vegetation removal activities have been completed, the biologist shall conduct daily pre-activity clearance surveys, as necessary.
- If at any time during Project activities a special-status species enters the Project Area or otherwise may be impacted by the Project, all activities at the site where the find occurred shall cease. At that point, a monitoring biologist shall recommend an appropriate course of action to avoid, relocate or otherwise protect the species such that construction may proceed without harming the species.

BIO-4 To avoid impacts on biological resources adjacent to the Project Area, the designated Project disturbance limits shall be visibly marked in the field to ensure that no inadvertent impacts occur outside the approved disturbance limits.

BIO-5 Compensation for Impacts to Special-Status Species. If the Project Area is determined to be occupied by a special-status species prior to start of construction, and cannot be avoided, direct temporary and/or permanent impacts to suitable habitat for federally or State-listed species within the proposed Project Area shall be mitigated through on-site or off-site measures. Mitigation for temporary and permanent impacts to listed species habitat shall consider, and may overlap with, mitigation for impacts to jurisdictional waters and wetlands (BIO-6).

Temporary Impacts. Mitigation for direct temporary impacts to suitable habitat for federally or State-listed species shall be implemented through on-site rehabilitation at a 1:1 mitigation ratio. Areas temporarily impacted shall be returned to similar conditions to those that existed prior to grading and/or ground-disturbing activities. Proposed rehabilitation of impact areas may include, at a minimum, a feasible implementation structure, salvage/seeding details, invasive species eradication methods, a monitoring schedule, performance standards of success, estimated costs, and identification of responsible entities.

Permanent Impacts. Metropolitan shall fund a mitigation bank or in-lieu fee program to compensate for all permanent loss of suitable habitat for federally or State-listed species, if available, at a 1:1 ratio. Direct impacts to federally listed species' occupied habitat shall be addressed through either the Section 7 or Section 10(a)(1)(B) process under the federal Endangered Species Act (ESA) of 1973, as amended. Direct impacts to state-listed species shall be addressed through the California Fish and Game Code Section 2081(b) incidental take permit process. Metropolitan would comply with any additional measures (e.g. avoidance, conservation, etc.) incorporated into any permits or authorizations issued by the regulatory agencies with jurisdiction over these resources beyond what is being proposed under this CEQA analysis to reduce the impact to less than significant.

BIO-6 Compensation for Impacts to Jurisdictional Wetlands and Waters, inclusive of jurisdictional riparian habitat. Mitigation for temporary and permanent impacts to jurisdictional wetlands and waters shall consider and overlap with mitigation for impacts to special-status species habitat (BIO-5) where feasible. Metropolitan would comply with any additional measures (e.g. avoidance, conservation, etc.)

incorporated into any permits or authorizations issued by the regulatory agencies with jurisdiction over these resources.

Temporary Impacts. Mitigation for direct temporary impacts to jurisdictional wetlands and waters resulting from the Project shall be implemented through on-site restoration. Areas temporarily impacted shall be returned to conditions similar to those that existed prior to grading and/or ground-disturbing activities. For impacted vegetated jurisdictional wetlands and waters, the proposed rehabilitation of impact areas may include, at a minimum, a feasible implementation structure, salvage/seeding details, invasive species eradication methods, a monitoring schedule, performance standards of success, estimated costs, and identification of responsible entities.

Permanent Impacts. Mitigation for permanent impacts to jurisdictional wetlands and waters resulting from the Project shall be implemented at a minimum 1:1 mitigation ratio through purchase of credits through an agency-approved mitigation bank, in-lieu fee program, or other agreement.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

CULTURAL RESOURCES OVERVIEW

This section provides an analysis of proposed Project impacts on cultural resources, including historical and archaeological resources as well as human remains, and is based on the Archaeological Inventory for the Metropolitan Water District West Valley Feeder No. 1 Stage 3 Improvements Project (Archaeological Inventory Report) prepared by Greenwood and Associates dated July 31, 2018, attached as Appendix D.

REGULATORY FRAMEWORK

CEQA requires a Lead Agency to determine whether a project may have a significant effect on historical resources (PRC Section 21084.1), archaeological resources, or human remains. A historical resource is a resource listed in, or determined to be eligible for listing, in the California Register of Historical Resources (CRHR); a resource included in a local register of historical resources; or any object, building, structure, site, area, place, record, or manuscript that a Lead Agency determines to be historically significant (*CEQA Guidelines* Section 15064.5[a][1-3]). Resources listed on the National Register of Historic Places (NRHP) are automatically listed on the CRHR, along with State Landmarks and Points of Interest. The CRHR can also include properties designated under local ordinances or identified through local historical resource surveys. In addition, pursuant to PRC Section 5024.1), a resource shall be considered historically significant if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

If it can be demonstrated that a project would cause damage to a unique archaeological resource, the CEQA Lead Agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC Section 21083.2[a-b]). PRC Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

METHODOLOGY

Preparation of the Archaeological Inventory Report included a review of available archaeological site records, archaeological survey reports and historical maps available at the South Central Coastal Information Center (SCCIC), and review of the Project description. The results of the SCCIC record search identified three archaeological sites in the vicinity of the Project Area.

A pedestrian survey of the Project Area was conducted by a qualified archaeologist on June 5 and 6, 2018. The pedestrian survey did not identify archaeological resources within the Project Area.

Additionally, a Sacred Lands File search was conducted by the Native American Heritage Commission (NAHC), and information gathering and coordination with members of the Native American community through the NAHC's List of Contacts was conducted.

IMPACT ANALYSIS

Would the Project:

- a) **Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?**

No Impact. No, the proposed Project would not cause a substantial adverse change in the significance of a historical resource. No historical resources were identified by the cultural resources record searches conducted at the SCCIC. In addition, the intensive pedestrian surveys of the Project Area were negative for historical resources. Therefore, the Project Area does not contain any historical resources, as defined in Section 15064.5 of the State *CEQA Guidelines*, and no impact would occur.

- b) **Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?**

Less Than Significant With Mitigation Incorporated. The proposed Project may cause a substantial adverse change in the significance of an archaeological resource. Though the pedestrian field survey results did not find evidence of archaeological resources, the SCCIC record search did identify three archaeological sites in the vicinity of the Project Area. Additionally, coordination with the Gabrieleño Band of Mission Indians-Kizh Nation has indicated that there is a potential for buried archaeological resources in the area. However, implementation of MMS **CULT-1, CULT-2, CULT-3, and CULT-4** would reduce potential impacts to less than significant levels.

- c) **Disturb any human remains, including those interred outside of formal cemeteries?**

Less Than Significant Impact. No, the proposed Project would not disturb any human remains, including those interred outside of dedicated cemeteries. Background archival research and the

intensive pedestrian field survey failed to find any potential for human remains (e.g., the existence of formal cemeteries), and no known formal cemeteries are present in the Project Area. Although it is highly unlikely, there is the possibility that previously undiscovered remains could be uncovered during ground-disturbing activities. Should human remains be encountered, it is a Metropolitan Standard Practice to comply with the State of California's Health and Safety Code Section 7050.5, which states that no further disturbance would occur until the appropriate county coroner has made a determination of origin and disposition of the remains pursuant to PRC Section 5097.98. Adherence to State of California's Health and Safety Code Section 7050.5 would result in the proper handling and treatment of unexpected human remains. Therefore, impacts on human remains from the proposed Project would be less than significant.

MITIGATION PROGRAM

- CULT-1** Prior to the initiation of construction, a qualified archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards for Archaeology (National Park Service 1983) shall be retained.
- CULT- 2** Metropolitan will coordinate with the Gabrieleño Band of Mission Indians-Kizh Nation to retain a Native American monitor with ancestral ties to the Project Area (Native American Tribal Monitor), as needed to protect cultural resources.
- CULT- 3** The archaeologist and Native American Tribal Monitor shall monitor construction-related ground-disturbing activities associated with valve relocation areas and new access road construction. Monitoring for excavation work associated with valve relocations will be on a spot-check basis (as these areas have been previously disturbed), and full-time for excavation activities associated with the proposed new access road construction. The archaeological monitor and Native American Tribal Monitor shall complete monitoring logs that describe the work and details regarding resources encountered during the ground-disturbing activities.
- CULT-4** If archaeological resources are identified during Project-related activities, Metropolitan and/or its contractors shall cease all activity within 50 feet of the find until the archaeologist and Native American Tribal Monitor can evaluate the find. If necessary, the evaluation may require preparation of a treatment plan and determination of California Register of Historical Resources eligibility. If the discovery proves to be significant under CEQA and cannot be avoided by the Project, additional work, such as data recovery excavation, reporting, curation, or reburial, may be warranted, thereby reducing the impact to a less than significant level. Any data recovery plans will be developed in consultation with the Gabrieleño Band of Mission Indians-Kizh Nation.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. ENERGY. Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IMPACT ANALYSIS

Would the Project:

- a) **Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?**

No Impact. No, the proposed Project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during Project construction activities. Project construction would require the use of construction equipment for excavation, building, and paving activities. Construction would also include the use of vehicles by construction workers and delivery or haul trucks traveling to and from the proposed Project Area. The proposed Project's construction air pollutant emissions were estimated using the CalEEMod 2016.3.2. CalEEMod uses Project-specific information, including the Project's land uses and location, to estimate a Project's emissions. Off-road construction equipment use was calculated from the equipment data (i.e., vehicle types, hours per day, horsepower, load factor) provided in the CalEEMod 2016.3.2 construction output files included in Appendix B. The total horsepower hours for the proposed Project was then multiplied by fuel usage estimates for construction activities included in the OFFROAD Model. The OFFROAD Model provides equipment-specific emission factors. Energy data can be found in Appendix E.

Fuel consumption from construction worker and delivery or haul trucks was calculated using the trip rates and distances provided in the CalEEMod construction output files. Total vehicle miles traveled (VMT) was then calculated for each type of construction-related trip and divided by the miles per gallon factor using CARB's Emissions FACtor 2021 (EMFAC 2021) model. EMFAC provides the total annual VMT and fuel consumed for each vehicle type. Construction delivery and haul trucks were assumed to be heavy-duty diesel trucks. As shown in Table 8, Energy Use During Construction, a total of 666 gallons of gasoline and 5,225 gallons of diesel fuel is estimated to be consumed during construction.

TABLE 8
ENERGY USE DURING CONSTRUCTION

Source	Gasoline Fuel (gallons)	Diesel Fuel (gallons)
Off-road Construction Equipment	0	5,148
Worker commute trips	611	2
Vendor trips	55	1
On-road haul trips	0	74
Total	666	5,225

See Appendix F for Energy data. Data based on CalEEMod 2016.3.2, OFFROAD, and EMFAC 2021 programs.

Fuel energy consumed during construction would be temporary in nature and would not occur after completion of construction activities. Furthermore, only construction equipment necessary to complete the construction activities would be used, and future inspection and maintenance activities would involve vehicle trips similar to current operations. Therefore, the proposed construction activities would not result in inefficient, wasteful, or unnecessary fuel consumption. There would be no impact.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. No, the proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Although there is no specific state or local plan for renewable energy that is applicable to the proposed Project, the California Energy Commission (CEC) is the State's primary energy policy and planning agency. The CEC has adopted Building Energy Efficiency Standards and Appliance Energy Efficiency Standards, and developed energy efficiency goals for existing buildings, and developed zero-emission vehicle policies. The City of Los Angeles City Council adopted a renewable energy study, the Los Angeles 100% Renewable Energy Study (LA100; 2021), with a goal to achieve 100% renewable electricity by 2045. The LA100 addresses pathways and costs to achieve 100% renewable electricity supply while maintaining Los Angeles Department of Water and Power's reliability, analyzes greenhouse gas reductions and public health, examines economic changes with renewable electric power, and environmental justice.

The proposed Project includes modification to existing valve structures, replacement of valves, and construction of a new access road and vehicle turnaround. No buildings or transportation facilities with zero-emission vehicles are proposed. Additionally, Metropolitan is not a signatory of the LA100 study, and the Project's nine-month construction timeframe would occur before the LA100 goal of 100% renewable energy by 2045. Therefore, the proposed Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency, and no impact would occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. GEOLOGY AND SOILS. Would the project:				
a) Directly or indirectly cause 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 known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IMPACT ANALYSIS

The following analysis is based on Geotechnical Study West Valley Feeder 1 Access Roads and Valve Improvements Widening Project Chatsworth, California (Geotechnical Study) prepared by Kleinfelder and dated May 15, 2018 (Kleinfelder 2018) (included as Appendix F) and the paleontological resources records search and literature review conducted by Psomas from the Vertebrate Paleontology Department at the Natural History Museum of Los Angeles County (LACM) on July 16, 2018 (included as Appendix G).

Would the Project

- a) **Directly or indirectly cause 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 known fault? Refer to Division of Mines and Geology Special Publication 42.

ii) Strong seismic ground shaking?

No Impact. No, the proposed Project would not significantly cause a substantial adverse impact, either directly or indirectly, involving the rupture of an earthquake fault mapped as part of an Alquist-Priolo Earthquake Fault Zone (APEFZ) or cause a substantial adverse impact either directly or indirectly, from strong seismic ground shaking. According to the Geotechnical Study, the Project Area is not located within a State of California Earthquake Fault Rupture Hazard Zone, and no mapped active or potentially active fault traces are known to transect the Project Area. The closest active faults to the site are in the Sierra Madre fault zone, with the Santa Susana and San Fernando sections faults located approximately 7.0 miles and 7.5 miles, respectively, from the site. The proposed Project includes modification to existing valve structures, replacement of valves, and construction of a new access road and vehicle turnaround. No new buildings would be constructed as part of the proposed Project. Additionally, the proposed Project is located in a park, which is not occupied by people, and no permanent or temporary structures that would be occupied by people would be constructed and/or operated as part of the proposed Project. Therefore, the Project would not directly or indirectly cause adverse effects, including the risk of loss, injury or death, as a result of fault rupture or strong seismic ground shaking, and no impact would occur.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. No, the proposed Project would not cause a substantial adverse impact, directly or indirectly, from seismic-related ground failure, including liquefaction. Soil liquefaction occurs when saturated, cohesionless soils lose their strength due to the buildup of excess pore water pressure during cycling loading, such as that induced by earthquakes, causing it to behave as a liquid. The types of soils that are most susceptible to liquefaction are loose, saturated sands and some silt. Based on the Geotechnical Study, the characteristics of the soil, bedrock, and depth to groundwater at the Project Area indicate that the site soils have a remote potential for liquefaction during a design-level earthquake. Moreover, the Project Area is not currently occupied by people, and no permanent or temporary structures that would be occupied by people would be constructed and/or operated are proposed. Accordingly, there would be no significant risk of loss, injury or death from ground failure, and impacts would be less than significant.

iv) Landslides?

Less Than Significant Impact. No, the proposed Project would not directly or indirectly cause a potential substantial adverse impact involving landslides. Landslides are ground failures in which large sections of slope consisting of earth material, including debris, detach, and slide downhill. The Project Area is located within Chatsworth Park South, in the Santa Susana Mountains and is located within a designated Landslide Area, characterized by soils which can be prone to clusters of small, shallow, surficial landslides. The Project Area is not identified as a landslide hazard zone; however, some risk factors associated with landslides do exist at the Project Area and include sloping terrain, the presence of nearby active faults, and historic seismic shaking (Kleinfelder 2018). The proposed Project includes modification to existing valve structures, replacement of valves, and construction of a new access road and vehicle turnaround. No new buildings would be constructed as part of the proposed Project. Additionally, the Project Area is not currently occupied by people, and no permanent or temporary structures that would be occupied by people would be constructed and/or operated are proposed. Therefore, impacts related to exposure of people or structures to landslides would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. No, the proposed Project would not result in substantial soil erosion or the loss of topsoil due to the relatively small disturbance acreage. The proposed Project would involve construction activities within areas in both paved and unpaved areas, and within areas of sloped terrain covered with vegetation. All hauling of equipment would be conducted within the footprint of previously disturbed, existing roads and trail segments leading to the Project Area. During construction, soils could be exposed to potential short-term wind and water erosion. The Project would include implementation of standard BMPs and the Project's Storm Water Pollution Prevention Plan (SWPPP) to reduce potential erosion and loss of topsoil due to surface water runoff during construction. BMPs for fugitive dust control would also be implemented in order to control wind-related erosion and loss of topsoil. The construction of the access road, turn around areas, and access road retaining wall would create more stable slopes and surface areas and reduce potential for substantial soil erosion or loss of topsoil to occur. Additionally, temporary disturbances to soil would be restored. Therefore, the proposed Project would not result in substantial soil erosion, or the loss of topsoil and impacts would be less than significant.

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- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less Than Significant Impact. No, the proposed Project would not be located on or result in unstable geologic deposits or soils such that on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse would potentially occur. According to the Geotechnical Study, there is low potential for liquefaction at the Project Area and thus a low potential for lateral spreading. Additionally, as discussed above, the Project Area is not identified as a landslide hazard zone. The proposed Project includes replacement of equipment and modifications to existing facilities, as well as the construction of a new access road for maintenance and operation vehicles. Therefore, impacts would be less than significant.

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?

Less Than Significant Impact. No, the proposed Project would not be located on expansive soil as defined in Section 1803.5.3 of the California Building Code (2022), creating substantial direct or indirect risks to life or property. According to Section 1803.5.3 of the California Building Code, soils are considered expansive if exhibiting the following characteristics:

1. Plasticity index (PI) of 15 or greater;
2. More than 10 percent of the soil particles pass a No. 200 sieve (75 micrometers);
3. More than 10 percent of the soil particles are less than 5 micrometers in size; and
4. Expansion index greater than 20.

Expansive soils are characterized by their ability to undergo significant volume change due to variations in moisture content. According to the Geotechnical Study, the soils encountered at the Project Area are granular and have a low to medium expansion potential. Therefore, the Project would have a less than significant impact related to expansive soils.

- e) **Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?**

No Impact. No, the proposed Project does not require the use or installation of septic tanks or alternative wastewater disposal systems. The proposed Project includes modification to existing valve structures, replacement of valves, and construction of a new access road and vehicle turnaround. No new buildings would be constructed as part of the proposed Project. Therefore, no impacts related to septic tanks or alternative wastewater disposal systems would occur.

- f) **Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

Less Than Significant With Mitigation Incorporated. The proposed Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. According to the Paleontological Record Search, the underlying geology of the Project Area consists of a thick-bedded, late Cretaceous sandstone known as the Chatsworth Formation. This formation has produced numerous localities of vertebrate and invertebrate fossils, including sharks and a wide range of molluscan fauna. Microfossils, such as foraminifera, indicate an oceanic environment. Turbidity flow sedimentary deposits, such as the Chatsworth Formation, are likely to preserve fossils that have been reworked from nearby shallow environments and are usually concentrated in lenses of fossil-rich sediments. According to the records search, nearby localities of shark taxa including *Cretolamna appendiculata*, *Squalicorax kaupi*, *Squalus* sp., and *Squatina hassei* have been reported from Dayton Canyon, approximately three miles south of the Project area; and an online records search using the Paleobiology Database (paleobiodb.org) of the invertebrate fossils of the Chatsworth Formation indicated the presence of shallow water echinoderm and molluscan taxa, including the paratype of the gastropod, *Anchura phaba* (Elder and Saul 1996).

Excavation into the Chatsworth Formation in the Project Area may expose unique vertebrate and invertebrate fossils. In addition, the potential for recovery of small fossils, such as teeth, from bulk sediment samples is possible. Metropolitan considers identifiable vertebrate, invertebrate, and plant fossils to be unique under the CEQA. Therefore, implementation of MMs **GEO-1, GEO-2, GEO-3, and GEO-4**, which includes monitoring related to exposures of the Chatsworth Formation, would be required to reduce potential direct or indirect impacts to unique paleontological resources or unique geologic features to less than significant levels.

MITIGATION PROGRAM

- GEO-1** Prior to the initiation of construction-related ground disturbing activities, Metropolitan shall retain the services of a qualified paleontologist to monitor excavation activities within the Chatsworth Formation.
- GEO-2** The qualified paleontologist shall prepare a Paleontological Resources Mitigation Plan. The mitigation plan will specify the level of monitoring to be implemented, if any, when earthmoving activities are occurring in the Chatsworth Formation. The mitigation plan will also provide criteria for determining when and to what extent monitoring will be reduced if too few or no fossil remains are recovered as a result of monitoring. The mitigation plan will also include procedures for fossil recovery and curation, and identify potential museum repositories.
- GEO-3** As soon as practicable and if necessary, the paleontological monitor will recover all larger vertebrate fossil specimens, a representative sample of any invertebrate

or plant specimens, and any fine-grained rock or sediment sample that can be recovered easily. If unique paleontological resources are recovered as a result of monitoring, the paleontologist will assist Metropolitan in developing a formal curation agreement with a recognized museum repository. Paleontological monitoring and fossil/sample recovery shall follow the procedures outlined in the Paleontological Resources Mitigation Plan.

GEO-4 All unique fossil remains recovered from the Project Area as a result of the mitigation program will be treated (prepared, identified, curated, cataloged) in accordance with designated museum repository requirements.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. GREENHOUSE GAS EMISSIONS. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

OVERVIEW OF GREENHOUSE GAS EMISSIONS

Climate change refers to any significant change in climate, such as the average temperature, precipitation, or wind patterns over a period of time. Climate change may result from natural factors, natural processes, and human activities that change the composition of the atmosphere and alter the surface and features of the land. Significant changes in global climate patterns have been associated with global warming, which is a gradual increase in the overall temperature of the earth's atmosphere generally attributed to an accumulation of greenhouse gas (GHG) emissions in the atmosphere. GHGs trap heat in the atmosphere, which in turn increases the Earth's surface temperature. Some GHGs occur naturally and are emitted into the atmosphere through natural processes, while others are created and emitted solely through human activities. The emission of GHGs through fossil fuel combustion, in conjunction with human activities, appears to be closely associated with global warming (OPR 2008).

REGULATORY FRAMEWORK

In response to climate change, California implemented Assembly Bill (AB) 32, the "California Global Warming Solutions Act of 2006." AB 32 required the reduction of statewide GHG emissions to 1990 emissions levels (essentially a 15 percent reduction below 2005 emission levels) by 2020 and the adoption of rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions. On September 8, 2016, the Governor signed Senate Bill (SB) 32 into law, extending AB 32 by requiring the State to further reduce GHG emissions to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged).

On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program and the Low Carbon Fuel Standard, and implementation of recently adopted policies and legislation, such as SB 1383 (aimed at reducing short-lived climate pollutants including methane, hydrofluorocarbon gases,

and anthropogenic black carbon) and SB 100 (accelerated the Renewables Portfolio Standard to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045). The 2017 Scoping Plan recommends local governments adopt policies and locally-appropriate quantitative thresholds consistent with a statewide per capita goal of six metric tons (MT) of metric tons per year of carbon dioxide equivalents (CO₂e) by 2030 and two MT of CO₂e by 2050 (CARB 2017).

In May 2022, Metropolitan adopted a Climate Action Plan (CAP) and certified the associated Program Environmental Impact Report (PEIR). Metropolitan's CAP complies with the requirements of *CEQA Guidelines* Section 15183.5(b)(1) for a qualified GHG reduction plan, and as such, can be used to streamline and tier CEQA GHG analysis and mitigate for GHG impacts associated with construction and operational activities (Metropolitan 2022). The CAP includes a baseline GHG emissions inventory of Metropolitan's operations from 1990 through 2020 and a GHG emissions forecast through 2045. The CAP established Metropolitan's GHG emissions reduction targets to be consistent with SB 32 (40 percent reduction below 1990 levels by 2030) and the recently signed AB 1279, which codifies the State's goal of achieving carbon neutrality by 2045. The CAP includes a suite of GHG emissions reduction measures to be implemented that would reduce Metropolitan's GHG emissions to achieve the adopted emissions reduction targets established in the CAP. By following these emissions reduction measures, Metropolitan would exceed the State's target of 40 percent below 1990 levels by 2030 and make significant progress toward ultimately achieving carbon neutrality by 2045 (Metropolitan 2022).

METHODOLOGY

Construction GHG emissions are generated by vehicle engine exhaust from construction equipment, on-road hauling trucks, vendor trips, and worker commuting trips. Construction GHG emissions were calculated concurrently with air quality criteria pollutant emissions by using CalEEMod Version 2016.3.2 and the Project information as described in Section III, Air Quality.

The results are output in metric tons of carbon dioxide equivalent (MTCO₂e) for each year of construction. The estimated construction GHG emissions for the Project are shown in Table 9.

**TABLE 9
ESTIMATED ANNUAL GREENHOUSE GAS EMISSIONS FROM
CONSTRUCTION**

Year	Emissions (MTCO₂e)
2019	71
2020	83
Total	154
Annual Emissions*	5
SCAQMD Interim Significance Threshold	3,000
Exceeds Threshold	No

MTCO₂e: metric tons of carbon dioxide equivalent; SCAQMD: South Coast Air Quality Management District.

* Total amortized over 30 years

Source: CalEEMod data in Appendix B.

GHG emissions generated from construction activities are finite and occur for a relatively short period of time. Unlike the numerous opportunities available to reduce a project's long-term GHG emissions through design features, operational restrictions, and other methods, GHG emissions -reduction measures for construction equipment are relatively limited. Therefore,

SCAQMD staff recommends that construction emissions be amortized over a 30-year project lifetime so that GHG reduction measures address construction GHG emissions as part of the operational GHG reduction strategies (SCAQMD 2008a). As shown in Table 9, Estimated Annual Greenhouse Gas Emissions from Construction, the 30-year amortized construction emissions would be 5 MTCO₂e/yr.

GHG EMISSION THRESHOLDS

Individual projects do not generate sufficient GHG emissions to influence climate change directly. However, physical changes caused by a project can contribute incrementally to significant cumulative effects, even if individual changes resulting from a project are limited. The issue of climate change typically involves an analysis of whether a project's contribution towards an impact would be cumulatively considerable. "Cumulatively considerable" means the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (*CEQA Guidelines* Section 15064[h][1]).

To evaluate whether a project may generate a quantity of GHG emissions with the potential to have a significant impact on the environment, local air districts developed a number of bright-line significance thresholds. Bright-line significance thresholds are numeric mass emissions thresholds that identify the level at which additional analysis of project GHG emissions is necessary. If project emissions are equal to or below the significance threshold, with or without mitigation, the project's GHG emissions would be less than significant.

As mentioned in the Regulatory Framework section above, in May 2022, Metropolitan adopted a CAP and certified an associated Program EIR to analyze and mitigate GHG emissions associated with its activities. However, the CAP was not yet completed at the time this Project's GHG emissions analysis was conducted in 2018. Therefore, this Project continues the practice of referring to guidance from other agencies, in this case, the SCAQMD, when evaluating the significance of GHG emissions.

SCAQMD considered a tiered approach to determine the significance of projects based on guidance provided by the SCAQMD's GHG CEQA Significance Threshold Working Group in September 2010. The draft tiered approach is outlined in meeting minutes dated September 29, 2010 (SCAQMD 2010):

- **Tier 1.** If the project is exempt from further environmental analysis under existing statutory or categorical exemptions, there is a presumption of less than significant impacts with respect to climate change. If not, then the Tier 2 threshold should be considered.
- **Tier 2.** Consists of determining whether or not the project is consistent with a GHG reduction plan that may be part of a local general plan, for example. The concept embodied in this tier is equivalent to the existing concept of consistency in *CEQA Guidelines* Section 15064(h)(3), 15125(d) or 15152(a). Under this tier, if the project is consistent with the qualifying local GHG reduction plan, it is not significant for GHG emissions. If there is not an adopted plan, then a Tier 3 approach would be appropriate.
- **Tier 3.** Establishes a screening significance threshold level to determine significance. The Working Group has provided a recommendation of 10,000 MT of CO₂e per year for industrial projects where SCAQMD is the CEQA Lead Agency and 3,000 MT of CO₂e per year for non-industrial projects.
- **Tier 4.** Establishes a service population threshold to determine significance. The Working Group has provided a recommendation of 4.8 MT of CO₂e per person per year for land use projects.

The Project would not be statutory or categorically exempt; therefore, Tier 1 would not apply. Metropolitan has adopted a local, qualified GHG reduction plan; however, the GHG reduction plan was not adopted at the time of this Project analysis; thus, Tier 2 would not apply. Tier 4 would also not apply because the Project would not generate a service population (defined as residents or employees). Accordingly, the Tier 3 threshold is considered by Metropolitan to be the most appropriate threshold to determine the significance of GHG emission impacts for the Project pursuant to *CEQA Guidelines* Section 15064.

IMPACT ANALYSIS

Would the Project:

- a) **Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

Less Than Significant Impact. No, the proposed Project would not directly or indirectly generate GHG emissions that may have a significant impact on the environment. The proposed Project includes modification to existing valve structures, replacement of valves, and construction of a new access road and vehicle turnaround. No new buildings would be constructed as part of the proposed Project. The Project would not require additional employees for operations and maintenance or generate regular vehicle trips, nor would it use natural gas. Water consumption and solid waste generation would not change from existing conditions and would be negligible with respect to the generation of GHGs. Therefore, Project operation would not increase GHG emissions, and the estimated amortized annual GHG emissions would be 5 MTCO₂e/yr, which is substantially below the SCAQMD's threshold of 3,000 MTCO₂e/yr; and, consequently, there would be a less than significant impact.

- b) **Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

No Impact. No, the proposed Project would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purposes of reducing GHG emissions. The principal State plans and policies adopted for the purpose of reducing GHG emissions are AB 32 and SB 32. The quantitative goal of AB 32 and SB 32 is to reduce GHG emissions throughout the State to 40 percent below 1990 levels by 2030 and 80 percent below 1990 emissions levels by 2050. As shown in Table 9, the Project would result in an increase of 5 MTCO₂e of emissions on a yearly basis (when amortized over 30 years). This is substantially below the SCAQMD's annual threshold of 3,000 MT CO₂e. Additionally, the Project would not conflict with the recommendations outlined in Metropolitan's CAP. The Project would not substantially increase GHG emissions. Thus, the Project does not conflict with applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of greenhouse gases, and no impact would occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

OVERVIEW OF HAZARDS AND HAZARDOUS MATERIALS

The following analysis is based on the Phase I Environmental Site Assessment Metropolitan Water District of Southern California West Valley Feeder No. 1 Stage 3 Improvements Project (Phase I ESA) prepared by C. Young Associates and dated July 26, 2018 (CYA 2018) (included as Appendix H).

IMPACT ANALYSIS

Would the Project:

- a) **Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

Less than Significant Impact. No, the proposed Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. The proposed Project includes modification to existing valve structures, replacement of valves, and construction of a new access road and vehicle turnaround. No new buildings would be constructed as part of the proposed Project and the public would not have access to the valve

structures or WVF1 pipeline in the Project Area. Project construction activities would require the transport and use of standard construction equipment and materials, some of which may include a hazardous component such as transport and storage of fuels. These activities would be conducted in compliance with existing federal, State, and local regulations. Project operations would be the same as existing operations, which do not involve the routine transport or disposal of hazardous materials. Therefore, the Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials and impacts would be less than significant.

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?

Less than Significant Impact. No, the proposed Project would not create a significant hazard to the public through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. The proposed Project includes modification to existing valve structures, replacement of valves, and construction of a new access road and vehicle turnaround. No new buildings would be constructed as part of the proposed Project and the public would not have access to the valve structures or WVF1 pipeline in the Project Area. Project construction activities would require the transport and use of standard construction equipment and materials, some of which may include a hazardous component such as transport and storage of fuels. These activities would be conducted in compliance with existing federal, State, and local regulations. Project operations would be the same as existing operations, which do not involve the routine transport or disposal of hazardous materials. Thus, only minimal amounts of hazardous materials, primarily in the form of fuels, would be used and the potential for an accidental release of significant quantities of hazardous materials that could affect the surrounding environment is low. Therefore, impacts would be less than significant.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. No, the proposed Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school such that a significant environmental impact would occur. No existing or proposed schools are within 0.25 mile of the Project Area. The closest school to the Project is Chatsworth Park Elementary School, located approximately 0.47 mile to the east of the site. Therefore, no impact would occur.

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?

No Impact. No, the proposed Project would not be located on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. The Department of Toxic Substances Control (DTSC) (2024) EnviroStor database was reviewed, and it was determined that the Project Area is not located on or near sites identified on a list compiled pursuant to Government Code Section 65962.5.

Results from the Phase I ESA found that Chatsworth Park South property (which includes the WVF1 Project Area) is listed on the Envirostor and Voluntary Cleanup Program (VCP) regulatory databases and is referenced as an active voluntary cleanup facility with a past use of a small arms firing range. The Chatsworth South Park property is under regulatory oversight of the DTSC. A Remedial Action Plan (RAP) for the park property was approved by DTSC and implemented from

the period of April 5, 2016, through December 30, 2016. The WVF1 Project Area is not mapped within any of the Remedial Areas of the RAP, meaning that significant environmental impacts did not extend from the former firing range activities at Chatsworth Park South to the WVF1 Project Area. Therefore, the Project would not be located on a site included on a list of hazardous material sites, and no impact would occur.

- 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?**

No Impact. No, the proposed Project would not result in a safety hazard or excessive noise for people residing or working in the Project Area due to proximity to a public airport or public use airport. The Project Area is not located within an adopted Airport Land Use Plan or in the vicinity of a private airstrip, heliport, or helistop. The nearest airport is the Van Nuys Airport, located approximately 7.5 miles southeast of the Project. The Project would be located outside the Van Nuys Airport influence area and would not expose additional people to safety hazards related to airport operations (LA County ALUC 2003). Therefore, no impact would occur.

- f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

No Impact. No, the proposed Project would not impair implementation of or physically interfere with an adopted emergency plan or evacuation plan. The Emergency Management Department (EMD) heads the efforts within the City of Los Angeles in the development of Citywide emergency plans, revises—at regular intervals—and then distributes the Emergency Operations Master Plan and Master Procedures and Annexes. The EMD also updates the City's guidelines for the emergency response and recovery plans (City of Los Angeles 2018). State Route 118 and Topanga Canyon Boulevard are identified by the City of Los Angeles as Primary Disaster Routes, defined as freeway, highway, or arterial routes pre-identified for use during a disaster event and are utilized to bring in emergency personnel, equipment, and supplies to impacted areas in order to save lives, protect property and minimize impact to the environment. Valley Circle Boulevard and Devonshire Street are identified as Secondary Disaster Routes (LACDPW 2018).

The proposed Project includes modification to existing valve structures, replacement of valves, and construction of a new access road and vehicle turnaround. Vehicular access along any and all transport haul routes would be maintained during construction via a Traffic Control Plan which will maintain full function of roadways and allow unimpeded two-way traffic flow. The Project would not alter traffic conditions or modify any street within the local or regional circulation system or remove or add any emergency access points to or from the Project Area. No impacts related to adopted emergency response or evacuation plans would occur, and no mitigation is required.

- g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?**

Less Than Significant Impact. No, the proposed Project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. The Project Area is classified as a Very High Fire Hazard Severity Zone by the City of Los Angeles Fire Department (LAFD), based on criteria including fuel loading, slope, fire weather, and other related factors (LAFD 2024a). The Project Area is located within a wildland area which is adjacent to urbanized development. The boundaries of the Project Area are adjacent to undeveloped areas with brush, and the eastern boundary borders the Chatsworth Park South, while access from Larwin Avenue and Germain Street border an urbanized residential area. The proposed Project includes modification to existing valve structures, replacement of valves, and construction of a

new access road and vehicle turnaround. No new buildings or structures occupied by people would be constructed as part of the proposed Project, all construction vehicles would contain fire extinguishers, and staff are trained in fire suppression. Therefore, impacts related to exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires would be less than significant.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
X. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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 which would:				
i) result in substantial erosion or siltation on- or off-site;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) substantially increase the rate or amount of surface runoff in a manner in which would result in flooding on- or off-site;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) In flood hazards, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

OVERVIEW OF HYDROLOGY AND WATER QUALITY

The analysis in this section is based on the Hydrology and Hydraulic Analyses for West Valley Feeder No 1 Valve Structures Improvements (Stage 3) (Metropolitan 2018) (included as Appendix I).

IMPACT ANALYSIS

Would the Project:

- a) **Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?**

Less Than Significant Impact. No, the proposed Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. The Project would construct approximately 8,000 square feet of impervious surface through construction of the access road and runoff from this area would be directed to the existing drainage via a series of v-ditches along the roadway perimeter. Although runoff volumes would increase slightly, the Project would not introduce substantial amounts of urban pollutants to the storm water runoff due to the infrequent use of the access road. The quality of water runoff from the Project Area would be similar to the existing conditions. Therefore, the Project would not introduce substantial amounts of urban pollutants to the storm water runoff beyond existing conditions, and the slight increase in runoff would be accommodated by the existing drainage.

Potential construction-related impacts on water quality focus on sediments, turbidity, and pollutants associated with sediments. Construction-related activities that are primarily responsible for sediment releases are related to exposing soils to potential mobilization by rainfall, runoff, and wind. These activities include grading and other earth disturbance activities. Non-sediment-related pollutants that are also of concern during construction include waste construction materials, liquid products, and petroleum products used in construction or the maintenance of heavy equipment. The Project would incorporate various BMPs to control storm flow during construction activities, including use of sandbags, straw wattles, and silt fencing to control erosion. Further, Metropolitan would implement a Water Pollution Control Plan (WPCP) or SWPPP as is standard practice, to ensure the Project maintain water quality standards. Due to the Project's limited size of less than two acres, and because the Project would incorporate BMPs and WPCP or SWPPP to minimize the potential for erosion, potential construction-related water quality impacts would be less than significant.

- b) **Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?**

No Impact. No, the proposed Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin. Project construction activities include valve modifications, construction of an access road, and vehicle turnaround areas. Construction activities would generally consist of surface grading and would not impact or affect the groundwater table. Thus, impacts related to substantial depletion of groundwater supplies would not occur. As groundwater will not be used and excavation will primarily be on surface levels where groundwater would not occur, no impact would occur.

- 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 which would:**
- i) **result in substantial erosion or siltation on- or off-site;**
 - ii) **substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;**

iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

Less Than Significant Impact. No, the proposed Project would not substantially alter the existing drainage pattern of the area, including through alteration of the course of a stream or river which would result in substantial erosion or siltation on- or off-site; substantially increase the rate or amount of surface runoff in a manner which would result in flooding; nor create or contribute to runoff water which would exceed the capacity of an existing or planned stormwater drainage; or impede or redirect flood flows. Based on the Hydrology and Hydraulic Analyses for West Valley Feeder No 1 Valve Structures Improvements (Stage 3) (Metropolitan 2018), the existing drainage pattern mimics the historic predevelopment drainage conditions. The main drainage is along the alluvial canyon bottom with surface flow generally to the east and south toward park detention basins. The drainage path is shown as a blueline stream on the USGS topographic quadrangle (Metropolitan 2018). Several drainage culverts, pipes, and detention basins were installed within the park to facilitate storm water runoff. Development of the proposed Project would involve modifications to WVF1 valve structures, construction of a new (paved) access road for maintenance vehicles, including construction of small retaining walls which would increase the impervious surface area on the proposed Project Area by approximately 8,000 square feet. Because the proposed Project would introduce impervious surfaces to a previously natural area, the post-development runoff that would be generated on site would be slightly higher than the pre-development runoff.

According to the Hydrology and Hydraulic Analyses, the drainage boundaries within the proposed Project would, for the most part, remain similar to existing conditions. The proposed access road alignment would consist of concrete pavement at steep slopes with v-ditches to convey runoff away from the road. A culvert crossing would be constructed where the access road crosses a stream. Runoff flow velocities and subsequent erosion would be minimized through the placement of riprap/grouted stone where pipeline structures are exposed to stream erosion. Additionally, the existing drainage patterns would be retained (Metropolitan 2018). Runoff volumes and velocities would be similar to existing conditions and would follow the same general drainage pattern; therefore, a less than significant impact would occur related to changes in the drainage pattern.

iv) impede or redirect flood flows?

No Impact. No, the proposed Project would not substantially alter the existing drainage pattern of the area or impede or redirect flood flows within Chatsworth Park South. The Project Area is located within a 100-year flood boundary (See Exhibit 11, Flood Zone); however, the Project would not construct any habitable structures or structures that would impede or redirect flood flows. As discussed previously, the existing drainage pattern of the Project Area would be largely maintained following Project implementation, such that storm water runoff would enter the same drainage system as under existing conditions. No impact would occur.

d) In flood hazards, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No Impact. No, the proposed Project would not be located in a designated flood hazard, tsunami, or seiche zones, and would not result in the potential for pollutants to be released to the environment by inundation. The Project Area is located approximately 15 miles east of the Pacific Ocean, the nearest potential source of a tsunami. The Project is not susceptible to tsunami-related damage; and, therefore, impacts related to inundation by a tsunami would not occur. The body of water nearest the Project Area is the Van Norman Lake Reservoir in Sylmar, which is located approximately 8 miles northeast of the site. Based on the review of the inundation area for the



Van Norman Lake Reservoir, the Project Area is located approximately 7 miles west of the nearest inundation area and is not located within the inundation zone of any other body of water (City of Los Angeles 2021). Therefore, no impacts related to inundation due to a seiche would occur.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Impact. No, the proposed Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. There is no applicable water quality control plan or sustainable ground water management plan for the Project Area. Refer to responses to Questions X(a) and X(b). As discussed above, the Project would not result in any significant impacts related to implementation of a water quality control plan sustainable groundwater management plan, and no impact would occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IMPACT ANALYSIS

Would the Project:

a) Physically divide an established community?

No Impact. No, the proposed Project would not physically divide an established community. The Project Area is located within Chatsworth Park South, on the edge of the community of Chatsworth and is bounded by the Santa Susana Mountains. The Project Area does not serve as a means of moving through or connecting a community or neighborhood. Furthermore, construction of the Project would not extend into the adjacent residential areas and would not impede pedestrian or vehicular routes of travel within the community. Thus, the proposed Project would not divide an established community, and no impact would occur.

b) Cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. No, the proposed Project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. The proposed Project is located within Chatsworth Park South, which is currently zoned Open Space (OS-1XL); the General Plan and Community Plan land use designation is Open Space (City of Los Angeles 2014). The proposed Project would not change the existing land use of the Project Area or its designated land use or zoning. Therefore, the proposed Project would not conflict with applicable plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect, and no impacts would occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IMPACT ANALYSIS

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? and
- 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?

No Impact. No, the proposed Project would not 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 or 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. The proposed Project includes modification to existing valve structures, replacement of valves, and construction of a new access road and vehicle turnaround within Chatsworth Park South. Based on the California Department of Conservation (CGS) Mineral Land Classification, the proposed Project Area is located within Mineral Resource Zone-3 (MRZ-3), which is an area of undetermined mineral resource significance (CGS 2022). The Project Area is located within the Simi Production-Consumption Region Study Area as classified under the Surface Mining and Reclamation Act (SMARA) (CGS 2022). However, based on a review of CGS, no mineral resources of statewide importance are designated in the Project Area, and no designated active or abandoned mine sites are within the Project Area (CGS 2022). No active or abandoned oil fields or extraction facilities are located on the Project Area (DOGGR 2024). No areas in the vicinity of the Project Area are designated as MRZ-2, which indicates the presence of significant mineral resources; the nearest MRZ-2 designation is approximately 12 miles southeast of the Project Area and located in the San Fernando Valley Production-Consumption Region (CGS 2022). Therefore, no impact to known mineral resources of statewide or regional importance or the availability of a locally important mineral resource recovery site would occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. NOISE. Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a project located within the vicinity of a private airstrip or 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

The following analysis is based on, Project Noise Calculations, prepared for the proposed Project by Psomas (2018) (included as Appendix J).

OVERVIEW OF NOISE AND VIBRATION

Noise

Noise is typically defined as unwanted sound and is described in terms of a sound's intensity or loudness, pitch, and duration. The ambient noise environment is composed of stationary and mobile noise sources. Stationary noise sources occur in a single location and may be constant or short-term in nature; mobile noise sources are typically transportation-related and are generally not considered a constant noise source.

The physical measure of sound, or sound level, is measured in decibels (dB), which are based on a logarithmic scale. Therefore, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3-dB decrease. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud). The A-weighted decibel scale relates noise to human sensitivity. Common noise levels are measured in terms of the "A-weighted decibel", abbreviated dBA. Table 10, Typical Noise Levels, provides examples of various noises and their typical A-weighted noise level.

**TABLE 10
TYPICAL NOISE LEVELS**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet fly-over at 300 m (1,000 ft)	100	-
Gas Lawn Mower at 1 m (3 ft)	90	-
Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph)	80	Food Blender at 1 m (3 ft)
Noisy Urban Area, Daytime Gas Lawn Mower at 30 m (100 ft)	70	Vacuum Cleaner at 3 m (10 ft)
Commercial Area Heavy Traffic at 90 m (300 ft)	60	Normal speech at 1 m (3 ft)
Quiet Urban Daytime	50	Large Business Office, Dishwasher in Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room
Quiet Suburban Nighttime	30	Library
Quiet Rural Nighttime	20	Bedroom at Night
	10	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

dBA: A-weighted decibels; m: meter; ft: feet; km/hr: kilometers per hour; mph: miles per hour.

Source: Caltrans 2013.

Although human perception of sound is somewhat subjective, it is widely accepted that the average healthy ear (1) can perceive an increase or decrease of 1 dBA in controlled laboratory environments, (2) can perceive a change of 3 dBA in outdoor environments with background noise, and (3) can notice that an increase of 10 dBA sounds twice as loud.

Noise, or sound over a period of time, can be measured using a number of methods. The two most common methods are the community noise equivalent (CNEL) and the equivalent sound level (L_{eq}). The equivalent sound level was used for this analysis. The average noise levels over a period of minutes or hours is expressed as dBA L_{eq} . L_{eq} can be measured for any time period. The CNEL scale represents the average of 24 hourly noise measurements and adjusts or penalizes the dBA during certain sensitive time periods to account for increased noise sensitivity during the evening and nighttime periods. The evening time period (7:00 PM to 10:00 PM) penalizes noises by 5 dBA, while nighttime (10:00 PM to 7:00 AM) noises are penalized by 10 dBA.

Vibration

Groundborne vibration, expressed as peak particle velocity (ppv), consists of oscillatory waves that propagate from the source through the ground to adjacent structures. Vibration of building components can also take the form of an audible, low-frequency rumbling noise, which is referred to as groundborne noise. Vibration energy spreads out as it travels through the ground, causing the vibration level to decrease with the distance from the source.

REGULATORY FRAMEWORK

Noise generated by the Project is regulated by limits established by the City of Los Angeles General Plan Noise Element and municipal code. The City's Noise Element applies to the City as a whole, and it addresses noise mitigation regulations, strategies, and programs that delineate

federal, State, and local jurisdiction relative to rail, automotive, aircraft, and nuisance noise. The following objectives from the Noise Element of the General Plan are applicable to the Project:

Objective 2 (Nonairport) – Reduce or eliminate nonairport-related intrusive noise, especially relative to noise-sensitive uses.

Objective 3 (Land Use Development) – Reduce or eliminate noise impacts associated with proposed development of land and changes in land use.

The City's Noise Regulations are provided in Chapter XI of the Los Angeles Municipal Code (LAMC). For cases where ambient noise levels are not known, Section 111.03 of the LAMC provides minimum ambient noise levels for the City's presumed daytime (7:00 AM to 10:00 PM) and nighttime (10:00 PM to 7:00 AM) hours. The LAMC presumed ambient noise levels are shown in Table 11, below.

**TABLE 11
CITY OF LOS ANGELES PRESUMED AMBIENT NOISE LEVELS**

Zone	Daytime Hours (7:00 AM to 10:00 PM) dBA L_{eq}	Nighttime Hours (10:00 PM to 7:00 AM) dBA L_{eq}
Residential	50	40
Commercial	60	55
Manufacturing (M1, MR1, and MR2)	60	55
Manufacturing (M2 and M3)	65	65

dBA L_{eq}: Average noise energy level.

Source: LAMC Section 111.03.

For construction, the LAMC indicates that no construction or repair work shall be performed between the hours of 9:00 PM and 7:00 AM since such activities would generate loud noises and disturb persons occupying sleeping quarters in any adjacent dwelling, hotel, apartment, or other place of residence.

The LAMC also specifies that any powered equipment that produces a maximum noise level exceeding 75 dBA at a distance of 50 feet is prohibited. However, this noise limitation does not apply where compliance is technically infeasible or cannot be met despite the use of mufflers, shields, sound barriers, and/or any other noise reduction device or techniques during the operation of equipment.

Groundborne vibration and noise can be generated during construction activities. The City of Los Angeles does not have regulatory standards for construction or operational vibration sources. Therefore, thresholds for potential structural damage and human annoyance associated with vibration are based on the Caltrans' vibration limits. For purposes of this analysis, a threshold of 78 velocity decibels (VdB) is used as the threshold of significance related to human perception because this level of vibration represents a level that is distinctly perceptible.

Table 12, Anticipated Vibration Levels Per Construction Equipment Types, presents anticipated vibration levels according to the expected construction equipment types at a distance of 25 feet as presented by the Federal Transit Administration and also used by Caltrans. A vibration level of 0.2 ppv is used as the threshold of significance for structural damage, as this is the point at which continuous or frequent vibrations would begin to damage non-engineered timber and masonry buildings (Caltrans 2020).

**TABLE 12
ANTICIPATED VIBRATION LEVELS PER CONSTRUCTION
EQUIPMENT TYPES**

Equipment	Velocity at 25 ft (VdB)
Large bulldozer	87
Small bulldozer	58
Jackhammer	79
Loaded trucks	86

ft: feet; VdB: velocity decibels velocity decibels.

Source: FTA 2006.

IMPACT ANALYSIS

Would the Project result in:

- a) **Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

Less Than Significant Impact. No, the proposed Project would not generate a substantial temporary or permanent increase in ambient noise levels in excess of applicable standards.

Construction Impacts

Construction noise would be generated on site by construction equipment during demolition, excavation, site preparation, and construction activities. Estimated noise levels attributable to the proposed Project are shown in Table 13, Construction Noise Levels at Noise-Sensitive Uses, and calculations are included in Appendix J, Project Noise Calculations.

**TABLE 13
CONSTRUCTION NOISE LEVELS AT NOISE-SENSITIVE USES**

Construction Phase and Equipment	Noise Levels (Leq dBA) Religious Uses ^a to the North (3,580 feet away)	Noise Levels (Leq dBA) Residential Uses to the West (1,982 feet away)	Noise Levels (Leq dBA) Park Uses to the South (502 feet away)	Noise Levels (Leq dBA) Residences to the East (1,415 feet away)
Ground Clearing/Demolition (Tractor/Loader/Backhoe, Excavator)	47	52	64	55
Excavation (Crane, Excavator, Grader, Tractor/Loader/Backhoe)	41	46	58	49
Foundation Construction (Crane, Excavator, Tractor/Loader/Backhoe)	51	56	68	59
Structure Construction (Crane, Excavator, Tractor/Loader/Backhoe, Rubber Tired Dozer)	41	46	58	49
Paving and Site Cleanup (Paver)	47	52	64	55

Leq dBA: Average noise energy level.

^a The Church at Rock Peak, 22601 Santa Susana Pass Road, Chatsworth

Note: Noise levels from construction activities do not take into account attenuation provided by intervening structures.

Source: FTA 2018.

The nearest noise-sensitive receptors would be visitors to Chatsworth Park South, as well as residences to the east and south. Table 13 shows that the noise levels from on-site construction activities from the proposed Project would range from 41 to 64 dBA Leq for construction activities located at the closest point to nearby receptors and that construction activities would not exceed the maximum noise level of 75 dBA at a distance of 50 feet in compliance with the LAMC. Because construction would be within the time periods allowed by the City, would occur only during the daytime hours, and would be temporary, the impact would be less than significant.

Operational Impacts

Operation of the proposed Project would not involve any increase in ambient noise levels in the vicinity of the Project Area in excess of standards established in the local general plan or noise ordinance. Upon completion of the proposed Project, the WVF1 will be subject to routine maintenance, patrols, and inspection, in the same manner it is currently operated. The proposed Project would not cause an increase the number of vehicle trips or inspections. Because the proposed Project would not involve any increase in ambient noise levels due to operation of the pipeline, impacts would be less than significant.

b) Generation of excessive ground borne vibration or ground borne noise levels?

No Impact. No, the proposed Project would not generate excessive groundborne vibration or noise levels. Table 14 depicts the vibration annoyance criteria for sensitive receptors. As shown, the closest sensitive receptors to the proposed Project are visitors to Chatsworth Park South, approximately 500 away. At a distance of 500 feet, vibration decibel levels would not exceed the criteria threshold of 78 VdB. As such, vibration generated by the proposed Project's construction

equipment would generally not be perceived and would result in no impact related to vibration induced annoyance.

TABLE 14
VIBRATION ANNOYANCE CRITERIA AT SENSITIVE USES

Equipment	Vibration Levels (VdB) Residential Uses to the West (1,982 feet away)	Vibration Levels (VdB) Park Uses to the South (502 feet away)	Vibration Levels (VdB) Residences to the East (1,415 feet away)
Large bulldozer	49	61	52
Small bulldozer	20	32	23
Jackhammer	41	53	44
Loaded trucks	48	60	51
Criteria	78	78	78
Exceeds Criteria?	No	No	No

L_{eq} dBA: Average noise energy level. Source: FTA 2018.

Table 15, Vibration Levels at Sensitive Uses, shows the ppv levels relative to structural damage to sensitive uses from vibration activities. Vibration induced annoyance may occur for people, especially people in buildings or structures. Examples of sensitive land uses include residences, hospitals, schools, retirement facilities, older or fragile buildings that are susceptible to cosmetic damage, and those industries that require precision during manufacturing processes. As shown in Table 15, the closest sensitive receptors to the proposed Project are visitors to Chatsworth Park South, located approximately 500 feet away. At a distance of 500 feet, all ppv levels during construction activities would be below the threshold of 0.2 ppv, and park users would generally be outside of structures. As such, generation of excessive ground borne vibration or ground borne is not anticipated during construction activities. Daily operational activities would remain similar to current operations of the pipeline, and therefore would not create excessive ground borne vibration or ground borne noise.

TABLE 15
VIBRATION LEVELS AT SENSITIVE USES

Equipment	Vibration Levels (ppv) Religious Uses to the North (3,580 feet away)	Vibration Levels (ppv) Residential Uses to the West (1,982 feet away)	Vibration Levels (ppv) Park Uses to the South (502 feet away)	Vibration Levels (ppv) Residences to the East (1,415 feet away)
Large bulldozer	0.000	0.000	0.001	0.000
Small bulldozer	0.000	0.000	0.000	0.000
Jackhammer	0.000	0.000	0.000	0.000
Loaded trucks	0.000	0.000	0.001	0.000
Criteria	0.200	0.200	0.200	0.200
Exceeds Criteria?	No	No	No	No

ppv: peak particle velocity.

Source: FTA 2018.

Both Project construction and operation activities to the closest sensitive receptors would be under the thresholds for ground borne vibrations and ground borne noise, therefore no impact would occur.

- c) For a project located within the vicinity of a private airstrip or 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?**

No Impact. No, the proposed Project is not within the vicinity of an airport land use plan. The nearest public use airport to the Project Area is the Van Nuys Airport, located over 7.5 miles from the proposed Project. The Project Area is not located within an adopted Airport Land Use Plan or in the vicinity of a private airstrip, heliport, or helistop, and would not expose people to excessive noise levels. Therefore, no impact would occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. 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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IMPACT ANALYSIS

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)? and**
- b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?**

No Impact. No, the proposed Project would not induce substantial unplanned growth in an area or displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. The Project is located within an undeveloped portion of Chatsworth Park South, and no residential uses occur within the Project Area, nor are there existing plans that would redevelop the Project Area for residential uses. The Project would not expand Metropolitan's service capacity, nor would it extend service into an area that is not currently developed or approved for future development. As such, the proposed Project would not displace a substantial number of existing people or housing, and no impact would occur. The proposed Project would not induce substantial unplanned population growth in an area, either directly or indirectly, nor result in either direct or indirect population growth, and no impact would occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. PUBLIC SERVICES.				
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police Protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other Public Facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IMPACT ANALYSIS

- 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, and other public facilities?**

1. Fire Protection

No Impact. No, the proposed Project would not result in substantial adverse physical impacts to any fire protection services. The LAFD provides fire protection and emergency medical services to the City of Los Angeles, including fire suppression, paramedic/emergency medical, fire prevention, emergency, and hazardous materials management/environmental safety services. The Project Area is served by LAFD Division 3, Battalion 15, Station 96, located at 21800 Marilla Street, Chatsworth, California 91311-4127, approximately 1.3 miles southeast of the Project Area (LAFD 2024c). The proposed Project does not include new housing and would not require employees beyond those already employed by Metropolitan. In addition, the Project would not increase water supply to the area or otherwise directly or indirectly induce population growth in the area that would increase demand for fire protection services. Therefore, the proposed Project would not have an effect upon or result in a need for new or physically altered fire protection services to maintain acceptable service ratios, response times, or other performance objectives, and no impact would occur.

2. Police Protection

No Impact. No, the proposed Project would not result in substantial adverse physical impacts to any police protection services. The Los Angeles Police Department (LAPD) provides police protection services to the Project Area. The Devonshire Community Police Station of the Valley Bureau serves Chatsworth, including the Project Area, which is in Reporting District 1721 (LAPD 2024). The proposed Project does not include new housing and would not require employees beyond those already employed by Metropolitan. In addition, the Project would not increase water

supply to the area or otherwise directly or indirectly induce population growth in the area that would increase demand for police protection services. Therefore, the proposed Project would not have an effect upon or result in a need for new or physically altered police protection services to maintain acceptable service ratios, response times, or other performance objectives, and no impact would occur.

3. Schools

No Impact. No, the proposed Project would not result in substantial adverse physical impacts to any schools. The Project Area is located within an area served by the Los Angeles Unified School District (LAUSD) (City of Los Angeles 1993). Impacts on schools are generally associated with increased population in an area and the need for additional schools to serve that population. The Project would not increase water supply to the area or otherwise directly or indirectly induce population growth in the area that would increase demand for schools. Therefore, the proposed Project would not have an effect upon or result in a need for new or physically altered schools to maintain acceptable service ratios or other performance objectives, and no impact would occur.

4. Parks

No Impact. No, the proposed Project would not result in substantial adverse physical impacts to any parks. The Project Area is located within an area designated as open space and located within Chatsworth Park South, which is operated by the Los Angeles Department of Recreation and Parks (LADRAP) (City of Los Angeles 1993). The proposed Project would not change the use of the use of Chatsworth Park South and thus would not change the amount of open space or parkland designated within the surrounding community. In addition, the Project would not increase water supply to the area or otherwise directly or indirectly induce population growth in the area that would increase demand for parks. Therefore, the proposed Project would not have an effect upon or result in a need for new or physically altered parks to maintain acceptable service ratios or other performance objectives, and no impact would occur.

5. Other Public Facilities

No Impact. No, the proposed Project would not result in substantial adverse physical impacts to any other public facilities. The Project Area is located within an area designated as open space (City of Los Angeles 1993). Furthermore, the Project would not include a residential element such as housing that would directly induce growth and potentially increase demand on other public facilities such as libraries, childcare centers, senior centers, hospitals, or other related facilities. Therefore, the proposed Project would not have an effect upon or result in a need for other new or physically altered public facilities, and no impact would occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IMPACT ANALYSIS

Would the Project:

- a) **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?**

No Impact. No, the proposed Project would not 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. Increases in demand for recreational facilities are typically associated with substantial increases in population. The proposed Project includes modification to existing valve structures, replacement of valves, and construction of a new access road and vehicle turnaround within Chatsworth Park South. The proposed Project would not create new or expanded facilities or services that would induce development and increase population within the Project vicinity. Therefore, there would be no impact related to demand or use of recreational facilities.

- b) **Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?**

No Impact. No, the proposed Project does not include recreational facilities or require the construction or expansion of recreational facilities. As discussed above, the proposed Project does not include a residential element such as housing, nor does it include an increase in water supply or capacity that would induce growth and potentially increase demand on or the expansion of recreational facilities. Therefore, no impact would occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. TRANSPORTATION/TRAFFIC. Would the project:				
a) Conflict with program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IMPACT ANALYSIS

Would the Project:

- a) Conflict with program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?**

Less Than Significant Impact. No, the proposed Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. The Chatsworth-Porter Ranch Community Plan incorporates the Mobility Plan, an element of the General Plan. The proposed Project would not conflict with the public improvement programs related to circulation established for guiding development of the Chatsworth-Power Ranch Community Plan. Implementation of the proposed Project is expected to generate short-term traffic impacts during the construction period. Vehicle trips would include trucks hauling materials and supplies to the Project Area and workers commuting to and from the Project Area. It is anticipated that these trips would occur throughout the day and would not be concentrated during traffic peak hours. Therefore, short-term construction-related impacts would be less than significant. Following completion of construction activities, operation of the WVF1 would continue, including vehicle trips occur for routine inspection and maintenance, consistent with current operation of the pipeline. Therefore, the proposed Project would not conflict with a program, plan, ordinance or policy addressing the circulation system, and no impact would occur.

- b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?**

No Impact. No, the proposed Project would not conflict with or be inconsistent with *CEQA Guidelines* Section 15064.3(b). *CEQA Guidelines* Section 15064.3(b) pertains to the use of VMT as a method of determining the significance of transportation impacts. Project operation is not expected to change either the number or length of operational trips to the Project Area, and thus would have no impact on VMT. Additionally, VMT analysis is inapplicable to construction traffic because trip generation to and from each construction Project Area is temporary. Therefore, the Project would not conflict with *CEQA Guidelines* Section 15064.3(b), and no impact would occur.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses?

No Impact. No, the proposed Project would not substantially increase hazards due to a geometric design feature or incompatible uses. During Project construction activities, vehicles and equipment would use the existing access roads, including the road accessing the Calleguas Hydropower Generating Facility. The construction of the vehicle access road and turn around areas will not have geometric design features such as sharp curves or intersection and are intended for improved ingress and egress to the Project Area by Metropolitan utility vehicles. Therefore, no impacts related to a design feature or incompatible uses would occur.

d) Result in inadequate emergency access?

No Impact. No, the proposed Project would not result in inadequate emergency access. The Project Area, including all surrounding arterials and public rights-of-way, and access off Larwin Avenue and Germaine Street, would remain unchanged. Traffic patterns as well as types of vehicles traveling along the roads in proximity to the Project Area would not be affected during construction. Further, construction of the proposed Project would be in accordance with applicable emergency access requirements set forth in the 2020 Los Angeles Fire Code and California Fire Code (LAFD 2020) and would not increase hazards on site. Implementation of the proposed Project would not alter existing emergency access routes in place at Chatsworth Park South. Therefore, no impacts related to emergency access would occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. TRIBAL CULTURAL RESOURCES. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

IMPACT ANALYSIS

Would the project:

- a) **Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or**

No Impact. No, the proposed Project would not cause a substantial adverse change in the significance of a tribal cultural resource. Metropolitan sent letters via certified mail to four Native American tribes that had previously requested to be informed through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated with the tribe, pursuant to PRC Section 21080.3.1. One tribe, the Gabrieleño Band of Mission Indians-Kizh Nation (Gabrieleño-Kizh Nation) responded and requested consultation. A consultation meeting took place on September 13, 2018. Tribal Chairperson, Mr. Anthony Salas and Tribal Biologist, Mr. Matthew Teutimez, described the history of the Project Area and features of the Project that may be sensitive for unidentified tribal cultural resources, but no tribal cultural resources were identified. Metropolitan's cultural resource and archaeological resource identification efforts did not identify the presence of a resource eligible for or listed on the CRHR or local register within the Project Area. As no tribal cultural resource was identified and no resource eligible for the CRHR or local register was identified, no impact would occur.

- b) **A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.**

Less Than Significant. As described under XVII. (a)(i), Metropolitan conducted tribal cultural resource consultation with the Gabrieleño-Kizh Nation. No CRHR or local register of historic resources are known within the Project Area. The Gabrieleño-Kizh Nation noted during the consultation process that they have not previously been granted access to the Project Area in order to adequately identify the presence of tribal cultural resources and that features of the Project Area are considered sensitive by the tribe. Additionally, general vicinity of the Project Area, particularly the Santa Susana mountains are known to be sensitive for prehistoric archaeological resources. Metropolitan, as lead agency, has not identified any specific tribal or prehistoric resources in the Project Area. The Gabrieleño-Kizh Nation recommend the use of a Native American monitor to assist in the identification of any previously undiscovered archaeological resources for excavation work associated with valve relocations on a spot-check basis (as these areas have been previously disturbed), and full-time for excavation activities associated with the proposed new access road construction (refer to **MM CULT-3**, as stated in Section V).

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIX. UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a determination by the wastewater treatment provider which 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IMPACT ANALYSIS

Would the Project:

- a) **Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?**

No Impact. No, the proposed Project would not require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication facilities. The proposed Project includes valve modifications, construction of an access road, and vehicle turnaround area. The Project does not include existing or proposed structures which generate wastewater, water treatment, electrical power, natural gas, or telecommunications facilities, and no storm water drainage systems would be affected. Therefore, no impact would occur.

- b) **Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?**

No Impact. Yes, there would be sufficient water supplies available to serve the proposed Project. Water used during Project construction would primarily be utilized for controlling dust and would not include expansion of use requiring additional water supply over what is currently serving the Project Area. Additionally, the Project construction activities are expected to be completed in nine months and are not anticipated to occur over multiple years. The WVF1 is currently in operation

and no additional water supply will be required following the proposed improvements. Therefore, the proposed Project would have sufficient water supplies, and no impact could occur.

c) Result in a determination by the wastewater treatment provider which 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?

No Impact. No, the proposed Project would not require a determination by a wastewater treatment provider which serves or may serve the Project that it has inadequate capacity to serve the Project. The proposed Project will not result in any additional demands for wastewater treatment. No new buildings or structures occupied by people would be constructed as part of the proposed Project. The proposed Project includes valve modifications, construction of an access road, and vehicle turnaround area. During construction activities, portable toilets would be placed at the Project Area, and no wastewater would be generated by the proposed Project or for operations. Therefore, no impacts related to exceeding wastewater treatment requirements would occur.

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less Than Significant Impact. No, the proposed Project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. The proposed Project entails valve modifications to the existing WVF1 pipeline, construction of an access road, and vehicle turnaround area. During construction, the Project is expected to generate solid waste associated with grading and valve replacement, and general construction activities. Non-hazardous solid waste generated by construction of the proposed Project is anticipated to be transported to a Class III waste facility serving the Project Area. Waste Management – Simi Valley Landfill & Recycling Center in Simi Valley, California, is located approximately 10.2 miles west of the Project Area and has a remaining capacity of 88,300,000 cy; Sunshine Canyon Landfill in Sylmar, California, is located 7.9 miles northeast of the Project Area and has a remaining capacity of 98,800,000 cubic yards (cy); and Chiquita Canyon Landfill in Castaic, California, is located 11.35 miles northwest of the Project Area with a remaining capacity of 8,617,126 cy.

Additionally, contractor specifications for the proposed Project would include requirements for construction and demolition waste management to divert the minimum requirement of 65 percent of debris from landfill disposal and redirect reusable materials to appropriate sites, and consideration for the utilization of recycled materials in the new construction portion of this Project. Operation following construction would not generate solid waste. Therefore, impacts related to service by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs would be less than significant.

e) Comply with Federal, State, and local statutes and regulations related to solid waste?

No Impact. Yes, the proposed Project would comply with federal, State, and local management and reduction statutes and regulations related to solid waste. Project construction would be approximately nine months and is not expected to produce waste uncommon to standard demolition and construction activities. As previously discussed in Threshold XIX.d, all solid waste produced by the Project during construction and maintenance would be disposed of at the appropriate land disposal facility and landfill in accordance with the applicable regulations and

guidelines. Solid waste would not be generated by Project operation. Therefore, no impacts related to compliance with federal, State, or local statutes and regulations would occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XX. WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. No, the proposed Project would not substantially impair an adopted emergency response plan or emergency evacuation plan. The Project is not located in or near a State Responsibility Area (BOF 2024); however, Chatsworth Park South, including the Project Area, is classified as a Very High Fire Hazard Severity Zone by the LAFD. As previously discussed, the EMD heads the efforts within the City of Los Angeles in the development of citywide emergency plans and annexes and updates the City's guidelines for the emergency response and recovery plans (City of Los Angeles 2024). The Project would not alter traffic conditions or modify any street within the local or regional circulation system. The proposed Project would not remove or add any emergency access points to or from the Project Area. Existing access for emergency vehicles is considered adequate and available through two access entrances off public rights of way at Larwin Avenue and Germain Street and from Chatsworth Park South. These emergency access points will remain in place during Project construction. Therefore, the Project would not interfere with the implementation of the Los Angeles Hazards Mitigation Plan, other adopted emergency response plan, and no impact would occur.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less Than Significant Impact. No, the proposed Project would not expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire due to slope, prevailing winds, or other factors. The Project is not located in or near a State Responsibility Area; however, Chatsworth Park South, including the Project Area, is classified as a Very High Fire

Hazard Severity Zone by the LAFD (LAFD 2024a). The Project includes valve modifications, construction of an access road, and vehicle turnaround areas to the WVF1. No new buildings or structures occupied by people would be constructed as part of the proposed Project. Thus, the Project would not permanently expose people to the potential for wildfires, and impacts would be less than significant.

- c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?**

Less Than Significant Impact. No, the proposed Project would not require the installation of or maintenance of infrastructure that may exacerbate fire risk or that may result in impacts to the environment. The proposed Project does not include the installation or maintenance of emergency water sources, power lines, or other utilities. The proposed Project would construct an asphalt and concrete access road and vehicle turnaround to replace a current dirt access road and construct new road where no access currently exists. Construction of the permanent access road would help limit maintenance vehicle exposure to dry vegetation that currently grows in and along the edges of the dirt access road. During Project construction, a water truck would be operating on site for dust suppression. Additionally, the Project must comply with the Brush Clearance Requirements of the LAFD Fire Code (LAFD 2024b). Therefore, impacts would be less than significant.

- d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?**

Less Than Significant Impact. No, the proposed Project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides. The proposed Project is not located in or near a State Responsibility Area; however, Chatsworth Park South, including the Project Area, is classified as a Very High Fire Hazard Severity Zone by the LAFD. The proposed Project includes valve modifications, construction of an access road, and vehicle turnaround areas to the WVF1 and will require workers only during the construction period. No new buildings or structures occupied by people would be constructed as part of the proposed Project. Once the proposed Project is completed, periodic maintenance and inspections by staff will continue. Thus, the proposed Project would not permanently expose people or structures to downstream flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes, impacts would be less than significant.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XXI. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have 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 animal community, reduce the number or restrict the range of rare or endangered plants or animals, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

IMPACT ANALYSIS

Does the Project:

- a) **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?**

Less Than Significant with Mitigation Incorporated. The proposed Project entails the continued maintenance of existing water pipeline infrastructure including valve modifications, construction of an access road, and vehicle turnaround areas to the WVF1. No new buildings or structures occupied by people would be constructed as part of the proposed Project. As described throughout the analysis in Section 3.0, with the incorporation of the identified MMs, implementation of the proposed Project would not degrade the quality of the environment, would not substantially reduce the habitats of fish or wildlife species, would not cause a fish or wildlife population to drop below self-sustaining levels, would not threaten to eliminate a plant or animal, and would not eliminate important examples of major periods of California history or prehistory.

- b) **Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental efforts 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 probably future projects)?**

Less Than Significant Impact. The proposed Project entails the continued maintenance of existing water pipeline infrastructure including valve modifications, construction of an access road,

and vehicle turnaround areas to the WVF1. Based on the analysis contained in this Initial Study, the proposed Project would not result in any significant and unmitigable impacts in any environmental categories. No Metropolitan additional current or future projects are planned by Metropolitan within the Project Area. Past Metropolitan projects within the Project Area have been routine operation, inspection, and patrolling of the WVF pipeline. For these reasons, the incremental effects of the proposed Project would not be considerable when viewed in connection with the effects of past projects, current projects, or probable future projects, and the proposed Project's cumulative impacts would not be significant.

c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less Than Significant Impact. The proposed Project entails the continued maintenance of existing water pipeline infrastructure including valve modifications, construction of an access road, and vehicle turnaround areas to the WVF1. Based on the analysis contained in this Initial Study, with the implementation of Metropolitan's standard construction practices as described in Section 1.6, Metropolitan Standard Practices, the proposed Project does not exceed any significance thresholds or result in significant impacts in the environmental categories typically associated with indirect or direct effects to human beings, such as aesthetics, air quality, hazards and hazardous materials, noise, public services, or transportation. As discussed in this document, the proposed Project would not expose persons to the hazards of toxic air emissions, chemical or explosive materials, ground-shaking, flooding, noise, or transportation hazards. For these reasons, the proposed Project would not have substantial adverse effects on human beings, either directly or indirectly and therefore, impacts would not be significant.

This page intentionally left blank

SECTION 4.0 REPORT PREPARERS

4.1 LEAD AGENCY

Diane Doesserich..... Team Manager, Environmental Planning Section
Lilia I. Martínez.....Principal Environmental Specialist
Michelle Morrison..... Senior Environmental Specialist

4.2 CONSULTANTS

Psomas

Jim Hunter..... Principal-in-Charge
Jennifer Marks Senior Project Manager
Megan Larum.....Environmental Planner
Marc Blain Senior Biologist
Brad BloodSenior Regulatory Permit Manager
Allison RudalevigeBiologist/Regulatory Specialist
Sarah Thomas Biologist
Jack Underwood Biologist
Tin Cheung Director of Air Quality/Greenhouse Gas/Noise
Daria Sarraf..... Air Quality/Greenhouse Gas/Noise Analyst
Sheryl Kristal..... Word Processor
Mike Deseo GIS/Graphics
Jennie Ramirez GIS/Graphics

This page intentionally left blank

SECTION 5.0 REFERENCES

- American Ornithological Society (AOS). 2023 (July). *Check-list of North and Middle American Birds* (7th ed., as revised through 62th Supplement). Washington, D.C.: AOU. <http://checklist.aou.org/>.
- Board of Forestry and Fire Protection (BOF). 2024 (May 1). State Responsibility Area (SRA Viewer). Sacramento, California: BOF. <https://calfire-forestry.maps.arcgis.com/apps/webappviewer/index.html?id=468717e399fa4238ad86861638765ce1>.
- California Department of Conservation, Farmland Mapping and Monitoring Program (FMMP). 2018 (January). San Bernardino County Important Farmland 2018. Sacramento, CA: FMMP. <http://www.conservation.ca.gov/dlrp/fmmp/Pages/SanBernardino.aspx>.
- California Department of Conservation, The Land Conservation Act (LCA). 2022. DOC Maps: Agriculture. Sacramento, CA: DOC. <https://maps.conservation.ca.gov/agriculture/>.
- California Department of Conservation (CGS). 2022. Surface Mining and Reclamation Act (SMARA) Mineral Lands Classification (MLC) data portal. Sacramento, CA: CGS. <http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=mlc>.
- California Department of Fish and Wildlife. 2023a. California Natural Diversity Database. Records of Occurrence for the USGS' Palmdale, Lancaster East, Lancaster West, Alpine Butte, Littlerock, and Ritter Ridge 7.5-minute quadrangles. Sacramento, CA: CDFW, Natural Heritage Division.
- . 2023b (October). Special Animals. Sacramento, CA: CDFW, Natural Heritage Division.
- . 2018. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities*. Sacramento, CA: CDFW.
- California Department of Transportation (Caltrans). 2024 (April 8, last accessed). Scenic Highways. Sacramento, CA: Caltrans. <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>.
- . 2020 (April). Transportation and Construction Vibration Guidance Manual. Sacramento, CA: Caltrans. <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf>.
- . 2013 (September) Technical Noise Supplement to the Traffic Noise Analysis Protocol. Sacramento, CA: Caltrans. <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf>.
- California Air Pollution Control Officers Association (CAPCOA). 2016. California Emission Estimator Model (CalEEMod)TM Version 2016.3.1, Developed by Trinity Consultants in Collaboration with SCAQMD and other California Air Districts. Sacramento, CA: CAPCOA.
- California Air Resources Board (CARB). 2024a (April 8, last accessed). iADAM: Air Quality Data Statistics. Sacramento, CA: CARB. <http://www.arb.ca.gov/adam/>.
- . 2024b (April 8, last accessed). Area Designations Maps/State and National. Sacramento, CA: CARB. <https://www.arb.ca.gov/desig/adm/adm.htm>.

- . 2021. Emission Factor Model (EMFAC 2021). Sacramento, CA: CARB. <https://arb.ca.gov/emfac/>.
- . 2017 (November). California's 2017 Climate Change Scoping Plan. Sacramento, CA: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf.
- California Building Code. 2022. 2022 California Building Code, Title 24, Part 2 (Volumes 1 & 2), Chapter 18 – Soils and Foundations. <https://codes.iccsafe.org/content/CABC2022P1/chapter-18-soils-and-foundations>.
- California Governor's Office of Planning and Research (OPR). 2008 (June 18). CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review. Sacramento, CA: OPR. <https://opr.ca.gov/ceqa/docs/20210720-june08-ceqa.pdf>.
- California Native Plant Society (CNPS). 2023 (June, last accessed). Inventory of Rare and Endangered Plants of California (online edition). Information for referenced species with a California Rare Plant Rank/Records of Occurrence for the regional USGS' 7.5-minute quadrangles. Sacramento, CA: CNPS. <http://www.rareplants.cnps.org/>.
- Center for North American Herpetology (CNAH). 2015. *CNAH: North American Herpetofauna: California: The Amphibians, Reptiles, and Turtles of California*. Lawrence, KS: CNAH. <http://www.cnah.org/namesList.aspx?stateId=5&listType=stateList&orderId=0>.
- C Young Associates. 2018 (July 26). *Phase I Environmental Site Assessment Metropolitan Water District of Southern California West Valley Feeder No. 1 Stage 3 Improvements Project*. La Jolla, California [Appendix H].
- Department of Toxic Substances Control (DTSC). 2024 (April 8, last accessed). EnviroStor. Sacramento, CA: DTSC. <https://www.envirostor.dtsc.ca.gov/public/>.
- Division of Oil, Gas & Geothermal Resources (DOGGR). 2024. (April 5, last accessed). Division of Oil, Gas & Geothermal Resources - Well Finder. Sacramento, CA: DOGGR. <https://maps.conservation.ca.gov/doggr/wellfinder/>.
- Elder, W. P., & Saul, L. R. (1996). Taxonomy and biostratigraphy of Coniacian through Maastrichtian Anchura (Gastropoda: Aporrhaiidae) of the North American Pacific slope. *Journal of Paleontology*, 70(3), 381-399.
- Federal Transit Administration (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment Manual. Washington, D.C.: FTA. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf.
- . 2006 (May). Transit Noise and Vibration Impact Assessment, FTA-VA-90-1003-06 (prepared by Harris Miller & Hanson, Inc.). Washington, D.C.: FTA. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf.
- Greenwood and Associates. 2018 (July 31). Archaeological Inventory Metropolitan Water District (MWD) West Valley Feeder No 1 (WVF1) Stage 3 Improvements Project. Pacific Palisades, California [Appendix D].

Kleinfelder. 2018 (May 15). Geotechnical Study West Valley Feeder 1 Access Roads and Valve Improvements Widening Project Chatsworth, California. Riverside, California [Appendix F].

Los Angeles, City of. 2024 (April 8, last accessed). *Emergency Plans and Annexes*. Los Angeles, CA: EMD. <http://emergency.lacity.org/emergency-plans-and-annexes>.

———. 2021 (November 24, adopted). Safety Element of the Los Angeles City General Plan. Los Angeles, CA: the City. https://planning.lacity.gov/odocument/bf51ae04-1c7b-4931-9a29-d46209998b89/Safety_Element.pdf.

———. 2014 (August 20, as of). General Plan Land Use Map. Chatsworth – Porter Ranch Community Plan. Los Angeles, CA: the City. <https://planning.lacity.gov/odocument/591cc3bc-acb7-4cae-bc4c-ab5028ab89bf/chtplanmap.pdf>.

———. 1993 (September 4, adopted). Chatsworth-Porter Ranch Community Plan. Los Angeles, CA: the City. https://planning.lacity.gov/odocument/84cf42e3-252a-414e-833c-c037442a599c/Chatsworth-Porter_Ranch_Community_Plan.pdf.

Los Angeles County Airport Land Use Commission (LA County ALUC). 2003 (May 13). Airport Influence Area. Los Angeles, CA: ALUC. https://case.planning.lacounty.gov/assets/upl/project/aluc_airport-van-nuys.pdf.

Los Angeles County Department of Public Works (LACDPW). 2024 (April 8, last accessed). Disaster Routes, Los Angeles County Operational Area. Los Angeles, CA: LACDPW. <http://dpw.lacounty.gov/dsg/disasterroutes/>.

Los Angeles Fire Department (LAFD). 2024a (March 11, last accessed). Fire Zone Map. Los Angeles, CA: LAFD. <https://www.lafd.org/fire-prevention/brush/fire-zone/fire-zone-map>.

———. 2024b. (March 11, last accessed). Clearance Requirements. Los Angeles, CA: LAFD. <https://www.lafd.org/fire-prevention/brush/clearance-requirements>.

———. 2024c. (February 12, last accessed). Stations Map. Los Angeles, CA: LAFD. <http://www.lafd.org/fsla/stations-map?community=Chatsworth&year=2017&st=751>.

———. 2020. Fire Code. Los Angeles, CA: LAFD. <https://www.lafd.org/fire-prevention/fire-code>.

Los Angeles Municipal Code (LAMC). 2024 (February 10, current through). Official City of Los Angeles Municipal Code. Los Angeles, CA: the City. https://codelibrary.amlegal.com/codes/los_angeles/latest/lamc/0-0-0-107363.

Los Angeles Police Department (LAPD) 2024. (April 8, last accessed). Devonshire Community Police Station. Los Angeles, CA: LAPD. <https://www.lapdonline.org/lapd-contact/valley-bureau/devonshire-community-police-station/>.

Metropolitan Water District of Southern California (Metropolitan). 2022 (May). Climate Action Plan. Los Angeles, CA: MWD. <https://www.mwdh2o.com/media/12469/final-cap.pdf>.

———. 2021b. Master Specifications (Construction Contract). [Appendix A].

- . 2018 (May). Hydrology and Hydraulic Analyses for West Valley Feeder No 1 Valve Structures Improvements (Stage 3). [Appendix I].
- National Park Service (NPS). 1983. Professional Qualifications Standards. Washington, D.C.: NPS. <https://www.nps.gov/articles/sec-standards-prof-quals.htm>.
- Psomas. 2024 (May). Updated Biological and Jurisdictional Resources Assessment for the Metropolitan Water District West Feeder No. 1 State 3 Improvements Project in the City of Los Angeles, California. Santa Ana, CA. [Appendix C].
- Smithsonian National Museum of Natural History (SNMNH). 2011. Mammal Species of the World (3rd ed.) (a database based on Wilson, D.E., and D. M. Reeder's 2005 publication entitled Mammal Species of the World, A Taxonomic and Geographic Reference, 3rd ed.). Washington, D.C.: SNMNH. <https://www.departments.bucknell.edu/biology/resources/msw3/>.
- South Coast Air Quality Management District (SCAQMD). 2023 (March, Revised). SCAQMD Air Quality Significance Thresholds. Diamond Bar, CA: SCAQMD. <https://www.aqmd.gov/docs/default-source/ceqa/handbook/south-coast-aqmd-air-quality-significance-thresholds.pdf?sfvrsn=25>.
- . 2016 (February). National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) Attainment Status for South Coast Air Basin. Diamond Bar, CA: SCAQMD. <http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf?sfvrsn=2>.
- . 2010 (September 28). Greenhouse Gas CEQA Significance Threshold Stakeholder Working Group #15 (slide presentation). Diamond Bar, CA: SCAQMD. [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf).
- . 2008a (October). SCAQMD Draft Guidance Document – Interim CEQA Greenhouse Gas Significance Thresholds. Diamond Bar, CA: SCAQMD. [https://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/ghgattachmente.pdf](https://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf).
- . 2008b (July, as revised). Final Localized Significance Threshold Methodology. Diamond Bar, CA: SCAQMD. <http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf>.
- . 1993 (as amended). CEQA Air Quality Handbook. Diamond Bar, CA: SCAQMD.
- U.S. Forest Service (USFS). 2024 (January 26, last accessed). National Forest Locator Map. Washington, D.C.: USFS. <https://www.fs.usda.gov/mapfinder/>.
- URS. 2017 (April 20). Remedial Action Completion Report Chatsworth Park South 22360 West Devonshire Street Chatsworth, California.
- U.S. Army Corps of Engineers (USACE). 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. (J.S. Wakeley, R.W. Lichvar, and C.V. Noble, Eds.). Vicksburg, MS: U.S. Army Engineer Research and

Development Center.
<https://www.spk.usace.army.mil/Portals/12/documents/regulatory/pdf/trel08-28.pdf>.

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). 2024 (April 8, last accessed). State Soil Data Access Hydric Soils List. Washington, D.C.: USDA, NRCS. <http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/>.

U.S. Fish & Wildlife Service (USFWS). 2024 (April 8, last accessed). Wetland Mapper. Washington, D.C.: USFWS. <https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/>.

This page intentionally left blank

West Valley Feeder No. 1 Stage 3 Improvements Project

Proposed Initial Study-Mitigated Negative Declaration



Appendices A through J

Metropolitan Report No. 1582

June 2024

West Valley Feeder No. 1 Stage 3 Improvements Project

Proposed Initial Study-Mitigated Negative Declaration

Appendices A through J

The Metropolitan Water District of Southern California

700 North Alameda Street
Los Angeles, California 90012

Report No. 1582

June 2024

APPENDICES

Appendix

- A Metropolitan Standard Practices
- B CalEEMod Calculations
- C Updated Biological and Jurisdictional Waters Resources Assessment
- D Archaeological Inventory
- E Energy Analysis
- F Report of Geotechnical Study
- G Paleontological Records Search
- H Phase I Environmental Site Assessment
- I Hydrology and Hydraulic Analyses
- J Project Noise Calculations

APPENDIX A
METROPOLITAN STANDARD PRACTICES

METROPOLITAN STANDARD PRACTICES

The following are Metropolitan standard practices that are carried out by Metropolitan Environmental Planning or as part of Section 01065 (Environmental Requirements) and Section 01565 (Noise Control) of the construction contractor specifications for all projects (Metropolitan 2021).

General

- The Contractor shall obtain necessary local, state and federal environmental permits and shall comply with the requirements of all such permits and laws, regulations, acts, codes and ordinances.
- The Contractor shall perform all construction activities only within the construction boundaries shown on the drawings. The construction boundaries shall be fenced, unless otherwise directed by the Engineer. Any request to use any area outside the construction boundaries for any activity will require review and approval by the Engineer.
- **Worker Environmental Awareness Protections Training.** Metropolitan routinely conducts pre-construction Worker Environmental Awareness Protections Training (WEAP) for both capital projects and operations and maintenance activities. WEAP trainings are project-specific and cover potential environmental concerns or considerations including, but not limited to, awareness of biological resources, special status species near project sites, jurisdictional waters, cultural resources, paleontological resources, environmentally sensitive areas, and/or avoidance areas.
- **Environmental Assessment.** As an internal practice, Metropolitan conducts Environmental Assessments or similar studies prior to project commencement to determine if any sensitive resources have the potential to be present at a project site. Resources assessed typically include biological, cultural paleontological resources, noise sensitivity, and sensitive receptors in the vicinity of the project area.

Air Quality

- The Contractor shall not discharge smoke, dust, or other air contaminants into the atmosphere in a quantity that exceeds the legal limit.
- The Contractor shall use low sulfur fuels (0.5 percent by weight) for all construction vehicles and equipment.
- The Contractor shall shut-off all idling vehicles when not in use.

- Construction equipment shall be maintained, and properly tuned and operated in a manner so as to reduce peak emission levels.
- Construction methods shall include dust reduction activities, including the use of water trucks in construction areas. The Contractor shall spray water on all unpaved roads as often as required to minimize dust and particulates, and as determined by Engineer. Paved streets shall be swept if silt is carried over to these roads from construction activities.
- The Contractor shall use low emission mobile construction equipment during site preparation, grading, excavation, and construction of the project.
- The Contractor shall use existing on-site power sources (e.g., power poles) rather than portable generators when feasible and as directed by the Engineer; or clean fuel generators shall be used rather than temporary power generators when feasible.
- All off-road diesel-fueled construction equipment greater than 25 horsepower (hp) shall be compliant with federally mandated clean diesel engines (USEPA Tier 4), where available, in accordance with the California Air Resources Board's (CARB) In-use Off-road Diesel-fueled Fleet Regulation (Title 13 California Code of Regulations, Division 3, Chapter 9, Article 4.8). The Contractor shall provide a current copy of each unit's certified tier specifications, best available control technology documentation, and CARB Registrations or SCAQMD operating permit, or the CARB Certificate of Reported Compliance Validation, at the time of mobilization of each unit of equipment.
- The Contractor shall cover all trucks transporting earthen material or maintain at least two feet of freeboard.
- The Contractor shall implement the Best Available Control Measures listed in Table 1 of the SCAQMD Rule 403 (Fugitive Dust).
- When wind speeds, including instantaneous gusts, exceed 25 miles per hour, the Contractor shall implement and record Contingency Control Measures listed in Table 3 in SCAQMD Rule 403.

Biological Resources

- **Trees.** As part of the project, the following procedures will be implemented to avoid adverse impacts to trees located within the project work limits:
 - Impacts to any trees located within the project work limits shall be avoided, when possible.
 - No trees within project work limits shall be removed, cut, or trimmed unless identified for removal on project drawings.

- If trees must be removed, cut or trimmed, this activity shall be conducted per any applicable local tree ordinances and any required permits must be obtained prior to any tree removal, cutting or trimming.
 - The Contractor shall avoid stockpiling of materials, and driving or parking vehicles and equipment under the canopy of existing trees to protect tree root systems and avoid damage to the trees.
- **Nesting Bird Surveys.** No physical disturbance of vegetation, operational structures, buildings, or other potential habitat (e.g., open ground, gravel, construction equipment or vehicles, etc.) that may support nesting birds protected by the federal Migratory Bird Treaty Act and California Fish and Game Code shall occur in the breeding season, except as necessary to respond to public health and safety concerns, or otherwise authorized by the Engineer. The breeding season extends from **February 15 through August 31 (edit as required)** for passerines and general nesting and from January 1 through August 31 for raptors.
 - If nesting habitat must be cleared or project activities must occur in the vicinity of nesting habitat within the breeding season as defined above, a qualified biologist shall perform a nesting bird survey no more than three days prior to clearing or removal of nesting habitat or start of project activities.
 - If active nests for sensitive species, raptors and/or migratory birds are observed, an adequate buffer zone or other avoidance and minimization measures, as appropriate, shall be established, as identified by a qualified biologist and approved by the Engineer. The buffer shall be clearly marked in the field by the Contractor, as directed by the Engineer, and construction or clearing shall not be conducted within this zone until the young have fledged and are no longer reliant on the nest.
 - A qualified biologist shall monitor active nests or nesting bird habitat within or immediately adjacent to project construction areas, and the Engineer shall provide necessary recommendations to the Contractor to minimize or avoid impacts to protected nesting birds.
- **Desert Tortoise Awareness Training.** Metropolitan conducts Desert Tortoise Awareness Training for all Metropolitan staff and contractors working at Metropolitan's desert facilities or on the CRA. Desert Tortoise Awareness Training consists of a presentation and handout discussing the protected status of the desert tortoise and its habitat, predators, and avoidance measures. Avoidance measures include, but are not limited to the following:
 - Work areas shall be delineated with flagging if determined necessary by the qualified staff person.
 - Access to project sites shall be restricted to designated existing routes of travel.

- Workers shall inspect for tortoises under vehicles and equipment prior to use. If a tortoise is present, workers would only move the vehicle when the tortoise would not be injured by the vehicle or would wait for the tortoise to move out from under the vehicle.

Cultural Resources, Paleontological Resources, and Human Remains

- If archaeological or paleontological resources are encountered at the project site, the Contractor shall not disturb the resources and shall immediately cease all work within 50 feet of the discovery, notify the Engineer, and protect the discovery area, as directed by the Engineer. The Engineer, with the qualified architectural historian, archaeologist and/or paleontologist, shall make a decision of validity of the discovery and designate an area surrounding the discovery as a restricted area. The Contractor shall not enter or work in the restricted area until the Engineer provides written authorization.
- In the event that human remains are discovered during excavation/construction activity, Health and Safety Code Section 7050.5, CEQA Guidelines Section 15064.5(e), and Public Resources Code (PRC) Section 5097.98 will apply. The Contractor shall notify the Engineer at once and not enter or work in the restricted area until the Engineer provides written authorization.

Hazardous Materials

- The Contractor shall clean up all spills in accordance with all applicable environmental laws and regulations and notify the Engineer immediately in the event of a spill.
- Stationary equipment such as motors, pumps, and generators, shall be equipped with drip pans.
- The Contractor shall handle, store, apply, and dispose of chemicals and/or herbicides consistent with all applicable federal, state and local regulations.
- The Contractor shall dispose of all contaminated materials in a manner consistent with all applicable local, state and federal environmental laws and regulations.
- Hazardous materials shall be stored in covered, leak-proof containers when not in use, away from storm drains and heavy traffic areas, and shall be protected from rainfall infiltration. Hazardous materials shall be stored separately from non-hazardous materials on a surface that prevents spills from permeating the ground surface, and in an area secure from unauthorized entry at all times. Incompatible materials shall be stored separately from each other.

Hydrology and Water Quality

- The Contractor shall not allow any equipment or vehicle storage within any drainage course or channels.
- Any material placed in areas where it could be washed into a drainage course or channel shall be removed prior to the rainy season.
- The Contractor shall not create a nuisance or pollution as defined in the California Water Code. The Contractor shall not cause a violation of any applicable water quality standards for receiving waters adopted by the Regional Water Quality Control Board or the SWRCB, as required by the Clean Water Act (CWA).
- Dewatering activities shall not affect any vegetation outside of the construction limits. The Contractor shall submit proposed dewatering plans to the Engineer for approval prior to any dewatering activities.

Lighting

- The Contractor shall exercise special care to direct floodlights to shine downward. These floodlights shall also be shielded to avoid a nuisance to the surrounding areas. No lighting shall include a residence or native area in its direct beam. The Contractor shall correct lighting nuisance whenever it occurs.

Noise

- The Contractor shall locate all noise-generating and stationary construction equipment as far as feasible from near-site residential and sensitive receivers and situated so that emitted noise is directed away from the sensitive receivers.
- To the extent feasible, noise-generating equipment shall be oriented such that the source of noise is facing away from the nearest sensitive receivers.
- Equipment idling time shall be reduced to five minutes on cranes and construction equipment.
- Areas where workers gather (e.g., break areas, shift-change areas, meeting areas, and sanitary stations) will be located a minimum of 100 feet away from any residence, if feasible.
- Parking areas shall be located a minimum of 150 feet from sensitive receivers. Parking areas within 500 feet of sensitive receivers will be posted with signs to prohibit workers from gathering during nighttime hours and to prohibit radios and music at any time.

- Fuel deliveries shall be a minimum of 500 feet from residences or to the greatest extent feasible.
- The Contractor shall perform all work without undue noise and shall make every effort to alleviate or prevent noise nuisances.
- The Contractor's construction vehicles and equipment shall have mufflers. The Contractor shall equip all construction equipment, fixed and mobile, with properly operating and maintained noise mufflers and intake silencers, consistent with the manufacturer standards. Equipment shall be maintained to a minimum standard that includes engine noise baffles and mufflers that meet or exceed the original manufacturer requirements.
- The Contractor shall utilize the following types of equipment whenever possible: electrical instead of diesel-powered equipment, hydraulic tools instead of pneumatic tools, and use of electric welders powered by remote generators.

Traffic

- The Contractor shall prepare a traffic control plan. This plan shall address temporary traffic control for each construction site in public roadways. The requirements and procedures described in the California Department of Transportation (Caltrans) "Manual of Traffic Controls for Construction and Maintenance Work Zones" or local requirements and procedures that meet or exceed the Caltrans' Manual shall be used in the plan. If required, the Contractor shall submit the plan for review and approval by local and State traffic authorities, as appropriate.
- As appropriate, the Contractor shall provide flagmen at intersections to assist trucks entering/exiting the work limits.
- The Contractor shall provide appropriate advance warning signage to alert motorists or pedestrians to the potential for cross construction vehicle traffic from work limits in accordance with Caltrans standards.

Wildfire

- Gasoline-powered or diesel-powered machinery used during construction shall be equipped with standard exhaust controls and muffling devices that shall also act as spark arrestors.
- Fire containment and extinguishing equipment shall be located on site and shall be accessible during construction activities. Construction workers shall be trained in use of the fire suppression equipment.

APPENDIX B
CALEEMOD CALCULATIONS

MWD West Valley Feeder - Los Angeles-South Coast County, Winter

MWD West Valley Feeder
Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	7.00	1000sqft	0.16	7,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	33
Climate Zone	8			Operational Year	2020
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MW hr)	1227.89	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -
Land Use - Asphalt Access Roads,
Construction Phase - .
Off-road Equipment - 1 excavator, 1 tractor, 1 crane
Off-road Equipment - 1 loader
Off-road Equipment - 1 tractor, 1 excavator, 1 grader, 1 crane
Off-road Equipment - 1 paver
Off-road Equipment - 1 excavator
Trips and VMT - .

Demolition - Tons based on truckload (1 truckload), 20 ton truck

Grading - Cubic yards based on truckloads, assuming 16 cy truck

Construction Off-road Equipment Mitigation - Rule 403

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	22.00
tblConstructionPhase	NumDays	1.00	21.00
tblConstructionPhase	NumDays	2.00	44.00
tblConstructionPhase	NumDays	100.00	109.00
tblConstructionPhase	NumDays	5.00	22.00
tblGrading	MaterialExported	0.00	32.00
tblGrading	MaterialExported	0.00	144.00
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.8878	20.0834	11.1128	0.0211	0.6437	0.9956	1.3569	0.0874	0.9159	0.9267	0.0000	2,092.5587	2,092.5587	0.6280	0.0000	2,108.2580
2020	2.0387	21.2124	13.5571	0.0251	0.0863	1.0312	1.1175	0.0233	0.9488	0.9721	0.0000	2,443.5460	2,443.5460	0.7502	0.0000	2,462.3000
Maximum	2.0387	21.2124	13.5571	0.0251	0.6437	1.0312	1.3569	0.0874	0.9488	0.9721	0.0000	2,443.5460	2,443.5460	0.7502	0.0000	2,462.3000

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.8878	20.0834	11.1128	0.0211	0.3520	0.9956	1.0652	0.0559	0.9159	0.9267	0.0000	2,092.5587	2,092.5587	0.6280	0.0000	2,108.2580
2020	2.0387	21.2124	13.5571	0.0251	0.0863	1.0312	1.1175	0.0233	0.9488	0.9721	0.0000	2,443.5460	2,443.5460	0.7502	0.0000	2,462.3000
Maximum	2.0387	21.2124	13.5571	0.0251	0.3520	1.0312	1.1175	0.0559	0.9488	0.9721	0.0000	2,443.5460	2,443.5460	0.7502	0.0000	2,462.3000

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	39.96	0.00	11.79	28.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.0800e-003	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	3.0800e-003	1.0000e-005	7.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000	0.0000	1.6300e-003

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.0800e-003	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	3.0800e-003	1.0000e-005	7.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000	0.0000	1.6300e-003

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2019	8/30/2019	5	22	
2	Site Preparation	Site Preparation	9/1/2019	9/30/2019	5	21	
3	Grading	Grading	10/1/2019	11/30/2019	5	44	
4	Building Construction	Building Construction	12/1/2019	4/30/2020	5	109	
5	Paving	Paving	4/1/2020	4/30/2020	5	22	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 22

Acres of Paving: 0.16

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Preparation	Excavators	1	8.00	158	0.38
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Cranes	1	8.00	231	0.29
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Excavators	1	8.00	158	0.38
Building Construction	Forklifts	0	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	0	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction	Rubber Tired Dozers	1	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	1	3.00	0.00	2.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	1	3.00	0.00	18.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	3.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	1	3.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0195	0.0000	0.0195	2.9500e-003	0.0000	2.9500e-003			0.0000			0.0000
Off-Road	0.1746	1.7530	1.7270	2.3300e-003		0.1170	0.1170		0.1077	0.1077		230.6564	230.6564	0.0730		232.4808
Total	0.1746	1.7530	1.7270	2.3300e-003	0.0195	0.1170	0.1365	2.9500e-003	0.1077	0.1106		230.6564	230.6564	0.0730		232.4808

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.8000e-004	0.0282	6.3400e-003	7.0000e-005	1.5900e-003	1.0000e-004	1.6900e-003	4.4000e-004	1.0000e-004	5.4000e-004		7.7259	7.7259	5.6000e-004		7.7400
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0166	0.0122	0.1327	3.4000e-004	0.0335	2.9000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		34.2639	34.2639	1.1800e-003		34.2934
Total	0.0175	0.0404	0.1391	4.1000e-004	0.0351	3.9000e-004	0.0355	9.3300e-003	3.7000e-004	9.7000e-003		41.9898	41.9898	1.7400e-003		42.0333

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.7500e-003	0.0000	8.7500e-003	1.3300e-003	0.0000	1.3300e-003			0.0000			0.0000
Off-Road	0.1746	1.7530	1.7270	2.3300e-003		0.1170	0.1170		0.1077	0.1077	0.0000	230.6564	230.6564	0.0730		232.4808
Total	0.1746	1.7530	1.7270	2.3300e-003	8.7500e-003	0.1170	0.1258	1.3300e-003	0.1077	0.1090	0.0000	230.6564	230.6564	0.0730		232.4808

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
--	-----	-----	----	-----	---------------	--------------	------------	----------------	---------------	-------------	----------	-----------	-----------	-----	-----	------

Category	lb/day										lb/day				
Hauling	8.8000e-004	0.0282	6.3400e-003	7.0000e-005	1.5900e-003	1.0000e-004	1.6900e-003	4.4000e-004	1.0000e-004	5.4000e-004		7.7259	7.7259	5.6000e-004	7.7400
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000
Worker	0.0166	0.0122	0.1327	3.4000e-004	0.0335	2.9000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		34.2639	34.2639	1.1800e-003	34.2934
Total	0.0175	0.0404	0.1391	4.1000e-004	0.0351	3.9000e-004	0.0355	9.3300e-003	3.7000e-004	9.7000e-003		41.9898	41.9898	1.7400e-003	42.0333

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.8000e-004	0.0000	7.8000e-004	1.2000e-004	0.0000	1.2000e-004			0.0000			0.0000
Off-Road	0.2607	2.6819	3.2632	5.1600e-003		0.1293	0.1293		0.1190	0.1190		511.1256	511.1256	0.1617		515.1684
Total	0.2607	2.6819	3.2632	5.1600e-003	7.8000e-004	0.1293	0.1301	1.2000e-004	0.1190	0.1191		511.1256	511.1256	0.1617		515.1684

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.2600e-003	0.2660	0.0598	6.7000e-004	0.0150	9.8000e-004	0.0160	4.1100e-003	9.4000e-004	5.0500e-003		72.8443	72.8443	5.3000e-003		72.9767
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0166	0.0122	0.1327	3.4000e-004	0.0335	2.9000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		34.2639	34.2639	1.1800e-003		34.2934

Total	0.0249	0.2782	0.1925	1.0100e-003	0.0485	1.2700e-003	0.0498	0.0130	1.2100e-003	0.0142		107.1082	107.1082	6.4800e-003		107.2701
-------	--------	--------	--------	-------------	--------	-------------	--------	--------	-------------	--------	--	----------	----------	-------------	--	----------

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.5000e-004	0.0000	3.5000e-004	5.0000e-005	0.0000	5.0000e-005			0.0000			0.0000
Off-Road	0.2607	2.6819	3.2632	5.1600e-003		0.1293	0.1293		0.1190	0.1190	0.0000	511.1256	511.1256	0.1617		515.1684
Total	0.2607	2.6819	3.2632	5.1600e-003	3.5000e-004	0.1293	0.1297	5.0000e-005	0.1190	0.1190	0.0000	511.1256	511.1256	0.1617		515.1684

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.2600e-003	0.2660	0.0598	6.7000e-004	0.0150	9.8000e-004	0.0160	4.1100e-003	9.4000e-004	5.0500e-003		72.8443	72.8443	5.3000e-003		72.9767
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0166	0.0122	0.1327	3.4000e-004	0.0335	2.9000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		34.2639	34.2639	1.1800e-003		34.2934
Total	0.0249	0.2782	0.1925	1.0100e-003	0.0485	1.2700e-003	0.0498	0.0130	1.2100e-003	0.0142		107.1082	107.1082	6.4800e-003		107.2701

3.4 Grading - 2019**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	1.4261	17.0215	9.1213	0.0199		0.7122	0.7122		0.6552	0.6552		1,970.6197	1,970.6197	0.6235		1,986.2068
Total	1.4261	17.0215	9.1213	0.0199	0.5303	0.7122	1.2425	0.0573	0.6552	0.7125		1,970.6197	1,970.6197	0.6235		1,986.2068

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.8000e-004	0.0282	6.3400e-003	7.0000e-005	1.5900e-003	1.0000e-004	1.6900e-003	4.4000e-004	1.0000e-004	5.4000e-004		7.7259	7.7259	5.6000e-004		7.7400
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0407	0.4425	1.1500e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		114.2131	114.2131	3.9300e-003		114.3113
Total	0.0563	0.0689	0.4488	1.2200e-003	0.1134	1.0600e-003	0.1144	0.0301	9.9000e-004	0.0311		121.9390	121.9390	4.4900e-003		122.0513

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					0.2387	0.0000	0.2387	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	1.4261	17.0215	9.1213	0.0199		0.7122	0.7122		0.6552	0.6552	0.0000	1,970.6197	1,970.6197	0.6235		1,986.2068
Total	1.4261	17.0215	9.1213	0.0199	0.2387	0.7122	0.9508	0.0258	0.6552	0.6810	0.0000	1,970.6197	1,970.6197	0.6235		1,986.2068

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.8000e-004	0.0282	6.3400e-003	7.0000e-005	1.5900e-003	1.0000e-004	1.6900e-003	4.4000e-004	1.0000e-004	5.4000e-004		7.7259	7.7259	5.6000e-004		7.7400
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0407	0.4425	1.1500e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		114.2131	114.2131	3.9300e-003		114.3113
Total	0.0563	0.0689	0.4488	1.2200e-003	0.1134	1.0600e-003	0.1144	0.0301	9.9000e-004	0.0311		121.9390	121.9390	4.4900e-003		122.0513

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8668	19.9553	10.9462	0.0196		0.9945	0.9945		0.9150	0.9150		1,939.7674	1,939.7674	0.6137		1,955.1105
Total	1.8668	19.9553	10.9462	0.0196		0.9945	0.9945		0.9150	0.9150		1,939.7674	1,939.7674	0.6137		1,955.1105

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.3300e-003	0.1159	0.0339	2.5000e-004	6.4000e-003	7.5000e-004	7.1500e-003	1.8400e-003	7.2000e-004	2.5600e-003		27.1277	27.1277	1.9100e-003		27.1754
Worker	0.0166	0.0122	0.1327	3.4000e-004	0.0335	2.9000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		34.2639	34.2639	1.1800e-003		34.2934
Total	0.0209	0.1281	0.1666	5.9000e-004	0.0399	1.0400e-003	0.0410	0.0107	9.9000e-004	0.0117		61.3916	61.3916	3.0900e-003		61.4687

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8668	19.9553	10.9462	0.0196		0.9945	0.9945		0.9150	0.9150	0.0000	1,939.7674	1,939.7674	0.6137		1,955.1105
Total	1.8668	19.9553	10.9462	0.0196		0.9945	0.9945		0.9150	0.9150	0.0000	1,939.7674	1,939.7674	0.6137		1,955.1105

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
--	-----	-----	----	-----	---------------	--------------	------------	----------------	---------------	-------------	----------	-----------	-----------	-----	-----	------

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.3300e-003	0.1159	0.0339	2.5000e-004	6.4000e-003	7.5000e-004	7.1500e-003	1.8400e-003	7.2000e-004	2.5600e-003		27.1277	27.1277	1.9100e-003		27.1754
Worker	0.0166	0.0122	0.1327	3.4000e-004	0.0335	2.9000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		34.2639	34.2639	1.1800e-003		34.2934
Total	0.0209	0.1281	0.1666	5.9000e-004	0.0399	1.0400e-003	0.0410	0.0107	9.9000e-004	0.0117		61.3916	61.3916	3.0900e-003		61.4687

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7480	18.4126	10.6883	0.0196		0.9096	0.9096		0.8368	0.8368		1,897.9030	1,897.9030	0.6138		1,913.2485
Total	1.7480	18.4126	10.6883	0.0196		0.9096	0.9096		0.8368	0.8368		1,897.9030	1,897.9030	0.6138		1,913.2485

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.7200e-003	0.1064	0.0307	2.5000e-004	6.4000e-003	5.1000e-004	6.9100e-003	1.8400e-003	4.9000e-004	2.3300e-003		26.9449	26.9449	1.8000e-003		26.9900
Worker	0.0153	0.0109	0.1203	3.3000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003		33.2226	33.2226	1.0500e-003		33.2488

Total	0.0191	0.1172	0.1510	5.8000e-004	0.0399	7.9000e-004	0.0407	0.0107	7.5000e-004	0.0115		60.1675	60.1675	2.8500e-003		60.2387
-------	--------	--------	--------	-------------	--------	-------------	--------	--------	-------------	--------	--	---------	---------	-------------	--	---------

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7480	18.4126	10.6883	0.0196		0.9096	0.9096		0.8368	0.8368	0.0000	1,897.9030	1,897.9030	0.6138		1,913.2485
Total	1.7480	18.4126	10.6883	0.0196		0.9096	0.9096		0.8368	0.8368	0.0000	1,897.9030	1,897.9030	0.6138		1,913.2485

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.7200e-003	0.1064	0.0307	2.5000e-004	6.4000e-003	5.1000e-004	6.9100e-003	1.8400e-003	4.9000e-004	2.3300e-003		26.9449	26.9449	1.8000e-003		26.9900
Worker	0.0153	0.0109	0.1203	3.3000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003		33.2226	33.2226	1.0500e-003		33.2488
Total	0.0191	0.1172	0.1510	5.8000e-004	0.0399	7.9000e-004	0.0407	0.0107	7.5000e-004	0.0115		60.1675	60.1675	2.8500e-003		60.2387

3.6 Paving - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2298	2.4590	2.5360	4.1100e-003		0.1195	0.1195		0.1100	0.1100		398.3631	398.3631	0.1288		401.5841
Paving	0.0191					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.2489	2.4590	2.5360	4.1100e-003		0.1195	0.1195		0.1100	0.1100		398.3631	398.3631	0.1288		401.5841

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.4400e-003	0.2127	0.0615	5.0000e-004	0.0128	1.0200e-003	0.0138	3.6900e-003	9.7000e-004	4.6600e-003		53.8898	53.8898	3.6000e-003		53.9799
Worker	0.0153	0.0109	0.1203	3.3000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003		33.2226	33.2226	1.0500e-003		33.2488
Total	0.0228	0.2236	0.1818	8.3000e-004	0.0463	1.3000e-003	0.0476	0.0126	1.2300e-003	0.0138		87.1124	87.1124	4.6500e-003		87.2287

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	0.2298	2.4590	2.5360	4.1100e-003		0.1195	0.1195		0.1100	0.1100	0.0000	398.3631	398.3631	0.1288		401.5841
Paving	0.0191					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.2489	2.4590	2.5360	4.1100e-003		0.1195	0.1195		0.1100	0.1100	0.0000	398.3631	398.3631	0.1288		401.5841

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.4400e-003	0.2127	0.0615	5.0000e-004	0.0128	1.0200e-003	0.0138	3.6900e-003	9.7000e-004	4.6600e-003		53.8898	53.8898	3.6000e-003		53.9799
Worker	0.0153	0.0109	0.1203	3.3000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003		33.2226	33.2226	1.0500e-003		33.2488
Total	0.0228	0.2236	0.1818	8.3000e-004	0.0463	1.3000e-003	0.0476	0.0126	1.2300e-003	0.0138		87.1124	87.1124	4.6500e-003		87.2287

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
-------------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--	--------	--------	--------	--	--------

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.547726	0.045437	0.201480	0.122768	0.016614	0.006090	0.019326	0.029174	0.002438	0.002359	0.005005	0.000677	0.000907

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
---------------------------	--------	--------	--------	--------	--	--------	--------	--	--------	--------	--	--------	--------	--------	--------	--------

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.0800e-003	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Unmitigated	3.0800e-003	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	5.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.4800e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.0000e-005	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Total	3.0800e-003	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
--	-----	-----	----	-----	---------------	--------------	------------	----------------	---------------	-------------	----------	-----------	-----------	-----	-----	------

SubCategory	lb/day										lb/day					
Architectural Coating	5.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.4800e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.0000e-005	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Total	3.0800e-003	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

MWD West Valley Feeder - Los Angeles-South Coast County, Summer

MWD West Valley Feeder
Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	7.00	1000sqft	0.16	7,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	33
Climate Zone	8			Operational Year	2020
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MW hr)	1227.89	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -
Land Use - Asphalt Access Roads,
Construction Phase - .
Off-road Equipment - 1 excavator, 1 tractor, 1 crane
Off-road Equipment - 1 loader
Off-road Equipment - 1 tractor, 1 excavator, 1 grader, 1 crane
Off-road Equipment - 1 paver
Off-road Equipment - 1 excavator
Trips and VMT - .

Demolition - Tons based on truckload (1 truckload), 20 ton truck

Grading - Cubic yards based on truckloads, assuming 16 cy truck

Construction Off-road Equipment Mitigation - Rule 403

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	22.00
tblConstructionPhase	NumDays	1.00	21.00
tblConstructionPhase	NumDays	2.00	44.00
tblConstructionPhase	NumDays	100.00	109.00
tblConstructionPhase	NumDays	5.00	22.00
tblGrading	MaterialExported	0.00	32.00
tblGrading	MaterialExported	0.00	144.00
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.8860	20.0820	11.1215	0.0212	0.6437	0.9955	1.3569	0.0874	0.9159	0.9267	0.0000	2,099.774 2	2,099.7742	0.6282	0.0000	2,115.479 0
2020	2.0352	21.2104	13.5706	0.0252	0.0863	1.0312	1.1175	0.0233	0.9487	0.9720	0.0000	2,449.940 3	2,449.9403	0.7500	0.0000	2,468.689 1
Maximum	2.0352	21.2104	13.5706	0.0252	0.6437	1.0312	1.3569	0.0874	0.9487	0.9720	0.0000	2,449.940 3	2,449.9403	0.7500	0.0000	2,468.689 1

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.8860	20.0820	11.1215	0.0212	0.3520	0.9955	1.0652	0.0559	0.9159	0.9267	0.0000	2,099.774 2	2,099.7742	0.6282	0.0000	2,115.479 0
2020	2.0352	21.2104	13.5706	0.0252	0.0863	1.0312	1.1175	0.0233	0.9487	0.9720	0.0000	2,449.940 3	2,449.9403	0.7500	0.0000	2,468.689 1
Maximum	2.0352	21.2104	13.5706	0.0252	0.3520	1.0312	1.1175	0.0559	0.9487	0.9720	0.0000	2,449.940 3	2,449.9403	0.7500	0.0000	2,468.689 1

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	39.96	0.00	11.79	28.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.0800e-003	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	3.0800e-003	1.0000e-005	7.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000	0.0000	1.6300e-003

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.0800e-003	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	3.0800e-003	1.0000e-005	7.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000	0.0000	1.6300e-003

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2019	8/30/2019	5	22	
2	Site Preparation	Site Preparation	9/1/2019	9/30/2019	5	21	
3	Grading	Grading	10/1/2019	11/30/2019	5	44	
4	Building Construction	Building Construction	12/1/2019	4/30/2020	5	109	
5	Paving	Paving	4/1/2020	4/30/2020	5	22	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 22

Acres of Paving: 0.16

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Preparation	Excavators	1	8.00	158	0.38
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Cranes	1	8.00	231	0.29
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Excavators	1	8.00	158	0.38
Building Construction	Forklifts	0	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	0	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction	Rubber Tired Dozers	1	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	1	3.00	0.00	2.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	1	3.00	0.00	18.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	3.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	1	3.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0195	0.0000	0.0195	2.9500e-003	0.0000	2.9500e-003			0.0000			0.0000
Off-Road	0.1746	1.7530	1.7270	2.3300e-003		0.1170	0.1170		0.1077	0.1077		230.6564	230.6564	0.0730		232.4808
Total	0.1746	1.7530	1.7270	2.3300e-003	0.0195	0.1170	0.1365	2.9500e-003	0.1077	0.1106		230.6564	230.6564	0.0730		232.4808

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.5000e-004	0.0278	5.9400e-003	7.0000e-005	1.5900e-003	1.0000e-004	1.6900e-003	4.4000e-004	1.0000e-004	5.3000e-004		7.8592	7.8592	5.4000e-004		7.8727
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0150	0.0110	0.1447	3.7000e-004	0.0335	2.9000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		36.3886	36.3886	1.2500e-003		36.4198
Total	0.0158	0.0389	0.1506	4.4000e-004	0.0351	3.9000e-004	0.0355	9.3300e-003	3.7000e-004	9.6900e-003		44.2478	44.2478	1.7900e-003		44.2926

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.7500e-003	0.0000	8.7500e-003	1.3300e-003	0.0000	1.3300e-003			0.0000			0.0000
Off-Road	0.1746	1.7530	1.7270	2.3300e-003		0.1170	0.1170		0.1077	0.1077	0.0000	230.6564	230.6564	0.0730		232.4808
Total	0.1746	1.7530	1.7270	2.3300e-003	8.7500e-003	0.1170	0.1258	1.3300e-003	0.1077	0.1090	0.0000	230.6564	230.6564	0.0730		232.4808

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
--	-----	-----	----	-----	---------------	--------------	------------	----------------	---------------	-------------	----------	-----------	-----------	-----	-----	------

Category	lb/day										lb/day				
Hauling	8.5000e-004	0.0278	5.9400e-003	7.0000e-005	1.5900e-003	1.0000e-004	1.6900e-003	4.4000e-004	1.0000e-004	5.3000e-004		7.8592	7.8592	5.4000e-004	7.8727
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000
Worker	0.0150	0.0110	0.1447	3.7000e-004	0.0335	2.9000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		36.3886	36.3886	1.2500e-003	36.4198
Total	0.0158	0.0389	0.1506	4.4000e-004	0.0351	3.9000e-004	0.0355	9.3300e-003	3.7000e-004	9.6900e-003		44.2478	44.2478	1.7900e-003	44.2926

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.8000e-004	0.0000	7.8000e-004	1.2000e-004	0.0000	1.2000e-004			0.0000			0.0000
Off-Road	0.2607	2.6819	3.2632	5.1600e-003		0.1293	0.1293		0.1190	0.1190		511.1256	511.1256	0.1617		515.1684
Total	0.2607	2.6819	3.2632	5.1600e-003	7.8000e-004	0.1293	0.1301	1.2000e-004	0.1190	0.1191		511.1256	511.1256	0.1617		515.1684

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.0500e-003	0.2625	0.0560	6.8000e-004	0.0150	9.6000e-004	0.0160	4.1100e-003	9.2000e-004	5.0300e-003		74.1010	74.1010	5.1000e-003		74.2286
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0150	0.0110	0.1447	3.7000e-004	0.0335	2.9000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		36.3886	36.3886	1.2500e-003		36.4198

Total	0.0230	0.2735	0.2006	1.0500e-003	0.0485	1.2500e-003	0.0498	0.0130	1.1900e-003	0.0142		110.4896	110.4896	6.3500e-003		110.6484
-------	--------	--------	--------	-------------	--------	-------------	--------	--------	-------------	--------	--	----------	----------	-------------	--	----------

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.5000e-004	0.0000	3.5000e-004	5.0000e-005	0.0000	5.0000e-005			0.0000			0.0000
Off-Road	0.2607	2.6819	3.2632	5.1600e-003		0.1293	0.1293		0.1190	0.1190	0.0000	511.1256	511.1256	0.1617		515.1684
Total	0.2607	2.6819	3.2632	5.1600e-003	3.5000e-004	0.1293	0.1297	5.0000e-005	0.1190	0.1190	0.0000	511.1256	511.1256	0.1617		515.1684

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.0500e-003	0.2625	0.0560	6.8000e-004	0.0150	9.6000e-004	0.0160	4.1100e-003	9.2000e-004	5.0300e-003		74.1010	74.1010	5.1000e-003		74.2286
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0150	0.0110	0.1447	3.7000e-004	0.0335	2.9000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		36.3886	36.3886	1.2500e-003		36.4198
Total	0.0230	0.2735	0.2006	1.0500e-003	0.0485	1.2500e-003	0.0498	0.0130	1.1900e-003	0.0142		110.4896	110.4896	6.3500e-003		110.6484

3.4 Grading - 2019**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	1.4261	17.0215	9.1213	0.0199		0.7122	0.7122		0.6552	0.6552		1,970.6197	1,970.6197	0.6235		1,986.2068
Total	1.4261	17.0215	9.1213	0.0199	0.5303	0.7122	1.2425	0.0573	0.6552	0.7125		1,970.6197	1,970.6197	0.6235		1,986.2068

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.5000e-004	0.0278	5.9400e-003	7.0000e-005	1.5900e-003	1.0000e-004	1.6900e-003	4.4000e-004	1.0000e-004	5.3000e-004		7.8592	7.8592	5.4000e-004		7.8727
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0500	0.0367	0.4822	1.2200e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		121.2953	121.2953	4.1700e-003		121.3995
Total	0.0508	0.0646	0.4881	1.2900e-003	0.1134	1.0600e-003	0.1144	0.0301	9.9000e-004	0.0311		129.1545	129.1545	4.7100e-003		129.2722

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					0.2387	0.0000	0.2387	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	1.4261	17.0215	9.1213	0.0199		0.7122	0.7122		0.6552	0.6552	0.0000	1,970.6197	1,970.6197	0.6235		1,986.2068
Total	1.4261	17.0215	9.1213	0.0199	0.2387	0.7122	0.9508	0.0258	0.6552	0.6810	0.0000	1,970.6197	1,970.6197	0.6235		1,986.2068

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.5000e-004	0.0278	5.9400e-003	7.0000e-005	1.5900e-003	1.0000e-004	1.6900e-003	4.4000e-004	1.0000e-004	5.3000e-004		7.8592	7.8592	5.4000e-004		7.8727
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0500	0.0367	0.4822	1.2200e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		121.2953	121.2953	4.1700e-003		121.3995
Total	0.0508	0.0646	0.4881	1.2900e-003	0.1134	1.0600e-003	0.1144	0.0301	9.9000e-004	0.0311		129.1545	129.1545	4.7100e-003		129.2722

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8668	19.9553	10.9462	0.0196		0.9945	0.9945		0.9150	0.9150		1,939.7674	1,939.7674	0.6137		1,955.1105
Total	1.8668	19.9553	10.9462	0.0196		0.9945	0.9945		0.9150	0.9150		1,939.7674	1,939.7674	0.6137		1,955.1105

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.1600e-003	0.1157	0.0307	2.6000e-004	6.4000e-003	7.4000e-004	7.1400e-003	1.8400e-003	7.1000e-004	2.5500e-003		27.8815	27.8815	1.7900e-003		27.9261
Worker	0.0150	0.0110	0.1447	3.7000e-004	0.0335	2.9000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		36.3886	36.3886	1.2500e-003		36.4198
Total	0.0192	0.1267	0.1754	6.3000e-004	0.0399	1.0300e-003	0.0410	0.0107	9.8000e-004	0.0117		64.2701	64.2701	3.0400e-003		64.3460

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8668	19.9553	10.9462	0.0196		0.9945	0.9945		0.9150	0.9150	0.0000	1,939.7674	1,939.7674	0.6137		1,955.1105
Total	1.8668	19.9553	10.9462	0.0196		0.9945	0.9945		0.9150	0.9150	0.0000	1,939.7674	1,939.7674	0.6137		1,955.1105

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
--	-----	-----	----	-----	---------------	--------------	------------	----------------	---------------	-------------	----------	-----------	-----------	-----	-----	------

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.1600e-003	0.1157	0.0307	2.6000e-004	6.4000e-003	7.4000e-004	7.1400e-003	1.8400e-003	7.1000e-004	2.5500e-003		27.8815	27.8815	1.7900e-003		27.9261
Worker	0.0150	0.0110	0.1447	3.7000e-004	0.0335	2.9000e-004	0.0338	8.8900e-003	2.7000e-004	9.1600e-003		36.3886	36.3886	1.2500e-003		36.4198
Total	0.0192	0.1267	0.1754	6.3000e-004	0.0399	1.0300e-003	0.0410	0.0107	9.8000e-004	0.0117		64.2701	64.2701	3.0400e-003		64.3460

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7480	18.4126	10.6883	0.0196		0.9096	0.9096		0.8368	0.8368		1,897.9030	1,897.9030	0.6138		1,913.2485
Total	1.7480	18.4126	10.6883	0.0196		0.9096	0.9096		0.8368	0.8368		1,897.9030	1,897.9030	0.6138		1,913.2485

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.5600e-003	0.1064	0.0279	2.6000e-004	6.4000e-003	5.0000e-004	6.9000e-003	1.8400e-003	4.8000e-004	2.3200e-003		27.7025	27.7025	1.6900e-003		27.7447
Worker	0.0138	9.8200e-003	0.1314	3.5000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003		35.2834	35.2834	1.1100e-003		35.3112

Total	0.0174	0.1162	0.1592	6.1000e-004	0.0399	7.8000e-004	0.0407	0.0107	7.4000e-004	0.0115		62.9859	62.9859	2.8000e-003		63.0559
-------	--------	--------	--------	-------------	--------	-------------	--------	--------	-------------	--------	--	---------	---------	-------------	--	---------

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7480	18.4126	10.6883	0.0196		0.9096	0.9096		0.8368	0.8368	0.0000	1,897.9030	1,897.9030	0.6138		1,913.2485
Total	1.7480	18.4126	10.6883	0.0196		0.9096	0.9096		0.8368	0.8368	0.0000	1,897.9030	1,897.9030	0.6138		1,913.2485

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.5600e-003	0.1064	0.0279	2.6000e-004	6.4000e-003	5.0000e-004	6.9000e-003	1.8400e-003	4.8000e-004	2.3200e-003		27.7025	27.7025	1.6900e-003		27.7447
Worker	0.0138	9.8200e-003	0.1314	3.5000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003		35.2834	35.2834	1.1100e-003		35.3112
Total	0.0174	0.1162	0.1592	6.1000e-004	0.0399	7.8000e-004	0.0407	0.0107	7.4000e-004	0.0115		62.9859	62.9859	2.8000e-003		63.0559

3.6 Paving - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2298	2.4590	2.5360	4.1100e-003		0.1195	0.1195		0.1100	0.1100		398.3631	398.3631	0.1288		401.5841
Paving	0.0191					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.2489	2.4590	2.5360	4.1100e-003		0.1195	0.1195		0.1100	0.1100		398.3631	398.3631	0.1288		401.5841

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.1100e-003	0.2127	0.0557	5.2000e-004	0.0128	1.0000e-003	0.0138	3.6900e-003	9.6000e-004	4.6400e-003		55.4049	55.4049	3.3800e-003		55.4895
Worker	0.0138	9.8200e-003	0.1314	3.5000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003		35.2834	35.2834	1.1100e-003		35.3112
Total	0.0209	0.2226	0.1871	8.7000e-004	0.0463	1.2800e-003	0.0476	0.0126	1.2200e-003	0.0138		90.6883	90.6883	4.4900e-003		90.8007

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	0.2298	2.4590	2.5360	4.1100e-003		0.1195	0.1195		0.1100	0.1100	0.0000	398.3631	398.3631	0.1288		401.5841
Paving	0.0191					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.2489	2.4590	2.5360	4.1100e-003		0.1195	0.1195		0.1100	0.1100	0.0000	398.3631	398.3631	0.1288		401.5841

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.1100e-003	0.2127	0.0557	5.2000e-004	0.0128	1.0000e-003	0.0138	3.6900e-003	9.6000e-004	4.6400e-003		55.4049	55.4049	3.3800e-003		55.4895
Worker	0.0138	9.8200e-003	0.1314	3.5000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003		35.2834	35.2834	1.1100e-003		35.3112
Total	0.0209	0.2226	0.1871	8.7000e-004	0.0463	1.2800e-003	0.0476	0.0126	1.2200e-003	0.0138		90.6883	90.6883	4.4900e-003		90.8007

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
-------------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--	--------	--------	--------	--	--------

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.547726	0.045437	0.201480	0.122768	0.016614	0.006090	0.019326	0.029174	0.002438	0.002359	0.005005	0.000677	0.000907

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
---------------------------	--------	--------	--------	--------	--	--------	--------	--	--------	--------	--	--------	--------	--------	--------	--------

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.0800e-003	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Unmitigated	3.0800e-003	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	5.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.4800e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.0000e-005	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Total	3.0800e-003	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
--	-----	-----	----	-----	---------------	--------------	------------	----------------	---------------	-------------	----------	-----------	-----------	-----	-----	------

SubCategory	lb/day										lb/day					
Architectural Coating	5.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.4800e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.0000e-005	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003
Total	3.0800e-003	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.5300e-003	1.5300e-003	0.0000		1.6300e-003

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

MWD West Valley Feeder - Los Angeles-South Coast County, Annual

MWD West Valley Feeder
Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	7.00	1000sqft	0.16	7,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	33
Climate Zone	8			Operational Year	2020
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MW hr)	1227.89	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -
Land Use - Asphalt Access Roads,
Construction Phase - .
Off-road Equipment - 1 excavator, 1 tractor, 1 crane
Off-road Equipment - 1 loader
Off-road Equipment - 1 tractor, 1 excavator, 1 grader, 1 crane
Off-road Equipment - 1 paver
Off-road Equipment - 1 excavator
Trips and VMT - .

Demolition - Tons based on truckload (1 truckload), 20 ton truck

Grading - Cubic yards based on truckloads, assuming 16 cy truck

Construction Off-road Equipment Mitigation - Rule 403

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	22.00
tblConstructionPhase	NumDays	1.00	21.00
tblConstructionPhase	NumDays	2.00	44.00
tblConstructionPhase	NumDays	100.00	109.00
tblConstructionPhase	NumDays	5.00	22.00
tblGrading	MaterialExported	0.00	32.00
tblGrading	MaterialExported	0.00	144.00
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0583	0.6479	0.3899	7.8000e-004	0.0156	0.0293	0.0450	2.2900e-003	0.0270	0.0293	0.0000	70.4111	70.4111	0.0210	0.0000	70.9370
2020	0.0798	0.8357	0.5015	9.3000e-004	2.2000e-003	0.0409	0.0431	5.9000e-004	0.0377	0.0383	0.0000	82.1684	82.1684	0.0257	0.0000	82.8101
Maximum	0.0798	0.8357	0.5015	9.3000e-004	0.0156	0.0409	0.0450	2.2900e-003	0.0377	0.0383	0.0000	82.1684	82.1684	0.0257	0.0000	82.8101

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0583	0.6479	0.3899	7.8000e-004	9.1000e-003	0.0293	0.0384	1.5800e-003	0.0270	0.0285	0.0000	70.4110	70.4110	0.0210	0.0000	70.9369
2020	0.0798	0.8357	0.5015	9.3000e-004	2.2000e-003	0.0409	0.0431	5.9000e-004	0.0377	0.0383	0.0000	82.1684	82.1684	0.0257	0.0000	82.8100
Maximum	0.0798	0.8357	0.5015	9.3000e-004	9.1000e-003	0.0409	0.0431	1.5800e-003	0.0377	0.0383	0.0000	82.1684	82.1684	0.0257	0.0000	82.8100

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	36.66	0.00	7.43	24.65	0.00	1.07	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	8-1-2019	10-31-2019	0.2616	0.2616
2	11-1-2019	1-31-2020	0.6670	0.6670

3	2-1-2020	4-30-2020	0.6840	0.6840
		Highest	0.6840	0.6840

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.6000e-004	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7000e-004	1.7000e-004	0.0000	0.0000	1.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	5.6000e-004	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.7000e-004	1.7000e-004	0.0000	0.0000	1.9000e-004

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.6000e-004	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7000e-004	1.7000e-004	0.0000	0.0000	1.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	5.6000e-004	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.7000e-004	1.7000e-004	0.0000	0.0000	1.9000e-004

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2019	8/30/2019	5	22	
2	Site Preparation	Site Preparation	9/1/2019	9/30/2019	5	21	
3	Grading	Grading	10/1/2019	11/30/2019	5	44	
4	Building Construction	Building Construction	12/1/2019	4/30/2020	5	109	
5	Paving	Paving	4/1/2020	4/30/2020	5	22	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 22

Acres of Paving: 0.16

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Preparation	Excavators	1	8.00	158	0.38
Site Preparation	Graders	0	8.00	187	0.41

Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Cranes	1	8.00	231	0.29
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Excavators	1	8.00	158	0.38
Building Construction	Forklifts	0	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	0	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction	Rubber Tired Dozers	1	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	1	3.00	0.00	2.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	1	3.00	0.00	18.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	3.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	1	3.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.1000e-004	0.0000	2.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0193	0.0190	3.0000e-005		1.2900e-003	1.2900e-003		1.1800e-003	1.1800e-003	0.0000	2.3017	2.3017	7.3000e-004	0.0000	2.3199
Total	1.9200e-003	0.0193	0.0190	3.0000e-005	2.1000e-004	1.2900e-003	1.5000e-003	3.0000e-005	1.1800e-003	1.2100e-003	0.0000	2.3017	2.3017	7.3000e-004	0.0000	2.3199

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.2000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0779	0.0779	1.0000e-005	0.0000	0.0780
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.4000e-004	1.5000e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3476	0.3476	1.0000e-005	0.0000	0.3479
Total	1.8000e-004	4.6000e-004	1.5700e-003	0.0000	3.8000e-004	0.0000	3.8000e-004	1.0000e-004	0.0000	1.1000e-004	0.0000	0.4255	0.4255	2.0000e-005	0.0000	0.4259

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
--	-----	-----	----	-----	---------------	--------------	------------	----------------	---------------	-------------	----------	-----------	-----------	-----	-----	------

Category	tons/yr										MT/yr					
Fugitive Dust					1.0000e-004	0.0000	1.0000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0193	0.0190	3.0000e-005		1.2900e-003	1.2900e-003		1.1800e-003	1.1800e-003	0.0000	2.3017	2.3017	7.3000e-004	0.0000	2.3199
Total	1.9200e-003	0.0193	0.0190	3.0000e-005	1.0000e-004	1.2900e-003	1.3900e-003	1.0000e-005	1.1800e-003	1.1900e-003	0.0000	2.3017	2.3017	7.3000e-004	0.0000	2.3199

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.2000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0779	0.0779	1.0000e-005	0.0000	0.0780
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.4000e-004	1.5000e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3476	0.3476	1.0000e-005	0.0000	0.3479
Total	1.8000e-004	4.6000e-004	1.5700e-003	0.0000	3.8000e-004	0.0000	3.8000e-004	1.0000e-004	0.0000	1.1000e-004	0.0000	0.4255	0.4255	2.0000e-005	0.0000	0.4259

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7400e-003	0.0282	0.0343	5.0000e-005		1.3600e-003	1.3600e-003		1.2500e-003	1.2500e-003	0.0000	4.8687	4.8687	1.5400e-003	0.0000	4.9072

Total	2.7400e-003	0.0282	0.0343	5.0000e-005	1.0000e-005	1.3600e-003	1.3700e-003	0.0000	1.2500e-003	1.2500e-003	0.0000	4.8687	4.8687	1.5400e-003	0.0000	4.9072
-------	-------------	--------	--------	-------------	-------------	-------------	-------------	--------	-------------	-------------	--------	--------	--------	-------------	--------	--------

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	2.8500e-003	6.1000e-004	1.0000e-005	1.5000e-004	1.0000e-005	1.6000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.7008	0.7008	5.0000e-005	0.0000	0.7021
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6000e-004	1.3000e-004	1.4300e-003	0.0000	3.5000e-004	0.0000	3.5000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.3318	0.3318	1.0000e-005	0.0000	0.3321
Total	2.5000e-004	2.9800e-003	2.0400e-003	1.0000e-005	5.0000e-004	1.0000e-005	5.1000e-004	1.3000e-004	1.0000e-005	1.4000e-004	0.0000	1.0326	1.0326	6.0000e-005	0.0000	1.0341

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7400e-003	0.0282	0.0343	5.0000e-005		1.3600e-003	1.3600e-003		1.2500e-003	1.2500e-003	0.0000	4.8687	4.8687	1.5400e-003	0.0000	4.9072
Total	2.7400e-003	0.0282	0.0343	5.0000e-005	0.0000	1.3600e-003	1.3600e-003	0.0000	1.2500e-003	1.2500e-003	0.0000	4.8687	4.8687	1.5400e-003	0.0000	4.9072

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	2.8500e-003	6.1000e-004	1.0000e-005	1.5000e-004	1.0000e-005	1.6000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.7008	0.7008	5.0000e-005	0.0000	0.7021
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6000e-004	1.3000e-004	1.4300e-003	0.0000	3.5000e-004	0.0000	3.5000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.3318	0.3318	1.0000e-005	0.0000	0.3321
Total	2.5000e-004	2.9800e-003	2.0400e-003	1.0000e-005	5.0000e-004	1.0000e-005	5.1000e-004	1.3000e-004	1.0000e-005	1.4000e-004	0.0000	1.0326	1.0326	6.0000e-005	0.0000	1.0341

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0117	0.0000	0.0117	1.2600e-003	0.0000	1.2600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0314	0.3745	0.2007	4.4000e-004		0.0157	0.0157		0.0144	0.0144	0.0000	39.3298	39.3298	0.0124	0.0000	39.6408
Total	0.0314	0.3745	0.2007	4.4000e-004	0.0117	0.0157	0.0273	1.2600e-003	0.0144	0.0157	0.0000	39.3298	39.3298	0.0124	0.0000	39.6408

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	2.0000e-005	6.3000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1557	0.1557	1.0000e-005	0.0000	0.1560
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	9.2000e-004	9.9900e-003	3.0000e-005	2.4100e-003	2.0000e-005	2.4300e-003	6.4000e-004	2.0000e-005	6.6000e-004	0.0000	2.3174	2.3174	8.0000e-005	0.0000	2.3194
Total	1.1200e-003	1.5500e-003	0.0101	3.0000e-005	2.4400e-003	2.0000e-005	2.4700e-003	6.5000e-004	2.0000e-005	6.7000e-004	0.0000	2.4731	2.4731	9.0000e-005	0.0000	2.4754

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.2500e-003	0.0000	5.2500e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0314	0.3745	0.2007	4.4000e-004		0.0157	0.0157		0.0144	0.0144	0.0000	39.3297	39.3297	0.0124	0.0000	39.6408
Total	0.0314	0.3745	0.2007	4.4000e-004	5.2500e-003	0.0157	0.0209	5.7000e-004	0.0144	0.0150	0.0000	39.3297	39.3297	0.0124	0.0000	39.6408

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	6.3000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1557	0.1557	1.0000e-005	0.0000	0.1560
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	9.2000e-004	9.9900e-003	3.0000e-005	2.4100e-003	2.0000e-005	2.4300e-003	6.4000e-004	2.0000e-005	6.6000e-004	0.0000	2.3174	2.3174	8.0000e-005	0.0000	2.3194
Total	1.1200e-003	1.5500e-003	0.0101	3.0000e-005	2.4400e-003	2.0000e-005	2.4700e-003	6.5000e-004	2.0000e-005	6.7000e-004	0.0000	2.4731	2.4731	9.0000e-005	0.0000	2.4754

3.5 Building Construction - 2019**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0205	0.2195	0.1204	2.2000e-004		0.0109	0.0109		0.0101	0.0101	0.0000	19.3570	19.3570	6.1200e-003	0.0000	19.5101
Total	0.0205	0.2195	0.1204	2.2000e-004		0.0109	0.0109		0.0101	0.0101	0.0000	19.3570	19.3570	6.1200e-003	0.0000	19.5101

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.3000e-003	3.6000e-004	0.0000	7.0000e-005	1.0000e-005	8.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.2751	0.2751	2.0000e-005	0.0000	0.2755
Worker	1.7000e-004	1.4000e-004	1.5000e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3476	0.3476	1.0000e-005	0.0000	0.3479
Total	2.2000e-004	1.4400e-003	1.8600e-003	0.0000	4.3000e-004	1.0000e-005	4.4000e-004	1.2000e-004	1.0000e-005	1.3000e-004	0.0000	0.6227	0.6227	3.0000e-005	0.0000	0.6234

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0205	0.2195	0.1204	2.2000e-004		0.0109	0.0109		0.0101	0.0101	0.0000	19.3570	19.3570	6.1200e-003	0.0000	19.5101
Total	0.0205	0.2195	0.1204	2.2000e-004		0.0109	0.0109		0.0101	0.0101	0.0000	19.3570	19.3570	6.1200e-003	0.0000	19.5101

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.3000e-003	3.6000e-004	0.0000	7.0000e-005	1.0000e-005	8.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.2751	0.2751	2.0000e-005	0.0000	0.2755
Worker	1.7000e-004	1.4000e-004	1.5000e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3476	0.3476	1.0000e-005	0.0000	0.3479
Total	2.2000e-004	1.4400e-003	1.8600e-003	0.0000	4.3000e-004	1.0000e-005	4.4000e-004	1.2000e-004	1.0000e-005	1.3000e-004	0.0000	0.6227	0.6227	3.0000e-005	0.0000	0.6234

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0760	0.8010	0.4649	8.5000e-004		0.0396	0.0396		0.0364	0.0364	0.0000	74.8961	74.8961	0.0242	0.0000	75.5016

Total	0.0760	0.8010	0.4649	8.5000e-004		0.0396	0.0396		0.0364	0.0364	0.0000	74.8961	74.8961	0.0242	0.0000	75.5016
-------	--------	--------	--------	-------------	--	--------	--------	--	--------	--------	--------	---------	---------	--------	--------	---------

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6000e-004	4.7100e-003	1.2800e-003	1.0000e-005	2.7000e-004	2.0000e-005	3.0000e-004	8.0000e-005	2.0000e-005	1.0000e-004	0.0000	1.0807	1.0807	7.0000e-005	0.0000	1.0824
Worker	6.0000e-004	4.9000e-004	5.3700e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3329	1.3329	4.0000e-005	0.0000	1.3339
Total	7.6000e-004	5.2000e-003	6.6500e-003	2.0000e-005	1.7000e-003	3.0000e-005	1.7400e-003	4.6000e-004	3.0000e-005	4.9000e-004	0.0000	2.4135	2.4135	1.1000e-004	0.0000	2.4163

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0760	0.8010	0.4649	8.5000e-004		0.0396	0.0396		0.0364	0.0364	0.0000	74.8960	74.8960	0.0242	0.0000	75.5016
Total	0.0760	0.8010	0.4649	8.5000e-004		0.0396	0.0396		0.0364	0.0364	0.0000	74.8960	74.8960	0.0242	0.0000	75.5016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6000e-004	4.7100e-003	1.2800e-003	1.0000e-005	2.7000e-004	2.0000e-005	3.0000e-004	8.0000e-005	2.0000e-005	1.0000e-004	0.0000	1.0807	1.0807	7.0000e-005	0.0000	1.0824
Worker	6.0000e-004	4.9000e-004	5.3700e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3329	1.3329	4.0000e-005	0.0000	1.3339
Total	7.6000e-004	5.2000e-003	6.6500e-003	2.0000e-005	1.7000e-003	3.0000e-005	1.7400e-003	4.6000e-004	3.0000e-005	4.9000e-004	0.0000	2.4135	2.4135	1.1000e-004	0.0000	2.4163

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.5300e-003	0.0271	0.0279	5.0000e-005		1.3100e-003	1.3100e-003		1.2100e-003	1.2100e-003	0.0000	3.9753	3.9753	1.2900e-003	0.0000	4.0074
Paving	2.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	2.7400e-003	0.0271	0.0279	5.0000e-005		1.3100e-003	1.3100e-003		1.2100e-003	1.2100e-003	0.0000	3.9753	3.9753	1.2900e-003	0.0000	4.0074

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.3800e-003	6.5000e-004	1.0000e-005	1.4000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5465	0.5465	3.0000e-005	0.0000	0.5474
Worker	1.5000e-004	1.2000e-004	1.3600e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3371	0.3371	1.0000e-005	0.0000	0.3373
Total	2.3000e-004	2.5000e-003	2.0100e-003	1.0000e-005	5.0000e-004	1.0000e-005	5.1000e-004	1.4000e-004	1.0000e-005	1.5000e-004	0.0000	0.8836	0.8836	4.0000e-005	0.0000	0.8847

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.5300e-003	0.0271	0.0279	5.0000e-005		1.3100e-003	1.3100e-003		1.2100e-003	1.2100e-003	0.0000	3.9753	3.9753	1.2900e-003	0.0000	4.0074
Paving	2.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	2.7400e-003	0.0271	0.0279	5.0000e-005		1.3100e-003	1.3100e-003		1.2100e-003	1.2100e-003	0.0000	3.9753	3.9753	1.2900e-003	0.0000	4.0074

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.3800e-003	6.5000e-004	1.0000e-005	1.4000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5465	0.5465	3.0000e-005	0.0000	0.5474
Worker	1.5000e-004	1.2000e-004	1.3600e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3371	0.3371	1.0000e-005	0.0000	0.3373
Total	2.3000e-004	2.5000e-003	2.0100e-003	1.0000e-005	5.0000e-004	1.0000e-005	5.1000e-004	1.4000e-004	1.0000e-005	1.5000e-004	0.0000	0.8836	0.8836	4.0000e-005	0.0000	0.8847

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.547726	0.045437	0.201480	0.122768	0.016614	0.006090	0.019326	0.029174	0.002438	0.002359	0.005005	0.000677	0.000907

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
--	-----------------	-----------	-----	-----	------

Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.6000e-004	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7000e-004	1.7000e-004	0.0000	0.0000	1.9000e-004
Unmitigated	5.6000e-004	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7000e-004	1.7000e-004	0.0000	0.0000	1.9000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Consumer Products	4.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7000e-004	1.7000e-004	0.0000	0.0000	1.9000e-004
Total	5.6000e-004	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7000e-004	1.7000e-004	0.0000	0.0000	1.9000e-004

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7000e-004	1.7000e-004	0.0000	0.0000	1.9000e-004
Total	5.6000e-004	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7000e-004	1.7000e-004	0.0000	0.0000	1.9000e-004

7.0 Water Detail**7.1 Mitigation Measures Water**

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			

Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

APPENDIX C

UPDATED BIOLOGICAL AND JURISDICTIONAL WATERS RESOURCES

May 13, 2024

Michelle Morrison
Senior Environmental Specialist, Environmental Planning Section
The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, California 90012

VIA EMAIL
MMorrison@mwdh2o.com

Subject: Updated Biological and Jurisdictional Waters Resources Assessment for the Metropolitan Water District West Valley Feeder No. 1 Stage 3 Improvements Project in the City of Los Angeles, California

Dear Michelle Morrison:

This Letter Report presents the updated conclusions of a biological and jurisdictional waters resources assessment for The Metropolitan Water District of Southern California (MWD) West Valley Feeder No. 1 (WVF1) Stage 3 Improvements project (hereinafter referred to as the “project”) located in the City of Los Angeles, Los Angeles County, California (Exhibit 1). The purpose of the field surveys was to evaluate the potential biological and jurisdictional constraints on the project; determine the presence or absence of special status species, identify potential impacts to biological and jurisdictional water resources that could result from implementation of the project; and provide recommendations to avoid, minimize, and/or mitigate significant impacts.

PROJECT DESCRIPTION AND LOCATION

The project involves modification of the MWD WVF1 located northwest of Chatsworth Park South. Proposed project actions include construction of an approximately 500-foot access road including a vehicle turnaround area and various modifications to existing facilities including valve relocation, equipment replacement, and reconstruction of valve structures. Additionally, the project proposes the installation of new manholes, concrete vaults, and retaining walls along the WVF1. Project impacts would include both temporary impacts in areas associated with construction access, staging, and laydown areas as well as permanent impacts associated with the proposed access road. Except for those areas where impacts would be confined to existing structures and the surrounding paved areas, all other impact areas occurring would be subject to some degree of earth disturbance.

The project site is in the western portion of the San Fernando Valley in the City of Los Angeles (Exhibit 1). Surrounding land uses include undeveloped open space in the Santa Susana Pass State Historic Park to the west and Chatsworth Park South to the east, with urban development farther to the east. A Metrolink railroad alignment is located immediately north of the site. The project site occurs on the U.S. Geological Survey’s (USGS’) Oat Mountain 7.5-minute quadrangle at Township 2 North, Range 17 West, Sections 13 and 14 (Exhibit 2). Topography in the survey area includes slopes and eastward-draining canyons; elevations range from approximately 1,010 feet above mean sea level (msl) in the east to 1,160 feet above msl in the

west. Soils in the survey area are mapped as rock outcrop–Gaviota complex, 30 to 75 percent slopes (Exhibit 3).

Thirteen vegetation types and other areas occur on the project site (Exhibit 4). Vegetation categories include California sagebrush–deerweed scrub, California sagebrush–bush mallow scrub, semi-natural herbaceous stand, wild oats grassland, bush mallow scrub, laurel sumac scrub, red willow/arroyo willow thicket, coast live oak woodland, coast live oak–California sycamore woodland, eucalyptus grove, disturbed, developed and ornamental.

Significant Ecological Areas

The *County of Los Angeles General Plan* originally characterized Significant Ecological Areas (SEAs) as areas that contain unique, dwindling, or other rare plant and animal resources that need to be more specifically studied for the purpose of public education, research, and other non-disruptive outdoor uses (England and Nelson 1976). Thus, the SEA designation does not prohibit development of land but signals that further study is required.

The project is located partially within the Santa Susana Mountains/Simi Hills SEA, which was adopted pursuant to the Santa Clarita Valley Area Plan Update of 2011 and the Los Angeles County General Plan Update of 2015. As noted in the 2015 Los Angeles General Plan, the main purposes for establishing the Santa Susana Mountains/Simi Hills SEA was: (a) to protect core habitats of listed species including Braunton's milk vetch (*Astragalus brauntonii*), coastal California gnatcatcher (*Polioptila californica californica*), and least Bell's vireo (*Vireo bellii pusillus*); (b) for protection of biotic communities, vegetative associates, and habitat of plant and animal species that are restricted in distribution in the County and regionally; and (c) to act as an essential habitat linkage between the Santa Monica Mountains to the south, San Gabriel Mountains to the east, and the Los Padres National Forest to the north.

SURVEY METHODS

Psomas Biologist Allison Rudalevige conducted an initial general plant and wildlife survey, mapped vegetation, and performed a jurisdictional delineation for the project on June 4, 2018. The general survey was repeated in 2022 and a number of focused protocol surveys were conducted including a rare plant focused protocol survey, least Bell's vireo focused protocol survey, California gnatcatcher focused protocol survey, and a California red-legged frog focused protocol survey. A general survey and updated vegetation mapping survey were conducted in October 2023 due to the addition of previously unsurveyed project work areas. The survey area included a 100-foot buffer around all project impact areas. Representative photographs are provided in Appendix A.

Literature Review

Prior to the survey, a literature review was conducted to identify special status plants, wildlife, and habitats that have been reported to occur in the vicinity of the survey area. The California Native Plant Society's (CNPS') Inventory of Rare and Endangered Plants (CNPS 2023) and the California Department of Fish and Wildlife's (CDFW's) California Natural Diversity Database (CDFW 2023b) were reviewed. Database searches included the USGS' Simi Valley East (also called Santa Susana), Oat Mountain, Canoga Park, and Calabasas 7.5-minute quadrangles. Resources reviewed to assist in the delineation of jurisdictional features included the U.S. Department of Agriculture, Natural Resources Conservation Service's (USDA NRCS') Web Soil Survey, the USDA NRCS' Hydric Soils List (USDA NRCS 2023), and the U.S. Fish and Wildlife Service's (USFWS') National Wetlands Inventory (NWI) Wetland Mapper (USFWS 2023).

Vegetation Mapping and General Survey

Vegetation was mapped on a 1-inch equals 100-foot (1"=100') scale color aerial. Nomenclature for vegetation types generally follows that of *A Manual of California Vegetation* (Sawyer et al. 2009). All plant species observed were recorded in field notes. Plant species were identified in the field or collected for subsequent identification using keys in Baldwin et al. (2012). Nomenclature of plant taxa conforms to the *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2023e) for special status species and the *Jepson eFlora* (Jepson Flora Project 2023) for all other taxa.

All wildlife species detected during the course of the surveys were documented in field notes. Active searches for reptiles and amphibians included lifting, overturning, and carefully replacing rocks and debris. Birds were identified by visual and auditory recognition. Surveys for mammals were conducted during the day and included searching for and identifying diagnostic signs, including scat, footprints, scratch-outs, dust bowls, burrows, and trails. Taxonomy and nomenclature for wildlife generally follows the *Special Animals List* (CDFW 2023d) for special status species and, for other species, Center for North American Herpetology (2015) for amphibians and reptiles, the American Ornithological Society (2023) for birds, and the Smithsonian National Museum of Natural History (2011) for mammals.

Jurisdictional Delineation

Section 404 of the federal Clean Water Act (CWA) and Section 1602 of the *California Fish and Game Code* regulate activities affecting resources under the jurisdiction of the U.S. Army Corps of Engineers (USACE) and the CDFW, respectively. Waters of the United States under the jurisdiction of the USACE include navigable coastal and inland waters, lakes, rivers, streams, and their tributaries; interstate waters and their tributaries; wetlands adjacent to such waters; intermittent streams; and other waters that could affect interstate commerce. The CDFW has jurisdictional authority over resources associated with rivers, streams, and lakes. Section 401 of the CWA provides the Regional Water Quality Control Board (RWQCB) with the authority to regulate, through a Water Quality Certification, any proposed federally permitted activity that may affect water quality. The RWQCB also has jurisdiction over isolated wetlands and waters of the State under the Porter-Cologne Water Quality Control Act.

A delineation of jurisdictional water resource boundaries was conducted concurrently with vegetation mapping and general biological surveys in order to describe the type and extent of waters regulated by the USACE, the RWQCB, and/or the CDFW. Jurisdictional features were mapped on the aerial. Non-wetland waters of the United States under the jurisdiction of the USACE were assessed based on the presence of an Ordinary High Water Mark (OHWM). The presence of wetland waters of the United States was assessed using a three-parameter approach for wetland hydrology, hydrophytic vegetation, and hydric soils, as described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008). It should be noted that the RWQCB shares USACE jurisdiction unless isolated conditions are present. If conditions indicating isolated waters are present, the RWQCB takes jurisdiction using the USACE's OHWM. CDFW generally asserts jurisdiction over the top of the bank of a river, stream, or lake or to the outer limit of riparian vegetation located within or immediately adjacent to the river, stream, or lake.

SURVEY RESULTS

Vegetation Types and Other Landcovers

Approximately 10.98 acres of vegetation and other landcovers occur in the survey area (Exhibit 4; Table 1). This consists of California sagebrush–deerweed scrub, California sagebrush–bush mallow scrub, semi-natural herbaceous stand, wild oats grassland, bush mallow scrub, bush mallow–laurel sumac scrub,

laurel sumac scrub, red willow/arroyo willow thicket, coast live oak woodland, coast live oak–California sycamore woodland, eucalyptus grove, disturbed, developed, and ornamental. These areas are described below.

TABLE 1
VEGETATION TYPES AND OTHER LANDCOVER IN THE SURVEY AREA

Vegetation Type or Other Landcover	Area (acres)	Special Status*
California sagebrush–deerweed scrub	4.01	no
California sagebrush–bush mallow scrub	0.21	no
semi-natural herbaceous stand	0.31	no
wild oats grassland	0.35	no
bush mallow scrub	0.02	no
laurel sumac scrub	1.72	no
red willow/arroyo willow thicket	0.21	yes
coast live oak woodland	0.82	no
coast live oak–California sycamore woodland	0.65	no
eucalyptus grove	0.07	no
disturbed	0.67	no
developed	1.12	no
ornamental	0.82	no
Total	10.98	

* Sensitivity is based on the California Department of Fish and Wildlife’s *California Natural Community List* (CDFW 2022a).

California Sagebrush–Deerweed Scrub

California sagebrush–deerweed scrub occurs on slopes throughout the survey area. This vegetation type is dominated by deerweed (*Acmispon glaber*; formerly *Lotus scoparius*) and California sagebrush (*Artemisia californica*), with the relative cover of each varying across the site. Other drought-deciduous sage scrub species such as California buckwheat (*Eriogonum fasciculatum*) and saw-toothed goldenbush (*Hazardia squarrosa*) occur at lower cover. The area between shrubs is dominated by red brome (*Bromus madritensis* ssp. *rubens*), with scattered tocalote (*Centaurea melitensis*), crimson fountain grass (*Pennisetum setaceum*), and large-bracted morning-glory (*Calystegia macrostegia*). Deerweed often occurs in areas with recent disturbance, such as through clearing, fire, or intermittent flooding (Sawyer et al. 2009). The eastern portion of the site burned most recently during the 2008 Sesnon Fire, while the western portion of the site burned in the 2005 Topanga Fire (Los Angeles County 2017). Deerweed stands represent an early successional community that is replaced by longer-lived shrubs typically between five and ten years after a fire (Sawyer et al. 2009). The vegetation in the survey area may represent a transition between a post-fire community and a more “typical” coastal sage scrub community.

This vegetation type corresponds to the *Artemisia californica*–*Lotus scoparius* Association in Sawyer et al. (2009), which consists of mixed stands of California sagebrush with other shrubs sub-dominant. It is not considered a sensitive natural community by the CDFW.

California Sagebrush–Bush Mallow Scrub

California sagebrush–bush mallow scrub occurs in the eastern portion of the survey area. This vegetation type is similar to the California sagebrush–deerweed scrub but is dominated by a mix of chaparral mallow (*Malacothamnus fasciculatus*) and California sagebrush. Bush mallow associations represent post-fire conditions, and individual shrubs are suppressed by longer-lived shrubs within a decade after a fire (Sawyer et al. 2009). Therefore, this area may also represent a transition between a post-fire community and a more “typical” coastal sage scrub or chaparral community.

This vegetation type does not correspond to a named alliance or association in Sawyer et al. (2009). Its composition is similar to the *Malacothamnus fasciculatus* Shrubland Alliance, though the cover of bush mallow is less than the required cover (i.e., 50 percent) for that alliance. Since neither the *Artemisia californica* Shrubland Alliance nor the *Malacothamnus fasciculatus* Shrubland Alliance are considered sensitive natural communities by the CDFW, the California sagebrush–bush mallow scrub in the survey area is not considered sensitive.

Semi-natural Herbaceous Stand

Semi-natural herbaceous stands occur adjacent to the access roads throughout the survey area. This vegetation consists of non-native, weedy species such as grayish shortpod mustard (*Hirschfeldia incana*), tocalote, red brome, and round-leaved filaree (*Erodium cicutarium*), with no single species dominant. These species are typical of disturbed areas. Scattered natives, such as deerweed, saw-toothed goldenbush, large-bracted morning-glory, fascicled tarplant (*Deinandra fasciculata*), and sapphire eriastrum (*Eriastrum sapphirinum*) are also present.

This vegetation type corresponds to various semi-natural herbaceous stands in Sawyer et al. (2009). Being dominated by non-native species, it is not considered a sensitive natural community by the CDFW.

Wild Oats Grassland

Wild oats grassland occurs in a patch in the western portion of the survey area. This vegetation type is dominated by wild oat (*Avena* sp.). Scattered coastal sage scrub species, such as wishbone bush (*Mirabilis laevis* var. *crassifolia*) also occur.

This vegetation type corresponds to the *Avena (barbata, fatua)* semi-natural herbaceous stand in Sawyer et al. (2009). Being dominated by a non-native species, it is not considered a sensitive natural community by the CDFW.

Bush Mallow Scrub

Bush mallow scrub occurs in a few discrete patches in the survey area. This vegetation type is dominated by chaparral mallow at a cover greater than 50 percent. As discussed above, these areas may represent a transition between a post-fire community and a more “typical” coastal sage scrub or chaparral community.

This vegetation type corresponds to the *Malacothamnus fasciculatus* Shrubland Alliance in Sawyer et al. (2009). It is not considered a sensitive natural community by the CDFW.

Laurel Sumac Scrub

Laurel sumac scrub occurs on slopes throughout the survey area. This vegetation type consists of large individuals or stands of laurel sumac (*Malosma laurina*).

This vegetation type corresponds to the *Malosma laurina* Shrubland Alliance in Sawyer et al. (2009). It is not considered a sensitive natural community by the CDFW.

Red Willow/Arroyo Willow Thicket

Red willow/arroyo willow thicket occurs along a portion of Drainage 1 in the western portion of the survey area. This vegetation type is dominated by a canopy of red willow (*Salix laevigata*) and arroyo willow (*Salix lasiolepis*). The understory is partly open with some areas containing western poison oak (*Toxicodendron diversilobum*) or cattail (*Typha* sp.).

This vegetation type corresponds to the *Salix laevigata*–*Salix lasiolepis* Association in Sawyer et al. (2009). It is considered a sensitive natural community by the CDFW. It is also associated with water resources under the jurisdiction of the USACE, the RWQCB, and/or the CDFW, as discussed below.

Coast Live Oak Woodland

Coast live oak woodland occurs on upland slopes of the survey area. This vegetation type consists of individual coast live oak (*Quercus agrifolia*) that are not associated with the on-site drainages.

This vegetation type corresponds to the *Quercus agrifolia* Woodland Alliance in Sawyer et al. (2009). It is not considered a sensitive natural community by the CDFW.

Coast Live Oak–California Sycamore Woodland

Coast live oak–California sycamore woodland occurs along the drainages in the survey area. This vegetation type consists of a closed canopy of coast live oaks with some western sycamore (*Platanus racemosa*). The lower canopy and understory contain blue elderberry (*Sambucus nigra* ssp. *caerulea*), laurel sumac, mugwort (*Artemisia douglasiana*), and western poison oak.

This vegetation type corresponds to the *Quercus agrifolia*–*Platanus racemosa*/*Toxicodendron diversilobum* Association in Sawyer et al. (2009). It is not considered a sensitive natural community by the CDFW. However, it is associated with water resources under the jurisdiction of the USACE, the RWQCB, and/or the CDFW, as discussed below.

Eucalyptus Grove

Eucalyptus grove occurs adjacent to the existing Calleguas Municipal Water District facility at the western end of the survey area. This vegetation type is dominated by non-native silver dollar gum (*Eucalyptus polyanthemos*) with pepper tree (*Schinus molle*).

This vegetation type corresponds to the *Eucalyptus (globulus, camaldulensis)* semi-natural woodland stand in Sawyer et al. (2009). Being dominated by non-native species, it is not considered a sensitive natural community by the CDFW.

Disturbed

Disturbed landcover consists of graded, dirt access roads throughout the survey area. These areas are unvegetated or contain sparse weedy vegetation.

Developed

Developed landcover consists of paved roads in the survey area and the existing Calleguas Municipal Water District facility.

Ornamental

Ornamental landcover consists of landscaped areas containing non-native ornamental vegetation. On the project site, these areas consisted predominantly of turf grass as part of a park field near the entrance to Chatsworth Park South.

Jurisdictional Resources

Jurisdictional resources in the survey area includes one main drainage channel to the west (Drainage 1) with one tributary channel (Drainage 1A) and a second large drainage (Drainage 2) towards the center of the site (Exhibit 5; Table 2). The NWI maps Drainage 1 as a Riverine, intermittent streambed that is temporarily flooded. Soils in the survey area are not listed as hydric (USDA NRCS 2023).

**TABLE 2
JURISDICTIONAL WATER RESOURCES IN THE SURVEY AREA**

Jurisdiction	Drainage 1 (acres)	Drainage 2 (acres)	Total
USACE	-	-	-
wetland waters of the United States	0.02	0.00	0.02
non-wetland waters of the United States	0.04	0.03	0.07
RWQCB	0.06	0.03	0.09
CDFW	0.74	0.50	1.24

USACE: U.S. Army Corps of Engineers; RWQCB: Regional Water Quality Control Board; CDFW: California Department of Fish and Wildlife

* The riparian canopy extends over both Drainages 1 and 1A; acreage for both channels is included under Drainage 1.

U.S. Army Corps of Engineers

The on-site drainage channels connect with the City of Los Angeles' subsurface municipal separate storm sewer system (MS4), which carries flow to the Los Angeles River. The Los Angeles River discharges into the Pacific Ocean, a Traditional Navigable Water (TNW). Drainage 1 had flowing water during the summer 2018 site visit and the spring and summer 2022 site visits. The presence of surface water during the dry season indicates that these drainages may be considered to be relatively permanent, non-navigable tributaries to a TNW. Therefore, Drainage 1 would be considered waters of the United States. It exhibited evidence of bed, bank, and OHWM. Indicators of an OHWM include a change in vegetation cover and composition, break in bank slope, and drift deposits.

Drainage 1A did not have flowing water at the time of the surveys or exhibit indicators of wetland hydrology. It had a bed and near vertical banks with an accumulation of leaf litter consistent with the surrounding hillsides. Drainage 1A exhibits the features of an ephemeral body. Ephemeral waters are no

longer jurisdictional under Section 404 of the Clean Water Act due to the recent Sacket decision [*Sackett v. Environmental Protection Agency*, 598 U.S. ____ (2023)]. However, Drainage 1A remains under the jurisdiction of the RWQCB, an isolated water of the State, and CDFW.

Drainage 1 exhibited evidence of wetland hydrology (e.g., surface water, drift deposits, drainage patterns). The majority of the drainage was under a coast live oak canopy (an upland species) either lacking understory vegetation or with western poison oak (a facultative upland species) (Lichvar et al. 2016) and would not meet the hydrophytic vegetation criterion for wetlands. Therefore, the portion of Drainage 1 with an oak canopy would be considered non-wetland waters of the United States. A portion of Drainage 1 had a canopy of red willow and arroyo willow, with an understory containing western poison oak or cattail in small patches. Both willow species observed on-site are considered facultative wetland species and cattail is considered an obligate wetland species. A soil test pit was not dug due to inaccessibility of the channel in this area (i.e., the presence of poison oak and dense riparian vegetation as well as the steepness of the surrounding slopes prevented safe access); therefore, the presence of hydric soils could not be confirmed. However, given the presence of flowing water during the dry season and the dominance of facultative wetland species with a small amount of obligate wetland species present in the channel, the portion of the drainage containing willows can be inferred to be wetland waters of the United States. Drainage 2 similarly carries flow to the Los Angeles River and is considered jurisdictional waters of the United States because the Los Angeles River discharges into the Pacific Ocean, a TNW.

Approximately 0.09 acre of waters of the United States (0.02-acre wetland and 0.07-acre non-wetland) occur in the survey area (Exhibit 5; Table 2).

Regional Water Quality Control Board

Regional Water Quality Control Board extends to all waters of the U.S. on-site and one isolated drainage (Drainage 1A). Approximately 0.09 acre of waters of the State, including drainage 1A, occur in the survey area (Exhibit 5; Table 2).

California Department of Fish and Wildlife

CDFW jurisdiction in the survey area extends to the outer dripline of riparian vegetation (i.e., coast live oak–California sycamore woodland and red willow/arroyo willow thicket). Approximately 1.24 acres of jurisdictional resources under the regulatory authority of the CDFW occur in the survey area (Exhibit 5; Table 2). This includes 0.21 acre of red willow/arroyo willow thicket.

Wildlife Habitat

The survey area provides moderate to high quality habitat for wildlife. The presence of human intrusion into the area on dirt access roads and trails and surrounding urban development decrease the wildlife value relative to undisturbed areas.

No fish species were observed during the 2022 focused surveys and the drainages in the survey area provide minimal habitat for fish due to the limited amount of surface water present and the isolated nature of the drainages in the survey area. Western mosquitofish (*Gambusia affinis*), a non-native species used for vector control, could potentially be present in the area if released.

During the 2022 focused surveys, the only amphibian species that was observed was the Northern Pacific treefrog (*Pseudacris regilla*). Common species that may also occur include black-bellied slender salamander (*Batrachoseps nigriventris*), western toad (*Anaxyrus boreas*), and Baja California treefrog (*Pseudacris hypochondriaca*).

Reptile species observed during the 2022 focused surveys include: western fence lizard (*Sceloporus occidentalis*) and the common side-blotched lizard (*Uta stansburiana*). Other common species that may also occur include western skink (*Plestiodon skiltonianus*), southern alligator lizard (*Elgaria multicarinata*), ring-necked snake (*Diadophis punctatus*), California kingsnake (*Lampropeltis californiae*), gopher snake (*Pituophis catenifer*), and southern Pacific rattlesnake (*Crotalus oreganus helleri*).

Bird species observed on or adjacent to the survey area during the 2022 focused surveys include: mallard (*Anas platyrhynchos*), California quail (*Callipepla californica*), rock pigeon (*Columba livia*), Eurasian collared-dove (*Streptopelia decaocto*), mourning dove (*Zenaida macroura*), common poorwill (*Phalaenoptilus nuttallii*), white-throated swift (*Aeronautes saxatalis*), Anna's hummingbird (*Calypte anna*), Allen's hummingbird (*Selasphorus sasin*), turkey vulture (*Cathartes aura*), Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), acorn woodpecker (*Melanerpes formicivorus*), Nuttall's woodpecker (*Picoides nuttalli*), northern flicker (*Colaptes auratus*), Pacific-slope flycatcher (*Empidonax difficilis*), black phoebe (*Sayornis nigricans*), ash-throated flycatcher (*Myiarchus cinerascens*), Cassin's kingbird (*Tyrannus vociferans*), California scrub-jay (*Aphelocoma californica*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), northern rough-winged swallow (*Stelgidopteryx serripennis*), barn swallow (*Hirundo rustica*), cliff swallow (*Petrochelidon pyrrhonota*), oak titmouse (*Baeolophus inornatus*), bushtit (*Psaltiriparus minimus*), white-breasted nuthatch (*Sitta carolinensis*), canyon wren (*Catherpes mexicanus*), Bewick's wren (*Thyromanes bewickii*), blue-gray gnatcatcher (*Poliophtila caerulea*), wrentit (*Chamaea fasciata*), American robin (*Turdus migratorius*), western bluebird (*Sialia mexicana*), California thrasher (*Toxostoma redivivum*), northern mockingbird (*Mimus polyglottos*), European starling (*Sturnus vulgaris*), phainopepla (*Phainopepla nitens*), house finch (*Haemorhous mexicanus*), lesser goldfinch (*Spinus psaltria*), dark-eyed junco (*Junco hyemalis*), song sparrow (*Melospiza melodia*), spotted towhee (*Pipilo maculatus*), California towhee (*Melospiza crissalis*), hooded oriole (*Icterus cucullatus*), brown-headed cowbird (*Molothrus ater*), red-winged blackbird (*Agelaius phoeniceus*), and yellow-rumped warbler (*Setophaga coronata*).

Mammal species observed during the 2022 focused surveys include: California ground squirrel (*Otospermophilus beecheyi*), desert cottontail (*Sylvilagus audubonii*) and coyote (*Canis latrans*). Other common species that may occur include Botta's pocket gopher (*Thomomys bottae*), common raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and bobcat (*Lynx rufus*). Common bat species with potential to forage in the survey area include canyon bat (*Parastrellus hesperus*).

Wildlife Movement

Within large open space areas where few or no man-made or naturally occurring physical constraints to wildlife movement are present, wildlife corridors may not yet exist. However, once open space areas become constrained and/or fragmented as a result of urban development or the construction of physical obstacles (e.g., roads and highways), the remaining landscape features or travel routes that connect the larger open space areas become corridors as long as they provide adequate space, cover, food, and water and do not contain obstacles or distractions (e.g., man-made noise, lighting) that would generally hinder wildlife movement.

The survey area is located at the urban-wildland interface, with urban development to the east, large tracts of undeveloped open space to the west, and Chatsworth Park South as a buffer between the two. The existing dirt roads in the survey area have extremely minimal vehicular traffic and represent a minor barrier to wildlife movement with most species minimally deterred from efficiently crossing. Generally, wildlife are expected to move freely throughout the survey area and surroundings under existing conditions.

Special Status Vegetation Types

The CDFW Vegetation Classification and Mapping Program provides a list of vegetation Alliances, Associations, and Special Stands that are considered to be “Sensitive Natural Communities” based on their rarity and threat (CDFW 2023c). Information on rarity is based on the range and distribution of a given type of vegetation, and the proportion of occurrences that are of good ecological integrity. Threats and trends are considered in categories like residential and commercial development, agriculture, energy production and mining, and invasive and other problematic species. One vegetation type in the survey area, red willow/arroyo willow thicket, is considered special status by the CDFW.

Special Status Plant and Wildlife Species

Plants or wildlife may be considered “special status” due to declining populations, vulnerability to habitat change, or restricted distributions. Certain special status species have been listed as Threatened or Endangered under the State and/or Federal Endangered Species Acts.

Special Status Plants

Twenty-five special status plant species have been reported in the vicinity of the survey area (CNPS 2023; CDFW 2023b). Table 3 summarizes their status and potential to occur in the survey area inclusive of 2022 rare plant survey results.

TABLE 3
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE VICINITY
OF THE SURVEY AREA

Species	Common Name	Federal Status	State Status	CRPR Status	Potential to Occur in the Survey Area
<i>Astragalus brauntonii</i>	Braunton's milk-vetch	FE	–	1B.1	Potentially suitable habitat present. Not observed during focused surveys.
<i>Calandrinia breweri</i>	Brewer's claudrinia	–	–	4.2	Potentially suitable habitat present. Not observed during focused surveys.
<i>Calochortus catalinae</i>	Catalina mariposa lily	–	–	4.2	Potentially suitable habitat present. Not observed during focused surveys.
<i>Calochortus clavatus</i> var. <i>gracilis</i>	slender mariposa lily	–	–	1B.2	Potentially suitable habitat present. Not observed during focused surveys.
<i>Calochortus fimbriatus</i>	late-flowered mariposa lily	–	–	1B.2	Potentially suitable habitat present. Not observed during focused surveys.
<i>Calochortus plummerae</i>	Plummer's mariposa lily	–	–	4.2	Potentially suitable habitat present. Not observed during focused surveys.
<i>Calystegia peirsonii</i>	Peirson's morning-glory	–	–	4.2	Not expected to occur; outside current known range. Not observed during focused surveys.
<i>Cercocarpus betuloides</i> var. <i>blancheae</i>	island mountain-mahogany	–	–	4.3	Not expected to occur; outside current known range. Not observed during focused surveys.
<i>Chorizanthe parryi</i> var. <i>fernandina</i>	San Fernando Valley spineflower	FC	SE	1B.1	Potentially suitable habitat present and historic occurrence from Chatsworth Park (CCH 2022; 1901 record). Not observed during focused surveys.
<i>Convolvulus simulans</i>	small-flowered morning-glory	–	–	4.2	Limited potential to occur; marginally suitable habitat. Not observed during focused surveys.
<i>Deinandra minthornii</i>	Santa Susana tarplant	–	SR	1B.2	Potentially suitable habitat present and reported just southwest of survey area (CCH 2022). Not observed during focused surveys.
<i>Dodecahema leptoceras</i>	slender-horned spineflower	FE	SE	1B.1	Limited potential to occur; marginally suitable habitat and at edge of current known range. Not observed during focused surveys.
<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i>	Blochman's dudleya	–	–	1B.1	Not expected to occur; outside current known range. Not observed during focused surveys.
<i>Dudleya multicaulis</i>	many-stemmed dudleya	–	–	1B.2	Limited potential to occur; marginally suitable habitat and at edge of current known range. Not observed during focused surveys.
<i>Harpagonella palmeri</i>	Palmer's grapplinghook	–	–	4.2	Limited potential to occur; suitable habitat but at edge of current known range. Not observed during focused surveys.
<i>Horkelia cuneata</i> var. <i>puberula</i>	mesa horkelia	–	–	1B.1	Potentially suitable habitat present. Not observed during focused surveys.

Species	Common Name	Federal Status	State Status	CRPR Status	Potential to Occur in the Survey Area
<i>Juglans californica</i>	Southern California black walnut	–	–	4.2	Not expected to occur; this species is visible year-round and would have been observed if present. Not observed during focused surveys.
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	Coulter's goldfields	–	–	1B.1	Not expected to occur; no suitable habitat. Not observed during focused surveys.
<i>Lilium humboldtii</i> ssp. <i>ocellatum</i>	ocellated Humboldt lily	–	–	4.2	Potentially suitable habitat present. Not observed during focused surveys.
<i>Lupinus paynei</i>	Payne's bush lupine	–	–	1B.1	Potentially suitable habitat present. Not observed during focused surveys.
<i>Monardella hypoleuca</i> ssp. <i>hypoleuca</i>	white-veined monardella	–	–	1B.3	Not expected to occur; outside current known range. Not observed during focused.
<i>Navarretia ojaiensis</i>	Ojai navarretia	–	–	1B.1	Not expected to occur; no suitable habitat. Not observed during focused.
<i>Nolina cismontana</i>	chaparral nolina	–	–	1B.2	Potentially suitable habitat present. Not observed during focused surveys.
<i>Orcuttia californica</i>	California Orcutt grass	FE	SE	1B.1	Not expected to occur; no suitable habitat. Not observed during focused.

CRPR: California Rare Plant Rank

LEGEND:**Federal (USFWS)**

FE Endangered
 FT Threatened SR
 FC Candidate

State (CDFW)

SE Endangered
 Rare

CRPR

1B Plants Rare, Threatened, or Endangered in California and elsewhere
 3 Plants about which we need more information – a review list
 4 Plants of limited distribution – a watch list

CRPR Threat Code Extensions

.1 Seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat)
 .2 Fairly threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)
 .3 Not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known)

Of the species reported from the literature review, five species are federally and/or State-listed Endangered, Threatened, or Rare or are candidates for listing: Braunton's milk-vetch, San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), Santa Susana tarplant (*Deinandra minthornii*), slender-horned spineflower (*Dodecahema leptoceras*), and California Orcutt grass (*Orcuttia californica*). Suitable or marginally suitable habitat for Braunton's milk-vetch, San Fernando Valley spineflower, Santa Susana tarplant, and slender-horned spineflower occur in the survey area. Results of rare plants surveys conducted in 2022 by Psomas Biologist Sarah Thomas were negative for all five of these species. The remaining species are not expected to occur in the survey area because the survey area does not support suitable habitat or soils for these species or the survey area is outside the known range of the species.

In addition to species formally listed by the resource agencies, ten species reported in the vicinity of the survey area have a California Rare Plant Rank (CRPR) of 1B. Six of these species—slender mariposa lily (*Calochortus clavatus* var. *gracilis*), late-flowered mariposa lily (*Calochortus fimbriatus*), many-stemmed dudleya (*Dudleya multicaulis*), mesa horkelia (*Horkelia cuneata* var. *puberula*), Payne's bush lupine

(*Lupinus paynei*), and chaparral nolina (*Nolina cismontana*)—have potential to occur in the survey area due to suitable or marginally suitable habitat present. Results of rare plants surveys conducted were negative for all six of these species. The remaining four species are not expected to occur in the survey area because the survey area does not support suitable habitat or soils for these species or the survey area is outside the known range of the species.

Several plant species with a CRPR of 3 or 4 are also known from the vicinity, however, none were detected during rare plant surveys.

Special Status Wildlife

Twenty-five special status wildlife species have been reported in the vicinity of the survey area (CDFW 2023b) and an additional four species may occur in the vicinity based on the biologist's knowledge of the species. Table 4 summarizes their status and potential to occur in the survey area inclusive of 2022 focused survey results (see Appendix B).

**TABLE 4
SPECIAL STATUS WILDLIFE SPECIES REPORTED FROM
THE VICINITY OF THE SURVEY AREA**

Species	Common Name	Federal Status	State Status	Potential to Occur in the Survey Area
Invertebrates	-	-	-	-
<i>Bombus crotchii</i>	Crotch bumble bee	–	CE	May occur; potentially suitable habitat.
<i>Danaus plexippus</i> pop. 1	monarch (California overwintering population)	CF	–	Not expected to occur as an overwintering population; no suitable roosting habitat.
<i>Gonidea angulata</i>	western ridged mussel	–	S2	Not expected to occur; no suitable habitat or host species present.
<i>Socalchemmis gertschi</i>	Gertsch's socalchemmis spider	–	S1	May occur; potentially suitable habitat.
Amphibians	-	-	-	-
<i>Anaxyrus californicus</i>	arroyo toad	FE	SSC	Not expected to occur; no suitable habitat.
<i>Rana draytonii</i>	California red-legged frog	FT	SSC	Not expected to occur; marginal potentially suitable habitat; not detected during focused surveys.
<i>Spea hammondi</i>	western spadefoot	–	SSC	May occur in uplands and limited potential to breed; marginally suitable habitat.

Species	Common Name	Federal Status	State Status	Potential to Occur in the Survey Area
<i>Taricha torosa</i>	Coast Range newt	–	SSC	Not likely to occur due to lack of observation during surveys; marginally suitable habitat.
Reptiles	-	-	-	-
<i>Anniella</i> sp.	California legless lizard	–	SSC	May occur; potentially suitable habitat.
<i>Aspidoscelis tigris stejnegeri</i>	coastal whiptail	–	SSC	May occur; potentially suitable habitat.
<i>Emys marmorata</i>	western pond turtle	CF	SSC	Not expected to occur; no suitable habitat.
<i>Phrynosoma blainvillii</i>	coast horned lizard	–	SSC	May occur; potentially suitable habitat.
<i>Thamnophis hammondi</i>	two-striped garter snake	–	SSC	May occur; potentially suitable habitat.
Birds				
<i>Agelaius tricolor</i>	tricolored blackbird	–	ST, SSC	Not expected to occur; no suitable habitat.
<i>Aimophila ruficeps canescens</i>	southern California rufous-crowned sparrow	–	WL	May occur; potentially suitable habitat.
<i>Aquila chrysaetos</i>	golden eagle	–	FP	May occur for foraging; potentially suitable foraging habitat. Not expected to occur for nesting; no suitable nesting habitat.
<i>Athene cunicularia</i>	burrowing owl	–	SSC	Not expected to occur; no suitable habitat.
<i>Buteo swainsoni</i>	Swainson's hawk	–	ST	May occur for foraging; potentially suitable foraging habitat. Not expected to occur for nesting; outside the known breeding range.
<i>Poliophtila californica californica</i>	coastal California gnatcatcher	FT	SSC	Not expected to occur; potentially suitable habitat; not detected during focused surveys.

Species	Common Name	Federal Status	State Status	Potential to Occur in the Survey Area
<i>Riparia riparia</i>	bank swallow	–	ST	May occur for foraging during migration; potentially suitable foraging habitat. Not expected to occur for nesting; outside the known breeding range.
<i>Vireo bellii pusillus</i>	least Bell's vireo	FE	SE	Not expected to occur; marginal potentially suitable habitat; not detected during focused surveys.
Mammals				
<i>Antrozous pallidus</i>	pallid bat	–	SSC	May occur for foraging and roosting; potentially suitable foraging and roosting habitat.
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	–	SSC	Limited potential to occur for foraging; marginally suitable foraging habitat. Not expected to occur for roosting; no suitable roosting habitat.
<i>Euderma maculatum</i>	spotted bat	–	SSC	Limited potential to occur for foraging; marginally suitable foraging habitat. Not expected to occur for roosting; no suitable roosting habitat.
<i>Eumops perotis californicus</i>	western mastiff bat	–	SSC	May occur for foraging; suitable foraging habitat. Not expected to occur for roosting; no suitable roosting habitat.
<i>Lasiurus blossevillii</i>	western red bat	–	SSC	May occur for foraging and roosting; suitable foraging and roosting habitat.
<i>Lasiurus xanthinus</i>	western yellow bat	–	SSC	Limited potential to occur for foraging and roosting; marginally suitable foraging and roosting habitat.
<i>Macrotus californicus</i>	California leaf-nosed bat	–	SSC	Not expected to occur; outside of current known range.

Species	Common Name	Federal Status	State Status	Potential to Occur in the Survey Area
<i>Neotoma lepida intermedia</i>	San Diego desert woodrat	–	SSC	May occur; potentially suitable habitat.

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife

LEGEND:

Federal (USFWS)

FE Endangered
FT Threatened
CF Federal Candidate

State (CDFW)

SE Endangered
ST Threatened
CE Candidate Endangered
FP Fully Protected
SSC Species of Special Concern
WL Watch List
S1 Critically Imperiled
S2 Imperiled

Of the species reported from the literature review, nine species are federally and/or State-listed Endangered or Threatened or are candidates for listing: Crotch bumble bee (*Bombus crotchii*), monarch (California overwintering population) (*Danaus plexippus* pop. 1), arroyo toad (*Anaxyrus californicus*), California red-legged frog (*Rana draytonii*), tricolored blackbird (*Agelaius tricolor*), Swainson's hawk (*Buteo swainsoni*), coastal California gnatcatcher, bank swallow (*Riparia riparia*), and least Bell's vireo. While marginal potentially suitable habitat for California red-legged frog, least Bell's vireo, and coastal California gnatcatcher is present, focused protocol surveys conducted in 2022 were negative for all three species. Swainson's hawk and bank swallow may forage in the survey area but are not expected to nest since their breeding range is outside the project region. Arroyo toad and tricolored blackbird are not expected to occur in the survey area due to lack of suitable habitat. Crotch bumble bee is not expected to occur due to lack of observation during repeated site surveys in 2022 and 2023 by qualified biologists throughout all habitat areas on site.

Golden eagle (*Aquila chrysaetos*), a State Fully Protected species, has been reported from the vicinity of the survey area and has potential to forage in the survey area.

In addition to species listed under the state and federal Endangered Species Acts, 16 Species of Special Concern (designated by CDFW) have been reported near the survey area. This number includes four bat species that may occur in the vicinity based on the Psomas biologist's knowledge of the species. Thirteen of these species—coast range newt (*Taricha torosa*), western spadefoot (*Spea hammondi*), California legless lizard (*Anniella sp.*), coast horned lizard (*Phrynosoma blainvillii*), coastal whiptail (*Aspidoscelis tigris stejnegeri*), two-striped garter snake (*Thamnophis hammondi*), spotted bat (*Euderma maculatum*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), western mastiff bat (*Eumops perotis californicus*), western red bat (*Lasiurus blossevillii*), western yellow bat (*Lasiurus xanthinus*), and San Diego desert woodrat (*Neotoma lepida intermedia*)—have potential to occur in the survey area due to potentially suitable or marginally suitable habitat present. The remaining species are not expected to occur in the survey area because the survey area does not support suitable habitat for the species.

Critical Habitat

Critical Habitat is designated by the USFWS for the survival and recovery of species listed as Threatened or Endangered under the Federal Endangered Species Act (FESA). Areas designated as Critical Habitat include the physical or biological features that are essential to the survival and eventual recovery of that species. The survey area is not located in areas designated or proposed as Critical Habitat for any species.

PROJECT IMPACTS

In order to evaluate the entire extent of potential impacts on biological and jurisdictional water resources, it is necessary to understand the various project components and whether they are direct or indirect. All reported impact areas below represent direct impact resulting from temporary disturbance (such as construction yards) or permanent disturbance including replacement of the existing resource with engineered and developed features such as roadways, infrastructure, and adjacent cut slopes.

Vegetation Types and Other Areas

Based on the construction design plans, the project would impact a total of 1.98-acres of vegetation and other landcover in the project area (Table 5; Exhibit 6). This includes a permanent impact of 0.17 acre on special status vegetation (i.e., red willow/arroyo willow thicket). In addition to being a special status vegetation type, the red willow/arroyo willow thicket in the survey area is also within the boundaries of CDFW jurisdiction and has the potential to support federally and State listed wildlife species. However, results of focused surveys for least Bell's vireo and California red-legged frog conducted in 2022 indicate these species are absent from the project site. Impacts on red willow/arroyo willow thicket remain a potential constraint on development due to the status of the vegetation type as special status.

Impacts on vegetation within the boundaries of Chatsworth Park South are limited to the center two disturbance areas, one of which is a temporary construction yard. The impacted vegetation represents a minor percentage of the vegetation occurring within the approximately 50-acre park which encompasses nearly nine acres of oak woodland, eight acres of coastal sage scrub, six acres of chaparral, and 24 acres of landscaped/developed park areas.

**TABLE 5
VEGETATION TYPES AND OTHER LANDCOVER
IMPACTED BY THE PROJECT**

Vegetation Type or Other Landcover	Temporary impact area (Acres)^a	Permanent impact area (Acres)^a	Total impact area (Acres)^a
California sagebrush–deerweed scrub	0.02	0.83	0.85
California sagebrush–bush mallow scrub	0.00	0.00	0.00
semi-natural herbaceous stand	0.01	0.07	0.08
wild oats grassland	0.00	0.05	0.05
bush mallow scrub	0.00	0.02	0.02
laurel sumac scrub	0.15	0.15	0.29
red willow/arroyo willow thicket	0.00	0.17	0.17
coast live oak woodland	0.01	0.00	0.01
coast live oak–California sycamore woodland	0.00	0.22	0.22
eucalyptus grove	0.00	0.00	0.00
disturbed	0.03	0.00	0.03
developed	0.06	0.04	0.10
ornamental	0.14	0.00	0.14
Total	0.43	1.55	1.98

^a Values based on total work limit footprints.

Note: Totals may not appear to add correctly due to rounding error.

Jurisdictional Areas

Based on project design plans, approximately 0.02 acre of ‘wetland’ waters of the United States and waters of the State, 0.01 acre of ‘non-wetland’ waters of the United States and waters of the State, and 0.41 acre of CDFW jurisdictional waters will be impacted by the project (Table 6; Exhibit 7). Of these impacts, all 0.03 acres of State and federal waters and 0.39 acres of CDFW jurisdictional waters are considered permanent impacts. Permanent impacts are associated with the project’s conversion of natural drainage to culverted roadway. All other jurisdictional impacts are considered temporary as they would revert to pre-project conditions following short term project disturbance.

**TABLE 6
JURISDICTIONAL WATER RESOURCES
IMPACTED BY THE PROJECT**

Jurisdiction	Drainage 1 Permanent (acres)	Drainage 1 Temporary (acres)	Drainage 2 Permanent (acres)	Drainage 2 Temporary (acres)	Total
USACE	-	-	-	-	-
wetland waters of the United States	0.02	0.00	0.00	0.00	0.02
non-wetland waters of the United States	0.01	0.00	0.00	0.00	0.01
RWQCB	0.03	0.00	0.00	0.00	0.03
CDFW	0.40	0.00	0.00	0.01	0.41

USACE: U.S. Army Corps of Engineers; RWQCB: Regional Water Quality Control Board; CDFW: California Department of Fish and Wildlife

* The riparian canopy extends over both Drainages 1 and 1A; acreage for both channels is included under Drainage 1.

Special Status Plant Species

Results of rare plant focused surveys were negative for all special status species including federally and State listed species—Braunton’s milk-vetch, San Fernando Valley spineflower, Santa Susana tarplant, and slender-horned spineflower. Due to their absence from the project site, these species would not be a constraint to the project and would not require permitting with resource agencies.

Special Status Wildlife Species

Results of special status species focused protocol surveys were negative for all special status species including federally and State listed species—California red-legged frog, least Bell’s vireo, and coastal California gnatcatcher (see Appendix B). Due to their absence from the project site, these species would not be a constraint to the project and would not require permitting with resource agencies.

The project may impact the following species or their habitat: coast range newt, western spadefoot, California legless lizard, coast horned lizard, coastal whiptail, two-striped garter snake, spotted bat, pallid bat, Townsend’s big-eared bat, western mastiff bat, western red bat, western yellow bat, and San Diego desert woodrat. Impacts on a small amount of habitat for these species, relative to the availability of habitat in the region, are not expected to reduce the regional population below a self-sustaining level. Therefore, impacts would be considered adverse but would not represent a constraint to the project.

OTHER CONSIDERATIONS

Protected Trees

The City of Los Angeles Municipal Code (LAMC, Article 6 Protected Tree and Shrub Regulations, Sections 46.00 to 46.06) provides for the protection of certain “protected” tree and shrubs, which include several Southern California indigenous species that measure at least four inches of cumulative trunk diameter, four and one-half feet above ground level. Species that are defined as protected species include all indigenous oak trees (*Quercus* spp., excluding scrub oak [*Quercus berberidifolia*]); southern California black walnut (*Juglans californica* var. *californica*); western sycamore (*Platanus racemosa*); California bay (*Umbellularia californica*); Mexican elderberry (*Sambucus mexicana*); and toyon (*Heteromeles arbutifolia*). No protected tree may be relocated or removed except as provided by the LAMC (Section 46.02), without a permit issued by the Board of Public Works. The term “removed” includes any act that will cause a protected tree or shrub to die, including but not limited to acts that inflict damage upon the root system or other parts of the tree by fire, application of toxic substances, operation of equipment or machinery, or by changing the natural grade of land by excavation or filling the drip line area around the trunk.

While there are trees within the project work limits that may be protected under this ordinance, they may not be impacted because work would only occur on paved areas under the canopy. Protected shrubs are also present within the work limits and may require removal if avoidance is infeasible. If the protected trees or shrubs would be impacted by project activities, a removal permit from the City would be required.

Fish Passage

In-stream structures and construction activities have the very low potential to disrupt fish passage permanently or temporarily in areas containing fish habitat. Neither special status species nor native fish species were observed in the on-site drainages during the plant and wildlife surveys in 2022. Fish habitat in the project area was seen to be relatively poor due to the limited amount of surface water present and the isolated nature of the drainages. Natural aboveground flow is limited to a distance of less than 1,000 feet. The drainages are isolated from downstream fish populations because they connect with the City of Los Angeles’ subsurface municipal separate storm sewer system (MS4). In addition, no special status fish species have been reported from the drainages in the survey area or in the project region (CDFW 2023b). Therefore, the project as designed is not expected to impact fish passage and would not likely effect fish passage even if fish were present.

Nesting Raptors

Raptor species (i.e., birds of prey) have the potential to nest within mature trees in and adjacent to the survey area and their nests may be impacted by the project. If construction activities would occur during the raptor nesting season (i.e., generally February 1 to June 30), the loss of an active nest of any raptor species, including common raptor species, would be considered a violation of Sections 3503, 3503.5, and 3513 of the *California Fish and Game Code*.

Nesting Birds

The Migratory Bird Treaty Act (MBTA) protects migratory birds and their nests and eggs, both common and special status. Bird species protected under the provisions of the MBTA are identified by the List of Migratory Birds (50 *Code of Federal Regulations* [CFR] §10.13, as amended). In addition, Section 3503 of the *California Fish and Game Code* makes it unlawful to take, possess, or destroy any bird’s nest or

any bird's eggs. Further, any birds in the orders Falconiformes or Strigiformes (birds of prey, such as hawks, eagles, and owls) and their nests and eggs are protected under Section 3503.5 of the California Fish and Game Code. Section 3513 of the California Fish and Game Code prohibits the take and possession of any migratory nongame bird, as designated in the MBTA. Birds have the potential to nest in the project survey area, and their nests may be impacted by the project. The loss of an active bird nest, including common species, would be considered a violation of the MBTA and Fish and Game Code.

Roosting Bats

Pallid bat, western red bat, and western yellow bat may forage and roost in mature trees or rocky outcrops in the survey area. Impacts on roosting individuals can be a potential constraint on development, depending on the size of the impacted population.

Noise

During active construction, temporary noise impacts have the potential to disrupt foraging, nesting, roosting, and/or denning activities for a variety of wildlife species. Construction noise could deter wildlife from using habitat adjacent to construction. This impact would be considered adverse but would not represent a constraint on the project because a substantial amount of similar habitat is present in the vicinity where the animals may disperse. Following construction, noise levels would be the same as current conditions.

RECOMMENDATIONS

This section includes a list of recommendations designed to reduce potential Project impacts on biological resources. These recommendations are not based on a California Environmental Quality Act (CEQA) significance determination and may or may not be reflected within CEQA Mitigation Measures. Impacts on biological resources found to be potentially significant under the CEQA will require implementation of Mitigation Measures designed to avoid, minimize, restore, and or recreate impacted resources in order to offset loss in biological resource values.

Recommendations

Based on the proposed Project's biological resource impact analysis outlined above, recommendations designed to avoid or minimize these impacts are listed below. In general, reduction of the Project's disturbance area and/reduction of impacts on special status or otherwise protected biological resources to the maximum extent feasible is recommended.

Recommendation No. 1

If more than two years have elapsed since the previous rare plant survey was conducted, it is recommended that focused surveys be reconducted to ensure that the Project avoids impacts to rare plant species. Surveys should be conducted to confirm absence within the proposed Project's disturbance areas previously determined to have the potential to support special status plant species. Surveys should be conducted in accordance with current California Native Plant Society (CNPS) protocol and will occur during the appropriate time of year.

If survey results are positive, it is recommended that efforts are made to redesign the Project to avoid indirect impacts on rare plants. If not feasible, it is recommended that

efforts are made to redesign the Project to avoid direct impacts on rare plants. If not feasible, it is recommended that efforts are made to redesign the Project to minimize the number of individuals or acreage of population(s) directly impacted. If impacts on rare plants are unavoidable, it is recommended to prepare and implement a Special Status Plant Species Restoration Plan to reduce impacts on the impacted plant species. If the impacted rare plant is a State or federally listed species, consultation with applicable resources agencies (CDFW and/or USFWS) is recommended to determine if permitting will be required. Permit conditions, if applicable, would provide additional measures to avoid and and/or minimize impacts on State and federally threatened and endangered wildlife species.

Recommendation No. 2

If more than two years have elapsed since the previously conducted focused wildlife surveys for least Bell's vireo or California gnatcatcher, it is recommended that focused protocol surveys be repeated to ensure that the Project avoids impacts to these species. All surveys should be conducted to confirm absence within proposed Project disturbance areas that may support these species. Surveys should be conducted in accordance with the approved CDFW or U.S. Fish and Wildlife Species (USFWS) protocol guidelines for each species.

If survey results are positive, it is recommended that efforts are made to redesign the Project to avoid indirect impacts on the impacted species. If not feasible, it is recommended that efforts are made to redesign the Project to avoid direct impacts on the impacted species. If not feasible, it is recommended that efforts are made to redesign the Project to minimize the number of individuals or acreage of occupied habitat directly impacted. If impacts are unavoidable, consultation with applicable resources agencies (CDFW and/or USFWS) is recommended to determine if permitting will be required. Permit conditions, if applicable, would provide additional measures to avoid and and/or minimize impacts on State and federally threatened and endangered wildlife species.

Recommendation No. 3

In an effort to reduce potential impacts on non-listed special status wildlife species, it is recommended that a qualified biologist monitor all vegetation removal and grading to ensure that incidental construction impacts on non-listed special status and common wildlife species are avoided or minimized. Where feasible, the biological monitor will attempt to ensure wildlife are not directly impacted. It is recommended that the Biologist employ salvage methods and relocate wildlife species that can be moved that would otherwise be destroyed or adversely affected by construction and/or site-preparation activities. If wildlife is in harm's way and has not moved on its own, the Biologist will attempt to scatter them away from the area.

Recommendation No. 4

To avoid unanticipated impacts on biological resources in the immediate area, it is recommended that the designated disturbance limits are visibly marked in the field to ensure that no inadvertent impacts occur outside the approved disturbance limits.

Recommendation No. 5

To avoid take of nesting birds or their eggs, in compliance with applicable State and federal laws pertaining to the protection of nesting birds, it is recommended that construction activities (including, but not limited to, staging and disturbances to native and nonnative vegetation, structures, and substrates) should occur outside of the avian breeding season, if feasible, which generally runs from February 1–August 31 (as early as January 1 for some raptors. “Take” means to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill (*California Fish and Game Code*, Section 86), and includes take of eggs or young resulting from disturbances that cause abandonment of active nests. Depending on the avian species present, a qualified Biologist may determine that a change in the breeding season dates is warranted.

If avoidance of the avian breeding season is not feasible, it is recommended that a qualified Biologist with experience in conducting breeding bird surveys should conduct weekly bird surveys beginning 30 days prior to the initiation of Project activities, to detect protected native birds occurring in suitable nesting habitat that is to be disturbed and (as access to adjacent areas allows) any other such habitat within 500 feet of the disturbance area. The surveys should continue on a weekly basis with the last survey being conducted no more than three days prior to the initiation of Project activities. If a protected native bird is found, it is recommended that the Project activities are delayed within 300 feet of on- and off-site suitable nesting habitat (within 500 feet for suitable raptor nesting habitat) until August 31. Alternatively, a qualified Biologist could continue the surveys in order to locate any nests. If an active nest is located, Project activities within 300 feet of the nest (within 500 feet for raptor nests) or as determined by a qualified biologist, should be postponed until the nest is vacated; the juveniles have fledged; and there is no evidence of a second attempt at nesting. Flagging, stakes, or construction fencing should be used to demarcate the inside boundary of the buffer of 300 feet (or 500 feet) between the Project activities and the nest. Project personnel, including all contractors working on site, should be instructed on the sensitivity of the area.

If the qualified biologist determines that a narrower buffer between the Project activities and observed active nests is warranted (based on species-specific information; ambient conditions and birds’ habituation to them; and the terrain, vegetation, and birds’ lines of sight between the Project activities and the nest and foraging areas), the modified buffer may be used.

It is recommended that the qualified biologist be present on site during all grubbing and clearing of vegetation to ensure that these activities remain within the Project footprint to minimize the likelihood that active nests are abandoned or fail due to Project activities.

Recommendation No. 6

To avoid and or minimize impacts on bats, it is recommended that a qualified biologist conduct a field survey no earlier than 20 days prior to any grading activity that would occur during the breeding season (i.e., April 1 through August 31) of native bat species that potentially utilize the site. This should be done to determine if active maternity roosts of special status bats (such as pallid bat) are present in the applicable habitats on the site (e.g., woodlands). If active roosts are found, construction within 200 feet should be postponed or halted until the roost is vacated and juveniles are self-sufficient, as determined by the biologist.

Recommendation No. 7

In an effort to avoid or reduce impacts special status vegetation types, it is recommended that attempts are made to avoid direct impacts. If not feasible, it is recommended that efforts are made to redesign the Project to minimize the acreage of special status vegetation types directly impacted. If impacts on special status vegetation types are unavoidable, it is recommended to prepare and implement a Habitat Restoration Plan to restore impacted habitat areas or increase acreage elsewhere in the vicinity to reduce impacts on the special status vegetation types of the region. If the impacted special status vegetation types are considered jurisdictional under the Clean Water Act and/or Fish and Game Code, consultation with applicable resources agencies is recommended to determine if permitting will be required. Permit conditions, if applicable, would provide additional measures to avoid and and/or minimize impacts on impacted vegetation types within these jurisdictions.

Recommendation No. 8

To avoid or reduce impacts to protected trees (as defined by City of Los Angeles Municipal Code), it is recommended that all protected trees in the Project area are identified and direct impacts are avoided. If not feasible, it is recommended that efforts are made to redesign the Project to minimize the number of protected trees impacted. If impacts on protected trees are unavoidable, compliance with the City of Los Angeles Municipal Code requirements is recommended.

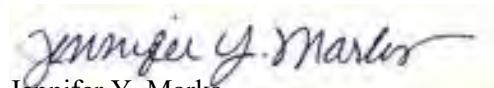
Recommendation No. 9

Prior to any fill of or alteration to jurisdictional drainages, wetlands, and/or associated riparian vegetation on the Project site, it is recommended that attempts are made to redesign the Project to avoid all direct impacts. If not feasible, it is recommended that efforts are made to minimize the acreage of impacted jurisdictional area. If impacts on jurisdictional areas are unavoidable, it is recommended to prepare and implement a Habitat Restoration Plan to create, enhance, and/or restore acreage to ensure that net habitat values are at least equal to those lost from Project implementation to reduce impacts on the jurisdictional features of the region. Consultation with applicable resources agencies is recommended to determine if permitting will be required. If required, it is recommended that the appropriate regulatory agency permits and/or agreements from the USACE, the CDFW, and the applicable RWQCB are obtained. Permit conditions, if applicable, would provide additional measures to avoid and and/or minimize impacts on impacted jurisdictional resources within these jurisdictions.

If you have any questions or comments, please contact Marc Blain at (626) 351-2000.

Sincerely,

P S O M A S



Jennifer Y. Marks
Senior Project Manager



Marc T. Blain
Senior Biologist

- Enclosures: Exhibits 1–7
Appendix A – Representative Photographs
Appendix B – Focused Survey Reports
- California Gnatcatcher Protocol Survey Report
 - Least Bell’s Vireo Protocol Survey Report
 - California Red-legged Frog Protocol Survey Report

R:\Projects\MWD\3MWD010403\Documentation\Bio Assessment\Bio Assessment Report-051324_ADA.docx

REFERENCES

- American Ornithological Society (AOS). 2018 (October). *Check-list of North and Middle American Birds* (7th ed., as revised through 58th Supplement). Washington, D.C.: AOU. <http://checklist.aou.org/>.
- Baldwin, B.G., D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (Eds.). 2012. *The Jepson Manual: Vascular Plants of California* (Second ed.). Berkeley, CA: University of California Press.
- California Department of Fish and Wildlife (CDFW). 2023a (January 24). California Natural Communities List. Natural Communities List Arranged Alphabetically by Life Form (PDF). Sacramento, CA: CDFW Biogeographic Data Branch. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline>.
- . 2023b (Oct 24). California Natural Diversity Database. Records of Occurrence for Santa Susana, Oat Mountain, Canoga Park, and Calabasas USGS 7.5-minute quadrangles. Sacramento, CA: CDFW, Natural Heritage Division.
- . 2023c. Natural Communities. Sacramento, CA: CDFW, Vegetation Classification and Mapping Program. <https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities>.
- . 2023d (October). *Special Animals*. Sacramento, CA: CDFW, Natural Heritage Division.
- . 2023e (October). *Special Vascular Plants, Bryophytes, and Lichens List*. Sacramento, CA: CDFW, Natural Heritage Division.
- California Native Plant Society (CNPS). 2023 (November 2, access date). Inventory of Rare and Endangered Plants (online edition, v8-03). Information Santa Susana, Oat Mountain, Canoga Park, and Calabasas USGS 7.5-minute quadrangles. Sacramento, CA: CNPS. <http://www.rareplants.cnps.org/>.
- Center for North American Herpetology (CNAH). 2015. *CNAH: North American Herpetofauna: California: The Amphibians, Reptiles, and Turtles of California*. Lawrence, KS: CNAH. <http://www.cnah.org/namesList.aspx?stateId=5&listType=stateList&orderId=0>
- Consortium of California Herbaria (CCH). 2023 (November, access date). Consortium of California Herbaria. Data provided by the participants of the Consortium of California Herbaria for plants listed in Table 3. Berkeley, CA: University of California. <http://ucjeps.berkeley.edu/consortium/>.
- England and Nelson Environmental Consultants (England and Nelson). 1976. *Los Angeles County Significant Ecological Area Study* (Prepared for the Los Angeles County Department of Regional Planning and Environmental Systems Research Institute). Riverside, CA: England and Nelson.
- Jepson Flora Project. 2023 (November, Revision 10). Jepson eFlora (Records for common species in the Plant Compendium. Berkeley, CA: The Jepson Herbarium. <http://ucjeps.berkeley.edu/eflora/>.
- Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016 (April 28). The National Wetland Plant List: 2016 Wetland Ratings. *Phytoneuron* 2016-30:1–17. Fort Worth, TX: G.L. Nesom.
- Los Angeles County GIS Data Portal. 2017. Los Angeles County Fire Department – Historic Fire Perimeters. Commerce, CA: Los Angeles County Fire Department, Information Management Division. <https://egis3.lacounty.gov/dataportal/2014/04/28/fire-perimeters-1965-2013/>.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation (Second Edition)*. Sacramento, CA: CNPS.

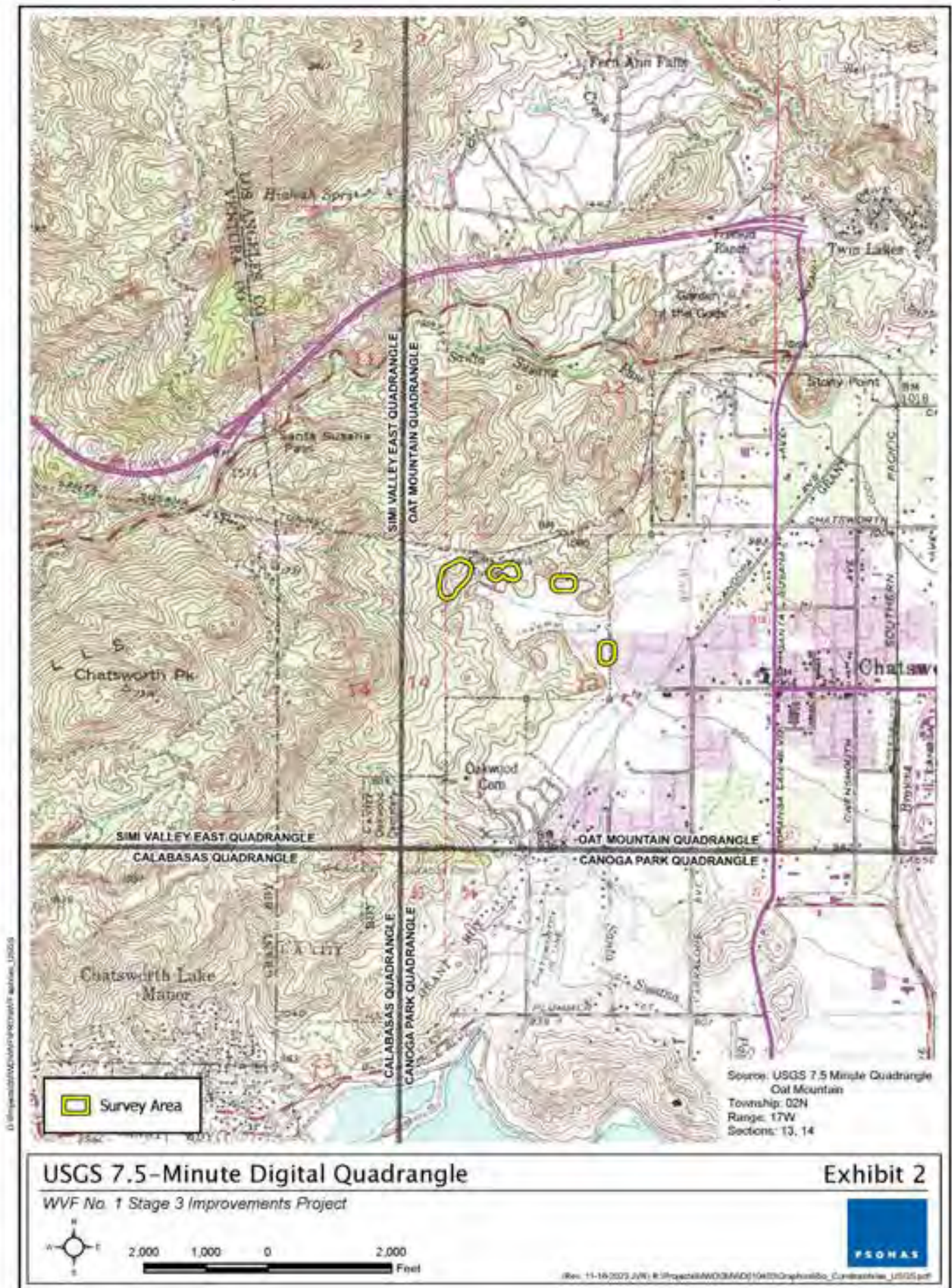
Smithsonian National Museum of Natural History (SNMNH). 2011. Mammal Species of the World (3rd ed.) (a database based on Wilson, D.E., and D. M. Reeder's 2005 publication entitled Mammal Species of the World, A Taxonomic and Geographic Reference, 3rd ed.). Washington, D.C.: SNMNH. <https://www.departments.bucknell.edu/biology/resources/msw3/>.

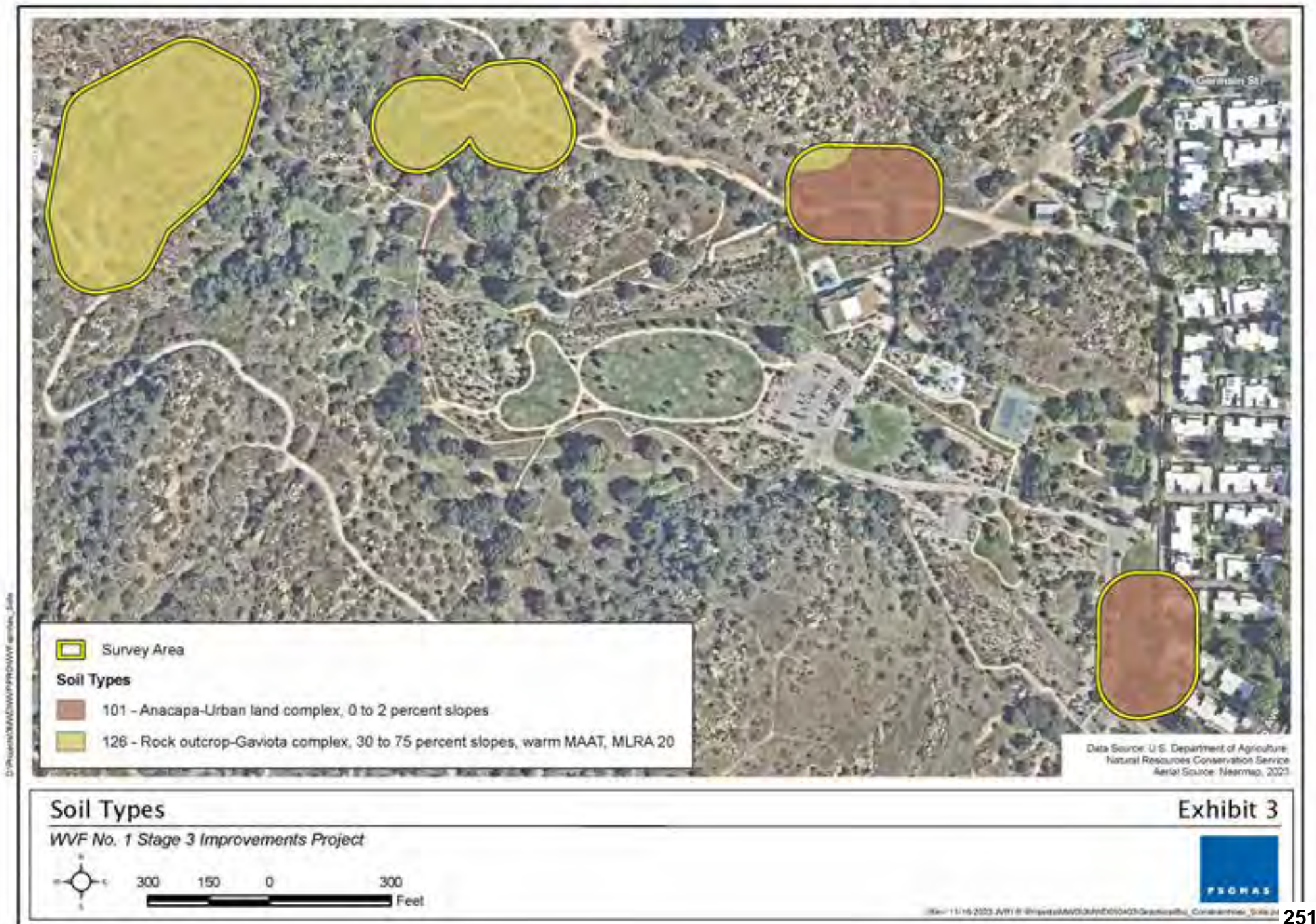
U.S. Army Corps of Engineers (USACE). 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. (J.S. Wakeley, R.W. Lichvar, and C.V. Noble, Eds.). Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). 2023 (November 2, access date). State Soil Data Access Hydric Soils List. Washington, D.C.: USDA, NRCS. <http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/>.

U.S. Fish and Wildlife Service 2023 (November). Wetland Mapper [Information for the Survey Area]. Washington D.C.: USFWS, National Wetlands Inventory. <http://www.fws.gov/wetlands/Data/Mapper.html>.

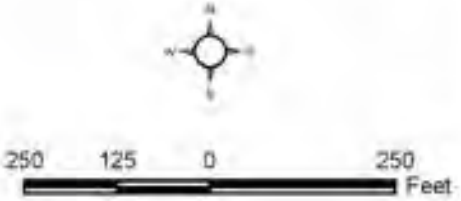








- Survey Area**
- Vegetation Types and Other Areas**
- California sagebrush-deerweed scrub
 - California sagebrush-bush mallow scrub
 - semi-natural herbaceous stand
 - wild oats grassland
 - bush mallow scrub
 - laurel sumac scrub
 - red willow/arroyo willow thicket
 - coast live oak woodland
 - coast live oak-California sycamore woodland
 - eucalyptus grove
 - disturbed
 - developed
 - ornamental



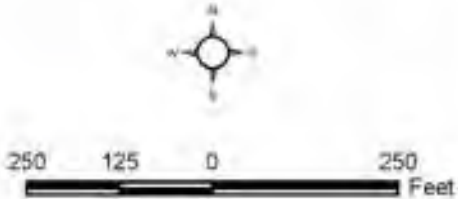
Vegetation Types and Other Areas Exhibit 4
WVF No. 1 Stage 3 Improvements Project







- Survey Area**
- Impact Areas**
- Vegetation Types and Other Areas**
- California sagebrush-deerweed scrub
 - California sagebrush-bush mallow scrub
 - semi-natural herbaceous stand
 - wild oats grassland
 - bush mallow scrub
 - laurel sumac scrub
 - red willow/arroyo willow thicket
 - coast live oak woodland
 - coast live oak-California sycamore woodland
 - eucalyptus grove
 - disturbed
 - developed
 - ornamental



Aerial Source: Hexmap 08/2023

Impacts to Vegetation
Types and Other Areas
WWF No. 1 Stage 3 Improvements Project

Exhibit 6





APPENDIX A
REPRESENTATIVE PHOTOGRAPHS



California sagebrush-deerweed scrub in the western portion of the survey area.



California sagebrush-bush mallow scrub in the eastern portion of the survey area.

Representative Photographs

WVF No. 1 Stage 3 Improvements Project

Attachment A-1



\\fls\6-26-2018\WMO\B\Projects\WVF\WVF0010254\Graphics\floras_EP.pdf



Semi-natural herbaceous stand in the western portion of the survey area.



Laurel sumac scrub in the western portion of the survey area.

Representative Photographs

WVF No. 1 Stage 3 Improvements Project

Attachment A-2



Rev: 6-28-2018 MWDO R:\Projects\WVF\WVF0010254\Graphics\Notes_EP.pdf



Red willow/arroyo willow thicket in the western portion of the survey area.



Coast live oak-California sycamore woodland in the western portion of the survey area.

Representative Photographs

WVF No. 1 Stage 3 Improvements Project

Attachment A-3



Rev: 6-26-2018 MW001 R:\Projects\NEWCOM\MW0010254\Graphics\Drawings_EP.pdf



Eucalyptus grove in the western portion of the survey area.



Disturbed area in eastern portion of the survey area.

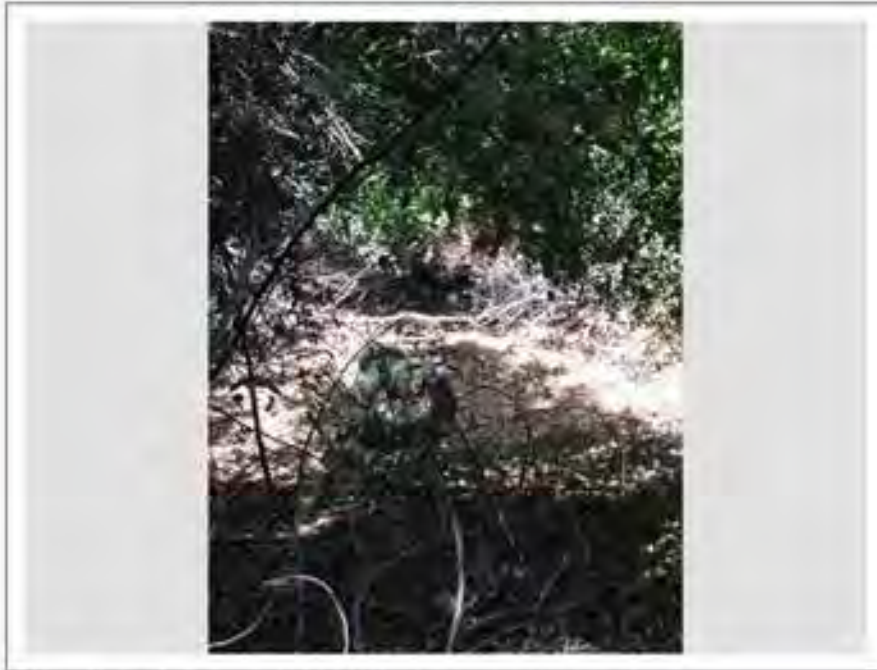
Representative Photographs

WVF No. 1 Stage 3 Improvements Project

Attachment A-4



\\Rev: 6-26-2018 MWDO R \\Projects\\WVF\\MWDO10254\\Graphics\\Box\\rev_EP.pdf



WWF1 STA 1416+33 existing blowoff (to be abandoned)



WWF1 STA 1407+45 existing blowoff.

Representative Photographs

WWF No. 1 Stage 3 Improvements Project

Attachment A-5



Rev: 6-26-2018 WMO R:\Projects\WVON\WVON0010254\Graphics\Drawings_EP.pdf



Along existing access trail to WWF1 STA 1415+42 proposed vault and pump well.



Contractor's laydown area in the western portion of the survey area.

Representative Photographs

WWF No. 1 Stage 3 Improvements Project

Attachment A-6



\\s\6-28-2018\NMDO\B\Projects\WWF\NMDO010254\Graphics\Photos_EP.pdf

APPENDIX B
FOCUSED SURVEY REPORTS

August 17, 2022

Mr. Chris Kofron
Recovery Permit Coordinator
U.S. Fish and Wildlife Service
2493 Portola Road, Suite B
Ventura, California 93003

VIA EMAIL
chris_kofron@fws.gov

Subject: Results of Focused Presence/Absence Surveys for the Coastal California Gnatcatcher for the Metropolitan Water District West Valley Feeder No. 1 Stage 3 Improvements Project in the City of Los Angeles, California

Dear Mr. Kofron:

This Letter Report presents the results of focused surveys for the coastal California gnatcatcher (*Poliophtila californica californica*) for the Metropolitan Water District West Valley Feeder No. 1 Stage 3 Improvements Project (hereinafter referred to as the “project site”) located in the City of Los Angeles in Los Angeles County, California. The purpose of the surveys was to determine the presence or absence of the coastal California gnatcatcher on or immediately adjacent to the project site. Surveys were conducted by Psomas Biologists who hold the necessary Federal Endangered Species Act (FESA) survey permit and were completed according to the guidelines established by the U.S. Fish and Wildlife Service (USFWS). Notification of the intent to conduct protocol-level surveys was submitted to the USFWS on May 11, 2022.

PROJECT DESCRIPTION AND LOCATION

The project involves modification of the MWD WVF1 located northwest of Chatsworth Park South, in the City of Los Angeles. Proposed project actions include construction of an approximately 500-foot access road including a vehicle turnaround area and various modifications to existing facilities including valve relocation, equipment replacement, and reconstruction of valve structures. Additionally, the project proposes the installation of new manholes, concrete vaults, and retaining walls along the WVF1. Project impacts would include both temporary impacts in areas associated with construction access, staging, and laydown areas as well as permanent impacts associated with the proposed access road. Except for those areas where impacts would be confined to existing structures and the surrounding paved areas, all other impact areas occurring would be subject to some degree of earth disturbance.

The project site is in the western portion of the San Fernando Valley in the City of Los Angeles (Exhibit 1). Surrounding land uses include undeveloped open space in the Santa Susana Pass State Historic Park to the west and Chatsworth Park South to the east, with urban development farther to the east. The project site occurs on the U.S. Geological Survey’s (USGS’) Oat Mountain 7.5-minute quadrangle at Township 2 North, Range 17 West, Sections 13 and 14 (Exhibit 2). Topography in the survey area includes slopes and eastward-draining canyons; elevations range from approximately 1,010 feet above mean sea level (msl) in the east to 1,160 feet above msl in the west.

Thirteen vegetation types and other areas occur on the project site (Exhibit 3). Vegetation categories include California sagebrush–deerweed scrub, California sagebrush–bush mallow scrub, semi-natural herbaceous stand, wild oats grassland, bush mallow scrub, bush mallow–laurel sumac scrub, laurel sumac scrub, red willow/arroyo willow thicket, coast live oak woodland, coast live oak–California sycamore woodland, eucalyptus grove, disturbed, and developed.

SURVEY AREA

The coastal California gnatcatcher survey was conducted in all areas containing potentially suitable habitat (i.e., California sagebrush–deerweed scrub, and California sagebrush–bush mallow scrub) within the project site and within 500 feet of the project site. Photographs of representative habitat on the project site are provided in Attachment A.

BACKGROUND

Recent taxonomic studies indicate that the California gnatcatcher consists of four subspecies that extend from southwestern California to southern Baja California, Mexico. The coastal California gnatcatcher, the northernmost gnatcatcher subspecies, is restricted to lowland areas from central Ventura County through Los Angeles, San Bernardino, Riverside, Orange, and San Diego Counties to the Baja California, Mexico border (Atwood and Lerman 2006; Mellink and Rea 1994). Previously, the coastal California gnatcatcher was common from the San Fernando Valley east along the base of the San Gabriel Mountains to Claremont (Atwood 1990). It is now rare in the northern part of its range, with a handful of sightings from Santa Clarita to Tujunga Wash, though a small population persists near Moorpark in Ventura County. The coastal California gnatcatcher has been recorded from sea level to approximately 3,000 feet above msl (USFWS 2003); however, more than 90 percent of gnatcatcher records are from elevations from sea level to 820 feet above msl along the coast (Atwood and Bolsinger 1992; MBA 1991) and between sea level and 1,800 feet above msl inland. USFWS estimates regarding the population size of the coastal California gnatcatcher in Southern California have been about 3,000 pairs (Atwood and Bontrager 2001).

The coastal California gnatcatcher typically occurs within coastal and inland sage scrub vegetation types. Sage scrub often occurs in a patchy distribution pattern throughout the gnatcatcher's range. Coastal California gnatcatchers also use chaparral, grassland, and riparian habitats that are near sage scrub. These non-sage scrub habitats are used for dispersal and foraging (Atwood et al. 1998; Campbell et al. 1998; USFWS 2003). Availability of these non-sage scrub areas is essential during certain times of the year, particularly during drought conditions or during dispersal, foraging, or nesting (USFWS 2003).

The coastal California gnatcatcher was designated as a Threatened species by the USFWS on March 25, 1993. A Special Rule was issued that would allow incidental take of coastal California gnatcatcher under Section 9 of the FESA if the take results from activities conducted in accordance with California's Natural Community Conservation Plan (NCCP) Act (USFWS 1993). For those not participating in the State's NCCP, any activity that may result in the take of coastal California gnatcatcher requires formal consultation with the USFWS under Sections 7 or 10 of the FESA.

On December 19, 2007, the USFWS published a Final Rule revising critical habitat for the coastal California gnatcatcher. The revised critical habitat designates 197,303 acres of land in San Diego, Orange, Riverside, San Bernardino, Los Angeles, and Ventura Counties as critical habitat for the coastal California gnatcatcher (USFWS 2007). The survey area is not located within the designated critical habitat for the coastal California gnatcatcher.

SURVEY METHODS

The USFWS coastal California gnatcatcher survey protocol recommends six visits to all potentially occupied habitat areas for surveys conducted entirely within the breeding season, which extends from March 15 to June 30 (USFWS 1997a, 1997b). A total of six focused gnatcatcher surveys were conducted in the survey area with a team of two Biologists. The surveys followed USFWS guidelines for breeding season surveys and were conducted at least one week apart. All surveys were conducted during the morning hours, and no more than 80 acres of suitable habitat were surveyed per visit. Psomas Senior Biologist Lindsay Messett (USFWS Permit No. TE067064-5) and Psomas Senior Biologist Jonathan Aguayo (USFWS Permit No. TE96514A-3) conducted the focused survey visits. Surveys were conducted on May 25; and June 1, 9, 16, 23 and 30, 2022.

Weather conditions met the USFWS survey protocol requirements for optimal gnatcatcher detection. Weather conditions that were too cold (below 55 degrees Fahrenheit [°F]), too hot (above 95°F), or too windy (wind speed greater than 15 miles per hour) were avoided. Surveys were conducted by slowly walking through all appropriate habitats (i.e., coastal sage scrub) while listening and watching for gnatcatcher activity. A combination of taped recordings of gnatcatcher vocalizations and “pishing” sounds were used in an attempt to elicit responses from any gnatcatchers that might be present. The frequency of vocalization playback and “pishing” varied depending on conditions, such as habitat patch size and topography in each area. All bird species detected during the survey were recorded, including notable observations of special status birds or other wildlife species. All wildlife species detected during the surveys were recorded (Attachment B).

TABLE 1
SUMMARY OF COASTAL CALIFORNIA GNATCATCHER SURVEY CONDITIONS

Survey Number	Date	Time (Start/End)	Surveyor	Temperature (°F) (Start/End)	Wind (mph) (Start/End)	Cloud Cover (%) (Start/End)
1	May 26, 2022	8:30 AM–10:15 AM	Messett	73/80	0/1	Clear
2	June 2, 2022	9:25 AM–10:28 AM	Messett	72/78	3/5	25/Clear
3	June 9, 2022	6:48 AM–9:14 AM	Aguayo	64/72	2/3	Clear
4	June 16, 2022	7:28 AM–10:07 AM	Aguayo	69/77	1/2	Clear
5	June 23, 2022	6:13 AM–8:22 AM	Aguayo	71/77	4/2	40/10
6	June 30, 2022	8:08 AM–10:26 AM	Aguayo	72/81	4	Clear

°F: degrees Fahrenheit; mph: miles per hour; %: percent

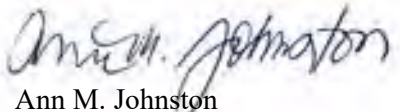
SURVEY RESULTS

No coastal California gnatcatchers were observed or detected in the survey area during focused surveys. Photographs of representative habitat conditions on the project site are provided in Attachment A. All wildlife species detected during the surveys were recorded in field notes and are summarized in Attachment B.

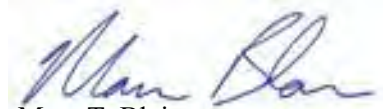
Psomas appreciates the opportunity to assist on this Project. If you have any comments or questions, please contact Marc Blain at (626) 351-2000 or Marc.Blain@psomas.com.

Sincerely,

PSOMAS

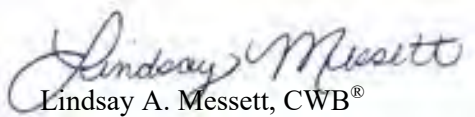


Ann M. Johnston
Vice President
Resource Management

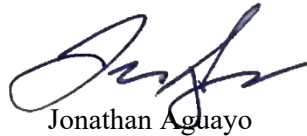


Marc T. Blain
Senior Project Manager/Vice President
Resource Management

I certify that the information in this survey report and enclosed exhibits fully and accurately present my work.



Lindsay A. Messett, CWB®
Senior Biologist
(TE067064-5)



Jonathan Aguayo
Senior Biologist
(TE96514A-3)

Attachments: Exhibits 1, 2, and 3
A – Site Photographs
B – Wildlife Compendium

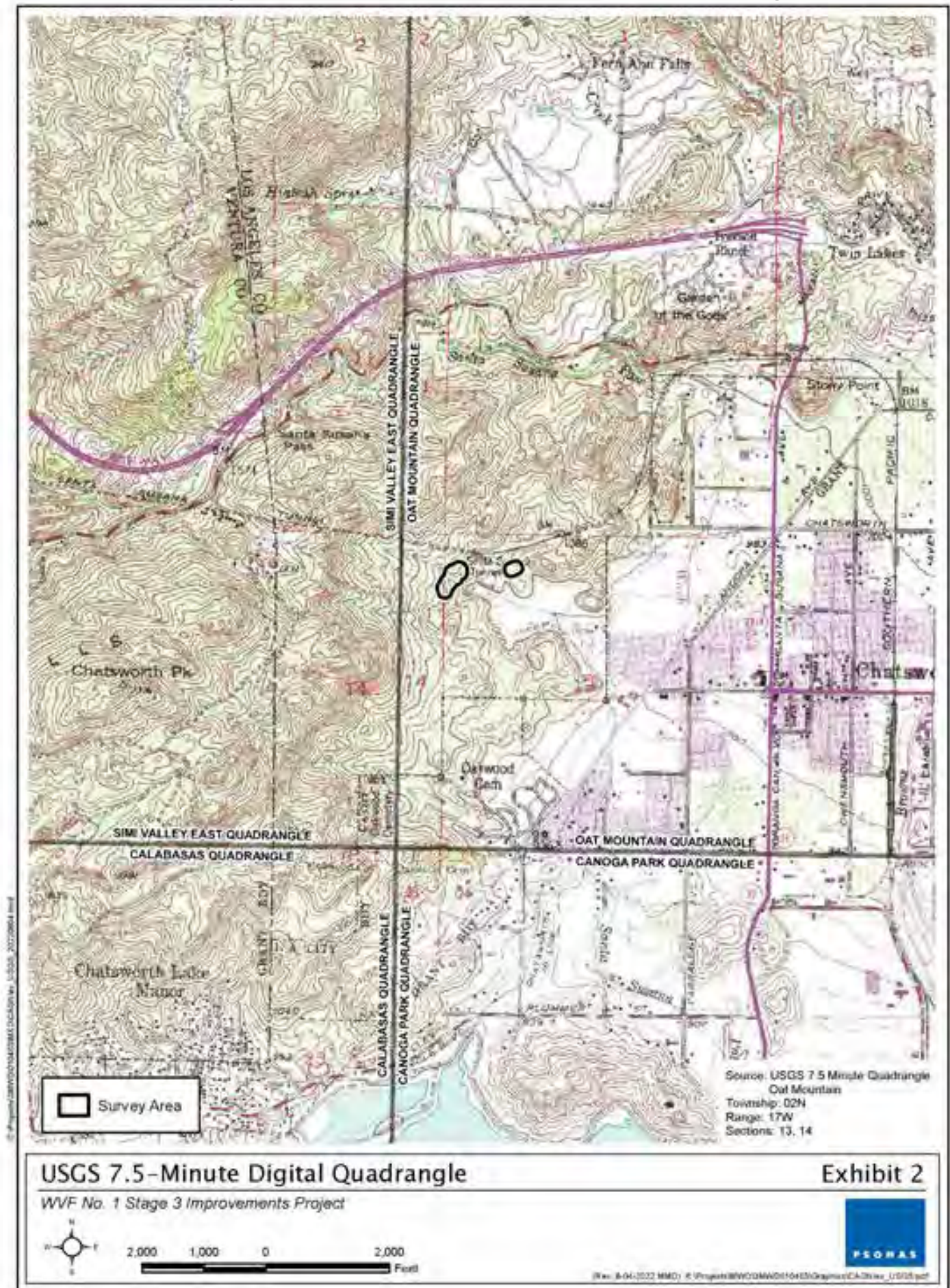
cc: Lilia Martinez, LiMartinez@mw dh2o.com

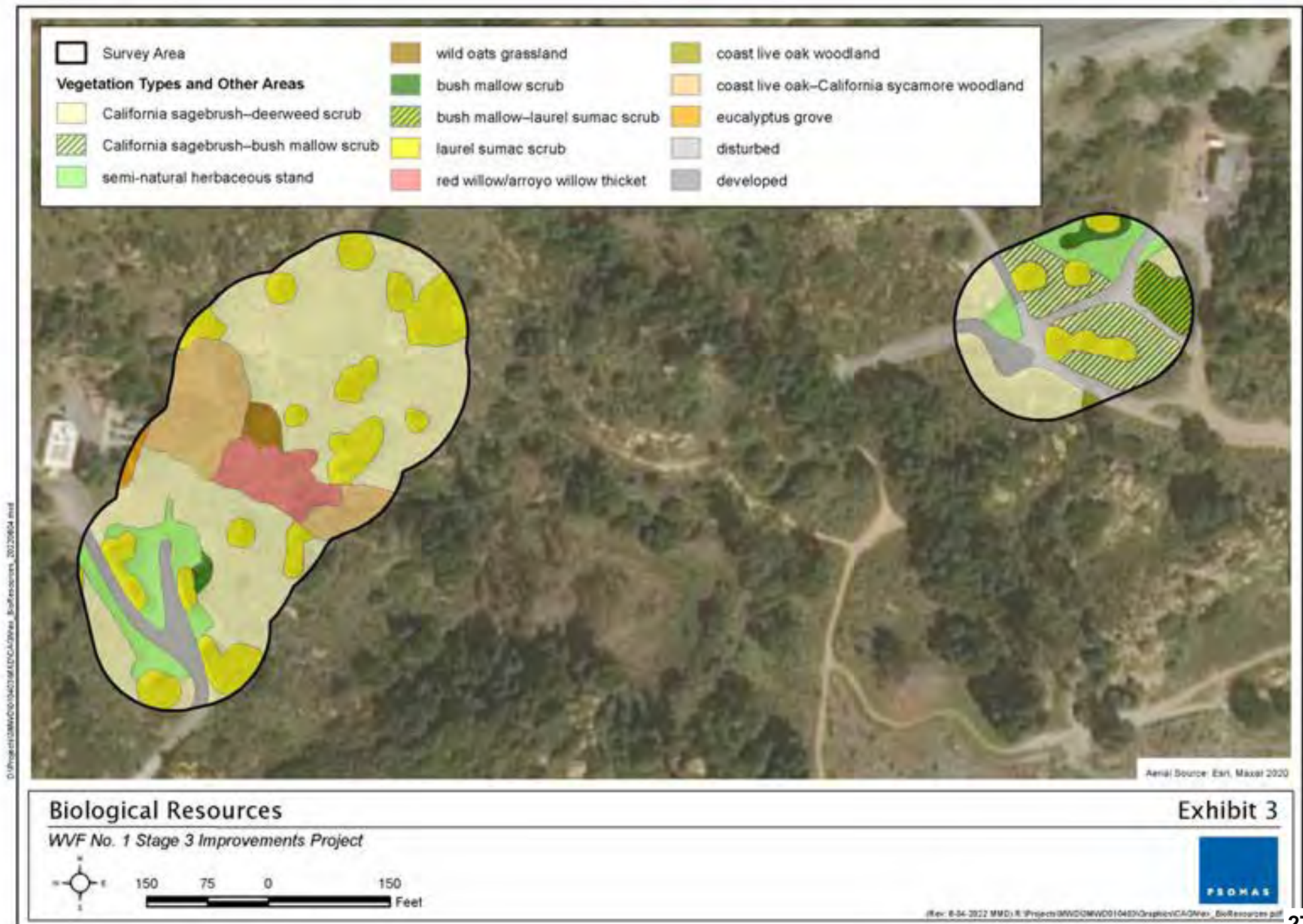
R:\Projects\MWD\3MWD010403\Documentation\CAGN\CAGN Survey_MWD-081722_ADA.docx

REFERENCES

- Atwood, J.L. 1990. *Status Review of the California Gnatcatcher (Poliophtila californica)*. Manomet, MA: Manomet Bird Observatory.
- Atwood, J.L. and J.S. Bolsinger. 1992. Elevational Distribution of the California Gnatcatchers in the United States. *Journal of Field Ornithology* 63(2):159–168. Waco, TX: Ornithological Societies of North America.
- Atwood, J. L. and D.R. Bontrager. 2001. California Gnatcatcher (*Poliophtila californica*). *The Birds of North America, No. 574* (A. Poole and F. Gill, Eds.). Philadelphia, PA: The Academy of Natural Sciences.
- Atwood, J.L., D.R. Bontrager, and A.L. Gorospe. 1998. Use of Refugia by California Gnatcatchers Displaced by Habitat Loss. *Western Birds* 29: 406–412. San Diego, CA: Western Field Ornithologists.
- Atwood, J.L. and S.B. Lerman. 2006. Family Poliophtilidae (Gnatcatchers) (pp. 350–377). *Handbook of the Birds of the World. Vol. 11: Old World Flycatchers to Old World Warblers* (J. del Hoyo, A. Elliott, and D.A. Christie, Eds.). Barcelona, Spain: Lynx Ediciones.
- Campbell, K. F., R.A. Erickson, W.E. Haas, and M.A. Patten. 1998. California Gnatcatcher Use of Habitats Other Than Coastal Sage Scrub: Conservation and Management Implications. *Western Birds* 29: 421–433. San Diego, CA: Western Field Ornithologists.
- Garrett, K. and J. Dunn. 1981. *Birds of Southern California: Status and Distribution*. Los Angeles, CA: Audubon Press.
- Mellink, E. and A.M. Rea. 1994. Taxonomic Status of the California Gnatcatchers of Northwestern Baja California, Mexico. *Western Birds* 25: 50–62. San Diego, CA: Western Field Ornithologists.
- Michael Brandman Associates (MBA). 1991 (July). A Rangewide Assessment of the California Gnatcatcher (*Poliophtila californica*) (an Unpublished Report prepared for the Building Industry Association of Southern California).
- U.S. Fish and Wildlife Service (USFWS). 2007 (December 19). Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Coastal California Gnatcatcher (*Poliophtila californica californica*); Final Rule. *Federal Register* 72(243): 72009–72213. Washington, D.C.: USFWS.
- . 2003 (April 24). Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Coastal California Gnatcatcher (*Poliophtila californica californica*) and Determination of Distinct Vertebrate Population Segment for the California Gnatcatcher (*Poliophtila californica*); Proposed Rule. *Federal Register* 68(79): 20227–20312. Washington, D.C.: USFWS. <https://www.fws.gov/policy/library/2003/03-9435.html>.
- . 1997a (February 28). *Coastal California Gnatcatcher (Poliophtila californica californica) Presence/Absence Survey Guidelines*. Washington, D.C.: USFWS.
- . 1997b (July 28). *Coastal California Gnatcatcher (Poliophtila californica californica) Presence/Absence Survey Protocol*. Washington, D.C.: USFWS.
- . 1993 (March 30). Endangered and Threatened Wildlife and Plants: Determination of Threatened Status for the Coastal California Gnatcatcher. *Federal Register* 58(59): 16742–16757. Washington, D.C.: USFWS.







ATTACHMENT A
SITE PHOTOGRAPHS



Photo 1 - June 9, 2022: View of potentially suitable habitat in the western portion of the project site, facing northeast. This area consists of California sagebrush–deerweed scrub and laurel sumac scrub dominated by laurel sumac, deerweed and California sagebrush.



Photo 2 - June 9, 2022: View of potentially suitable habitat in the middle portion of the project site, facing northwest. This area consists of California sagebrush–deerweed scrub dominated by deerweed and California sagebrush.

Site Photographs

Attachment A-1

WVF No. 1 Stage 3 Improvements Project



08/12/2023 JVIR R:\Projects\MND\3MWD\0104\CS\Graphics\CAGIMAB_SP.pdf

D:\Projects\MND\3MWD\0104\CS\Graphics\CAGIMAB_SP_20230721_4



Photo 3 - June 30, 2022: View of potentially suitable habitat in the southwestern portion of the project site, facing east. This area consists of California sagebrush-deerweed scrub dominated by deerweed, California buckwheat, and California sagebrush.



Photo 4 - June 30, 2022: View of potentially suitable habitat in the southeastern portion of the project site, facing west. This area consists of California sagebrush-deerweed scrub dominated by California sagebrush.

Site Photographs

WVF No. 1 Stage 3 Improvements Project

Attachment A-2



08/11/2023 JVIR R:\Project\A\ND\CM\WDC104\CS\Graphics\CAGINAB_SP.pdf

D:\Project\CM\WDC104\CS\CAGINAB\SP\20230721_40

ATTACHMENT B
WILDLIFE COMPENDIUM

WILDLIFE COMPENDIUM

Scientific Name	Common Name
LIZARDS	-
PHRYNOSOMATIDAE – SPINY LIZARD FAMILY	-
<i>Sceloporus occidentalis</i>	western fence lizard
BIRDS	-
ODONTOPHORIDAE – NEW WORLD QUAIL FAMILY	-
<i>Callipepla californica</i>	California quail
COLUMBIDAE – PIGEON AND DOVE FAMILY	-
<i>Streptopelia decaocto</i> *	Eurasian collared-dove
<i>Zenaida macroura</i>	mourning dove
APODIDAE – SWIFT FAMILY	-
<i>Aeronautes saxatalis</i>	white-throated swift
TROCHILIDAE – HUMMINGBIRD FAMILY	-
<i>Calypte anna</i>	Anna's hummingbird
<i>Selasphorus sasin</i>	Allen's hummingbird
ACCIPITRIDAE – HAWK FAMILY	-
<i>Buteo lineatus</i>	red-shouldered hawk
<i>Buteo jamaicensis</i>	red-tailed hawk
PICIDAE – WOODPECKER FAMILY	-
<i>Melanerpes formicivorus</i>	acorn woodpecker
TYRANNIDAE – TYRANT FLYCATCHER FAMILY	-
<i>Empidonax difficilis</i>	Pacific-slope flycatcher
<i>Myiarchus cinerascens</i>	ash-throated flycatcher
CORVIDAE – JAY AND CROW FAMILY	-
<i>Aphelocoma californica</i>	California scrub-jay
<i>Corvus brachyrhynchos</i>	American crow
<i>Corvus corax</i>	common raven
PARIDAE – TITMOUSE FAMILY	-
<i>Baeolophus inornatus</i>	oak titmouse
AEGITHALIDAE – BUSHTIT FAMILY	-
<i>Psaltiriparus minimus</i>	bushtit
SITTIDAE – NUTHATCH FAMILY	-
<i>Sitta carolinensis</i>	white-breasted nuthatch
TROGLODYTIDAE – WREN FAMILY	-
<i>Thryomanes bewickii</i>	Bewick's wren
POLIOPTILIDAE – GNATCATCHER FAMILY	-
<i>Poliophtila caerulea</i>	blue-gray gnatcatcher
SYLVIIDAE – SILVIID WARBLERS FAMILY	-
<i>Chamaea fasciata</i>	wrentit
TURDIDAE – THRUSH FAMILY	-
<i>Turdus migratorius</i>	American robin
MIMIDAE – MOCKINGBIRD AND THRASHER FAMILY	-
<i>Toxostoma redivivum</i>	California thrasher
<i>Mimus polyglottos</i>	northern mockingbird

Scientific Name	Common Name
FRINGILLIDAE – FINCH FAMILY	-
<i>Haemorhous mexicanus</i>	house finch
<i>Spinus psaltria</i>	lesser goldfinch
PASSERELLIDAE – NEW WORLD SPARROW FAMILY	-
<i>Melospiza crissalis</i>	California towhee
<i>Pipilo maculatus</i>	spotted towhee
ICTERIDAE – BLACKBIRDS AND ORIOLES	-
<i>Icterus cucullatus</i>	hooded oriole
<i>Molothrus ater</i>	brown-headed cowbird
MAMMALS	-
SCIURIDAE – SQUIRREL FAMILY	-
<i>Otospermophilus beecheyi</i>	California ground squirrel
LEPORIDAE – HARE AND RABBIT FAMILY	-
<i>Sylvilagus audubonii</i>	desert cottontail

* Non-native species

October 4, 2022

Mr. Chris Kofron
Recovery Permit Coordinator
U.S. Fish and Wildlife Service
2493 Portola Road, Suite B
Ventura, California 93003

VIA EMAIL
chris_kofron@fws.gov

Subject: Results of Least Bell's Vireo Focus Surveys for the Metropolitan Water District West Valley Feeder No. 1 Stage 3 Improvements Project, Los Angeles County, California

Dear Mr. Kofron:

This Letter Report presents the results of focused surveys to determine the presence or absence of the least Bell's vireo (*Vireo bellii pusillus*) for the Metropolitan Water District West Valley Feeder No. 1 Stage 3 Improvements Project (hereinafter referred to as the "proposed Project") located in Los Angeles County, California (Exhibit 1).

PROJECT DESCRIPTION AND LOCATION

The Project involves modification of the MWD WVF1 located northwest of Chatsworth Park South, in the City of Los Angeles. Proposed Project actions include construction of an approximately 500-foot access road including a vehicle turnaround area and various modifications to existing facilities including valve relocation, equipment replacement, and reconstruction of valve structures. Additionally, the project proposes the installation of new manholes, concrete vaults, and retaining walls along the WVF1. Project impacts would include both temporary impacts in areas associated with construction access, staging, and laydown areas as well as permanent impacts associated with the proposed access road. Except for those areas where impacts would be confined to existing structures and the surrounding paved areas, all other impact areas occurring would be subject to some degree of earth disturbance.

The Project site is in the western portion of the San Fernando Valley in the City of Los Angeles (Exhibit 1). Surrounding land uses include undeveloped open space in the Santa Susana Pass State Historic Park to the west and Chatsworth Park South to the east, with urban development farther to the east. The Project site occurs on the U.S. Geological Survey's (USGS') Oat Mountain 7.5-minute quadrangle at Township 2 North, Range 17 West, Sections 13 and 14 (Exhibit 2). Topography in the survey area includes slopes and eastward-draining canyons; elevations range from approximately 1,010 feet above mean sea level (msl) in the east to 1,160 feet above msl in the west.

Thirteen vegetation types and other areas occur on the project site (Exhibit 3). Vegetation categories include California sagebrush–deerweed scrub, California sagebrush–bush mallow scrub, semi-natural herbaceous stand, wild oats grassland, bush mallow scrub, bush mallow–laurel sumac scrub, laurel sumac scrub, red willow/arroyo willow thicket, coast live oak woodland, coast live oak–California sycamore woodland, eucalyptus grove, disturbed, and developed.

SPECIES BACKGROUND

The least Bell's vireo was formerly more common and widespread but became rare and local summer resident of Southern California's lowland riparian woodlands (Grinnell and Miller 1944; Garrett and Dunn 1981). The substantial population decline over the latter half of the twentieth century is attributable to the loss and degradation of riparian habitats and brood parasitism by the brown headed cowbird (*Molothrus ater*). As a result, the least Bell's vireo was listed by the California Department of Fish and Game (CDFG) as Endangered on October 2, 1980, and by the USFWS as Endangered on May 2, 1986 (CDFG 2011).

Bell's vireo is a Neotropical migrant that breeds in central and southwestern North America from northern Mexico to Southern California, Nevada, and Utah; east to Louisiana; and north to North Dakota, Wisconsin, and Indiana in the central United States (AOU 1998). Although not well known, the winter range of the Bell's vireo is believed to be the western coast of Central America from southern Sonora south to northwestern Nicaragua, including the cape region of Baja California, Mexico (Brown 1993). Of the four Bell's vireo subspecies, only two breed in California: the least Bell's vireo and the Arizona Bell's vireo (*V. b. arizonae*), which breeds in the Colorado River Valley (Garrett and Dunn 1981; Rosenberg et al. 1991). Though the least Bell's vireo was formerly considered a common breeder in riparian habitats throughout the Central Valley and other low-elevation riverine systems in California and Baja California, Mexico (Franzreb 1989), presently, the least Bell's vireo has been eliminated from much of its historical range (Franzreb 1989; Brown 1993).

The breeding habitat of the least Bell's vireo is primarily riparian dominated by willows with dense understory vegetation; shrubs such as mule fat (*Baccharis salicifolia*) and California rose (*Rosa californica*) are often a component of the understory (Goldwasser 1981). The least Bell's vireo is often found in areas that include trees such as willow (*Salix* sp.), western sycamore (*Platanus racemosa*) or cottonwood (*Populus* sp.), particularly where the canopy is within or immediately adjacent to an understory layer of vegetation (Salata 1983). The least Bell's vireo generally nests in early successional stages of riparian habitats, with nest sites frequently located in willows that are between four and ten feet high (Franzreb 1989). The most critical factor in habitat structure is the presence of a dense understory shrub layer from approximately two to ten feet above ground (Goldwasser 1981; Salata 1983; Franzreb 1989).

The least Bell's vireo population has increased tenfold from 291 territories in the early 1980s to an estimated 2,968 territories 20 years later (USFWS 2006). After a decade or more of absence in Los Angeles County, the least Bell's vireo returned by the mid-1980s with a pair reported from Whittier Narrows in 1985 and 1986 (Long 1993). Numbers of least Bell's vireo have continued to increase since that time, and it is now known to occur at several other locations in Los Angeles County such as the San Fernando (Van Norman) Dam; the San Gabriel River at Fish Canyon and Van Tassel Canyon; the Sepulveda Basin Wildlife Area; and the Castaic Lagoon Recreation Area (CDFW 2022). The two largest populations in the county are at Hansen Dam in the northeastern corner of the San Fernando Valley where 44 least Bell's vireo territories were present in 2009 (Griffith Wildlife Biology 2009) and on the Santa Clara River from I-5 downstream to the Las Brisas Bridge where 56 least Bell's vireo territories were present in 2007 (Bloom Biological, Inc. 2007).

On February 2, 1994, the USFWS issued their final designation of Critical Habitat for the least Bell's vireo (USFWS 1994), identifying approximately 37,560 acres as Critical Habitat in Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, and San Diego counties. The survey area is not located in the designated Critical Habitat area for this species.

SURVEY METHODS

A total of eight surveys for the least Bell's vireo were conducted on April 22; May 4, 16; June 6, 17, 28; and July 8, 18, 2022. Updated guidelines for least Bell's vireo surveys were issued on April 8, 1999, and require that at least eight surveys be conducted from April 10 to July 31 with a ten-day interval between each site visit. All surveys followed the recommended USFWS guidelines and were conducted by Psomas Biologist Sarah Thomas. The riparian habitat (approximately 0.21-acre) was systematically surveyed by walking slowly and methodically wherever feasible depending on streambed bank slope (Exhibits 3 and 4). Any observations of least Bell's vireo, including any pertinent behavior, would have been recorded and their locations mapped in the field. Surveys were conducted during the early morning hours and under optimal weather conditions for detection of birds. Survey dates, times, and weather data are shown in Table 1. Survey conditions and results were documented in field notes. An avian compendium recorded during these surveys is included in Attachment A.

TABLE 1
SUMMARY OF SURVEY DATA AND CONDITIONS FOR
LEAST BELL'S VIREO SURVEYS

Survey	Survey Date	Surveying Biologists	Start/End Time	Wind (miles/hour) Start	Wind (miles/hour) End	Tempe (°F) Start	Tempe (°F) End	Cloud Cover
1	4/22/2022	Thomas	0805/1015	1	1	62	69	95/75
2	5/4/2022	Thomas	0830/1000	1-2	1-2	68	73	50/Clear
3	5/16/2022	Thomas	0830/1030	2-3	1-2	67	75	Clear/Clear
4	6/6/2022	Thomas	0915/1100	1-2	1-2	70	76	25/10
5	6/17/2022	Thomas	0750/0930	0	0	63	63	100/100
6	6/28/2022	Thomas	0835/1040	1-2	1-2	79	90	25/Clear
7	7/8/2022	Thomas	0725/0910	0	1-2	66	71	Clear/Clear
8	7/18/2022	Thomas	0810/1000	1-2	1-2	76	82	50/25

SURVEY RESULTS

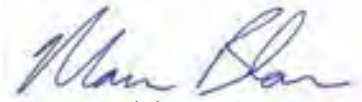
No least Bell's vireo were detected during the surveys. Brown headed cowbirds (three males, two females) were observed approximately 200 feet southwest of the survey area¹ on April 22; May 4, 16; and June 17 and 28, 2022.

¹ UTM 11S 350757.44 mE, 3792409.75 mN.

Psomas appreciates the opportunity to assist on this project. If you have any comments or questions, please call Marc Blain at (626) 351-2000.

Sincerely,

P S O M A S



Marc T. Blain
Senior Project Manager



Sarah Thomas
Biologist

Enclosures: Exhibit 1 – Regional Location and Local Vicinity
 Exhibit 2 – USGS 7.5-Minute Digital Quadrangle
 Exhibit 3 – Vegetation Types and Other Areas
 Exhibit 4 – Survey Area
 Attachment A – Avian Compendium

R:\Projects\MWD\3MWD010403\Documentation\LBV\MWD_LBV_Report-100422_ADA.docx

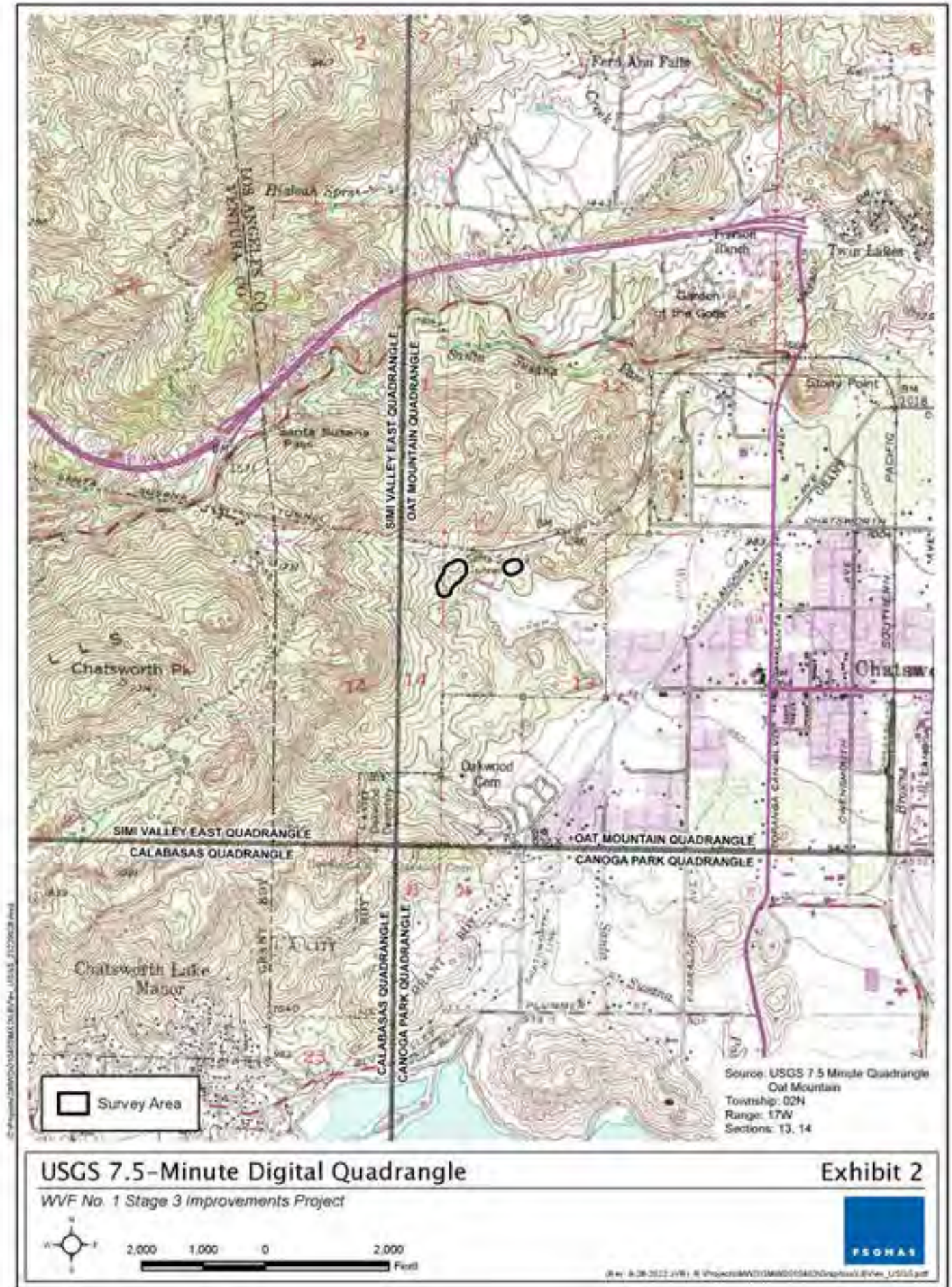
REFERENCES

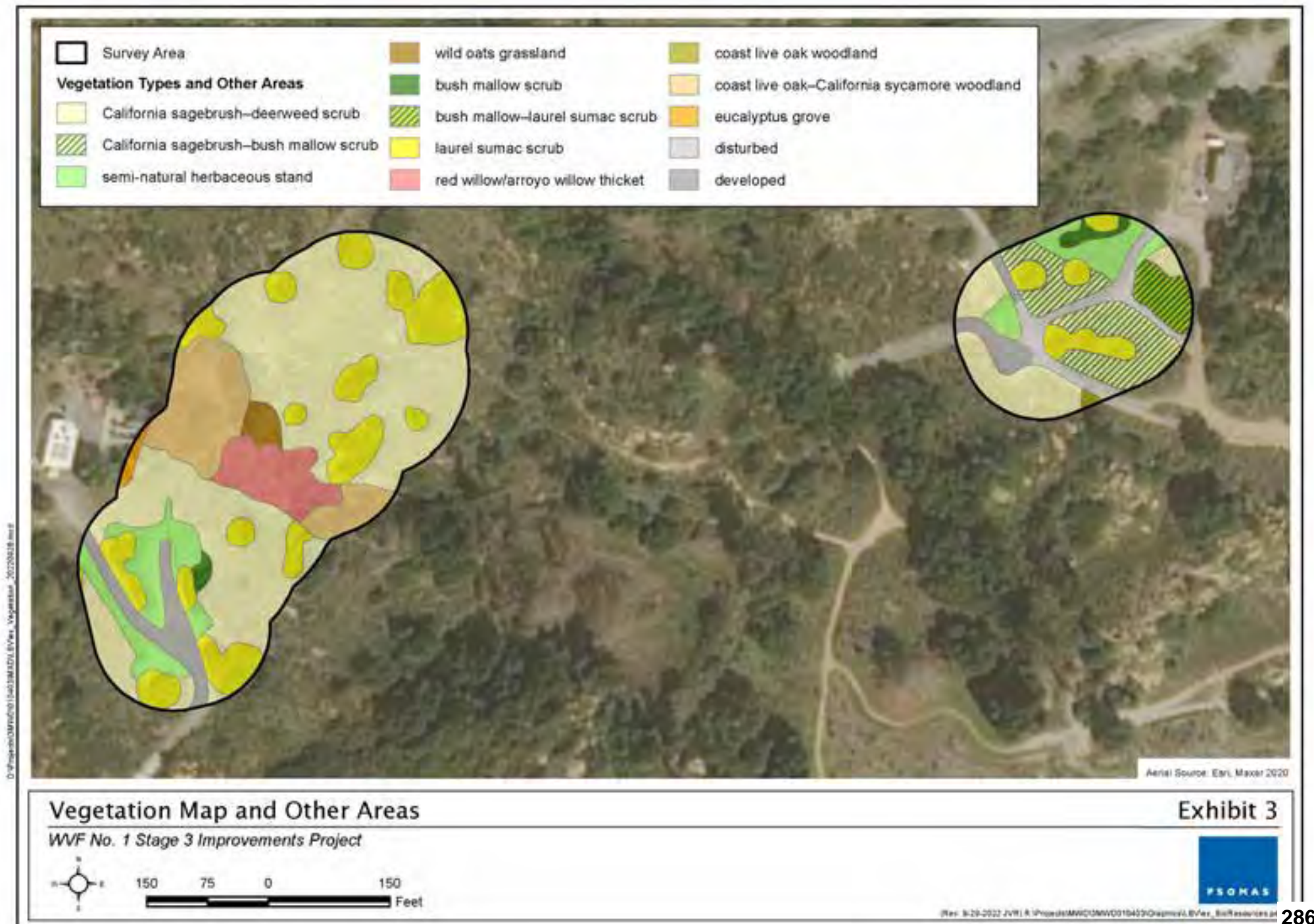
- American Ornithologists' Union (AOU). 1998. *Check-list of North American Birds*, 7th ed. Washington, D.C.: The American Ornithologists' Union
- Bloom Biological, Inc. 2007 (June). *Report on Interim Late Winter and Spring Survey of Raptors and Special-Status Bird Species on Portions of Newhall Land and Farming Company Property*. (Prepared for Newhall Land & Farming Company).
- Brown, B.T. 1993. Bell's Vireo (*Vireo bellii*). *The Birds of North America*, No. 35 (A. Poole, P. Stettenheim, and F. Gill, Eds.). Philadelphia, PA and Washington, D.C.: The Academy of Natural Sciences and AOU (respectively).
- California Department of Fish and Game (CDFG). 2011 (January). *State & Federally Listed Endangered & Threatened Animals of California*. Sacramento, CA: CDFG, Natural Heritage Division.
- California Department of Fish and Wildlife (CDFW). 2022. California Natural Diversity Database. Records of Occurrence for the USGS Oat Mountain, Simi Valley East, Calabasas, Canoga Park 7.5-minute quadrangles. Sacramento, CA: CDFG, Natural Heritage Division.
- Franzreb, K.E. 1989. *Ecology and Conservation of the Endangered Least Bell's Vireo* (Biological Report 89[1]). Sacramento, CA: USFWS, Endangered Species Office.
- Garrett, K. and J. Dunn. 1981. *Birds of Southern California: Status and Distribution*. Los Angeles, CA: Los Angeles Audubon Society.
- Goldwasser, S. 1981. *Habitat Requirements of the Least Bell's Vireo* (Final Report, Job IV-38.1). Sacramento, CA: CDFG.
- Griffith Wildlife Biology. 2009. The Status of the Least Bell's Vireo and Southwestern Willow Flycatcher at Los Angeles County Drainage Area Sites in 2009 (Unpublished report prepared for U.S. Army Corps of Engineers, Los Angeles District Operations Branch).
- Grinnell, J. and A.H. Miller. 1944. The Distribution of the Birds of California. *Pacific Coast Avifauna No.27*. Albuquerque, NM: Cooper Ornithological Society.
- Long, M.C. 1993. *Birds of the Whittier Narrows Recreation Area; Los Angeles County, California*. South El Monte, CA: Whittier Narrows Nature Center Associates.
- Rosenberg, K.V., R.D. Ohmart, W.C. Hunter, and B.W. Anderson. 1991. *Birds of the Lower Colorado River Valley*. Tucson, AZ: University of Arizona Press.
- Salata, L.R. 1983. *Status of the Least Bell's Vireo on Camp Pendleton, California: Report on Research Done in 1983*. Laguna Niguel, CA: USFWS.
- . 2006 (September). *Least Bell's Vireo (Vireo bellii pusillus): 5-Year Review, Summary and Evaluation*. Carlsbad, CA: U.S. Fish and Wildlife Service.

———. 1994 (February 2). Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Least Bell's Vireo. *Federal Register* 59 (22): 4845–4867. Washington, D.C.: USFWS.



C:\ProgramData\Trimble\MapSource\MapSource\B\View_Pros_Location_20220918.mxd







ATTACHMENT A
AVIAN COMPENDIUM

AVIAN COMPENDIUM RECORDED DURING THESE SURVEYS

Scientific Name	Common Name
BIRDS	-
ODONTOPHORIDAE – NEW WORLD QUAIL FAMILY	-
<i>Callipepla californica</i>	California quail
COLUMBIDAE – PIGEON AND DOVE FAMILY	-
<i>Streptopelia decaocto</i> *	Eurasian collared-dove
<i>Zenaida macroura</i>	mourning dove
APODIDAE – SWIFT FAMILY	-
<i>Aeronautes saxatalis</i>	white-throated swift
TROCHILIDAE – HUMMINGBIRD FAMILY	-
<i>Calypte anna</i>	Anna's hummingbird
<i>Selasphorus sasin</i>	Allen's hummingbird
CATHARTIDAE – NEW WORLD VULTURE FAMILY	-
<i>Cathartes aura</i>	turkey vulture
ACCIPITRIDAE – HAWK FAMILY	-
<i>Buteo jamaicensis</i>	red-tailed hawk
PICIDAE – WOODPECKER FAMILY	-
<i>Melanerpes formicivorus</i>	acorn woodpecker
<i>Picoides nuttallii</i>	Nuttall's woodpecker
<i>Colaptes auratus</i>	northern flicker
TYRANNIDAE – TYRANT FLYCATCHER FAMILY	-
<i>Empidonax difficilis</i>	Pacific-slope flycatcher
<i>Sayornis nigricans</i>	black phoebe
<i>Myiarchus cinerascens</i>	ash-throated flycatcher
<i>Tyrannus vociferans</i>	Cassin's kingbird
CORVIDAE – JAY AND CROW FAMILY	-
<i>Aphelocoma californica</i>	California scrub-jay
<i>Corvus corax</i>	common raven
HIRUNDINIDAE – SWALLOW FAMILY	-
<i>Stelgidopteryx serripennis</i>	northern rough-winged swallow
<i>Hirundo rustica</i>	barn swallow
<i>Petrochelidon pyrrhonota</i>	cliff swallow
PARIDAE – TITMOUSE FAMILY	-
<i>Baeolophus inornatus</i>	oak titmouse
AEGITHALIDAE – BUSHTIT FAMILY	-
<i>Psaltirparus minimus</i>	Bushtit
TROGLODYTIDAE – WREN FAMILY	-
<i>Troglodytes aedon</i>	house wren
<i>Thryomanes bewickii</i>	Bewick's wren
POLIOPTILIDAE – GNATCATCHER FAMILY	-
<i>Poliophtila caerulea</i>	blue-gray gnatcatcher
SYLVIIDAE – SILVIID WARBLERS FAMILY	-
<i>Chamaea fasciata</i>	Wrentit

Scientific Name	Common Name
MIMIDAE – MOCKINGBIRD AND THRASHER FAMILY	-
<i>Toxostoma redivivum</i>	California thrasher
<i>Mimus polyglottos</i>	northern mockingbird
STURNIDAE – STARLING FAMILY	-
<i>Sturnus vulgaris</i> *	European starling*
PTILOGONATIDAE – SILKY-FLYCATCHER FAMILY	-
<i>Phainopepla nitens</i>	Phainopepla
FRINGILLIDAE – FINCH FAMILY	-
<i>Haemorhous mexicanus</i>	house finch
<i>Spinus psaltria</i>	lesser goldfinch
PASSERELLIDAE – NEW WORLD SPARROW FAMILY	-
<i>Junco hyemalis</i>	dark-eyed junco
<i>Melospiza melodia</i>	song sparrow
<i>Melospiza crissalis</i>	California towhee
<i>Pipilo maculatus</i>	spotted towhee
ICTERIDAE – BLACKBIRDS AND ORIOLES	-
<i>Icterus cucullatus</i>	hooded oriole
<i>Molothrus ater</i>	brown-headed cowbird

* Non-native species

October 25, 2022

Lilia Martinez
Environmental Specialist, Environmental Planning Section
The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, California 90012

VIA EMAIL
LiMartinez@mwdh2o.com

Subject: Results of 2022 Focused Surveys for the California red-legged frog (*Rana draytonii*) for the Metropolitan Water District of Southern California, West Valley Feeder No 1 Project, Los Angeles, California.

Dear Ms. Martinez:

This Letter Report presents the results of focused diurnal and nocturnal surveys to determine the presence or absence of the California red-legged frog (*Rana draytonii*), for the Metropolitan Water District (MWD) of Southern California, West Valley Feeder No 1 (WVF1) Project (hereinafter referred to as the “proposed project”) located in Los Angeles County, California (Exhibit 1). A qualified Biologist with the necessary experience and a California Department of Fish and Wildlife (CDFW) scientific collection permit conducted the surveys.

PROJECT DESCRIPTION AND LOCATION

The project involves modification of the MWD WVF1 located approximately 1,500 feet northwest of Chatsworth Park South, in the City of Los Angeles. Proposed project actions include construction of an approximately 500-foot access road including a vehicle turnaround area and various modifications to existing facilities including valve relocation, equipment replacement, and reconstruction of valve structures. Additionally, the project proposes the installation of new manholes, concrete vaults, and retaining walls along the WVF1. Project impacts would include both temporary impacts in areas associated with construction access, staging, and laydown areas as well as permanent impacts associated with the proposed access road. Except for those areas where impacts would be confined to existing structures and the surrounding paved areas, all other impact areas occurring would be subject to some degree of earth disturbance.

The project site is in the western portion of the San Fernando Valley in the City of Los Angeles (Exhibit 1). Surrounding land uses include undeveloped open space in the Santa Susana Pass State Historic Park to the west and Chatsworth Park South to the east, with urban development farther to the east. A Metrolink railroad alignment is located immediately north of the site. The project site occurs on the U.S. Geological Survey’s (USGS’) Oat Mountain 7.5-minute quadrangle at Township 2 North, Range 17 West, Sections 13 and 14 (Exhibit 2). Topography in the survey area includes slopes and eastward-draining canyons; elevations range from approximately 1,010 feet above mean sea level (msl) in the east to 1,160 feet above msl in the west.

Representative site photos are included in Attachment A.

SPECIES BACKGROUND

California Red-legged Frog

The California red-legged is federally Endangered species and a California Species of Special Concern. This frog has been extirpated from approximately 70 percent of its historic range (USFWS 2006a). At the time of listing, the red-legged frog (*Rana aurora*) comprised two subspecies, the California red-legged frog (*R. aurora draytonii*) and the northern red-legged frog (*R. aurora aurora*) until genetic studies (Shaffer et al. 2004) determined that *R. aurora* is actually two separate species, northern red-legged frog (*R. aurora*) and California red-legged frog (*R. draytonii*). The ranges of these two species overlap in Mendocino County. Only the California red-legged frog (*R. draytonii*) occurs within the project region.

The California red-legged frog ranges in size from 1.5 to 5.5 inches in length, making it the largest native frog in the western United States (Wright and Wright 1949). Adult females are significantly longer than males, with an average snout to vent length of 5.4 inches versus 4.5 inches for adult males (Hayes and Miyamoto 1984). The hind legs and lower abdomen of adult frogs are often characterized by a reddish or salmon pink color; and the back is brown, gray, olive, or reddish brown, marked with small black flecks and larger irregular dark blotches (USFWS 2002a; Stebbins 2018). Dorsal spots often have light centers and, in some individuals, form a network of black lines (Stebbins 2018). Dorsolateral folds are prominent. Tadpoles range in length from 0.6 to 3.2 inches, and are a dark brown or olive, marked with darker spots (Storer 1925).

This species is found in humid forests, woodlands, grasslands, streams, wetlands, ponds, and lakes from sea level to 8,000 feet msl (Stebbins 2018). Preferred breeding habitat includes deep ponds and slow-moving streams where emergent vegetation is found on the bank edges (Jennings and Hayes 1994a, Thomson et al. 2016). Although primarily aquatic, it has been recorded in damp terrestrial places up to 302 feet from water for up to 50 consecutive days (Tatarian 2008) using small mammal burrows and moist leaf litter as refugia during dry periods (Jennings and Hayes 1994b).

California red-legged frog adults tend to be primarily nocturnal, while juveniles can be active at any time of day (Hayes and Tennant 1985). Adults feed on a wide range of prey, having been recorded feeding on at least 42 different taxa in a single study (Hayes and Tennant 1985), the majority of which were terrestrial invertebrates but also included fish, other amphibians, and small rodents. The diet of red-legged frog tadpoles has not been studied but is expected to be similar to other ranid frogs that feed on algae, diatoms, and detritus by grazing the surface of rocks and vegetation (Kupferberg 1997).

During the breeding season, typically from November through April, males call to females from the margins of ponds and slow streams (Jennings and Hayes 1994a). Unlike northern red-legged frogs, which lack vocal sacs and call underwater, California red-legged frogs have paired vocal sacs and call above the water surface (Hayes and Krempels 1986), though vocalizations are relatively weak and difficult to detect. Actual mating most commonly occurs in March but can vary depending on seasonal climatic patterns. The female lays a jellylike mass of 2,000 to 5,000 reddish brown eggs attached to emergent vegetation, twigs, or other structures in still or slow-moving water. The resulting tadpoles typically require about 3 weeks to hatch and another 11 to 20 weeks to metamorphose into juvenile frogs. Metamorphosis typically occurs from July to September, although some tadpoles have been observed to delay metamorphosis until the following March or April (Bobzien et al. 2000; Fellers et al. 2001). Red-legged frogs typically reach sexual maturity approximately two years (for males) and three years (for females) from metamorphosis (Jennings and Hayes 1985).

On March 17, 2010, the USFWS published the Revised Critical Habitat for the California red-legged frog. The Revised Critical Habitat designated 1,636,609 acres of critical habitat for the arroyo toad in

27 counties in California; Southern California counties include Santa Barbara, Ventura, Los Angeles, and Riverside. The survey area is not located within designated or proposed Critical Habitat for this species.

The California red-legged frog occurred historically in The Santa Monica Mountains and the greater Los Angeles area in general. But since the early 1970s, this species had not been seen and in fact, this species was considered largely extirpated from these areas. In the early 2000's a population of California red-legged frog was found in Simi Hills and gave hope to a potential recovery effort. In 2014 that recovery effort was put into motion. The Santa Monica Mountains Conservancy, partnered with the National Parks Service, transferred approximately 950 eggs from the Simi Hills population to two undisclosed streams in the Santa Monica Mountains (Kuykendall 2014). In 2017 during a stream survey, researchers found 9 egg masses in the streams where the transplanted eggs were introduced in 2014 (Behrens 2017). More recently, night surveys of these reintroduction sites conducted post Woolsey fire resulted in a total of 28 adult California red-legged frog detections (Kuykendall 2014, Cholo 2019). These findings show evidence of a potentially successful reestablishment of California red-legged frogs in the Santa Monica Mountains.

SURVEY METHODS

Surveys were completed in accordance with the Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog released in August 2005 (CDFW 2005). The protocol for California red-legged frog recommends a total of up to eight surveys conducted between January and September, with two daytime surveys and four nighttime surveys conducted during the breeding season, and one daytime and one nighttime survey conducted during the non-breeding season. Each survey must be conducted at least seven days apart, and the entire survey must be at least six weeks long. One survey should be conducted between February 25 and April 30, and at least one survey must be conducted between July 1 and September 30.

Psomas Senior Biologists Marc Blain, with the aid of Psomas Biologist Jack Underwood conducted the focused surveys in all potentially suitable habitat for California red-legged frog in the survey area. Consecutive diurnal and nocturnal surveys were conducted on April 28, June 17, and August 30, 2022, with two standalone nocturnal surveys being conducted on May 19, and June 24, 2022. Regarding the California red-legged frog protocol, the two day and four-night surveys conducted from April through June constituted the breeding season surveys; while the day and night survey on August 30, 2022, constituted the California red-legged frog non-breeding season survey.

The surveys included diurnal and nocturnal searches to determine the presence of eggs, tadpoles, and adults. Diurnal surveys were conducted from approximately 4:30 PM until dusk, and nocturnal surveys were conducted from one hour after dusk until approximately 10:00 PM. Surveys focused on detecting frogs by visual identification, listening for the advertising call of adult males, and checking potentially suitable breeding habitat for tadpoles and/or eggs. Biologists scanned pools for eggs, larvae, metamorphs, juveniles, and breeding and/or calling adults in potentially suitable breeding locations along the creek and for foraging individuals in the adjacent riparian and upland areas. Headlamps, flashlights, and binoculars were used to visually identify toads, frogs, and their larvae detected at night. Nocturnal surveys were conducted during appropriate environmental conditions conducive to the activity patterns of the California red-legged frog. Generally, these conditions are nighttime temperatures greater than 50 degrees Fahrenheit (°F) at dusk, with low winds (less than 10 miles per hour); nights with a full or nearly full moon were avoided. If any special status amphibians were found, the individual or population was documented, recorded with a Global Positioning System (GPS) unit, and mapped on an aerial photograph. Surveyor qualifications are presented in Attachment B of this Letter Report. California red-legged frog survey data sheets are provided in Attachment C. Survey dates, times, and weather data are shown in Table 1.

TABLE 1
SUMMARY OF SURVEY DATA AND CONDITIONS FOR CRLF SURVEYS

Survey	Survey Date	Survey Type	Surveying Biologists	Start/End Time	Wind (mph) Start	Wind (mph) End	Temp Start (°F)	Temp End (°F)	Cloud Cover (%)
1	4/28/2022	Diurnal	Blain; Underwood	6:20 PM–7:30 PM	3-4	1-2	63	60	0
2	4/28/2022	Nocturnal	Blain; Underwood	7:45 PM–9:04 PM	1-2	0-1	60	57	0
3	5/19/2022	Nocturnal	Blain	7:30 PM–9:45 PM	1-2	0–1	61	57	25
4	6/17/2022	Diurnal	Blain	4:25 PM–6:15 PM	5-6	5-6	75	73	50
5	6/17/2022	Nocturnal	Blain	7:25 PM–10:15 PM	4	3	66	63	0
6	6/24/2022	Nocturnal	Blain	8:00 PM–10:20 PM	2–3	1–2	83	74	0
7	8/30/2022	Diurnal	Blain	5:20 PM–6:40 PM	4-5	3–4	95	90	0
8	8/30/2022	Nocturnal	Blain	8:10 PM–9:40 PM	3	2	85	81	0

°F: degrees Fahrenheit; mph: miles per hour; %: percent

SURVEY RESULTS

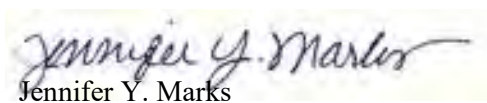
No California red-legged frogs were detected during the surveys. No special status species were observed during any of the surveys.

One amphibian species was detected during surveys, the northern pacific tree frog (*Pseudacris regilla*). A complete list of all wildlife species detected during the surveys is provided in Attachment D.

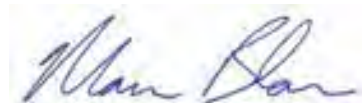
Psomas appreciates the opportunity to assist on this project. If you have any comments or questions, please call Marc Blain at (626) 351-2000.

Sincerely,

P S O M A S



Jennifer Y. Marks
Senior Project Manager



Marc T. Blain
Senior Biologist

Enclosures: Exhibits 1–2
Attachment A – Site Photographs
Attachment B – Surveyor Qualifications
Attachment C – California Red-Legged Frog Survey Data Sheets
Attachment D – Wildlife Compendium

REFERENCES

- Behrens, Z. (2017, March 22). *Rare Species Discovered Breeding in Santa Monica Mountains*—Santa Monica Mountains National Recreation Area (U.S. National Park Service).
<https://www.nps.gov/samo/learn/news/rare-species-discovered-breeding-in-santa-monica-mountains.htm>
- Bobzien, S., J.E. DiDonato, P.J. Alexander. 2000. *Status of the California Red-Legged Frog in the East Bay Regional Park District, California*. Oakland, California.
- California Department of Fish and Wildlife (CDFW). 2022. California Natural Diversity Database. Records of occurrence for the USGS Simi, Calabasas, Canoga Park, and Oat Mountain California 7.5-minute quadrangles. Sacramento, CA: CDFW, Natural Heritage Division.
- . 2022 (July). *Special Animals List*. Sacramento, CA: CDFW.
- . 2005 (August). *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog*. Sacramento, CA: CDFW.
- Cholo, A. (2019, October 15). *Night Surveys Show a Small Number of Threatened California Red-Legged Frogs Were Able to ‘Tough Out’ the Woolsey Fire and Subsequent Mudslides*—Santa Monica Mountains National Recreation Area (U.S. National Park Service).
<https://www.nps.gov/samo/learn/news/night-surveys-show-a-small-number-of-threatened-california-red-legged-frogs-were-able-to-tough-out-the-woolsey-fire-and-subsequent-mudslides.htm>
- Fellers G.M., D.E. Green, and J.E. Longcore. 2001. Oral chytridiomycosis in the Mountain Yellow-legged Frog (*Rana muscosa*). *Copeia* 2001:945-953.
- Hayes, M.P. and D.M. Kremples. 1986. Vocal sac variation among frogs of the genus *Rana* (Anura: Ranidae) from western North America. *Copeia* 1986:927-936.
- Hayes, M.P., and M.M. Miyamoto. 1984. “Biochemical, behavioral and body size difference between *Rana aurora aurora* and *R. a. draytonii*.” *Copeia*, 1984(4), 1018-1022.
- Hayes, M.P., and M.R. Tennant. 1985. Diet and feeding behavior of the California red-legged frog, *Rana aurora draytonii* (Ranidae). *Southwestern Naturalist* 30(4): 601-605.
- Jennings, M.R., and M.P. Hayes. 1994a. *Amphibian and Reptile Species of Special Concern in California* (Contract No. 8023). Sacramento, CA: CDFG, Inland Fisheries Division.
- . 1994(b). Decline of native ranid frogs in the desert Southwest. Pages 183-211 in P.R. Brown and J.W. Wright (editors). *Herpetology of the North American deserts: Proceedings of a symposium*. Southwestern Herpetologists Society Special Publication No. 5.
- . 1985. Pre-1900 overharvest of the California red-legged frog (*Rana aurora draytonii*): the inducement for bullfrog (*Rana catesbeiana*) introduction. *Herpetologica* 41:94–103.
- Kupferberg, S.J. 1997. The role of larval diet in anuran metamorphosis. *American Zoologist* 37:146–159.

- Kuykendall, K. (2014, July 25). *Biologists Release Hundreds of Threatened Frogs in Santa Monica Mountains Streams*—Santa Monica Mountains National Recreation Area (U.S. National Park Service). <https://www.nps.gov/samo/learn/news/biologists-release-100s-of-frogs.htm>
- Shaffer, H.B., G.M. Fellers, S.R. Voss, J.C. Oliver, and G.B. Pauly. 2004. Species boundaries, phylogeography and conservation genetics of the red-legged frog (*Rana aurora draytonii*) complex. *Molecular Ecology* 13:2667–2677. Boston, MA: Blackwell Publishing Ltd.
- Stebbins, Robert C. 2018. *A Field Guide to Western Reptiles and Amphibians*. 4th Edition. Houghton Mifflin Company.
- Storer, T. I. 1925. “A synopsis of the amphibia of California.” *University of California Publications in Zoology*, 27, 1-342.
- Tatarian, P.J. 2008. Movement patterns of California red-legged frogs (*Rana draytonii*) in an inland California environment. *Herpetological Conservation and Biology* 3:155-169.
- Thomson, R. C., Wright, A. N., Shaffer, H. B., Bolster, B., Cripe, K., Barry, S. J., Fisher, R. N., & Welsh, H. H. (2016). *California Amphibian and Reptile Species of Special Concern* (1st ed.). University of California Press. <http://www.jstor.org/stable/10.1525/j.ctv1xxxbx>
- U.S. Fish and Wildlife Service (USFWS). 2008. Endangered and Threatened Wildlife and Plants; Revised Critical Habitat for the California Red-Legged Frog (*Rana aurora draytonii*). *Federal Register* 73(180): 53491–53680.
- . 2006a. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the California Red-legged Frog, and Special Rule Exemption Associated with Final Listing for Existing Routine Ranching Activities; Final Rule. *Federal Register* 71(71): 19243–19346. Washington, D.C.: USFWS.
- . 2005b (August). Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog. 26 pp.
- . 2002a. Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, Oregon.
- . 2000. Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for the California Red-Legged Frog (*Rana aurora draytonii*); Proposed Rule. *Federal Register* 65 (176): 54891-54932.
- Wright, A. H. and Wright, A. A. 1949. *Handbook of Frogs and Toads of the United States and Canada*. Comstock Publishing Company, Inc., Ithaca, New York.



Project Location

WVF No. 1 Stage 3 Improvements Project

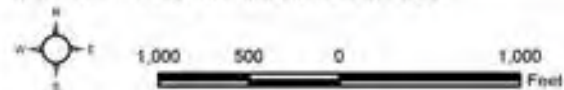
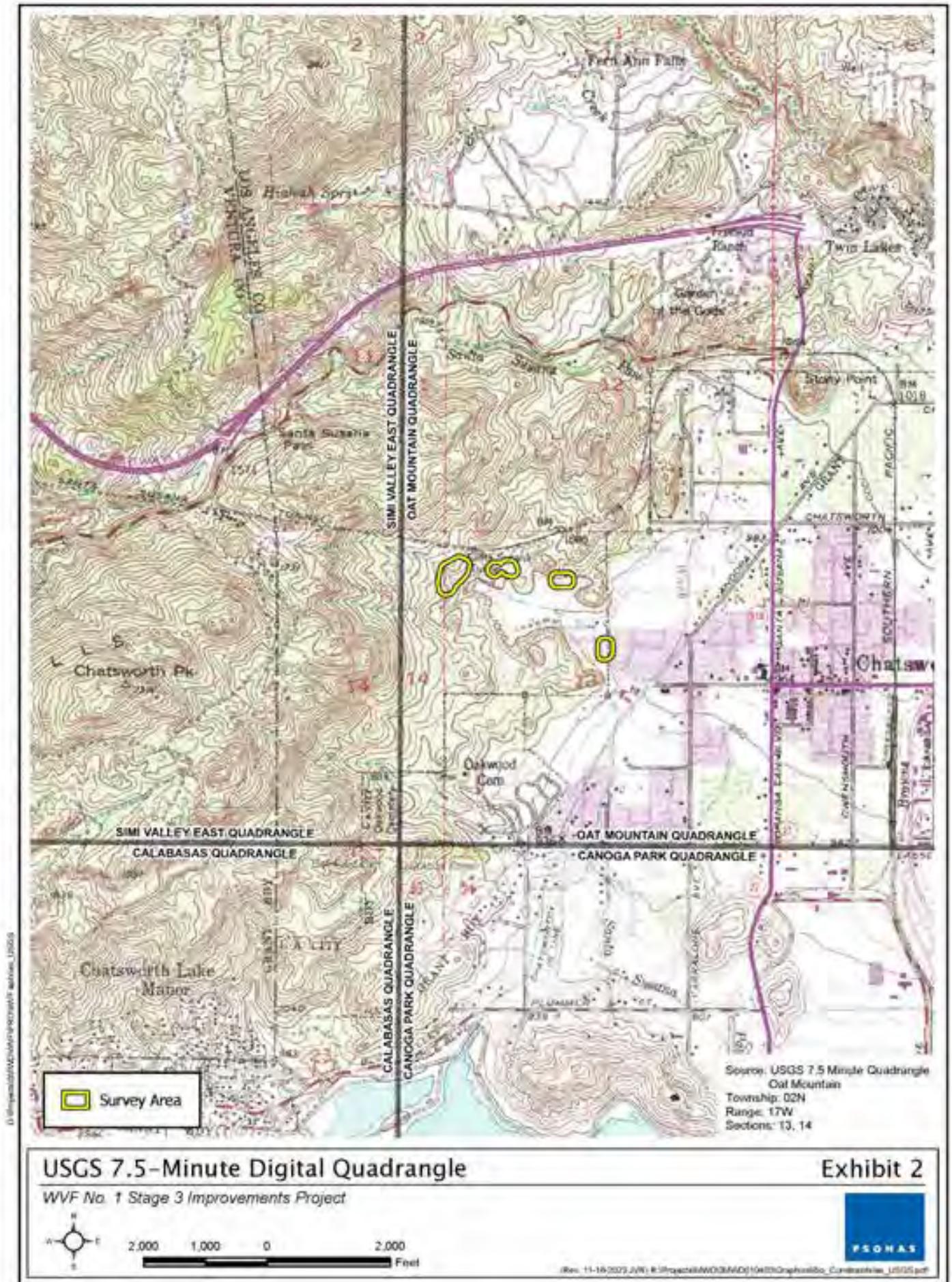


Exhibit 1



(Rev. 11-16-2023, A/R: R:\Projects\66030\66030\0403\Graphics\260_Constraints\Project_Location.pdf)



ATTACHMENT A
SITE PHOTOGRAPHS



California sagebrush-deerweed scrub in the western portion of the survey area.



California sagebrush-bush mallow scrub in the eastern portion of the survey area.

Representative Photographs

WVF No. 1 Stage 3 Improvements Project

Attachment A-1



Key: 6-24-2218 NMDs R:\Projects\NMD\NMD010054\Organizations_11P.pdf



Semi-natural herbaceous stand in the western portion of the survey area.



Laurel sumac scrub in the western portion of the survey area.

Representative Photographs

WVF No. 1 Stage 3 Improvements Project

Attachment A-2



Rev: 6-28-2018 WVD: R:\Projects\WVF\WVD\10254\Graphics\Notes_EP.pdf



Red willow/arroyo willow thicket in the western portion of the survey area.



Coast live oak-California sycamore woodland in the western portion of the survey area.

Representative Photographs

WVF No. 1 Stage 3 Improvements Project

Attachment A-3



Rev: 6-26-2018 MW001 R:\Projects\NEWCOM\MW0010254\Graphics\Drawings_EP.pdf



Eucalyptus grove in the western portion of the survey area.



Disturbed area in eastern portion of the survey area.

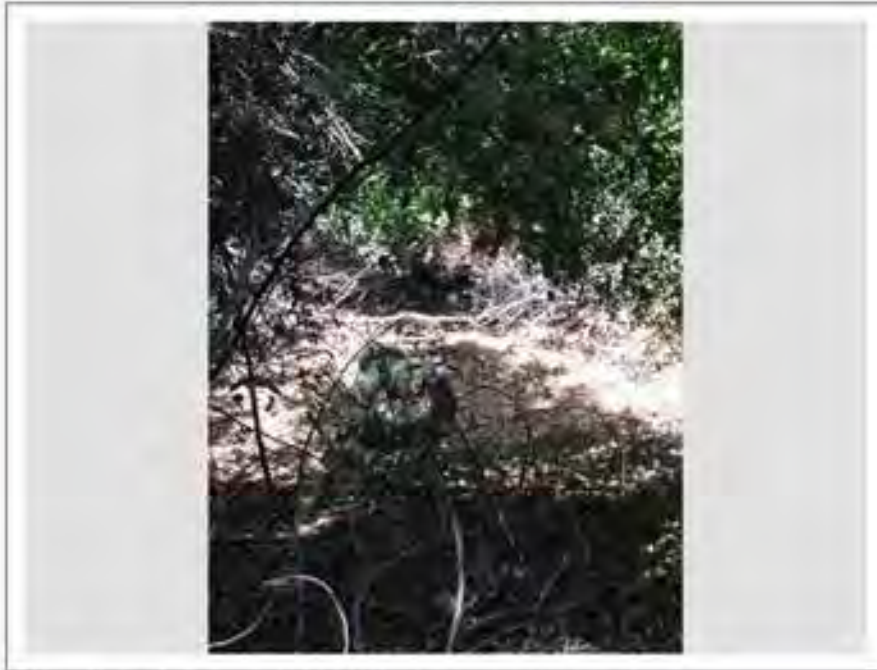
Representative Photographs

WVF No. 1 Stage 3 Improvements Project

Attachment A-4



\\Rev: 6-26-2018 MWDO R \\Projects\\WVF\\MWDO10254\\Graphics\\Box\\rev_EP.pdf



WWF1 STA 1416+33 existing blowoff (to be abandoned)



WWF1 STA 1407+45 existing blowoff.

Representative Photographs

WWF No. 1 Stage 3 Improvements Project

Attachment A-5



Rev: 6-26-2018 WMO R:\Projects\WVON\WVON0010254\Graphics\Drawings_EP.pdf



Along existing access trail to WWF1 STA 1415+42 proposed vault and pump well.



Contractor's laydown area in the western portion of the survey area.

Representative Photographs

WWF No. 1 Stage 3 Improvements Project

Attachment A-6



Rev: 6-26-2018 MWDO R:\Projects\WWF\WWF0010254\Graphics\Drawings_EP.pdf

ATTACHMENT B
SURVEYOR QUALICATIONS

ATTACHMENT C
CALIFORNIA RED-LEGGED FROG SURVEY DATA SHEETS

**Appendix E.
California Red-legged Frog Survey Data Sheet**

Survey results reviewed by _____	(FWS Field Office)	(date)	(biologist)
----------------------------------	--------------------	--------	-------------

Date of Survey: 04/28/2022 Survey Biologist: Blain, Marc
 (mm/dd/yyyy) (Last name) (first name)
 Survey Biologist: Underwood, Jack
 (Last name) (first name)

Site Location: LA County; Chatsworth; 34°15'42.3"N 118°37'21.2"W
 (County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

map within report

Proposed project name: MWD West Valley Feeder (WVF)
 Brief description of proposed action:
Roadway access improvements & additions for
WVF stub out point.

Type of Survey (circle one): DAY NIGHT BREEDING NON-BREEDING
 Survey number (circle one): 1 2 3 4 5 6 7 8
 Begin Time: 6:20 PM End Time: 7:30 PM
 Cloud cover: 0% Precipitation: 0
 Air Temperature: 63° F Water Temperature: 66° F
 Wind Speed: 2-3 MPH Visibility Conditions: Clear
 Moon phase: Waning Crescent Humidity: 66%
 Description of weather conditions: Weather was clear with no clouds
over head.

Brand name and model of light used to conduct surveys: Berco - Rechargeable, Zoomable
Tactical Flashlight. Adjustable to up to
1000m range.
 Were binoculars used for the surveys (circle one)? YES NO
 Brand, model, and power of binoculars: Mikon Monarch M7 8x42 8.3°

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: None observed.

Other notes, observations, comments, etc.

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

**Appendix E.
California Red-legged Frog Survey Data Sheet**

Survey results reviewed by _____ (FWS Field Office)	(date)	(biologist)
--	--------	-------------

Date of Survey: 4/28/2022
(mm/dd/yyyy)

Survey Biologist: Blain Marc
(Last name) (first name)

Survey Biologist: Underwood Jack
(Last name) (first name)

Site Location: Alameda County; Chablis; 39° 15' 42.3" N 118° 37' 21.2" W
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: MWD West Valley Feeder (WVF)
Brief description of proposed action:
Roadway access improvements & additions for WVF
Stub out point.

Type of Survey (circle one): DAY NIGHT BREEDING NON-BREEDING

Survey number (circle one): 1 (2) 3 4 5 6 7 8

Begin Time: 7:45 PM End Time: 9:04 PM

Cloud cover: 0% Precipitation: 0%

Air Temperature: 60°F Water Temperature: 66°F

Wind Speed: 1-2 MPH Visibility Conditions: Clear

Moon phase: waning crescent Humidity: 70%

Description of weather conditions: weather was clear with no precipitation.

Brand name and model of light used to conduct surveys: Hercal - rechargeable, zoomable, tactical flashlight. Adjustable to under 100,000 candle watts.

Were binoculars used for the surveys (circle one)? YES NO

Brand, model, and power of binoculars: Nikon Monarch M7 8x42 8.3°

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Northern Pacific Treefrog	N/A	H	adult	N/A	100%

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: None observed

Other notes, observations, comments, etc.

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____

(FWS Field Office)

(date)

(biologist)

Date of Survey: 05/19/2022
(mm/dd/yyyy)Survey Biologist: Blain
(Last name)MARC
(first name)Survey Biologist: _____
(Last name)

(first name)

Site Location: LA County, Chatsworth, 34° 15' 42.3" N 118° 37' 21.2 W
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).****ATTACH A MAP** (include habitat types, important features, and species locations)**Proposed project name: MWD West Valley Feeder (WVF)

Brief description of proposed action:

Roadway access improvements & additions for WVF
STUB OUT POINT.Type of Survey (circle one): DAY NIGHTBREEDING NON-BREEDINGSurvey number (circle one): 1 2 3 4 5 6 7 8Begin Time: 7:30 PMEnd Time: 9:45 PMCloud cover: 25%Precipitation: 0Air Temperature: 61°FWater Temperature: 66°FWind Speed: 1-2 MPHVisibility Conditions: Relatively clearMoon phase: waning gibbousHumidity: 81%Description of weather conditions: weather was relatively clear with
NO precipitation.Brand name and model of light used to conduct surveys: Beacon - Rechargeable, zoomable, tactical
Flashlight, adjustable to under 100,000 candle watts.Were binoculars used for the surveys (circle one)? YES NOBrand, model, and power of binoculars: Nikon Monarch M7 8x42 8.3°

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Northern Pacific Treefrog	1	0 3 H	adult	N/A	100%

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: NONE observed

Other notes, observations, comments, etc.

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

**Appendix E.
California Red-legged Frog Survey Data Sheet**

Survey results reviewed by _____ (RWS Field Office)	(date) _____	(biologist) _____
--	--------------	-------------------

Date of Survey: 06/17/2022 Survey Biologist: Blain Marc
(mm/dd/yyyy) (Last name) (first name)

Survey Biologist: _____
(Last name) (first name)

Site Location: LA COUNTY; Chatsworth 34° 15' 42.3" N 118° 37' 21.2" W
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: MWD West Valley Feeder Gully
Brief description of proposed action:
Roadway access improvements & additions for WVF
STUD OUT POINT.

Type of Survey (circle one): DAY NIGHT BREEDING NON-BREEDING

Survey number (circle one): 1 2 3 4 5 6 7 8

Begin Time: 4:25 PM End Time: 6:15 PM

Cloud cover: 50% Precipitation: 0%

Air Temperature: 75°F Water Temperature: 66°F

Wind Speed: 5-6 MPH Visibility Conditions: clear

Moon phase: waning gibbous Humidity: 57%

Description of weather conditions: Weather conditions were relatively clear with no precipitation

Brand name and model of light used to conduct surveys: Boreal - Rechargeable, Zoomable, Tactical Flashlight. Adjustable to under water or land use.

Were binoculars used for the surveys (circle one)? YES NO

Brand, model, and power of binoculars: Nikon Monarch M7 8X42 8.3°

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: NONE observed

Other notes, observations, comments, etc.

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____	(RWS Field Office)	(date)	(biologist)
----------------------------------	--------------------	--------	-------------

Date of Survey: 06/17/2022 Survey Biologist: Blain Maic
 (mm/dd/yyyy) (Last name) (first name)

Survey Biologist: _____
 (Last name) (first name)

Site Location: LA County; Chatsworth; 34° 15' 42.3" N 118° 37' 21.2" W
 (County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: MWD West Valley Feeder (WVF)
 Brief description of proposed action:
Roadway access improvements & additions for WVF
STUB OUT POINT.

Type of Survey (circle one): DAY NIGHT BREEDING NON-BREEDING

Survey number (circle one): 1 2 3 4 5 6 7 8

Begin Time: 7:25 PM

End Time: 10:15 PM

Cloud cover: 0%

Precipitation: 0%

Air Temperature: 66°F

Water Temperature: 66°F

Wind Speed: 3-4 MPH

Visibility Conditions: clear

Moon phase: Waning Gibbous

Humidity: 73%

Description of weather conditions: weather conditions were clear
with no precipitation

Brand name and model of light used to conduct surveys: Beal - Rechargeable, zoomable, tactical
Flashlight. Adjustable to under 100,000 candle watts.

Were binoculars used for the surveys (circle one)? YES NO

Brand, model, and power of binoculars: Nikon Monarch M7 8x42 8.3"

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Northern Pacific treefrog	N/A	H	adult	N/A	100%

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: none observed

Other notes, observations, comments, etc.

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (FWS Field Office)	(date) _____	(biologist) _____
--	--------------	-------------------

Date of Survey: 06/24/2022 Survey Biologist: Blain Marc
 (mm/dd/yyyy) (Last name) (first name)

Survey Biologist: _____
 (Last name) (first name)

Site Location: La County; Chatsworth; 34° 15' 42.3" N 118° 37' 21.2" W
 (County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: MWD West Valley Feeder (WVF)
 Brief description of proposed action:
Roadway access improvements & additions for WVF
STUB OUT POINT.

Type of Survey (circle one): DAY NIGHT BREEDING NON-BREEDING

Survey number (circle one): 1 2 3 4 5 6 7 8

Begin Time: 8:00 PM

End Time: 10:20 PM

Cloud cover: 0%

Precipitation: 0%

Air Temperature: 83°F

Water Temperature: 66°F

Wind Speed: 2-3 MPH

Visibility Conditions: Clear

Moon phase: Waning Crescent

Humidity: 84%

Description of weather conditions: weather was relatively clear with
NO precipitation

Brand name and model of light used to conduct surveys: Bercol - Rechargeable, Zoomable, Tactical
Flashlight. Adjustable to under 100,000 candle watts.

Were binoculars used for the surveys (circle one)? YES NO
 Brand, model, and power of binoculars: Nikon Monarch M7 8x42 8.3°

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Northern Pacific tree frog	1-4	0 3 H	adult	N/A	100%

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: none observed

Other notes, observations, comments, etc.

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (RWS Field Office)	(date)	(biologist)
--	--------	-------------

Date of Survey: 08/30/2022 Survey Biologist: Blain Marc
 (mm/dd/yyyy) (Last name) (first name)

Survey Biologist: _____
 (Last name) (first name)

Site Location: LA County, Chatsworth; 34° 15' 42.3" N 118° 37' 21.2" W
 (County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: MWD West Valley Feeder (WVF)
 Brief description of proposed action:
Roadway access improvements & additions for WVF
STUBOUT POINTS.

Type of Survey (circle one) DAY NIGHT BREEDING NON-BREEDING

Survey number (circle one): 1 2 3 4 5 6 7 8

Begin Time: 5:20 PM End Time: 6:40 PM

Cloud cover: 0% Precipitation: 0%

Air Temperature: 95°F Water Temperature: 68°F

Wind Speed: 3-4 Visibility Conditions: clear

Moon phase: waxing crescent Humidity: 80%

Description of weather conditions: weather conditions were clear with no precipitation

Brand name and model of light used to conduct surveys: BerGo! - Rechargeable, zoomable, tactical flashlight. Adjustable to under 100,000 candle watts.

Were binoculars used for the surveys (circle one)? YES NO

Brand, model, and power of binoculars: Nikon Monarch M7 8x42 8.3°

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: None observed

Other notes, observations, comments, etc.

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____	(FWS Field Office)	(date)	(biologist)
----------------------------------	--------------------	--------	-------------

Date of Survey: 08/30/2022 Survey Biologist: Blain Marc
 (mm/dd/yyyy) (Last name) (first name)
 Survey Biologist: _____
 (Last name) (first name)

Site Location: LA County; Chatsworth; 34°15'42.3"N 118°37'21.2"W
 (County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: <u>MWD West Valley Feeder (WVF)</u>
Brief description of proposed action: <u>Roadway access improvements & additions for WVF</u> <u>STUBOUT POINTS</u>

Type of Survey (circle one): DAY NIGHT BREEDING NON-BREEDING
 Survey number (circle one): 1 2 3 4 5 6 7 8
 Begin Time: 8:10 PM End Time: 9:40 PM
 Cloud cover: 0 Precipitation: 0%
 Air Temperature: 85°F Water Temperature: 68°F
 Wind Speed: 2-3 MPH Visibility Conditions: clear
 Moon phase: waxing crescent Humidity: 85%

Description of weather conditions: weather conditions were clear with no precipitation

Brand name and model of light used to conduct surveys: Berrol - Rechargeable, 200mAh, red light
Flashlight. Adjustable to under 100,000 candle watts.

Were binoculars used for the surveys (circle one)? YES NO
 Brand, model, and power of binoculars: Nikon Monarch M7 8x42 8.3°

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Northern Pacific Tree Frog	3	H	adult	NA	100%

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: none observed

Other notes, observations, comments, etc.

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

ATTACHMENT D
WILDLIFE COMPENDIUM

WILDLIFE SPECIES DETECTED DURING SURVEYS

Scientific Name	Common Name
AMPHIBIANS	
HYLIDAE – TREEFROG FAMILY	
<i>Pseudacris regilla</i>	Northern Pacific treefrog
LIZARDS	
PHRYNOSOMATIDAE – SPINY LIZARD FAMILY	
<i>Uta stansburiana</i>	common side-blotched lizard
BIRDS	
ANATIDAE – SWAN, GOOSE, AND DUCK FAMILY	
<i>Anas platyrhynchos</i>	mallard
COLUMBIDAE – PIGEON AND DOVE FAMILY	
<i>Columba livia*</i>	rock pigeon
<i>Zenaida macroura</i>	mourning dove
CAPRIMULGIDAE – NIGHTJAR FAMILY	
<i>Phalaenoptilus nuttallii</i>	common poorwill
APODIDAE – SWIFT FAMILY	
<i>Aeronautes saxatalis</i>	white-throated swift
TROCHILIDAE – HUMMINGBIRD FAMILY	
<i>Calypte anna</i>	Anna's hummingbird
ACCIPITRIDAE – HAWK FAMILY	
<i>Accipiter cooperii</i>	Cooper's hawk
<i>Buteo jamaicensis</i>	red-tailed hawk
STRIGIDAE – TYPICAL OWL FAMILY	
<i>Bubo virginianus</i>	great horned owl
PICIDAE – WOODPECKER FAMILY	
<i>Melanerpes formicivorus</i>	acorn woodpecker
<i>Picoides nuttallii</i>	Nuttall's woodpecker
<i>Colaptes auratus</i>	northern flicker
CORVIDAE – JAY AND CROW FAMILY	
<i>Aphelocoma californica</i>	California scrub-jay
<i>Corvus brachyrhynchos</i>	American crow
<i>Corvus corax</i>	common raven
HIRUNDINIDAE – SWALLOW FAMILY	
<i>Stelgidopteryx serripennis</i>	northern rough-winged swallow
PARIDAE – TITMOUSE FAMILY	
<i>Baeolophus inornatus</i>	oak titmouse
AEGITHALIDAE – BUSHTIT FAMILY	
<i>Psaltiriparus minimus</i>	bushtit
TROGLODYTIDAE – WREN FAMILY	
<i>Catherpes mexicanus</i>	canyon wren
<i>Thryomanes bewickii</i>	Bewick's wren
SYLVIIDAE – SILVIID WARBLERS FAMILY	
<i>Chamaea fasciata</i>	wrentit
TURDIDAE – THRUSH FAMILY	
<i>Sialia mexicana</i>	western bluebird

Scientific Name	Common Name
MIMIDAE – MOCKINGBIRD AND THRASHER FAMILY	
<i>Mimus polyglottos</i>	northern mockingbird
PTILOGONATIDAE – SILKY-FLYCATCHER FAMILY	
<i>Phainopepla nitens</i>	phainopepla
FRINGILLIDAE – FINCH FAMILY	
<i>Haemorhous mexicanus</i>	house finch
<i>Spinus psaltria</i>	lesser goldfinch
PASSERELLIDAE – NEW WORLD SPARROW FAMILY	
<i>Junco hyemalis</i>	dark-eyed junco
<i>Melospiza crissalis</i>	California towhee
<i>Pipilo maculatus</i>	spotted towhee
ICTERIDAE – BLACKBIRDS AND ORIOLES	
<i>Agelaius phoeniceus</i>	red-winged blackbird
PARULIDAE – WOOD-WARBLER FAMILY	
<i>Setophaga coronata</i>	yellow-rumped warbler
MAMMALS	
LEPORIDAE – HARE AND RABBIT FAMILY	
<i>Sylvilagus audubonii</i>	desert cottontail
CANIDAE – CANID FAMILY	
<i>Canis latrans</i>	Coyote

* Non-native species

APPENDIX D
ARCHAEOLOGICAL INVENTORY REPORT

**ARCHAEOLOGICAL INVENTORY
Metropolitan Water District (MWD)
West Valley Feeder No 1 (WVF1) Stage 3
Improvements Project**



Submitted to:

Psomas

Jennifer Marks, Senior Project Manager/Associate
Environmental Planning
3 Hutton Centre Drive, Suite 200
Santa Ana, CA 92807

John M. Foster, RPA
Greenwood and Associates
725 Jacon Way
Pacific Palisades, California 90272
(310) 454-3091

August 28, 2018

Abstract

The Metropolitan Water District of Southern California (MWD) has requested an archaeological record search and inventory for the proposed construction of an approximately 500-foot access road including a vehicle turn-around area and various modifications to existing facilities including valve relocation, equipment replacement, and reconstruction of valve structures. The archival research indicated that the project area is sensitive for archaeological resources with multiple sites in the immediate area. The foot reconnaissance was conducted and found ground visibility to be poor and could not determine if archaeological resources were present in the access road alignment. No archaeological resources were observed in the other impact areas. The proximity of recorded archaeological resources coupled with poor ground visibility warrants a recommendation for monitoring by an archaeological and Native American monitor.

Should potentially important cultural deposits be encountered during ground disturbing activities, work should be temporarily diverted from the vicinity of the discovery until the archaeologist and Native American can identify and evaluate the importance of the find, conduct any appropriate assessment, and implement measures to mitigate impacts on significant resources.

USGS Quadrangles: Oat Mountain and Santa Susana

Acreage: Various acres

Cultural Resources: None observed

Type of Investigation: Archaeological Record Search and Inventory

Cover Picture: Aerial view of subject area.

CONTENTS

INTRODUCTION	1
CURRENT SETTING	1
BACKGROUND	2
LITERATURE AND ARCHIVAL REVIEW	6
SURVEY RESULTS	10
IMPACTS.....	10
RECOMMENDATIONS	11
REFERENCES	12

Figures

1. Vicinity Map	3
2. Project Impact Areas.....	8

This report is not for public distribution

INTRODUCTION

Greenwood and Associates has conducted an archaeological record search and field inventory for the proposed Project for Metropolitan Water District (MWD) West Valley Feeder No. 1 (WVF1) Stage 3 Improvements Project in the community of Chatsworth in Los Angeles (Figure 1).

The study was prepared in order to identify any archaeological resources within the proposed impact areas. The investigation provides the necessary documentation to satisfy its obligations relative to CEQA requirements. The effort included a review of available archaeological site archives, historical maps, documents describing the proposed project area, and a survey of previously identified archaeological sites. This report describes the results of the background research, methods and results of the field investigation, and conclusions regarding the probability of impact to cultural resources due to project-related activities.

The Project involves modification of the MWD WVF1 structures, which is located northwest of Chatsworth Park South, in the City of Los Angeles. Proposed project actions include construction of an approximately 14-foot wide by 500-foot long access road including a vehicle turn-around area and various modifications to existing structures including valve relocation, equipment replacement, and reconstruction of valve structures. Additionally, the project proposes the installation of new manholes at existing structures, a concrete vault, and retaining walls along the WVF1. Project impacts would include both temporary impact areas associated with construction access, staging, and laydown areas as well as permanent impacts associated with the proposed access road. Except for those areas where impacts would be confined to existing structures and the surrounding, paved areas, all other impact areas occurring would be subject to some degree of earth disturbance (Figure 2).

CURRENT SETTING

The project area is on and within the east facing hills of the community of Chatsworth within the city of Los Angeles. The hills are covered in chaparral, sandstone cliffs, boulders, paved roads, lightly graded roads, and trails. MWD facilities including structures, pipelines, and other facilities are dispersed throughout the area. Las Virgenes and Calleguas Water Districts have pump stations and pipelines in Chatsworth Park. Lower portions of the park recently underwent extensive lead soil remediation.

The West Valley Feeder No. 1 was constructed in 1962 and has an inside diameter of 54 inches. Specific installation methods and exact excavation depths vary from pipeline to pipeline; however, the excavation methods and typical disturbance areas can be described. Generally pipelines have 5 to 10 feet of cover to the top of the pipe, although in some areas it may be substantially more due to topography or to avoid existing facilities. In undeveloped areas, such as the project area, trenching was generally open cut excavation

with 1:1 side slopes. Shoring is used in developed areas and along public streets. In the areas where open cut excavation is employed, the trench depths are generally between 15 and 20 foot deep and 30 to 50 foot wide at the existing ground surface, depending on topography.

BACKGROUND

Ethnography

This section summarizes the regional and cultural history of the project area. The discussion has been limited to that Native American group described as occupying the project area at the time of European contact and the historically documented activities following that contact. Chatsworth was inhabited by the Tongva-Fernandeño, Chumash-Venturaño, and Tataviam-Fernandeño Native American tribes.

Prehistory

The archaeological record indicates that sedentary populations occupied the coastal and inland regions of California more than 13,000 years ago. Early periods were characterized by the processing of hard seeds with the mano and milling stone and the use of the atlatl (dart thrower) to bring down large game, e.g., deer. Villages in eastern Ventura area were typically around permanent water sources that allowed exploitation of a variety of different habitats for food. In the later periods, prior to the arrival of Europeans, the bow and arrow was in use, trade and social networks evolved, and the mortar and pestle were used to process acorns in areas where they were available.

At the time of European contact, Chumash speaking peoples occupied a large area that extended south along the California coast from San Luis Obispo County into Los Angeles County and east to Kern County, and included the Santa Barbara Channel Islands of San Miguel, Santa Rosa, Santa Cruz, and Anacapa (Glassow 1980; Grant 1978). The project area lies within the territory occupied at that time by a native group speaking Ventureño, one of the six major dialects of the Chumash language.

Known as the Ventureño Chumash, this group was distinguished from their culturally similar neighbors to the west and north, the Ynezeño and Barbareño Chumash, on the basis of linguistic deviations noted by the early Spanish missionaries of the area, rather than by any apparent difference in social or economic organization. The Ventureño (so named because of their association with Mission San Buenaventura) were the southernmost of all the Chumash peoples and spoke one of six Chumashan dialects considered as forming a core group of more closely related forms (Grant 1978).

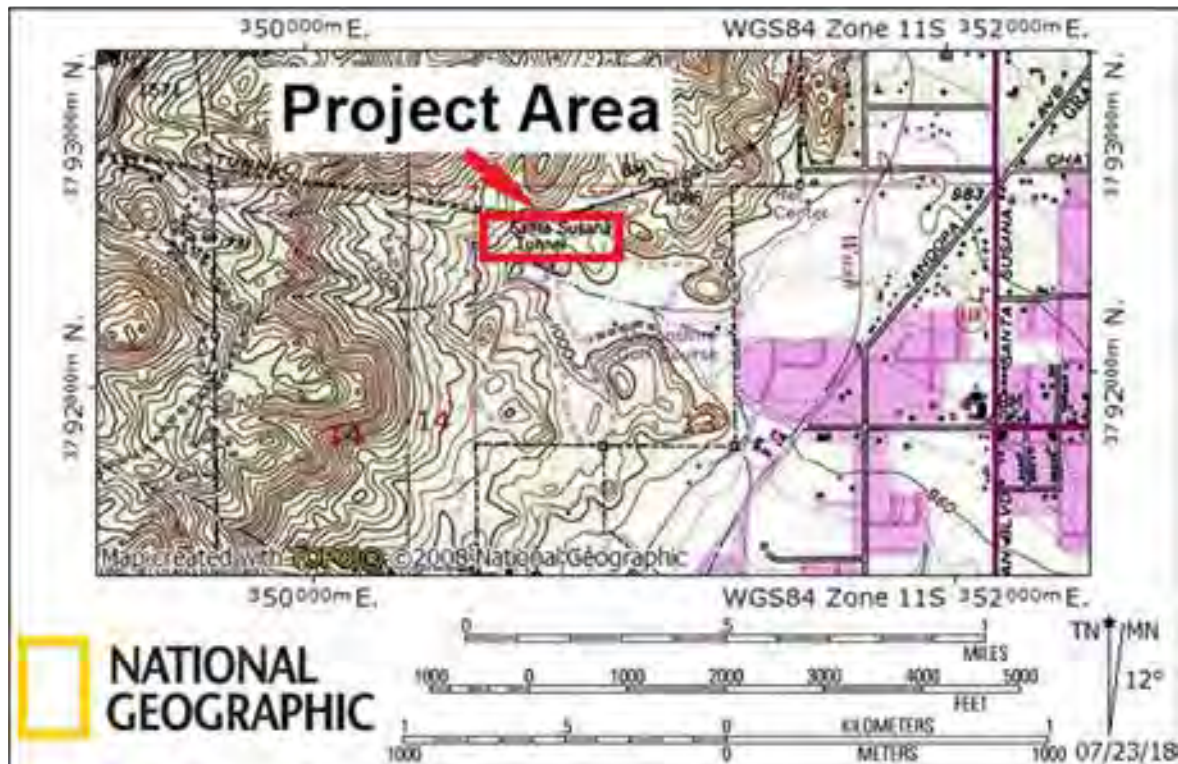


Figure 1. Vicinity Map, USGS Oat Mountain and Santa Susana, CA, 7.5 minute Quadrangles.

Native American culture in this region evolved over the course of at least 9,000 years and has been described as having achieved a level of social, political, and economic complexity not ordinarily associated with hunting and gathering groups (Greenwood and Browne 1969). Ethnographic information about the culture is most extensive for the coastal populations, and the culture and society have been well documented for groups such as the Barbareño and Ventureño Chumash. Much of what is known of the Ventureño has been provided by the journals of early Spanish explorers and by accounts of Chumash informants.

The Ventureño, like their neighbors, exploited a wide variety of marine and terrestrial resources within an ecosystem similar to that of their neighbors in Santa Barbara County. The limited area occupied by the Barbareño Chumash, a narrow coastal plain bounded on the north by the Santa Ynez Mountains, combined with a productive near shore fishery, resulted in the establishment of substantial permanent villages (Glassow and Wilcoxon 1979). These large villages provided centralized locations from which the inhabitants ventured to exploit available or seasonal resources and dispersed surplus resources and manufactured goods through intervillage exchange networks.

History

European incursions into the Ventureño area began with the arrival by sea of Juan Rodriguez Cabrillo on October 10, 1542, at the coastal Chumash village of *Shisholop*. Here, at the

present site of the City of Ventura, the Spaniards were met by “many very good canoes, each of which held 12 or 13 Indians.” This prompted the visitors to name the settlement the Pueblo de las Canoas. Cabrillo and his men remained in the area until the 13th of the month, trading glass beads for items of local produce (Engelhardt 1930:4; Grant 1978:518). This first encounter was followed in December 1602 by a visitation of three ships under the command of Sebastian Vizcaino, and again in August 1769 by the land expedition by Gaspar de Portolá.

The Franciscan Padres Juan Crespi and Francisco Gomez accompanied the Portolá Expedition, and Crespi described the native “pueblo” as consisting of 30 large houses with no fewer than 400 inhabitants. The first Roman Catholic Mass was celebrated at this time, the location was renamed La Asuncion de Nuestra Senora, and the seeds of the coming Spanish mission system were planted in the local populace (Engelhardt 1930:6-10).

On Easter Sunday, March 31, 1782, Junipero Serra established the new “Mission of the Seraphic Doctor, San Buenaventura,” and left as its first residents Fr. Pedro Cambon and a small company of guards (Engelhardt 1930:16). The project area was within Mission San Buenaventura had primary jurisdiction. The introduction of the Spanish mission system into Ventureño territory brought about dramatic changes in the aboriginal way of life. Between the time of the establishment of the Mission San Buenaventura and that of Mexican independence and the secularization of the mission lands in 1834, ancient lifeways gradually began to disappear. Villages were abandoned, traditional marriage patterns were inhibited, hunting and gathering activities were disrupted as newly introduced agricultural practices altered the landscape, and large portions of the native population died from European diseases to which they lacked immunities.

Mission San Buenaventura flourished for nearly 50 years until a combination of factors led to its decline. The toll which introduced European diseases took on the neophyte population of native Chumash peoples, the waning financial support from Spain, and the eventual takeover by the newly established Mexican government in 1822, all weakened the entire mission system. The final blow came in 1833, when the Mexican government secularized the mission system. This action removed most of the mission property from the hands of the church and made it part of the public domain, available for lease or sale (Drapeau 1965). Perhaps to maintain the self-sufficient lifestyle of the mission, the church was allowed to keep, in addition to the church building itself, “... an enclosed garden of an area of about five hundred varas square more or less” (Drapeau 1965). The remainder of the vast mission tract was granted to José de Arnaz in 1846 and became the Ex-Mission Rancho (Drapeau 1965; Thompson and West 1883). The City of San Buenaventura was officially organized in 1866 encompassing lots in the immediate vicinity of the mission and dominated by non-Anglo inhabitants.

After the Treaty of Guadalupe Hidalgo in 1846, the Euroamericans took over California and declared that Governor Pio Pico did not have the authority to lease and sell mission lands.

The United States Lands Commission heard petitions for claims to mission lands and voided many of the transactions concluded under Pico's hegemony.

The Rancho Period has been romanticized in literature and film as a time of easy wealth and leisure notable for dashing horsemanship and Hispanic hospitality on a grand scale. The reality was the more prosaic work of making a living in the cattle business (Greenwood 1989:451-466). The discovery of gold in northern California created a boom in the cattle industry which fed the hordes of miners searching for gold. During the 1860s, the Euroamerican population grew rapidly, partly because many of the old rancho families lost title to their land, leaving a vacuum which was promptly filled by settlers from central and eastern United States.

In the 1860s homesteaders moved into Chatsworth and one of the initial families was Nels and Ann Johnson who homesteaded 160 acres beneath the Santa Susanna Pass (Roderick 2001:32). Chatsworth Railroad History begins in 1893 when the Southern Pacific completed what is known as the Burbank branch all the way to Chatsworth with a depot near the intersection of Topanga and Marilla. In 1898 an additional mile of track was added up through what is now the Oakwood Cemetery into the Chatsworth quarry, now a part of the Santa Susana Pass State Historic Park. The quarry sent sandstone boulders to a stone mill in Los Angeles to further shape and form the stone. They also delivered sandstone to San Pedro Harbor where they were used for the breakwater. In 1898, railroad construction began on a short-cut to Burbank from Ventura in what was called the Montalvo Cutoff. The most difficult work was encountered in the pass, where three separate tunnels were blasted for the most part out of solid rock. During that time, Chatsworth became a boom town, with many of the workers living in a "tent" city near the heading of the main tunnel. Although the listed resident population in Chatsworth is 23 in 1900, the tunnel construction brought in so many workers that by 1904 the Santa Susana School (now Chatsworth Park Elementary) at Devonshire and Topanga had 120 students (Vincent 2014).

Chatsworth Park South was closed in 2008 due to lead contamination. Contamination from lead bullets used in the 1950s and 1960s at a former gun club owned by actor Roy Rogers prompted the closure. Investigators discovered toxic soil contamination left over from shotgun pellets and clay pigeons used on its 12-acre skeet-shooting range.

West Valley Feeder No 1 is a concrete cylinder that conveys water to two agencies (Las Virgenes Municipal Water District and Calleguas Municipal Water District). The pipeline was constructed in 1962. West Valley Feeder No 1 was originally constructed by Calleguas Municipal Water District and originally named Calleguas Conduit Unit 4.

LITERATURE AND ARCHIVAL REVIEW

Record Search Summary: West Valley Feeder No. 1, Stage 3, MWD (Chatsworth)

RESULTS

Resources within Project Area: One, 19-150434 (1900 structure)

Site 19-150434 is the reported location of a ca. 1900 structure. The location was identified on the basis of a 1903 15 minute USGS quadrangle (Scale = 1:62,500 feet) and was not field verified at the time of recording (Edberg 1978). A Universal Transverse Mercator grid point was provided and compared with potential impact areas. Two of the contractor laydown areas on the east side of the project area are within approximately 300 feet of the reported location of the ca. 1900 structure.

Archaeological resources within search area (0.5 mi radius): 19

CA-LAN-448	CA-LAN-3498	CA-LAN-3579
CA-LAN-449	CA-LAN-3500	CA-LAN-120078
CA-LAN-640	CA-LAN-3505	CA-LAN-120084
CA-LAN-1028	CA-LAN-3506	CA-LAN-176735
CA-LAN-1126	CA-LAN-3507	
CA-LAN-2174	CA-LAN-3509	
CA-LAN-3494	CA-LAN-3512	

Three archaeological sites, CA-LAN-3507 (Mealey and Buxton 2004), CA-LAN-3512 (Mealey, Farmer, and Brodie 2005), and CA-LAN-120084 (Mealey, Farmer, and Brodie 2005) were recorded outside of and west of the western terminus of proposed project area, i.e., laydown areas, access road, and trail. The three sites are recorded between 450 feet and 1000 feet from the nearest portion of the project area. Two of the archaeological sites, CA-LAN-3507 and CA-LAN-3512), were identified as small dispersed flake scatters. The third site, CA-LAN-120084, consists of three mortared red bricks and a scattering of white quartz rocks.

Surveys/Reports including Project Area: None

Surveys/Reports within search area: 31

LA-81	LA-2252	LA-4123
LA-160	LA-2623	LA-4125
LA-397	LA-2645	LA-6599
LA-631	LA-2874	LA-7837
LA-853	LA-3009	LA-8255
LA-1015	LA-3185	LA-9070

LA-1050	LA-3340	LA-10569
LA-1051	LA-3452	LA-10637
LA-2002	LA-3487	LA-10651
LA-2079	LA-3499	LA11164
		VN-572

Historic Resources Inventory (HRI) results (0.5 mile search radius):

Evaluated Historical Resources: 1

- Old Santa Susana Stage Road

Local Historical Resources: 1

- City of Los Angeles Historic Cultural Monument No. 92, Old Stage Coach Trail Property (Old Santa Susana Stage Road), South Chatsworth Park

County Historical Resources: 1

- Ventura County Historical Landmark #104, Old Santa Susana Stage Road

California State Points of Historical Interest: None

California State Historical Landmarks: None

National Register of Historic Places Properties: 1

- Old Santa Susana Stage Road, Chatsworth, CA. NRHP Ref. No. 74000517, listed Oct. 1974.

Historic Maps:

1903 USGS Santa Susana, California, 15' quadrangle map.

This map depicts a segment of the Santa Susana Tunnel, which carried a Southern Pacific Railroad line through the Santa Susana Pass, along with an above-ground section of the rail line, running east-west across the northern boundary of the current subject property. Also, within the study area is the western end of an unimproved (dirt) road that appears to have been a northwesterly extension of Devonshire Street. Along this road, in the immediate vicinity of the project area, were at least two dwellings, with three additional dwellings in close proximity to the southeast. Also, within 0.25 mile of the subject property, directly to the south, was a mining property with one associated dwelling. An unimproved road that provided access to the mine extended to the southeast, and this route continued to the northwest where it is depicted as a 'trail.' There were two or three additional dwellings located within 0.5 mile of the subject property, located around the western terminus of



Field Map

3MWD010204

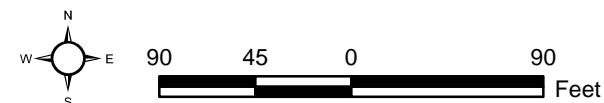


Figure 2. Project Impact Areas.

Devonshire Street. There were no additional historic features in the vicinity of the project area at this date.

1927 USGS Chatsworth, California, 6' quadrangle map.

This 1927 map only depicts the area east of the Los Angeles County line in detail. The unimproved road and dwellings that had been illustrated within and near the subject property on the 1903 map are no longer indicated. The railroad alignment remained along the north edge of the project area, and in addition to the segment of the Somis Branch of the Southern Pacific Railroad and Santa Susana Tunnel, the only historic feature depicted within 0.5 mile of the project area is a single dwelling located along the south side of the tracks immediately east of the project areas.

1933 USGS Chatsworth, California, 6' quadrangle map.

Like the 1925 map, this map illustrates only a few features west of the Ventura/Los Angeles County line. The only historic feature shown in proximity to the project area is the Somis Branch of the Southern Pacific Railroad, along its northern boundary.

1940 USGS Chatsworth, California, 6' quadrangle map.

The 1940 map depicts the Southern Pacific Railroad alignment and the Santa Susana Tunnel along the northern edge of the subject property. To the south, the Oakwood Cemetery had been established, and several new unimproved roads are indicated immediately north of the cemetery, approximately 0.5 mile from the subject property. No other historic features are represented within the search area.

1943 USGS Santa Susana, California, 15' quadrangle map.

In addition to the railroad alignment and tunnel, this map illustrates a new westward extension of Devonshire Street that had been established within 0.30 mile south of the project area by this date. There were approximately eight new residences along this unimproved roadway. Additionally, a trail is depicted to the southwest of the project areas that followed the base of the hills roughly 0.25 mile away. There was no additional historic development in the vicinity of the subject property at the time.

1951 USGS Santa Susana, California, 7.5' quadrangle map.

This map illustrates the western quarter of the search area for the project. It shows no historic features within that section beyond the Southern Pacific Railroad alignment.

1952 USGS Oat Mountain, California, 7.5' quadrangle map.

This map illustrates that by 1952, Devonshire Street had been extended to the base of the foothills south of the subject property, and this street was now paved. There was an unimproved road that continued northward from the west end of Devonshire, and along this road were two new residences within 1000 feet of the project areas. Beyond the Southern Pacific rail alignment and tunnel, there are no other buildings or historic features indicated in the vicinity of the subject property.

1969 USGS Oat Mountain, California, 7.5' quadrangle map.

The 1969 quadrangle map indicates that the unimproved roadway depicted on the 1952 map extending northward from the west end of Devonshire Street has been further extended to the north, to the southern boundary of the project areas. One new dwelling had been constructed at the north end of this road, and there was a second new dwelling near the east project area boundary. This was accessed by another new unimproved road that approached from the east. Also depicted is the Devonshire Golf Club, located within 0.25 mile southeast of the project areas. There were no additional historic features located in proximity to the project areas.

1969 USGS Santa Susana, California 7.5' quadrangle map.

This map is identical to the 1951 Santa Susana quadrangle map and depicts no historic features within this section of the search area beyond the Southern Pacific Railroad alignment.

Sanborn Map Co. Insurance Maps

There are no Sanborn insurance maps that include any portion of the record search area.

SURVEY RESULTS

The field survey was conducted on June 5 and 6, 2018 by John M. Foster, RPA. Visibility within the project area was generally poor with dense vegetation and steep slopes hindering observations of the ground surface. However, most of the impact areas (Figure 2) had excellent visibility, except for the proposed access road alignment, depicted in red on Figure 2. Transects with 10 meter spacing were conducted over each impact area.

Due to limited ground visibility in the western part of the project area, proposed alignment, it could not be determined if archaeological resources were present (Figure 2). The location of the ca. 1900 (19-150434) structure was carefully transected and no evidence of a structure was found. The scale of a 15 minute map makes precise locations difficult to determine and it likely that 19-150434 (1900 structure) is in the area but not in any of the proposed impact areas for this project.

It is evident from the closest recorded archaeological sites (dispersed flake scatters) that it is likely that additional flakes can be found under ideal conditions.

IMPACTS

Due to the limited ground visibility impacts to potential archaeological resources could not be determined for the proposed alignment. No archaeological resources were observed in the other impact areas.

RECOMMENDATIONS

The proximity of recorded archaeological resources coupled with poor ground visibility in some areas warrants a recommendation for monitoring by an archaeological and Native American monitor. Excavation strategies to determine if resources are present is not recommended since the closest archaeological sites consist of dispersed flake scatters and are not likely to be identified during the testing process. It is our opinion that monitoring would be the most effective means to identify cultural resources in the project areas.

In the event of an accidental discovery of any human remains in a location other than a dedicated cemetery, the steps and procedures specified in Health and Safety Code 7050.5, State CEQA Guidelines 15064.5(d), and Public Resources Code 5097.98 shall be implemented. Specifically, in accordance with Public Resources Code (PRC) Section 5097.98, the Los Angeles County Coroner shall be notified within 24 hours of the discovery of potentially human remains. The Coroner typically would then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she would contact the Native American Heritage Commission (NAHC) by phone within 24 hours, in accordance with PRC Section 5097.98. The NAHC typically would then designate a Most Likely Descendant (MLD) with respect to the human remains within 48 hours of notification.

The MLD typically would then have the opportunity to recommend to the property owner or the project proponent means for treating or disposing of, with appropriate dignity, the human remains and associated grave goods within 24 hours of notification. Whenever the NAHC is unable to identify a MLD, or the MLD fails to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the MLD and the mediation provided for in subdivision (k) of PRC Section 5097.94 fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative would re-inter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.

References

Drapeau, Louis C.

1965 The Rancho Ex-Mission of Ventura County, California. *Ventura County Historical Society Quarterly* 11(1):8-23.

Edberg, Robert

1978 Historic Sites Sheet for 19-150434. On file, South Central Coastal Information Center.

Engelhardt, Fr. Zephyrin, O.F.M.

1930 *Mission San Buenaventura*. Schauer Printing Studios, Inc., Santa Barbara, CA.

Glassow, Michael A.

1980 Recent Developments in the Archaeology of the Channel Islands. In *The California Islands*, edited by D. Power, pp. 79-99. Santa Barbara Museum of Natural History, Santa Barbara.

Glassow, Michael A., and Larry Wilcoxon

1979 *Coastal Adaptations North and South of Point Concepcion, California, with Particular Regard to Shellfish Exploitation*. Paper presented at the 44th Annual Meeting of the Society for American Archaeology, Vancouver.

Grant, Campbell

1978 Eastern Coastal Chumash. In *California*, edited by Robert F. Heizer, pp 509-523. *Handbook of North American Indians*, vol. 8, William Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Greenwood, Roberta S.

1989 The California Ranchero: Fact and Fancy. In *Colombian Consequences, Archaeological and Historical Perspectives on the Spanish Borderlands West*, Vol. 1. David Hurst Thomas, editor, pp. 451-465. Smithsonian Institution Press, Washington and London.

Greenwood, Roberta S., and Robert O. Browne

1969 *The Browne Site: Early Milling Stone Horizon in Southern California*. *American Antiquity* 34(4), Society for American Archaeology.

Mealey, M. and M. Buxton

2004 Archaeological Site Record for CA-LAN-3507. On file, South Central Coastal Information Center.

Mealey, M., S. Farmer, and N. Brodie

2005 Archaeological Site Record for CA-LAN-3512. On file, South Central Coastal Information Center.

Roderick, Kevin

2001 *The San Fernando Valley, American's Suburb*. Los Angeles Times Books.

Thompson, Thomas H., and Albert Augustus West

1883 *History of Santa Barbara and Ventura Counties, California*. Thompson and West, Oakland.

Vincent, Ann

2014 Chatsworth Past & Present. [www.chatsworth history.com](http://www.chatsworthhistory.com).

APPENDIX E
ENERGY ANALYSIS

Energy Use Summary

Construction Phase (gallons/construction period)		Gasoline	Diesel		
Construction Vehicles		0	5,148		
Worker Trips		611	2		
Vendor Trips		55	1		
Haul Trucks		0	74		
Total		666	5,226		
Operations Phase (gallons/year)		Gasoline	Diesel	Natural Gas (kBTU/yr)	Electricity (kWh/yr)
Hotel		0	0	9,590,000	2,531,200
	0	0	0	0	0
	0	0	0	0	0
All Land Uses		0	0	9,590,000	2,531,200

Construction Offroad Equipment Fuel Use

PhaseName	OffRoadEquipmentType	OffRoadEq UsageHours	HorsePower	Load Factor	Horsepower Category	Num Days	Year	Fuel Consumption Rate (gal/hour)	Fuel Type	Total Fuel Consumption (gal/construction period)	
Demolition	Concrete/Industrial Saws	0	8	81	0.73	100	22	2019	4.7	Gasoline	0
Demolition	Rubber Tired Dozers	0	1	247	0.4	300	22	2019	4.5	Diesel	0
Demolition	Tractors/Loaders/Backhoes	1	6	97	0.37	100	22	2019	1.6	Diesel	78
Site Preparation	Excavators	1	8	158	0.38	175	21	2019	2.9	Diesel	184
Site Preparation	Graders	0	8	187	0.41	175	21	2019	3.1	Diesel	0
Site Preparation	Tractors/Loaders/Backhoes	0	8	97	0.37	100	21	2019	1.6	Diesel	0
Grading	Concrete/Industrial Saws	0	8	81	0.73	100	44	2019	4.7	Gasoline	0
Grading	Cranes	1	8	231	0.29	300	44	2019	3.3	Diesel	337
Grading	Excavators	1	8	158	0.38	175	44	2019	2.9	Diesel	386
Grading	Graders	1	8	187	0.41	175	44	2019	3.1	Diesel	454
Grading	Rubber Tired Dozers	0	1	247	0.4	300	44	2019	4.5	Diesel	0
Grading	Tractors/Loaders/Backhoes	1	6	97	0.37	100	44	2019	1.6	Diesel	155
Building Construction	Cranes	1	4	231	0.29	300	109	2019	3.3	Diesel	417
Building Construction	Excavators	1	8	158	0.38	175	109	2019	2.9	Diesel	956
Building Construction	Forklifts	0	6	89	0.2	100	109	2019	2.0	Diesel	0
Building Construction	Rubber Tired Dozers	1	8	247	0.4	300	109	2019	4.5	Diesel	1,555
Building Construction	Tractors/Loaders/Backhoes	1	8	97	0.37	100	109	2019	1.6	Diesel	513
Paving	Cement and Mortar Mixers	0	6	9	0.56	25	22	2019	0.4	Gasoline	0
Paving	Pavers	1	7	130	0.42	100	22	2019	1.7	Diesel	113
Paving	Rollers	0	7	80	0.38	100	22	2019	1.7	Diesel	0
Paving	Tractors/Loaders/Backhoes	0	7	97	0.37	100	22	2019	1.6	Diesel	0
								Total			5,148
								Total	Total	Gasoline	-
								Total	Total	Diesel	5,148

Construction Phase - Onroad Energy UseYear **2020**

Vehicle Types	MPG by Fuel Type			Population by Fuel Type			
	GAS	DSL	ELEC	GAS	DSL	ELEC	Total
LDA	29.3	46.3		6,343,244	51,116	90,986	6,394,359
LDT1	25.2	22.1		692,885	447	2,466	693,332
LDT2	23.0	33.7		2,169,628	11,368	12,535	2,180,995
LHDT1	10.3	21.0		178,175	106,680		284,856
LHDT2	9.0	19.0		29,750	41,895		71,645
MCY	36.5			276,048			276,048
MDV	18.8	25.9		1,557,729	27,452	3,954	1,585,180
MH	5.0	10.4		36,101	12,007		48,108
MHDT	5.0	10.1		25,210	120,277		145,487
HHDT	3.9	6.4		88	103,820		103,908
OBUS	4.9	8.1		5,971	4,179		10,150
SBUS	9.0	7.4		2,328	6,543		8,871
UBUS	4.8	6.3		938	18	17	956

Input							Gasoline Consumption			Diesel Consumption		
Phase Name	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker	Vendor	Haul	Worker	Vendor	Haul
Demolition	3	0	2	14.7	6.9	20						
Site Preparation	3	0	18	14.7	6.9	20						
Grading	10	0	4	14.7	6.9	20						
Building Construction	3	1	0	14.7	6.9	20						
Paving	3	2	0	14.7	6.9	20						
Adjusted												
Demolition	66	0	2	14.7	6.9	20	42	0	0	0	0	6
Site Preparation	63	0	18	14.7	6.9	20	40	0	0	0	0	56
Grading	440	0	4	14.7	6.9	20	279	0	0	1	0	12
Building Construction	327	109	0	14.7	6.9	20	208	39	0	1	1	0
Paving	66	44	0	14.7	6.9	20	42	16	0	0	0	0
Total							611	55	0	2	1	74

APPENDIX F
REPORT OF GEOTECHNICAL STUDY



**REPORT OF GEOTECHNICAL STUDY
WEST VALLEY FEEDER 1 ACCESS ROADS AND
VALVE IMPROVEMENTS
WIDENING PROJECT
CHATSWORTH, CALIFORNIA**

MAY 15, 2018

**Copyright 2018 Kleinfelder
All Rights Reserved**

**ONLY THE CLIENT OR ITS DESIGNATED REPRESENTATIVES MAY USE THIS DOCUMENT AND ONLY FOR THE SPECIFIC
PROJECT FOR WHICH THIS REPORT WAS PREPARED.**



May 15, 2018
Kleinfelder Project No. 20180213.002A

Mr. Bei Su, PE
Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, California 90012

**SUBJECT: Final Report of Geotechnical Study
West Valley Feeder 1 Access Roads and Valve Improvements
Chatsworth, California**

Dear Mr. Su:

Kleinfelder is pleased to present this report summarizing our geotechnical investigation for the subject project. The purpose of our geotechnical investigation was to evaluate subsurface conditions and provide geotechnical recommendations for the design and construction of the proposed project. The conclusions and recommendations presented in this report are subject to the limitations presented in Section 6.

We appreciate the opportunity to provide geotechnical engineering services to you on this project. If you have any questions regarding this report or if we can be of further service, please do not hesitate to contact the undersigned at 951.801.3681.

Sincerely,

KLEINFELDER WEST, INC.

Jeffery D. Waller, PE, GE
Senior Geotechnical Engineer



Michael O. Cook, PG, CEG
Senior Engineering Geologist





TABLE OF CONTENTS

Section	Page
1 INTRODUCTION	1
1.1 PROJECT DESCRIPTION	1
1.2 SCOPE OF SERVICES	1
2 SITE DESCRIPTION	5
2.1 SITE DESCRIPTION	5
3 GEOLOGY	6
3.1 REGIONAL GEOLOGIC SETTING	6
3.2 SUBSURFACE CONDITIONS	6
3.2.1 Fill and Native Soils	7
3.2.2 Bedrock	7
3.3 GROUNDWATER	7
3.4 FAULTING	8
3.5 SEISMIC HAZARD ZONES	8
3.6 FLOOD HAZARD	9
3.7 EXPANSIVE SOILS	9
4 CONCLUSIONS AND RECOMMENDATIONS	10
4.1 GENERAL	10
4.2 SEISMIC DESIGN CONSIDERATIONS	10
4.3 EARTHWORK	12
4.3.1 Site Preparation	12
4.3.2 Overexcavation	13
4.3.3 Scarification and Compaction	14
4.3.4 Rippability	14
4.3.5 Engineered Fill	15
4.3.6 Temporary Excavations	15
4.3.7 Pipe Bedding and Trench Backfill	16
4.3.8 Stockpiling Excess Material	16
4.4 FOUNDATIONS	19
4.4.1 General	19
4.4.2 Shallow Foundations	20
4.4.3 Estimated Settlements	20
4.4.4 Lateral Resistance	21
4.4.5 Lateral Earth Pressures	21
4.5 SLOPE STABILITY	22
4.5.1 Methodology	22
4.5.2 Cut Slope Stability	22
4.5.3 Fill Slope Stability	24
4.5.4 Construction of Permanent Fill Slopes	24
4.5.5 Construction of Permanent Cut Slopes	25
4.6 PAVEMENT SECTIONS	25
4.6.1 Asphalt-Concrete Pavement Sections	25
4.6.2 Portland Cement Concrete Pavement	27
5 RECOMMENDED ADDITIONAL SERVICES	28
5.1 ADDITIONAL GEOTECHNICAL INVESTIGATION	28
5.2 PLANS AND SPECIFICATIONS REVIEW	28
5.3 CONSTRUCTION OBSERVATION AND TESTING	28
6 LIMITATIONS	30

**7 REFERENCES.....32****TABLES**

- 1 2016 CBC Seismic Design Parameters
- 2 Direct Shear Results and Slope Stability Parameters
- 3 Bedrock Cut-Slope Stability Analysis Results
- 4 CDMG Published Strength Properties
- 5 Asphalt Concrete Pavement Sections
- 6 Preliminary Recommended PCC Pavement Sections

FIGURES

- 1 Site Vicinity Map
- 2 Field Exploration Location Map
- 3 Regional Geologic Map
- 4 Typical Engineered Fill Slope/Benching Detail

APPENDICES

- A Field Explorations
- B Laboratory Testing
- C Seismic Refraction Survey Report



1 INTRODUCTION

Kleinfelder performed a geotechnical study for Metropolitan Water District of Southern California (MWD) for the proposed project in Chatsworth, California. This report summarizes the results of our field exploration, laboratory testing, and engineering analysis and provides recommendations for design and construction for the subject project. The approximate location of the project presented in this report is shown on Figure 1, Site Vicinity Map. The purpose of our geotechnical study was to evaluate subsurface soil conditions and provide geotechnical recommendations for the design and construction of the proposed project. The scope of our services was presented in our proposal dated December 1, 2017.

Our report includes a description of the work performed, a discussion of the geotechnical conditions observed at the site, and recommendations developed from our engineering analyses of field and laboratory data.

1.1 PROJECT DESCRIPTION

We understand the proposed project includes improvements to manholes and valve structures along the West Valley Feeder No. 1, and construction of two new access roads to provide maintenance access to the pipeline and valve structures. The roads are proposed to be constructed with Portland cement concrete (PCC) and may have sections where asphaltic concrete (AC) is used. On each alignment, a concrete Arizona crossing is also proposed at the location where the access roads cross the existing seasonal creeks.

Preliminary Plan and Profile documents for the project were reviewed in preparation of this report. The location of the proposed alignment selected by MWD are shown on Figure 2, Field Exploration Location Map. The proposed alignments may have small retaining walls. In steep sections of the roadway, concrete keys are proposed beneath the pavement to reduce the potential for sliding of the pavement.

1.2 SCOPE OF SERVICES

The scope of our geotechnical study consisted of a literature review, site reconnaissance, subsurface explorations, geotechnical laboratory testing, engineering evaluation and analysis,



and preparation of this report. A description of our scope of services performed for the geotechnical portion of the project follows.

Task 1 – Background Data Review. We reviewed readily-available published and unpublished geologic literature in our files and the files of public agencies, including selected publications prepared by the California Geological Survey, California Division of Mines and Geology, and the U.S. Geological Survey. We also reviewed readily available seismic and faulting information, including data for designated earthquake fault zones as well as our in-house database of faulting in the general site vicinity.

Task 2 – Field Exploration. On June 19, 2017, representatives of Kleinfelder and MWD met at the project site to perform reconnaissance of the proposed alignments and the current conditions. Each of the proposed alignments and many of the valve structures to be reconstructed were observed as well.

Kleinfelder supervised exploration of 5 hollow stem auger borings. The approximate locations of the borings are presented on Figure 2, Field Exploration Location Map. The borings were drilled to provide general information in order to characterize subsurface materials and perform our analyses.

Prior to beginning subsurface exploration, each of the 5 boring locations were marked and Kleinfelder notified Underground Service Alert (USA) of our intent to dig in accordance with California State law.

All exploratory borings were drilled and logged on January 30, 2018. The borings were advanced to depths ranging from approximately 11½ to 21½ feet below the existing ground surface (bgs) using a limited access track-mounted drill rig operated by 2R Drilling of Chino, California. Bulk and drive samples were retrieved from the borings, sealed and transported to our laboratory for further evaluation. A staff professional of Kleinfelder supervised the sampling, logged and visually classified the excavated soil cuttings and samples retrieved. Bulk soil samples were generally collected within the upper 5 feet of each boring and drive samples were collected at approximate 5-foot intervals using split-spoon samplers. With the exception of Boring B-3, the excavated soil cuttings were used to backfill the excavations. Boring B-3 was backfilled with a cement/bentonite grout due to concerns of potential lead contamination due to



being located near a previous shooting range. The Logs of Borings B-1 through B-5 are included in Appendix A, Field Explorations at the end of this report. The approximate locations of the borings are shown on Figure 2, Field Exploration Location Map.

On January 11, 2018, two Seismic Refraction Surveys were performed at the site by Advanced Geoscience Inc. (AGI) and their approximate locations are shown on Figure 2. AGI completed their field work and processed the data using the RAYFRACT program to prepare scaled, 2D elevation profiles of the seismic compressional-wave velocity layering. The Summary Report prepared by AGI is presented in Appendix C, Seismic Refraction Survey Report.

Task 3 – Laboratory Testing. Laboratory testing was performed on selected samples to provide parameters for engineering evaluation. Testing consisted of in-situ density and moisture content, sieve and hydrometer, direct shear, expansion index, maximum density and optimum moisture, R-value, and Preliminary Corrosion Potential. Descriptions of the laboratory tests performed and the results of the testing are presented in Appendix B, Laboratory Testing.

Task 4 – Geotechnical Analyses. Field and laboratory data were analyzed in conjunction with our understanding of the proposed project from the referenced MWD Civil Drawings to provide geotechnical recommendations for the design and construction of the proposed access roads and valve structure improvement. Seismic parameters presented are based on the 2016 California Building Code (CBC).

Task 5 – Report Preparation. This report summarizes the work performed, data acquired, and our findings, conclusions, and geotechnical recommendations for the design and construction of the proposed improvements. The report includes the following items:

- Site location map and site plan showing the approximate boring locations;
- Logs of borings (Appendix A);
- Results of laboratory tests (Appendix B);
- Seismic Refraction Survey Summary Report by AGI (Appendix C);
- Discussion of general site conditions;
- Discussion of general subsurface conditions as encountered during field exploration;
- Discussion of regional and local geology and site seismicity;



- Discussion of geologic and seismic hazards;
- Recommendations for site preparation, earthwork, temporary slope inclinations, fill placement, and compaction specifications, including excavation characteristics of subsurface soil deposits;
- Recommendations for retaining wall foundation design, allowable bearing pressures, and embedment depths;
- Recommendations for seismic design parameters in accordance with the 2016 CBC;
- Preliminary slope stability conclusions for Cross Section C, WVF1 Station 1415+42 access road section at Station 1+50 for Option 1, presented on the MWD Civil Drawings; and
- Preliminary slope stability conclusions for Cross Section F, WVF1 Station 1416+33 access road section at Station 2+20 for Option 2, presented on the MWD Civil Drawings.



2 SITE DESCRIPTON

2.1 SITE DESCRIPTION

The project site is located in the Chatsworth area of the City of Los Angeles, California. Chatsworth Park South bounds the site on the south and east sides. Hillside areas with local rugged rock outcrops, intervening drainage channels, and local dense vegetation bound the access road locations on the north and west sides. The southern and eastern portions of the access road locations are low-lying areas with sparse vegetation. Surface water was observed flowing within one of the drainage channels during the June 19, 2017, site visit. The channel is located at approximate Station 0+68 as shown on the referenced MWD Civil Drawings (MWD, 2018).



3 GEOLOGY

3.1 REGIONAL GEOLOGIC SETTING

The site is located within the western Transverse Ranges geomorphic province (Norris and Webb, 1990). The Transverse Ranges province is characterized by roughly east-west trending, convergent structural features in contrast to the predominant northwest-southeast structural trend of Coast Ranges and Peninsular geomorphic provinces in California (CGS, 2002). The Transverse Ranges province's east-west trending folds and faults are due to north-south tectonic compression from movement along the San Andreas fault system, resulting in one of the most seismically active regions in California. The western Transverse Ranges extends generally from the Los Angeles/San Bernardino County line on the east to Point Arguello west of Santa Barbara.

Structurally, the portion of the western Transverse Ranges where the project site is situated is bounded on the north by the Sierra Madre fault zone – San Fernando section and the Santa Monica Mountains to the south.

The primary geologic unit comprising the foothills of the project area is the Upper Cretaceous Chatsworth Formation. The Chatsworth Formation is a turbidite sequence of marine fan deposits composed primarily of arkosic sandstones (Link et al., 1984) with lesser siltstones and conglomerates interbedded with shales (Cilona et al., 2016). Young alluvial fan deposits underly the San Fernando Valley east of the project site. The geologic units are presented on Figure 3, Regional Geologic Map.

3.2 SUBSURFACE CONDITIONS

Subsurface conditions at the project site consist of young alluvial deposits overlying bedrock of the Cretaceous-age Chatsworth Formation. On January 30, 2018, Kleinfelder drilled five borings to a maximum depth of 21.5 feet below ground surface.

The following is a general description of the subsurface conditions and the bedrock characteristics that can be applied to subsurface conditions at the locations explored. Subsurface materials encountered at the locations explored generally consisted of a thin veneer



of artificial fill or native young alluvium overlying bedrock of the Chatsworth Formation. Detailed descriptions of the deposits are provided in our logs of borings presented in Appendix A.

3.2.1 Fill and Native Soils

Fill and alluvial soils encountered generally consisted of medium dense to dense silty sand to sand with gravel and some sandy clay. These soils were generally present locally within the upper 3 to approximately 5 feet except in B-3, where it extended to 16.5 feet (maximum depth explored). Laboratory testing of two bulk samples of subgrade soils collected at borings B-3 and B-5 resulted in R-values of 19 and 29, respectively. Laboratory dry density in boring B-3 of the native soil was approximately 113 pounds per cubic-foot (pcf) with a moisture content of approximately 6.7 percent.

3.2.2 Bedrock

Bedrock is predominantly comprised of a fine-grained yellow-brown sandstone of the Chatsworth Formation. The bedrock is thickly-bedded (3-10 feet thick) and uniformly dip to the northwest between approximately 10 and 15 degrees. Bedrock materials encountered below native and fill soils were consistent with Chatsworth Formation with blow counts greater than 50 for 6 inches. Laboratory dry densities of samples with bedrock materials ranged from approximately 98 to 118 pounds per cubic-foot (pcf). Laboratory moisture contents ranged from approximately 3.6 to 12.2 percent.

3.3 GROUNDWATER

Groundwater was not encountered in any of the borings performed at the site on January 30, 2018. There are no known active groundwater wells or monitoring wells on or within near proximity to the project site. Since the sites elevation is approximately 50 to 110 feet higher than the general ground surface of the San Fernando Valley located to the east, we do not anticipate encountering groundwater in areas underlain by shallow bedrock. Although not encountered in the borings, shallow perched groundwater could occur in areas underlain by alluvium.

Fluctuations of the groundwater level, localized zones of perched water, and variations in soil moisture content should be anticipated during and following the rainy season (late fall to early spring). Irrigation of landscaped areas on and adjacent to the site can also cause a fluctuation of



local groundwater levels.

3.4 FAULTING

There is a high potential for moderate to strong seismic activity to occur during the design life of the project. The site is in the highly seismic Southern California region within the influence of several fault systems that are considered to be active or potentially active. An active fault is defined by the State of California as being a “sufficiently active and well defined fault” that has exhibited surface displacement within Holocene time (about the last 11,000 years). A potentially active fault is defined by the State as a fault with a history of movement within Pleistocene time (between 11,000 and 1.6 million years ago). These active and potentially active faults are capable of producing potentially damaging seismic shaking at the site. It is anticipated that the project site will periodically experience ground acceleration as the result of earthquakes. Active faults without surface expression (blind faults) and other potentially active seismic sources, which are capable of generating earthquakes, are not currently zoned and are known to be locally present under the region.

The site is not located within a State of California Earthquake Fault Rupture Hazard Zone (Bryant and Hart, 2007, CGS, 2017). Based on our geologic literature review, no mapped active or potentially active fault traces are known to transect the project site (Treiman, 2000). The closest active fault to the site is the Sierra Madre fault Zone – Santa Susana and San Fernando sections faults located approximately 7.0 miles and 7.5 miles, respectively from the site (Barrows et al., 1975).

3.5 SEISMIC HAZARD ZONES

The project site is not located within a State of California designated area with potential liquefaction or earthquake-induced landslide zones (CGS, 2017). See Section 4.2.1 for the results of our liquefaction analysis at the site.

Landslides are ground failures (several tens to hundreds of feet deep) in which a (mass of earth material, including debris and often portions of bedrock) large section of a slope detaches and slides downhill. Landslides are not to be confused with minor surficial slope failures (slumps), which are usually limited to the topsoil zone and can occur on slopes composed of almost any geologic material. Landslides can cause damage to structures both above and below the slide mass.



Structures above the slide area are typically damaged by undermining of foundations. Areas below a slide mass can be damaged by being overridden and crushed by the failed slope material.

Several factors can increase the potential for landsliding; slope angle, rock or soil type, bedding and foliation orientation, persistence of fractures, fracture density, zones of shearing or faulting, weathering, clay content, seismicity, water content, groundwater and the presence or absence of vegetation.

Although the area of the project site is not identified as a landslide hazard zone, some of these risk factors for landslides do exist at the site including: sloping terrain, the presence of nearby active faults, and historic seismic shaking.

3.6 FLOOD HAZARD

The Federal Emergency Management Agency (FEMA) maintains a collection of Flood Insurance Rate Maps (FIRM), which cover the entire United States. These maps identify those areas which may be subjected to 100 year and 500-year cycle floods. Based on our review of FEMA map panel 1040F (FEMA, 2008) the elevated portions of the site are situated within Zone D area in which flood hazards are undetermined, but possible. The southernmost portion of the project site is located within Zone A where there is a 1% annual chance of flood (100-year flood). No Base Flood Elevations are determined. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

3.7 EXPANSIVE SOILS

Expansive soils are characterized by their ability to undergo significant volume change (shrink or swell) due to variations in moisture content. Changes in soil moisture content can result from rainfall, landscape irrigation, utility leakage, perched groundwater, drought, or other factors and may cause unacceptable settlement or heave of pavements, sidewalks, curbs, gutters and other structures supported over these materials. The soils generally encountered during our study were granular and based on the Expansion Index test performed, they have a low to medium expansion potential.



4 CONCLUSIONS AND RECOMMENDATIONS

4.1 GENERAL

Based on the results of our field exploration, laboratory testing and engineering analyses conducted during this study, it is our professional opinion that the proposed project is geotechnically feasible, provided the recommendations presented in this report are incorporated into the project design and construction. The primary geotechnical considerations for site development are the presence of bedrock, stability of proposed slope cuts, and construction of pavement on a relatively steep grade.

The following opinions, conclusions, and recommendations are based on the properties of the materials encountered in the borings, the results of the laboratory-testing program, and our engineering analyses performed. Our recommendations regarding the geotechnical aspects of the design and construction of the project are presented in the following sections.

4.2 SEISMIC DESIGN CONSIDERATIONS

It is our understanding that after January 1, 2017, jurisdictional agencies review of proposed development will be based on the 2016 California Building Code (CBC). According to the 2016 CBC, every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7-10 (ASCE, 2010), excluding Chapter 14 and Appendix 11A. The seismic design category for a structure may be determined in accordance with Section 1613 of the 2016 CBC or ASCE 7-10. Based on the subsurface conditions encountered, the site can be classified as Site Class C. We have assumed that proposed structures will have a period of less than ½ second. This assumption should be verified by the project structural engineer.

The 2016 CBC seismic design parameters for the proposed access roads are summarized in Table 1.



Table 1
2016 CBC Seismic Design Parameters*

Site Class	C
Risk Category	I, II, and III
S_s (Figure 1613.3.1(1)) (g)	2.184
S_1 (Figure 1613.3.1(2)) (g)	0.695
F_a (Table 1613.3.3(1))	1.0
F_v (Table 1613.3.3(2))	1.3
S_{MS} (Equation 16-37) (g)	2.184
S_{M1} (Equation 16-38) (g)	0.904
S_{DS} (Equation 16-39) (g)	1.456
S_{D1} (Equation 16-40) (g)	0.603
PGA_M (ASCE 7-10 Equation 11.8-1) (g)	0.815

*Section references above are to the 2016 CBC unless otherwise noted.

4.2.1 Liquefaction

The term liquefaction describes a phenomenon in which saturated, cohesionless soils temporarily lose shear strength (liquefy) due to increased pore water pressures induced by strong, cyclic ground motions during an earthquake. Structures founded on or above potentially liquefiable soils may experience bearing capacity failures due to the temporary loss of foundation support, vertical settlements (both total and differential), and undergo lateral spreading. The factors known to influence liquefaction potential include soil type, relative density, grain size, confining pressure, depth to groundwater, and the intensity and duration of the seismic ground shaking. The cohesionless soils most susceptible to liquefaction are loose, saturated sands and some silt.

Based on the properties of the soils encountered in our test borings and our knowledge of geologic conditions in the area of the site, a site class of 'C' is considered appropriate as determined from Table 1613.5.2 of the 2016 California Building Code. The characteristics of the



soil/bedrock, and depth to groundwater indicate that the site soils have a remote potential for liquefaction during a design-level earthquake.

4.3 EARTHWORK

Site preparation and earthwork operations should be performed in accordance with applicable codes, safety regulations and other local, state or federal specifications, and the recommendations included in this report. References to maximum unit weights are established in accordance with the latest version of ASTM Standard Test Method D1557. The earthwork operations should be overseen by a professional engineer from Kleinfelder.

4.3.1 Site Preparation

Existing pavements, utilities and other abandoned improvements should be demolished and removed from the site. All debris produced by demolition operations, including wood, steel, piping, plastics, etc., should be separated and disposed off-site. Existing abandoned utility pipelines which extend beyond the limits of the proposed construction and are to be abandoned in place, should be plugged with cement grout to prevent migration of soil and/or water. Demolition, disposal and grading operations should be overseen by a professional engineer from Kleinfelder.

Prior to general site grading, existing vegetation, organic topsoil, debris, and oversized materials (greater than 6 inches in maximum dimension) should be stripped and disposed outside the construction limits. Deeper stripping or grubbing may be required where higher concentrations of vegetation are encountered during site grading. The stripping work should include the removal of existing fill embankments, undocumented fill, and topsoil that, in the judgment of the geotechnical engineer, is compressible or contains significant voids. The stripping operation must expose a firm, non-yielding subgrade, or competent bedrock that is free of large voids. Stripped topsoil (less any debris) may be stockpiled and reused for landscaping purposes; however, this material should be evaluated for suitability if it is desired to use this material for engineered fill below structures.

Grading operations during the wet season or in areas where the soils are saturated may require significant provisions for drying of soils prior to compaction. If the project necessitates fill placement and compaction in wet conditions, we can provide alternatives for drying the soil.



Conversely, additional moisture may be required during the dry months. A sufficient water source should be available to provide adequate water during compaction. During dry months, moisture conditioning of the subgrade soils may be required if left exposed for greater than a few days.

4.3.2 Overexcavation

Organic, inert and oversized materials (greater than 6 inches in maximum dimension) should be stripped and isolated prior to removal of reusable soils. Pavement should be stripped and disposed off-site. Overexcavation should remove any loose or soft earth materials until a firm, relatively unyielding subgrade or competent bedrock is exposed, free of significant voids and organics. The subgrade soils exposed at the bottom of overexcavation should be observed or overseen by a professional engineer from our office prior to the placement of any fill. Prior to the placement of engineered fill, after site preparation, the bottom of the overexcavations should be proof-rolled and compacted to at least 90 percent relative compaction to the satisfaction of the geotechnical engineer-of-record. Additional removals, scarification and drying operations, and/or subgrade reinforcement may be required to stabilize soft, yielding subgrades.

The grading contractor should anticipate that additional processing and moisture conditioning of the onsite soils will be necessary during site grading to obtain material which is acceptable to be placed as engineered fill, as described in this report. The moisture conditioning of some of the soils will require significant drying and some soils will require the addition of moisture. These conditions could hamper equipment maneuverability and efforts to compact site soils to the recommended compaction criteria. Disking to aerate, chemical treatment, replacement with drier material, stabilization with a geotextile fabric or grid, or other methods may be required to mitigate the effects of excessive soil moisture and facilitate earthwork operations.

The grading contractor should also anticipate encountering oversized material greater than 6 inches in maximum dimension during excavation. Quantifying the actual amount of oversize material that could be encountered requires additional study.

Overexcavation of Pavements and Areas to Receive Fill: Pavements and areas to receive fill should be underlain by at least 2 feet of engineered fill. We recommend that overexcavation for pavements extend at least 2 feet below the bottom of pavement section and at least 2 feet



below existing grade and proposed finished subgrade elevations. The 2 feet of overexcavation may be performed by overexcavating 18 inches of soil and scarifying, moisture conditioning, and compacting the bottom 6 inches of the excavation. Where the existing fill is deeper than 2 feet below bottom of pavement subgrades, we recommend that the overexcavation be deepened to remove existing fill soils.

We understand that reinforced concrete keys are proposed to be placed beneath the pavement in the steeper area of the proposed roadway. Due to the depth of the key, we anticipate that the excavation will extend into the competent bedrock. However, once excavated, the material at the bottom of the key should be evaluated by a representative of the Geotechnical Engineer of Record and may need to be extended deeper if unsuitable soils or unsuitable bedrock are encountered. If the excavation is extended, MWD may select to extend the key deeper with concrete or backfill the overexcavated area with engineered fill in accordance with the Engineered Fill section below.

On the downhill side, engineered fill should extend to the bottom of the key. The engineered fill should extend at least 2 feet laterally from the key and be placed as described below in the Engineered Fill section.

4.3.3 Scarification and Compaction

Following site stripping and any required grubbing and/or overexcavation, in areas to receive engineered fill that are not in competent bedrock should be scarified to a minimum depth of 8 inches, uniformly moisture-conditioned to a moisture content to near the optimum moisture content and compacted to at least 90 percent of the maximum dry density obtained using ASTM (American Society for Testing and Materials) Test Method D1557.

4.3.4 Rippability

The excavation and rippability of the existing bedrock was evaluated by performance of a seismic refraction survey. We have included the Summary Report as Appendix C of this report.



4.3.5 Engineered Fill

We anticipate that most of the on-site soils may be reusable as engineered fill once debris and oversized materials greater than 6 inches in diameter have been removed, and after any vegetation and organic debris is cleared and disposed off site. Fill should be placed in lifts no greater than 8 inches thick, loose measurement, and should be compacted to at least 90 percent of the maximum dry density. The moisture content of the soil should be within approximately 0 to 3 percent above the optimum moisture content. Any imported fill materials to be used for engineered fill should be sampled and tested for approval by the geotechnical engineer prior to being transported to the site. In general, well-graded mixtures of gravel, sand and non-plastic silt are acceptable for use as import fill.

Engineered fill should be compacted to at least 90 percent of maximum dry density obtained by the ASTM D1557 method of compaction with the upper 6 inches below pavements and structures compacted to at least 95 percent relative compaction.

In areas where the site needs to be raised in elevation per the MWD civil drawings, prior to the placement of engineered fill, the upper 24 inches below the existing site grade of the existing soils should be overexcavated and replace with engineered fill.

4.3.6 Temporary Excavations

All excavations must comply with applicable local, state, and federal safety regulations including the current OSHA Excavation and Trench Safety Standards. Construction site safety generally is the sole responsibility of the Contractor, who shall also be solely responsible for the means, methods, and sequencing of construction operations. We are providing the information below solely as a service to our client. Under no circumstances should the information provided be interpreted to mean that Kleinfelder is assuming responsibility for construction site safety or the Contractor's activities; such responsibility is not being implied and should not be inferred.

The borings were advanced using a track-mounted, hollow-stem auger drill rig. Drilling was completed with moderate effort through the existing soil deposits and moderate to difficult drilling in the bedrock. Conventional earth moving equipment, as presented in the AGI report in Appendix C, should be capable of performing the excavations required for site development.



Near-surface soils encountered during our field investigation consisted predominantly of silty sand, clayey sand, and sand with silt. In our opinion, the soil encountered in our borings would be considered a Type 'C' soil with regard to the OSHA regulations. For this soil type, OSHA requires a maximum slope inclination of 1.5:1 (H:V) or flatter for excavations 20 feet or less in depth. Bedrock, due to its weathered condition, may be considered as a Type 'B' soil type with respects to OSHA regulations. Steeper cut slopes may be utilized for excavations less than 5 feet deep, depending on the strength, moisture content, and homogeneity of the soil/bedrock as observed during construction.

4.3.7 Pipe Bedding and Trench Backfill

If required, pipe bedding and pipe zone material should consist of sand or similar granular material having a minimum sand equivalent value of 30. The sand should be placed in a zone that extends a minimum of 6 inches below and 6 inches above the pipe for the full trench width. The bedding material should be compacted to a minimum of 90 percent of the maximum dry density or to the satisfaction of the geotechnical engineer's representative observing the compaction of the bedding material. Bedding material should consist of sand, gravel, crushed aggregate, or native free-draining granular material with a maximum particle size of 3/4 inch. Bedding materials should also conform to the pipe manufacturer's specifications, if available. Trench backfill above bedding and pipe zone materials may consist of approved, on-site or import soils placed in lifts no greater than 8 inches loose thickness and compacted to 90 percent of the maximum dry density based on ASTM Test Method D1557. Jetting of backfill is not recommended.

4.3.8 Stockpiling Excess Material

All stockpiles of excess soil materials should be kept away from the top of the excavations a minimum distance equal to the depth of the excavation. We recommend that stockpiles be constructed with a slope ratio of at least 2:1 (horizontal to vertical) and compacted to at least 85 percent relative compaction. The height of stockpiles should not exceed 10 feet. Compaction requirements and slope ratios are provided only for temporary stockpiling considerations, such as erosion control and temporary influences on excavations. We have not considered any long-term or structural support usage of stockpiles.



TEMPORARY SHORING

General

Temporary shoring may be required in areas adjacent to existing structures or improvements where excavations cannot be adequately sloped. Temporary shoring may consist of a turn-key shoring system, soldier piles and lagging, or other system. Recommendations for design of temporary shoring are presented below.

The shoring design should be provided by a civil engineer registered in the State of California and experienced in the design and construction of shoring under similar conditions. Once the final excavation and shoring plans are complete, the plans and design should be reviewed by Kleinfelder for conformance with the design intent and geotechnical recommendations provided herein.

Lateral Pressures

For the design of cantilevered shoring, an equivalent fluid pressure of 35 pounds per cubic foot (pcf) may be used for level backfill. Where the surface of the retained earth slopes up away from the shoring, a greater pressure should be used. Design data can be developed for additional cases when the design conditions are established.

In addition to the recommended earth pressure, any surcharge (live, including traffic, or dead load) located within a 1:1 plane drawn upward from the base of the shored excavation should be added to the lateral earth pressures. The lateral contribution of a uniform surcharge load located immediately behind the wall may be calculated by multiplying the surcharge by 0.5 for the level backfill condition. Lateral load contributions of surcharges located at a distance behind the shored wall may be provided once the load configurations and layouts are known. As a minimum, a 2-foot equivalent soil surcharge (250 psf) is recommended to account for nominal construction loads. It should be noted that the above pressures do not include hydrostatic pressure and assume groundwater will not be encountered in the excavation, or dewatering will be used to lower the ground water table below the bottom of the excavation.



Design of Soldier Piles

All soldier piles should extend to a sufficient depth below the excavation bottom to provide the required lateral resistance. We recommend the required embedment depths be calculated based on the principles of force and moment equilibrium. For this method, the allowable passive pressure against soldier piles that extend below the level of excavation may be assumed to be equivalent to a fluid pressure of 250 pcf. The maximum lateral resistance value should not exceed 3,000 psf. To account for arching, the passive resistance may be assumed to act over a width 3.0 times the width of the embedded portion of the pile, provided adjacent piles are spaced at least 2.5 pile diameters, center-to-center.

Drilling of the soldier pile shafts can be accomplished using heavy-duty drilling equipment. Temporary steel casing may be required to stabilize the sides of the pile shaft. Concrete for piles should be placed immediately after the drilling of the hole is complete. The concrete should be pumped to the bottom of the drilled shaft using a tremie. Once concrete pumping is initiated, a minimum head of 5 feet of concrete above the bottom of the tremie should be established and maintained throughout the concrete placement to prevent contamination of the concrete by soil inclusions. If steel casing is used, the casing should be removed as the concrete is placed.

To develop full lateral resistance, provisions should be taken to assure firm contact between the soldier piles and undisturbed materials. The concrete placed in the soldier pile excavations may be a lean-mix concrete. However, the concrete used in that portion of the soldier pile that is below the planned excavated level should provide sufficient strength to adequately transfer the imposed loads to the surrounding materials.

Lagging

Continuous treated timber lagging should be used between the soldier piles. The lagging should be installed as the excavation proceeds. If treated timber is used, the lagging may remain in place after backfilling. The lagging should be designed for the recommended earth pressure but limited to a maximum value of 400 psf.



Deflection

Shoring adjacent to existing structures or improvements should be designed and constructed to reduce potential movement. The shoring system designer should evaluate potential deflections in their design.

Monitoring

Some deflection of the shored excavation should be anticipated during the planned excavation. We recommend the project civil engineer perform a survey of all existing utilities and structures adjacent to the shored excavation. The purpose of this survey would be to evaluate the ability of existing utility lines or improvements to withstand horizontal movements associated with a shored excavation and to establish the baseline condition in case of unfounded claims of damage. If existing improvements are not capable of withstanding anticipated lateral movements, alternative shoring systems may be required.

Horizontal and vertical movements of the shoring system should be monitored by a licensed surveyor. The construction monitoring and performance of the shoring system are ultimately the contractor's responsibility. However, at a minimum, we recommend that the top of shoring be surveyed prior to excavation and that the top and bottom of the soldier beams be surveyed on a weekly basis until the shoring is not needed. Surveying should consist of measuring movements in vertical and two perpendicular horizontal directions.

4.4 FOUNDATIONS

4.4.1 General

Based on the results of our field exploration, laboratory testing and geotechnical analyses, the proposed retaining walls or culvert (if needed) may be supported on conventional spread foundations placed entirely on engineered fill or competent bedrock. If founded on engineered fill, spread foundations should be underlain by a minimum 2 feet of engineered fill constructed as recommended above. Recommendations for the design lateral earth pressures and design of spread foundations are presented below. Transitions from bedrock to engineered fill beneath a single footing should be avoided. If this condition exists, the bedrock portion should be overexcavated to provide the minimum fill thickness recommended above.



The recommended lateral earth pressures assume that drainage is provided behind the walls to prevent the buildup of hydrostatic pressures. Walls should be provided with drains to reduce the potential for the buildup of hydrostatic pressure. Drains may consist of a 2-foot-wide zone of $\frac{3}{4}$ -inch rock wrapped in filter fabric located immediately behind the wall extending to within 1 foot of the ground surface. Perforated Schedule 40 PVC pipe should be installed within the rock at the base of the drain and sloped to discharge to a suitable collection facility. Commercially available drainage panels could be used as an alternative. The product manufacturer's recommendations should be followed in the installation of a drainage panel. Expansive soils should not be used as wall backfill material.

Where slope extend at inclinations greater than horizontal behind retaining walls, a minimum of a 2-foot width drainage swale should be constructed at the top of the wall to limit the amount of surface water infiltrating behind the wall

4.4.2 Shallow Foundations

Shallow foundation constructed on engineered fill, or entirely on competent bedrock, may be designed for a net allowable bearing pressure of 2,500 pounds per square foot (psf) for dead plus sustained live loads. The foundations should be established at a depth of at least 18 inches below the lowest adjacent exterior grade if founded on soils or at least 12 inches if founded into competent bedrock. A one-third increase in the above bearing pressures can be used for wind or seismic loads.

The structural engineer should design the footing dimension and reinforcement; however shallow foundations should have a minimum width 24 inches. Structurally continuous foundations should not be directly founded on both engineered fill and bedrock. If the proposed foundations are anticipated to directly bear on both engineered fill and bedrock, a structural break should be constructed in the foundation to limit the distress caused by differential settlement. Compaction requirements should follow section 4.3.5 Engineered Fill.

4.4.3 Estimated Settlements

We estimate total static settlement for foundations designed in accordance with the recommendations presented above and supported entirely on engineered fill or bedrock to be less than 1 inch.



4.4.4 Lateral Resistance

Lateral load resistance may be derived from passive resistance along the vertical sides of the foundations, friction acting at the base of the foundation, or a combination of the two. An allowable passive resistance of 250 psf per foot of depth may be used for design. Allowable passive resistance values should not exceed 2,500 psf. An allowable coefficient of friction value of 0.35 between the base of the foundations and the engineered fill soils and competent bedrock can be used for sliding resistance using the dead load forces. An allowable coefficient of friction value of 0.35 between the base of the level concrete pavement and the aggregate base can also be used for sliding resistance using the dead load forces. The pavement sliding friction should be reduced for sloping pavements based on the percentage slope. Friction and passive resistance may be combined without reduction. We recommend that the first foot of soil cover be neglected in the passive resistance calculations.

4.4.5 Lateral Earth Pressures

Design earth pressures for retaining walls depend primarily on the allowable wall movement, wall inclination, type of backfill materials, backfill slopes, surcharges, and drainage. The earth pressures provided assume that a non-expansive backfill will be used and a drainage system will be installed behind the walls, so that external water pressure will not develop. If a drainage system will not be installed, the wall should be designed to resist hydrostatic pressure in addition to the earth pressure.

The recommended active lateral earth pressures for horizontal backfills using granular relatively non-expansive soils on walls that are free to rotate at least 0.1 percent of the wall height is 35 pcf. The recommended active lateral earth pressures for wall backfills sloping not steeper than 2:1 using granular relatively non-expansive soils on walls that are free to rotate at least 0.1 percent of the wall height is 70 pcf.

The above lateral earth pressures do not include the effects of surcharges (e.g., traffic, footings), compaction, or truck-induced wall pressures. Any surcharge (live, including traffic, or dead load) located within a 1:1 plane drawn upward from the base of the excavation should be added to the lateral earth pressures. The lateral contribution of a uniform surcharge load located immediately behind walls may be calculated by multiplying the surcharge by 0.33 for cantilevered walls. Walls adjacent to areas subject to vehicular traffic should be designed for a



2-foot equivalent soil surcharge (240 psf). Lateral load contributions from other surcharges located behind walls may be provided once the load configurations and layouts are known.

4.5 SLOPE STABILITY

In order to reach the grades presented in the MWD Civil Drawings, bedrock cut slopes and engineered fill slopes are designed to be constructed. The proposed bedrock cut slopes up to approximately 25 feet are designed to be excavated to an inclination of 1.5:1 Horizontal:Vertical (H:V) and the fill slopes are designed at 2:1 H:V. We have performed preliminary analysis of the cut and fill slopes to evaluate the feasibility of the proposed slope inclinations. We recommend reevaluating, as needed, the proposed slopes once final plans are prepared.

4.5.1 Methodology

To evaluate the preliminary cut slopes, Kleinfelder completed limit-equilibrium slope stability analyses for the proposed cut slopes using the Slide software by RocScience Inc. (2016). Factors of safety (FOS) for the static and seismic screening analysis were established using Spencer's method. For the screening analysis, the horizontal seismic coefficient was developed using the procedure outlined in SP117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California. We performed a deaggregation based on a recurrence interval of 10 percent in 50 years to develop a design peak ground acceleration of 0.54g. Using the earthquake parameters above, the corresponding seismic coefficient (k_{eq}) is 0.18 for 6 inches (15 cm) of slope displacement.

4.5.2 Cut Slope Stability

We performed analysis on the bedrock cut slopes presented in Cross-Section F as shown on Sheet SK-5 of the MWD Civil Drawings dated February 2018 as well as Cross-Section C as shown on Sheet SK-15 of the MWD Civil Drawings dated April 2018. The parameters selected for the cut slope stability analysis are based on results of direct shear laboratory testing. The results of the laboratory testing are presented below in Table 2.



Table 2
Direct Shear Results and Slope Stability Parameters

Sample Number	Friction Angle (degrees)	Cohesion (psf)
B - 1 at 5 feet	30	150
B – 4 at 5 feet	30	250
B – 5 at 5 feet	41	350
Bedrock Strength Used in Stability Analysis	34	250

Based on the analyses completed, the FOS satisfy the City of Los Angeles minimum required FOS of 1.5 and 1.0 for the static and screening analysis, respectively as shown in Table 3.

Table 3
Bedrock Cut-Slope Stability Analysis Results

Maintenance Road	Analysis	Minimum Required FOS	Calculated FOS
Option 1	Static	1.50	1.54
	Screening	1.00	1.13
Option 2	Static	1.50	1.54
	Screening	1.00	1.18

Note: ¹The screening analysis was performed in accordance with SP117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California.

The direct shear testing presented in Table 2 was performed on Modified California-Type ring samples. Due to the sampling method and the brittle nature of the bedrock, the strength of the bedrock samples recovered is less than undisturbed intact samples. Although we performed the analysis using the parameters above, we also performed research of CGS Seismic Hazard Zone Report 05 to provide Mean Values for the Chatsworth Formation in the Oat Mountain 7.5-Minute Quadrangle. The Chatsworth Formation shear strength values are shown in Table 4 below and are significantly greater than the parameters included in our analysis.



Table 4
CDMG Published Strength Properties

Bedrock Unit	Mean Friction Angle (degrees)	Mean Cohesion (psf)
Chatsworth Formation	39.3	654

* CGS is formerly California Division of Mines and Geology (CDMG), Seismic Hazard Zone Report 05

4.5.3 Fill Slope Stability

The fill slopes are designed to be constructed at a gradient of 2:1 H:V or greater and do not require slope stability analysis per the current grading code. We anticipate that fill slopes constructed using engineered fill comprised of local materials and sloped at a maximum inclination of 2:1 will be stable

4.5.4 Construction of Permanent Fill Slopes

Fill slopes may be inclined up to 2:1 (horizontal:vertical) or flatter. Where the toe of a fill slope terminates on a natural or cut slope, a keyway is required at the toe of the fill slope. In general, fill slope keyways should be a minimum width of 15 feet, with a minimum depth of 3 feet into competent natural material, and should extend a distance equal to the depth of the keyway beyond the toe of the fill. Benching should be cut into the existing slope to bind the fill to the slope (see Figure 4).

Due to the limited height and configuration of the proposed fill slopes within the portion of the project, slope drains are not anticipated to be needed for this portion of the project. However, depending on fill slope construction and actual site conditions encountered in the field, back drains may be required within the compacted fill to prevent the buildup of hydrostatic pressures behind the fill slope. Field conditions, such as observed seepage from bedrock, or the presence of water within the slope may require the use of subdrains to adequately prevent buildup of hydrostatic pressures behind the fill slope. In general, fill slopes with design heights less than 10 feet will likely not require subdrains. Figures 4 presents standard slope drain details for fill slopes. Benches should be step-like in profile, with each bench not less than four feet in height and established in competent material. Compressible or other unsuitable soils should be removed from the slope prior to benching. Competent material is defined as being essentially free of loose soil, heavy fracturing or erosion prone material and is established by the



Geotechnical Consultant during grading. Following completion of the excavation for the keyway, the project Geotechnical Consultant shall observe the keyway prior to backfilling with certified engineered fill.

When constructing fill slopes the contractor shall avoid spillage of loose material down the face of the slope during dumping and rolling conditions. We recommend that the incoming load be dumped behind the face of the slope and bladed into place. We recommend that fill slopes greater than 10 feet in height should be over-built a minimum of 2 feet in thickness and then trimmed back to expose a compacted core, as shown in Figure 4. The over-built thickness may need to be increased to achieve the specified minimum compaction depending on the site conditions and geometry of the slope. For fill slopes less than 10 feet in height, after 4 feet of vertical height has been obtained, the contractor should compact the outer face of the slope by backing the tamping roller over the top of the slope and thoroughly covering the entire slope surface with overlapping passes of the roller. The foregoing should be repeated after the placement of each 4 foot thickness of fill. Fill slope surface should be compacted to a minimum of 90 percent relative compaction per ASTM D1557.

4.5.5 Construction of Permanent Cut Slopes

In general, cut slopes planned should have a maximum inclination of 1.5:1 (horizontal:vertical). We recommend that a qualified geologist be on site during grading of the cut slopes to map the exposed geology for consistency with the conditions presented in this report. If out-of-slope conditions or other geologic conditions differ from that anticipated then additional analysis and recommendations may be required including trimming the slope to the angle of bedding where practical. If site conditions do not allow trimming the slope to a flatter angle then the slope may need to be over-excavated and replaced with a buttress fill.

4.6 PAVEMENT SECTIONS

4.6.1 Asphalt-Concrete Pavement Sections

The required pavement structural sections will depend on the expected wheel loads, volume of traffic, and subgrade soils. The Traffic Indexes (TI's) assumed should be reviewed by the project Owner, Architect, and/or Civil Engineer to evaluate their suitability for this project. Changes in the TI's will affect the corresponding pavement section. The pavement subgrade should be prepared just prior to placement of the base course. Positive drainage of the paved areas should be provided since moisture infiltration into the subgrade may decrease the life of



pavements. The recommended asphalt pavement concrete recommendations are presented below in Table 5.

Table 5
Asphalt Concrete Pavement Sections
(Design R-value = 24)

Traffic Use	Assumed Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
General Roadway Minimum	--	3.0	4.0
Light Access Roadway Traffic	5.0	3.0	7.0

-- denotes minimum pavement thicknesses for flexible pavement design.

The R-value test result evaluated above was 24. We anticipate the final subgrade soils will consist of a blend of the upper and lower fill materials. Since the characteristics of the near-surface soils can change as a result of grading, we recommend that the subgrade soils be retested for pavement support characteristics, to confirm the parameters used in design and allow for a possible reduction in structural section thickness. Pavement sections provided above are contingent on the following recommendations being implemented during construction.

- The pavement sections recommended above should be placed on at least 24 inches of engineered fill compacted to at least 90 percent of maximum dry density with the upper 6 inches compacted to at least 95 percent relative compaction. The overexcavation of the pavement areas should be conducted as recommended in the earthwork section of this report. Prior to fill placement, the exposed subgrade should be scarified to a depth of 8 inches, uniformly moisture conditioned to near optimum moisture content.
- Subgrade soils should be in a stable, non-pumping condition at the time aggregate base materials are placed and compacted.
- Aggregate base materials should be compacted to at least 95 percent relative compaction.
- Adequate drainage (both surface and subsurface) should be provided such that the subgrade soils and aggregate base materials are not allowed to become wet.
- Aggregate base materials should meet current Caltrans specifications for Class 2 aggregate baserock (Class 2), or crushed miscellaneous base (CMB) as specified in "Standard Specifications for Public Work Construction" ("Greenbook").



- The asphalt pavement should be placed in accordance with “Green Book” specifications.
- All concrete curbs separating pavement and landscaped areas should extend into the subgrade and below the bottom of adjacent, aggregate base materials.

Pavement sections provided above are based on the soil conditions encountered during our field investigation, our understanding of the final site grades, and limited laboratory testing. Since the actual pavement subgrade materials exposed during grading may be significantly different than those tested for this study, we recommend that representative subgrade samples be obtained and additional R-value tests performed. Should the results of these tests indicate a significant difference, the design pavement section(s) provided above may need to be revised.

4.6.2 Portland Cement Concrete Pavement

Concrete pavements may be desirable along the alignment. The concrete pavement should have a minimum 28-day compressive strength of 3,000 psi or 4,000 psi as presented below. Control joints should be spaced at every 15 feet or as designed by the Civil Engineer. The concrete pavement section should be placed on at least 24 inches of engineered fill compacted to at least 90 percent of the maximum dry density. Prior to fill placement, the exposed subgrade should be prepared as recommended in Section 4.4 of this report. Table 6 below presents our recommendations of Portland Cement Concrete (PCC) pavement sections.

Table 6
Preliminary Recommended PCC Pavement Sections

Design R-value	Assumed Traffic Index	Concrete Thickness (inches; using a 28-day compressive strength of 3,000 psi)	Concrete Thickness (inches; using a 28-day compressive strength of 4,000 psi)
24	5	7.5	7.0

The PCC sections presented above may be decreased by 0.5 inches provided that they are constructed on 4 inches of Class 2 aggregate base or CMB compacted to 95% relative compaction. We recommend that the additional 4 inches of aggregate base described above should also underlain 24 inches of engineered fill compacted to at least 90 percent relative compaction. Our review of the MWD Civil Drawings presents details including a 9-inch PCC thickness, which is also acceptable for our understanding of the traffic loading conditions.



5 RECOMMENDED ADDITIONAL SERVICES

5.1 ADDITIONAL GEOTECHNICAL INVESTIGATION

Our authorized scope included limited geotechnical investigation. Conditions could vary between the locations explored. We do not anticipate encountering adverse bedding conditions during grading. However, if adverse bedding conditions are encountered, redesign of proposed slopes may be necessary resulting in delays during construction. To reduce the risk of construction delays, confirmation borings could be excavated through the top of each proposed cut slope prior to construction. Kleinfelder can provide a proposal for additional scope and fee if this option is desired. A geotechnical representative should be retained to provide full-time observation and geologic mapping during construction of all slopes constructed for this project.

5.2 PLANS AND SPECIFICATIONS REVIEW

We recommend that Kleinfelder perform a general review of the project plans and specifications before they are finalized to verify that our geotechnical recommendations have been properly interpreted and implemented during design. If we are not accorded the privilege of performing this review, we can assume no responsibility for misinterpretation of our recommendations.

5.3 CONSTRUCTION OBSERVATION AND TESTING

The construction process is an integral design component with respect to the geotechnical aspects of a project. Because geotechnical engineering is an inexact science due to the variability of natural processes, and because we sample only a limited portion of the soils affecting the performance of the proposed structure, unanticipated or changed conditions can be encountered during grading. Proper geotechnical observation and testing during construction are imperative to allow the geotechnical engineer the opportunity to verify assumptions made during the design process. Therefore, we recommend that Kleinfelder be retained during the construction of the proposed improvements to observe compliance with the design concepts and geotechnical recommendations, and to allow design changes in the event that subsurface conditions or methods of construction differ from those assumed while completing this study.



Our services are typically needed at the following stages of grading.

- after demolition;
- during grading;
- after the overexcavation, but prior to scarification;
- during utility trench backfill;
- during base placement and site paving; and
- after excavation for foundations.



6 LIMITATIONS

This geotechnical study has been prepared for the exclusive use by Metropolitan Water District (Client) and their agents for specific application to the project in Chatsworth, California. The findings, conclusions and recommendations presented in this report were prepared in accordance with generally accepted geotechnical engineering practice. No other warranty, express or implied, is made.

The scope of services was limited to a background data review and the field exploration described in the Scope of Services section. It should be recognized that definition and evaluation of subsurface conditions are difficult. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present due to the limitations of data from field studies. The conclusions of this assessment are based on our field exploration and laboratory testing programs, and engineering analyses.

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. Although risk can never be eliminated, more detailed and extensive studies yield more information, which may help understand and manage the level of risk. Since detailed study and analysis involves greater expense, our clients participate in determining levels of service, which provide information for their purposes at acceptable levels of risk. The client and key members of the design team should discuss the issues covered in this report with Kleinfelder, so that the issues are understood and applied in a manner consistent with the owner's budget, tolerance of risk and expectations for future performance and maintenance.

Recommendations contained in this report are based on our field observations and subsurface explorations, limited laboratory tests, and our present knowledge of the proposed construction. It is possible that soil or groundwater conditions could vary between or beyond the points explored. If soil or groundwater conditions are encountered during construction that differ from those described herein, the client is responsible for ensuring that Kleinfelder is notified immediately so that we may reevaluate the recommendations of this report. If the scope of the proposed construction, including the locations of the improvements, changes from that described in this report, the conclusions and recommendations contained in this report are not considered valid until the changes are reviewed, and the conclusions of this report are modified or approved in writing, by Kleinfelder.

The scope of services for this subsurface exploration and geotechnical report did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous substances in the soil, surface water, or groundwater at this site.



Kleinfelder cannot be responsible for interpretation by others of this report or the conditions encountered in the field. Kleinfelder must be retained so that all geotechnical aspects of construction will be monitored on a full-time basis by a representative from Kleinfelder, including site preparation, preparation of foundations, and placement of engineered fill and trench backfill. These services provide Kleinfelder the opportunity to observe the actual soil and groundwater conditions encountered during construction and to evaluate the applicability of the recommendations presented in this report to the site conditions. If Kleinfelder is not retained to provide these services, we will cease to be the engineer of record for this project and will assume no responsibility for any potential claim during or after construction on this project. If changed site conditions affect the recommendations presented herein, Kleinfelder must also be retained to perform a supplemental evaluation and to issue a revision to our original report.

This report, and any future addenda or reports regarding this site, may be made available to bidders to supply them with only the data contained in the report regarding subsurface conditions and laboratory test results at the point and time noted. Bidders may not rely on interpretations, opinion, recommendations, or conclusions contained in the report. Because of the limited nature of any subsurface study, the contractor may encounter conditions during construction which differ from those presented in this report. In such event, the contractor should promptly notify the owner so that Kleinfelder's geotechnical engineer can be contacted to confirm those conditions. We recommend the contractor describe the nature and extent of the differing conditions in writing and that the construction contract include provisions for dealing with differing conditions. Contingency funds should be reserved for potential problems during earthwork and foundation construction.

This report may be used only by the client and only for the purposes stated, within a reasonable time from its issuance, but in no event later than one year from the date of the report. Land use, site conditions (both on site and off site) or other factors may change over time, and additional work may be required with the passage of time. Any party, other than the client who wishes to use this report shall notify Kleinfelder of such intended use. Based on the intended use of this report and the nature of the new project, Kleinfelder may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party and the client agrees to defend, indemnify, and hold harmless Kleinfelder from any claims or liability associated with such unauthorized use or non-compliance.



7 REFERENCES

- American Concrete Institute (ACI), 2002, Building Code Requirements for Structural Concrete (ACI 318-02) and Commentary (ACI 318R-02).
- American Society of Civil Engineers (ASCE), 2010, Minimum Design Load for Buildings and Other Structures (ASCE/SEI 7-10).
- Barrows, A.G., Kahle, J.E., Saul, R.B., and Weber, F.H., Jr., 1975, Geologic map of the San Fernando earthquake area, *in* Oakeshott, G.B., ed., San Fernando, California, earthquake of 9 February 1971.
- Bryant, William A., Hart, Earl W., 2007, Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Map, Interim Revision 2007.
- California Department of Transportation (Caltrans), 2017, Highway Design Manual.
- California Division of Mines and Geology Bulletin 196, Pl. 2, scale 1:18,000.
- California Division Of Mines and Geology (CDMG), 1997, Seismic Hazard Zone Report for the Oat Mountain 7.5 Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 05.
- California Geological Survey (CGS), 2002, *California Geomorphic Provinces*, Note 36.
- California Geological Survey (CGS), 2017, Earthquake Fault Zones and Seismic Hazard Zones, Oat Mountain 7.5 Minute Quadrangle, Earthquake Zones of Required Investigation Oat Mountain Quadrangle, scale 1: 24,000.
- Cilona, A., Aydin, A., Likerman, J., Parker, B., and Cherry, J., 2016, Structural and statistical characterization of joints and multi-scale faults in an alternating sandstone and shale turbidite sequence at the Santa Susana Field Laboratory: Implications for their effects on groundwater flow and contaminate transport, in *Journal of Structural Geology*, Volume 85, April 2016, pages 95-114.



FEMA, 2008, Flood Insurance Rate Map (FIRM) Los Angeles County, California and Incorporated Areas, ([Panel 1040 of 2350 Map Number 06037C1040F](#)) effective date September 26, 2008.

Geological Society of America, 2011, Structure of the San Fernando Valley Region, California: Implications for seismic hazard and tectonic history, Lanhenheim, V.E. et al., *Geosphere*, 7(2):528.

International Code Council, Inc., 2016 California Building Code.

Link, M.H., Squires, R.L. and Colburn, I. P., 1984, Upper Cretaceous Chatsworth Formation, Simi Hills, California, *AAPG Bulletin* (1984) 68 (7): 850-873. Published: July 01, 1984.

Metropolitan Water District (2018), MWD Civil Drawings, Distribution System, West Valley Feeder No 1, Valve Modifications Stage 3, Chatsworth Park, Sheets SK-1 through SK-7, February, 2018.

Norris, R. M., and Webb, R. W., 1990, *Geology of California*, second edition New York, John Wiley & Sons.

Rocscience, 2016, Slide 7.020 64-bit, Computer Software for the Analysis of Slope Stability.

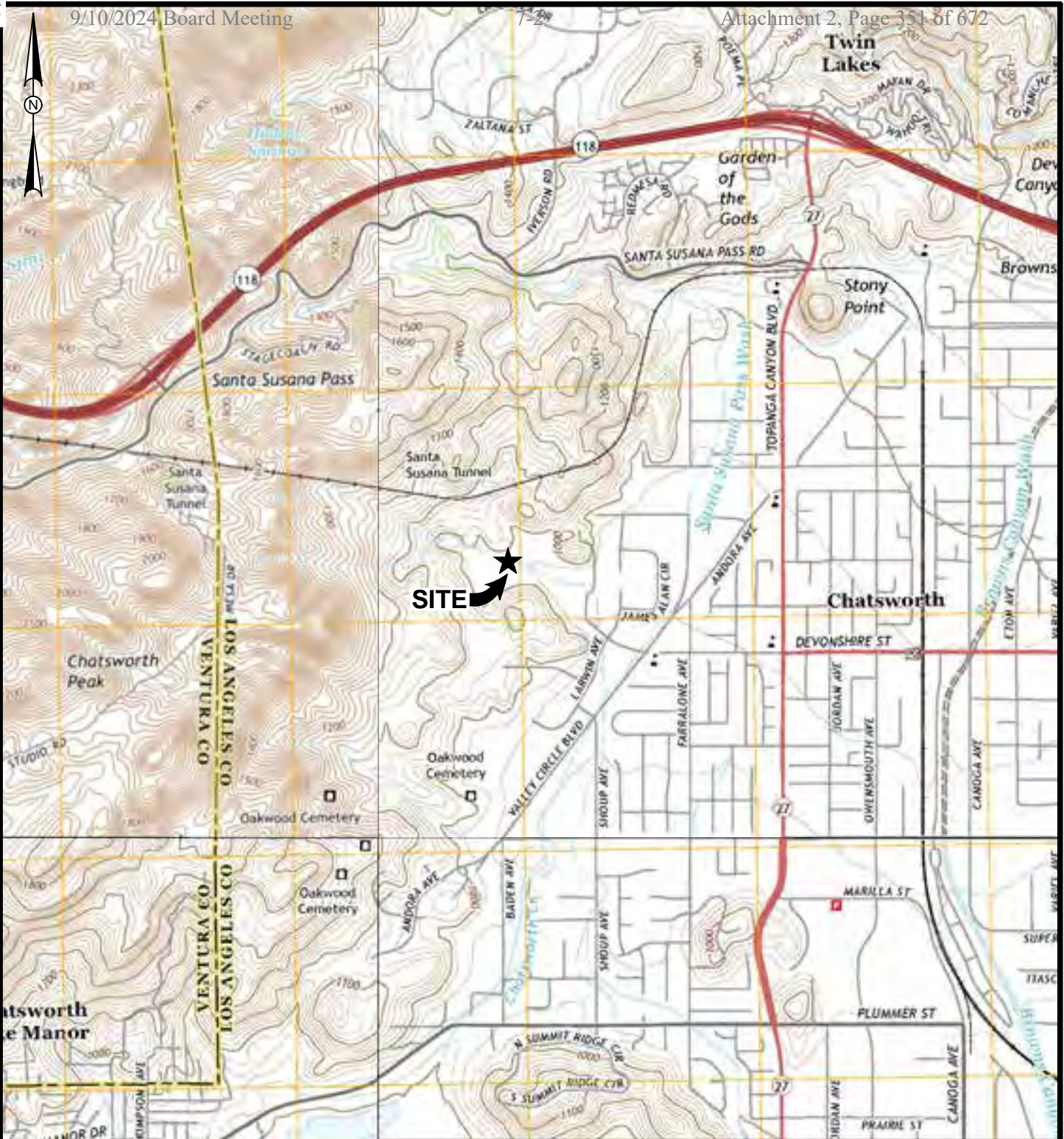
Treiman, J.A., compiler, 2000, Fault number 105a, Sierra Madre fault zone, Santa Susana section, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, <https://earthquakes.usgs.gov/hazards/qfaults>, accessed 03/06/2018 02:34 PM.

United States Geological Survey (USGS), 2014, Preliminary Geologic Map of the Los Angeles 30' x 60' Quadrangle, California, Version 2.1, Compiled by R.H. Campbell, C.J. Wills, P.J. Irvine, and B.J. Swanson, scale 1:100,000.

Yerkes, R.F. and Campbell, R.H., 1997, Preliminary Geologic map of the Oat Mountain 7.5' Quadrangle, Southern California: A Digital Database: U.S. Geological Survey, compiled by R.F. Yerkes and R. H. Campbell, Open-File Report 95-089, <https://pubs.usgs.gov/of/1995/of95-089/>.

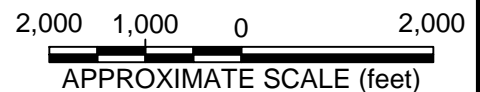



FIGURES



SOURCE: U.S.G.S. 7.5' Topographic series, Oat Mountain, California Quadrangle 2015.

The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.

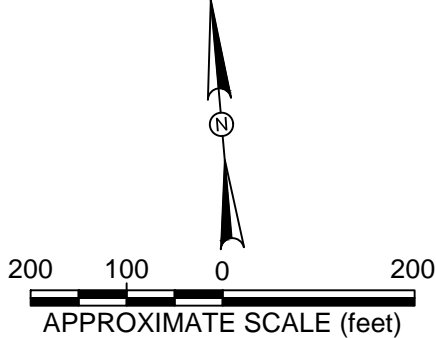


	PROJECT NO. 20180213	SITE VICINITY MAP	FIGURE 1
	DRAWN BY: DMF		
	CHECKED BY: JDW	WEST VALLEY FEEDER 1 VALVE IMPROVEMENTS CHATSWORTH, CALIFORNIA	
	DATE: 02/2018		
	REVISED: 02/2018		



EXPLANATION

- B-5 APPROXIMATE BORING LOCATION
- LINE 2 APPROXIMATE SEISMIC REFRACTION LINE LOCATION
- APPROXIMATE LOCATION OF ACCESS ROAD ALIGNMENT OPTION 1
- APPROXIMATE LOCATION OF ACCESS ROAD ALIGNMENT OPTION 2



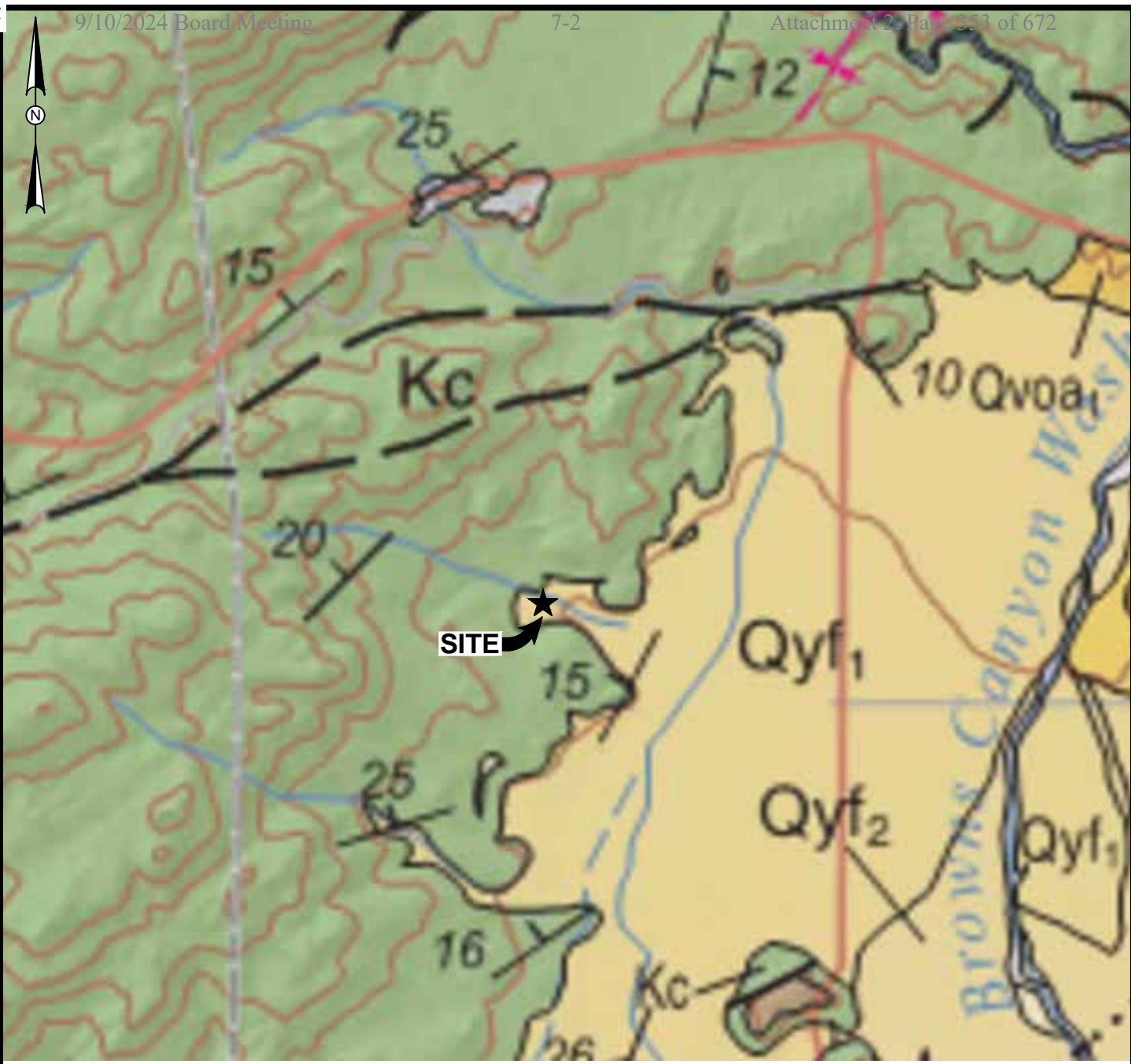
The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.



PROJECT NO.	20180213
DRAWN BY	DMF
CHECKED BY	JDW
DATE:	02/2018
REVISED:	02/2018

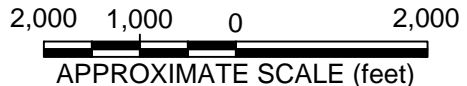
FIELD EXPLORATION LOCATION MAP
WEST VALLEY FEEDER 1 VALVE IMPROVEMENTS CHATSWORTH, CALIFORNIA

FIGURE
2



SOURCE: PRELIMINARY GEOLOGIC MAP OF THE LOS ANGELES 30'x60' QUADRANGLE, CALIFORNIA
VERSION 2.1 COMPILED BY RUSSELL H. CAMPBELL, CHRIS J. WILLIS, PAMELA J. IRVINE,
AND BRIAN J. SWANSON, 2014

EXPLANATION



The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.

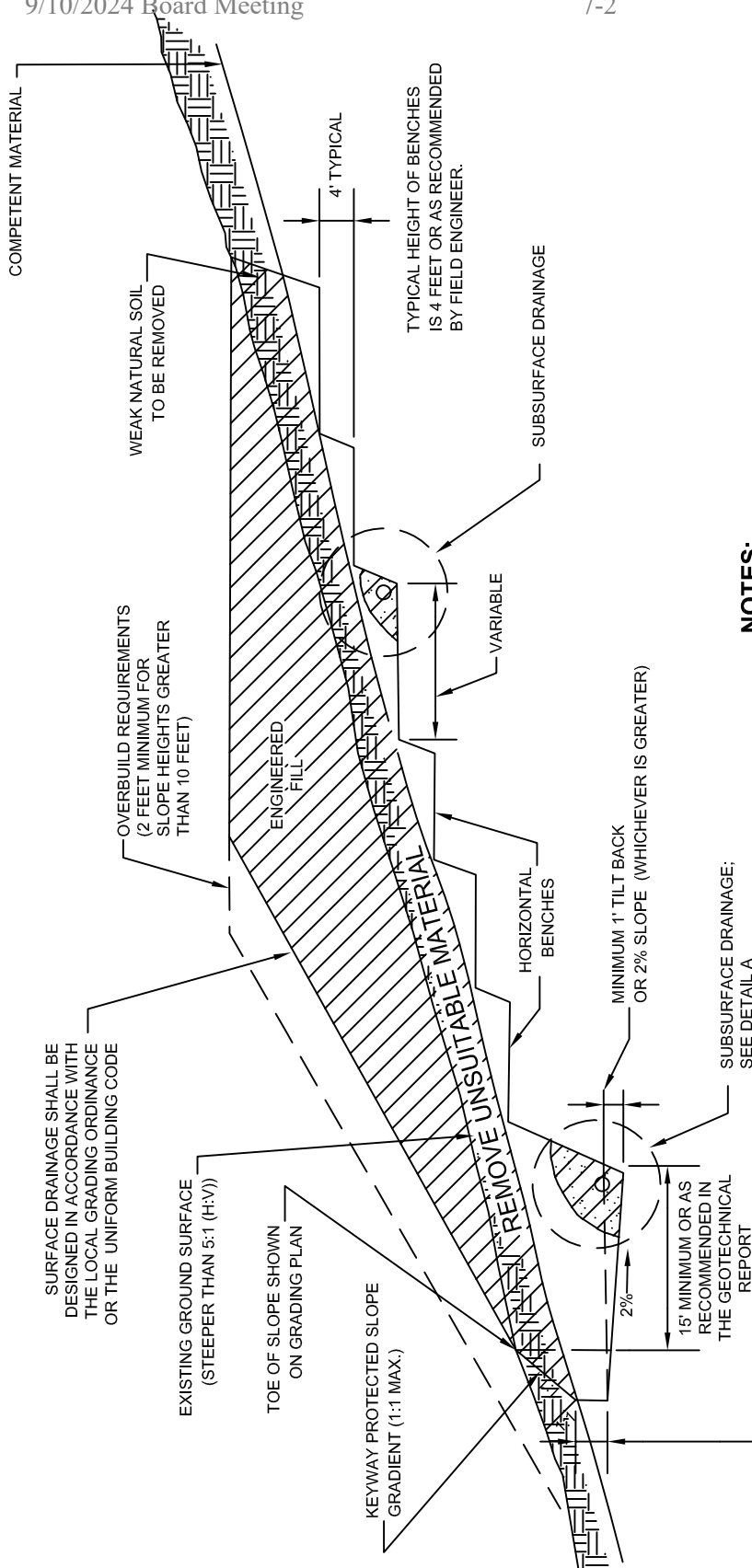
- Qyfa YOUNG ALLUVIAL FAN DEPOSITS, UNIT 2
- Qyfb YOUNG ALLUVIAL FAN DEPOSITS, UNIT 1
- Qyfc VERY OLD ALLUVIUM, UNDIVIDED
- Qyfd RINCON FORMATION, MARINE SHALE AND MUDSTONE
- Qyfe CHATSWORTH FORMATION



PROJECT NO. 20180213
DRAWN BY: DMF
CHECKED BY: JDW
DATE: 02/2018
REVISED: 02/2018

REGIONAL GEOLOGIC MAP
WEST VALLEY FEEDER 1 VALVE IMPROVEMENTS
CHATSWORTH, CALIFORNIA

FIGURE
3

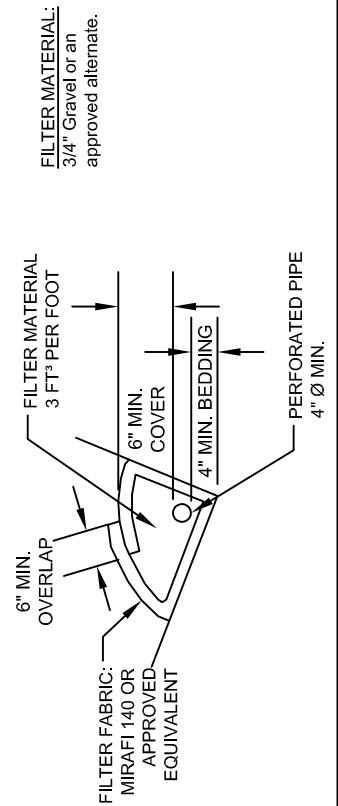


NOTES:

1. FINAL BENCHING AND KEYWAY EXCAVATION DEPTHS AND DETAILS SUBJECT TO EVALUATION OF FIELD CONDITIONS.
2. DIMENSIONS AND LOCATIONS OF SUB DRAINAGE ARE APPROXIMATE. ACTUAL INSTALLATION TO BE BASED ON FIELD CONDITIONS.
3. GRADE PIPES TO DRAIN TO AN APPROPRIATE DISCHARGE FACILITY.
4. INSTALL CLEANOUTS AT ENDS, ANGLES, AND JUNCTIONS OF PIPE.
5. BENCH SHALL BE REQUIRED WHEN NATURAL SLOPES ARE EQUAL TO OR STEEPER THAN 5:1 OR WHEN RECOMMENDED BY THE SOIL ENGINEER.
6. SUBDRAINAGE: BACK DRAIN REQUIRED AS RECOMMENDED IN THE GEOTECHNICAL REPORT AND VERIFIED IN THE FIELD BY THE GEOTECHNICAL CONSULTANT

DETAIL A:

PERFORATED PIPE SURROUNDED BY FILTER MATERIAL



FILTER MATERIAL:
3/4" Gravel or an
approved alternate.



PROJECT NO.	20180213
DRAWN:	03/2018
DRAWN BY:	DMF
CHECKED BY:	JW
FILE NAME:	20180213_F4.dwg

**TYPICAL ENGINEERED
FILL SLOPE/BENCHING DETAIL**

WEST VALLEY FEEDER 1 VALVE IMPROVEMENTS
CHATSWORTH, CALIFORNIA

FIGURE

4



APPENDIX A

Field Explorations



APPENDIX A

FIELD EXPLORATIONS

The subsurface exploration program for the proposed project consisted of advancing and logging a total of 5 hollow-stem auger borings. The borings were drilled with a limited access track drill rig equipped with 8-inch diameter hollow-stem augers, provided by 2R Drilling of Chino, California. The approximate locations of the borings are shown on Figure 2, Field Exploration Location Map.

The logs of the borings are presented on Figures A-3 through A-7. An explanation to the logs is presented on Figures A-1 and A-2, Soil Description Key and Graphics Key, respectively. The logs of borings present a description of the earth materials encountered, samples obtained, and show field and laboratory tests performed. The logs also show the boring number, drilling date, boring elevation and the name of the logger and drilling subcontractor. A Kleinfelder staff professional logged the borings utilizing the Unified Soil Classification System. The boundaries between soil types shown on the logs are approximate because the transition between different soil layers and/or bedrock may be gradual. Bulk and drive samples of representative earth materials were obtained from the borings at maximum intervals of approximately 5 feet. With the exception of Boring B-3, the excavated soil cuttings were used to backfill the excavations. In Boring B-3, the boring was backfilled with cement/bentonite grout.

A California sampler was used to obtain relatively undisturbed drive samples of the soil encountered. This sampler consists of a 3 inch O.D., 2.5 inch I.D. split barrel shaft that is driven a total of 18 inches into the soil at the bottom of the boring. The soil was retained in six 1-inch brass rings for laboratory testing. The sampler was driven using a 140-pound automatic hammer falling 30 inches. The total number of hammer blows required to drive the sampler the final 12 inches is termed the blow count and is recorded on the Logs of Borings. Where the sample was driven less than 12 inches, the number of blows to drive the sample for each 6-inch segment, or portion thereof, is shown on the logs.

Bulk samples of the sub-surface soils were directly retrieved from the soil cuttings produced by the auger blades.

SAMPLER AND DRILLING METHOD GRAPHICS

	BULK / GRAB / BAG SAMPLE
	MODIFIED CALIFORNIA SAMPLER (2 or 2-1/2 in. (50.8 or 63.5 mm.) outer diameter)
	CALIFORNIA SAMPLER (3 in. (76.2 mm.) outer diameter)
	STANDARD PENETRATION SPLIT SPOON SAMPLER (2 in. (50.8 mm.) outer diameter and 1-3/8 in. (34.9 mm.) inner diameter)
	HQ CORE SAMPLE (2.500 in. (63.5 mm.) core diameter)
	SHELBY TUBE SAMPLER
	HOLLOW STEM AUGER
	SOLID STEM AUGER
	WASH BORING
	SONIC CONTINUOUS SAMPLER

GROUND WATER GRAPHICS

	WATER LEVEL (level where first observed)
	WATER LEVEL (level after exploration completion)
	WATER LEVEL (additional levels after exploration)
	OBSERVED SEEPAGE

NOTES

- The report and graphics key are an integral part of these logs. All data and interpretations in this log are subject to the explanations and limitations stated in the report.
- Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual or differ from those shown.
- No warranty is provided as to the continuity of soil or rock conditions between individual sample locations.
- Logs represent general soil or rock conditions observed at the point of exploration on the date indicated.
- In general, Unified Soil Classification System designations presented on the logs were based on visual classification in the field and were modified where appropriate based on gradation and index property testing.
- Fine grained soils that plot within the hatched area on the Plasticity Chart, and coarse grained soils with between 5% and 12% passing the No. 200 sieve require dual USCS symbols, ie., GW-GM, GP-GM, GW-GC, GP-GC, GC-GM, SW-SM, SP-SM, SW-SC, SP-SC, SC-SM.
- If sampler is not able to be driven at least 6 inches then 50/X indicates number of blows required to drive the identified sampler X inches with a 140 pound hammer falling 30 inches.

ABBREVIATIONS

WOH - Weight of Hammer
 WOR - Weight of Rod

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

GRAVELS (More than half of coarse fraction is larger than the #200 sieve)	CLEAN GRAVEL WITH <5% FINES	Cu ≥ 4 and 1 ≤ Cc ≤ 3		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		Cu < 4 and/or 1 > Cc > 3		GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
	GRAVELS WITH 5% TO 12% FINES	Cu ≥ 4 and 1 ≤ Cc ≤ 3		GW-GM	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
				GW-GC	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
		Cu < 4 and/or 1 > Cc > 3		GP-GM	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
				GP-GC	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
	GRAVELS WITH > 12% FINES			GM	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
				GC-GM	CLAYEY GRAVELS, GRAVEL-SAND-CLAY-SILT MIXTURES
COARSE GRAINED SOILS (More than half of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH <5% FINES	Cu ≥ 6 and 1 ≤ Cc ≤ 3		SW	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		Cu < 6 and/or 1 > Cc > 3		SP	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
	SANDS WITH 5% TO 12% FINES	Cu ≥ 6 and 1 ≤ Cc ≤ 3		SW-SM	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
				SW-SC	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
		Cu < 6 and/or 1 > Cc > 3		SP-SM	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
				SP-SC	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
	SANDS WITH > 12% FINES			SM	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES
				SC-SM	CLAYEY SANDS, SAND-SILT-CLAY MIXTURES
FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid Limit less than 50)			ML	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				CL-ML	INORGANIC CLAYS-SILTS OF LOW PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	SILTS AND CLAYS (Liquid Limit greater than 50)			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
				MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY

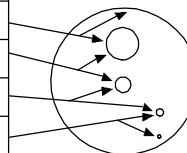
 Bright People. Right Solutions.	PROJECT NO.: 20174481	GRAPHICS KEY West Valley Feeder 1 Valve Improvements Chatsworth, CA	FIGURE A-1
	DRAWN BY: CC CHECKED BY: JW DATE: 3/1/2018 REVISED: -		

GRAIN SIZE 24 Board Meeting

7-2

Attachment 2, Page 358 of 672

DESCRIPTION	SIEVE SIZE	GRAIN SIZE	APPROXIMATE SIZE
Boulders	>12 in. (304.8 mm.)	>12 in. (304.8 mm.)	Larger than basketball-sized
Cobbles	3 - 12 in. (76.2 - 304.8 mm.)	3 - 12 in. (76.2 - 304.8 mm.)	Fist-sized to basketball-sized
Gravel	coarse 3/4 - 3 in. (19 - 76.2 mm.)	3/4 - 3 in. (19 - 76.2 mm.)	Thumb-sized to fist-sized
	fine #4 - 3/4 in. (#4 - 19 mm.)	0.19 - 0.75 in. (4.8 - 19 mm.)	Pea-sized to thumb-sized
Sand	coarse #10 - #4	0.075 - 0.19 in. (2 - 4.9 mm.)	Rock salt-sized to pea-sized
	medium #40 - #10	0.017 - 0.075 in. (0.43 - 2 mm.)	Sugar-sized to rock salt-sized
	fine #200 - #40	0.0029 - 0.017 in. (0.07 - 0.43 mm.)	Flour-sized to sugar-sized
Fines	Passing #200	<0.0029 in. (<0.07 mm.)	Flour-sized and smaller

**SECONDARY CONSTITUENT**

	AMOUNT	
Term of Use	Secondary Constituent is Fine Grained	Secondary Constituent is Coarse Grained
Trace	<5%	<15%
With	≥5 to <15%	≥15 to <30%
Modifier	≥15%	≥30%

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

CONSISTENCY - FINE-GRAINED SOIL

CONSISTENCY	SPT - N ₆₀ (# blows / ft)	Pocket Pen (tsf)	UNCONFINED COMPRESSIVE STRENGTH (Q _u)(psf)	VISUAL / MANUAL CRITERIA
Very Soft	<2	PP < 0.25	<500	Thumb will penetrate more than 1 inch (25 mm). Extrudes between fingers when squeezed.
Soft	2 - 4	0.25 ≤ PP < 0.5	500 - 1000	Thumb will penetrate soil about 1 inch (25 mm). Remolded by light finger pressure.
Medium Stiff	4 - 8	0.5 ≤ PP < 1	1000 - 2000	Thumb will penetrate soil about 1/4 inch (6 mm). Remolded by strong finger pressure.
Stiff	8 - 15	1 ≤ PP < 2	2000 - 4000	Can be imprinted with considerable pressure from thumb.
Very Stiff	15 - 30	2 ≤ PP < 4	4000 - 8000	Thumb will not indent soil but readily indented with thumbnail.
Hard	>30	4 ≤ PP	>8000	Thumbnail will not indent soil.

FROM TERZAGHI AND PECK, 1948; LAMBE AND WHITMAN, 1969; FHWA, 2002; AND ASTM D2488

APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL

APPARENT DENSITY	SPT-N ₆₀ (# blows/ft)	MODIFIED CA SAMPLER (# blows/ft)	CALIFORNIA SAMPLER (# blows/ft)	RELATIVE DENSITY (%)
Very Loose	<4	<4	<5	0 - 15
Loose	4 - 10	5 - 12	5 - 15	15 - 35
Medium Dense	10 - 30	12 - 35	15 - 40	35 - 65
Dense	30 - 50	35 - 60	40 - 70	65 - 85
Very Dense	>50	>60	>70	85 - 100

FROM TERZAGHI AND PECK, 1948

STRUCTURE

DESCRIPTION	CRITERIA
Stratified	Alternating layers of varying material or color with layers at least 1/4-in. thick, note thickness.
Laminated	Alternating layers of varying material or color with the layer less than 1/4-in. thick, note thickness.
Fissured	Breaks along definite planes of fracture with little resistance to fracturing.
Slickensided	Fracture planes appear polished or glossy, sometimes striated.
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown.
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness.

REACTION WITH HYDROCHLORIC ACID

DESCRIPTION	FIELD TEST
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming immediately

PLASTICITY

DESCRIPTION	LL	FIELD TEST
Non-plastic	NP	A 1/8-in. (3 mm.) thread cannot be rolled at any water content.
Low (L)	< 30	The thread can barely be rolled and the lump or thread cannot be formed when drier than the plastic limit.
Medium (M)	30 - 50	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump or thread crumbles when drier than the plastic limit.
High (H)	> 50	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump or thread can be formed without crumbling when drier than the plastic limit.

ANGULARITY

DESCRIPTION	CRITERIA
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces.
Subangular	Particles are similar to angular description but have rounded edges.
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges.
Rounded	Particles have smoothly curved sides and no edges.



PROJECT NO.: 20174481
DRAWN BY: CC
CHECKED BY: JW
DATE: 3/1/2018
REVISED: -

SOIL DESCRIPTION KEY

West Valley Feeder 1 Valve Improvements
Chatsworth, CA

FIGURE

A-2

PLOTTED: 03/12/2018 10:53 AM BY: C.Coffey
OFFICE FILTER: RIVERSIDE
PROJECT NUMBER: 20174481.010A
GINT FILE: KLF_gint_master_2017
GINT TEMPLATE: E:KLF_STANDARD_GINT_LIBRARY_2017.GLB [KLF_BORING/TEST PIT SOIL LOG]

9/10/2024 Board Meeting

Date Begin - End: 1/30/2018

Drilling Company: 7-2 2R Drilling

Attachment 2, Page 359 of 672

BORING LOG B-1

Logged By: C.Coffey

Drill Crew: Jeff

Hor.-Vert. Datum: Not Available

Drilling Equipment: CME-75 Track Mounted

Hammer Type - Drop: 140 lb. Auto - 30 in.


Plunge: -90 degrees

Drilling Method: Hollow Stem Auger

Weather: Party Cloudy/Mid 80s

Exploration Diameter: 8 in. O.D.

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS									
			Approximate Ground Surface Elevation (ft.): 1,034.00 Surface Condition: Gravel	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks		
															Lithologic Description	
			Fill Silty SAND (SM): fine-grained, pale olive brown, dry, some medium sand, subangular													hand auger to 0.5 feet, refusal at 0.5 feet due to very dense soil/bedrock
			Bedrock: Chatsworth Fm. (Kc) SANDSTONE: fine to medium-grained, yellowish brown (10YR-3/6), dry to moist, very dense, excavates as silty sand (SM) with gravel with fine to medium gravel (0.5 to .75 inch)		BC=50/2"				3.6	104.3						
1030	5				BC=50/5"											direct shear test
1025	10		excavates as silty sand (SM), fine grained, some fine gravel, subangular, slightly friable		BC=50/1"				4.4	104.4						hard drilling
1020	15		The boring was terminated at approximately 11.5 ft. below ground surface. The boring was backfilled with soil on January 30, 2018.				GROUNDWATER LEVEL INFORMATION: Groundwater was not observed during drilling or after completion. GENERAL NOTES: The exploration location and elevation are approximate and were estimated by Kleinfelder.									
1015	20															
1010																



PROJECT NO.: 20174481

DRAWN BY: CC

CHECKED BY: JW

DATE: 3/1/2018

REVISED: -

BORING LOG B-1

West Valley Feeder 1 Valve Improvements
Chatsworth, CA

FIGURE

A-3

PAGE: 1 of 395

gINT TEMPLATE: E:KLF_STANDA

Hammer Type - Drop: 140 lb. Auto - 30 in.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:
The exploration location and elevation are approximate and were estimated by Kleinfelder.



DARD_GINT_LIBRARY_2017.GLB [__KLF_BORING/TEST PIT SOIL LOG]

BORING LOG B-3

Drilling Company: 2R Drilling

Drill Crew: Jeff

Drilling Equipment: CME-75 Track Mounted

Drilling Method: Hollow Stem Auger

Exploration Diameter: 8 in. O.D.

Hammer Type - Drop: 140 lb. Auto - 30 in.



KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 20174481
DRAWN BY: CC
CHECKED BY: JW
DATE: 3/1/2018
REVISED:

BORING LOG B-3







West Valley Feeder 1 Valve Improvements Chatsworth, CA

FIGURE

A-5

PAGE: 1 of 397

Date Begin - End: 1/30/2018	Drilling Company: 7-2 2R Drilling	Attachment 2, Page 362 of 672	BORING LOG B-4	
Logged By: C.Coffey	Drill Crew: Jeff			
Hor.-Vert. Datum: Not Available	Drilling Equipment: CME-75 Track Mounted			Hammer Type - Drop: 140 lb. Auto - 30 in.
Plunge: -90 degrees	Drilling Method: Hollow Stem Auger			
Weather: Party Cloudy/Mid 80s	Exploration Diameter: 8 in. O.D.			

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS								
			Approximate Ground Surface Elevation (ft.): 1,021.00 Surface Condition: Soil	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks	
															Lithologic Description
1020			<u>Alluvium</u> Sandy Lean CLAY (CL): low plasticity, dark yellowish brown (10YR-3/4), dry, fine sand						6.4		100	58			Hand auger to 5 feet, medium to hard hand augering
1015	5		<u>Bedrock: Chatsworth FM (Kc)</u> SANDSTONE: fine-grained, very pale brown (10YR-7/4), dry, very dense, excavates as silty sand (SM), slightly friable		BC=26 34 40										direct shear test
1010	10				BC=50/5"				6.0	111.2					
1005	15				BC=50/2"										

The boring was terminated at approximately 16.5 ft. below ground surface. The boring was backfilled with soil on January 30, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
The exploration location and elevation are approximate and were estimated by Kleinfelder.

PLOTTED: 03/12/2018 10:55 AM BY: C.Coffey
OFFICE FILTER: RIVERSIDE
PROJECT NUMBER: 20174481.010A
GINT FILE: KLF_gint_master_2017
GINT TEMPLATE: E:KLF_STANDARD_GINT_LIBRARY_2017.GLB [KLF_BORING/TEST PIT SOIL LOG]

9/10/2024 Board Meeting

Date Begin - End: 1/30/2018

Drilling Company: 7-2 2R Drilling

Attachment 2, Page 363 of 672

BORING LOG B-5

Logged By: C.Coffey

Drill Crew: Jeff

Hor.-Vert. Datum: Not Available

Drilling Equipment: CME-75 Track Mounted

Hammer Type - Drop: 140 lb. Auto - 30 in.


Plunge: -90 degrees

Drilling Method: Hollow Stem Auger

Weather: Party Cloudy/Mid 80s

Exploration Diameter: 8 in. O.D.

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS								
			Approximate Ground Surface Elevation (ft.): 1,116.00 Surface Condition: Soil	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks	
															Lithologic Description
1115		<div><div>Fill</div><div>Poorly Graded SAND with Silt (SP-SM): fine-grained, dark yellowish brown (10YR-4/4), dry, dense, moderately cemented</div></div>						6.4							hand auger to 0.5 feet, hand auger refusal at 0.5 feet due to dense bedrock/sandstone
		<div><div>Bedrock: Chatsworth Fm. (Kc)</div><div>SANDSTONE: dark yellowish brown (10YR-4/4), very dense, excavates as silty sand with gravel (SM)</div></div>	BC=16 22 30					6.1	118.3	79	17				compaction test R-Value test
5			BC=8 12 50/5"												
1110															
		weakly cemented, increase in fines	BC=50/3"					5.8	98.0						
1105															hard drilling
		excavates as silty sand (SM), moderately cemented	BC=50/2"												disturbed sample
1100															
		moderately cemented	BC=50/2"												disturbed sample
20															
1095															
The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with soil on January 30, 2018.															GROUNDWATER LEVEL INFORMATION: Groundwater was not observed during drilling or after completion. GENERAL NOTES: The exploration location and elevation are approximate and were estimated by Kleinfelder.



Bright People. Right Solutions.

PROJECT NO.: 20174481

DRAWN BY: CC

CHECKED BY: JW

DATE: 3/1/2018

REVISED: -

BORING LOG B-5

West Valley Feeder 1 Valve Improvements
Chatsworth, CA

FIGURE

A-7

PAGE: 1 of 399



APPENDIX B

LABORATORY TESTING

GENERAL

Laboratory tests were performed on selected samples as an aid in classifying the soils and to evaluate physical properties of the soils that may affect foundation design and construction procedures. The tests were performed in general conformance with the current ASTM or California Department of Transportation (Caltrans) standards. A description of the laboratory-testing program is presented below.

Laboratory tests were performed on representative relatively undisturbed and bulk soil samples to estimate engineering characteristics of the various earth materials encountered. Testing was performed in accordance with one of the following references:

1. Lambe, T. William, Soil Testing for Engineers, Wiley, New York, 1951.
2. Laboratory Soils Testing, U.S. Army, Office of the Chief of Engineers, Engineering Manual No. 1110-2-1906, November 30, 1970.
3. ASTM Standards for Soil Testing, latest revisions.
4. State of California Department of Transportation, Standard Test Methods, latest revisions.

LABORATORY MOISTURE AND DENSITY DETERMINATIONS

Natural moisture content and dry density tests were performed on selected soil samples collected. Moisture content was evaluated in general accordance with ASTM Test Method D 2216; dry unit weight was evaluated using procedures similar to ASTM Test Method D 2937. The results are presented on the Logs of Borings and are summarized in Table B-1, Moisture Content and Unit Weight.

SIEVE AND HYDROMETER ANALYSIS

Sieve analyses were performed on four samples and Hydrometer Analysis was performed on one sample of the materials encountered at the site to evaluate the grain size distribution characteristics of the soils and to aid in their classification. The tests were performed in general



accordance with ASTM Test Method D 422. The test results are presented as Figures B-1 and B-2, Grain Size Distribution Curve.

DIRECT SHEAR

Direct shear testing was conducted on five samples to evaluate the shear strength parameters of representative on-site soils. The samples from B-1 and B-5 was taken from a bulk sample and remolded to 90% relative compaction for the test. Each sample was tested in a saturated state in general accordance with ASTM Test Method D3080-90. The test results are presented on Figure B-3 through B-7, Direct Shear Test.

EXPANSION INDEX

Expansion index testing was performed on a sample of the subsurface soils to evaluate their expansion characteristics. The test was performed in accordance with UBC Standard No. 18-2, Expansion Index Test Method. The test result is presented on Table B-2, Expansion Index Test Result and may be compared to the table presented below to qualitatively evaluate the expansion potential of the near-surface site soils.

<u>Expansion Index</u>	<u>Potential Expansion</u>
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
Above 130	Very High

MAXIMUM DENSITY/OPTIMUM MOISTURE TEST

Four maximum density/optimum moisture tests were performed on select bulk samples of the on-site soils to determine compaction characteristics. The tests were performed in accordance with ASTM Standard Test Method D-1557-91. The test results are presented in Table B-3, Maximum Density / Optimum Moisture Test Results.



R-VALUE TEST

Three resistance value (R-value) tests were performed to evaluate support characteristics of the near-surface onsite soils. R-value testing was performed in accordance with Caltrans Standard Test Method 301. The test results are presented in Table B-4, R-Value Test Results.

PRELIMINARY CORROSIVITY TESTS

A series of chemical tests were performed on two representative soil samples collected from the borings to estimate pH, sulfate content, chloride content, and electrical resistivity. The test results may be used by a qualified corrosion engineer to evaluate the general corrosion potential with respect to the construction materials. The results of the tests are presented in Table B-5, Preliminary Corrosion Test Results.



Table B-1
Moisture Content and Unit Weight

Boring	Depth (ft)	Moisture Content (%)	Dry Unit Weight (pcf)
B-1	2	3.6	104.3
B-1	10	4.4	104.4
B-2	0 – 5	7.0	--
B-2	5	12.2	114.2
B-2	10	10.1	106.3
B-3	0 – 5	6.3	--
B-3	2	6.7	113.3
B-3	5	5.0	104.9
B-4	0 – 5	6.4	--
B-4	10	6.0	111.2
B-5	0 – 5	6.4	--
B-5	2	6.1	118.3
B-5	10	5.8	98.0

-- denotes dry unit weight test was not performed due to sample type

Table B-2
Expansion Index Test Result

Boring	Depth (ft)	Expansion Index	Expansion Potential
B-4	0 – 5	56	Medium

Table B-3
Maximum Density/Optimum Moisture Test Results

Boring	Depth (ft)	Maximum Density (pcf)	Optimum Moisture (%)
B – 1	0 – 5	128.6	8.2
B – 5	0 – 5	130.3	8.2

Table B-4
R-Value Test Results

Boring	Approximate Depth (ft)	R-Value
B – 3	0 – 5	19
B – 5	0 – 5	29

Table B-5
Preliminary Corrosion Test Results

Boring	Depth (ft)	pH	Sulfate (ppm)	Chloride (ppm)	Resistivity (ohm-cm)
B – 2	0 – 5	8.3	1981	55	48

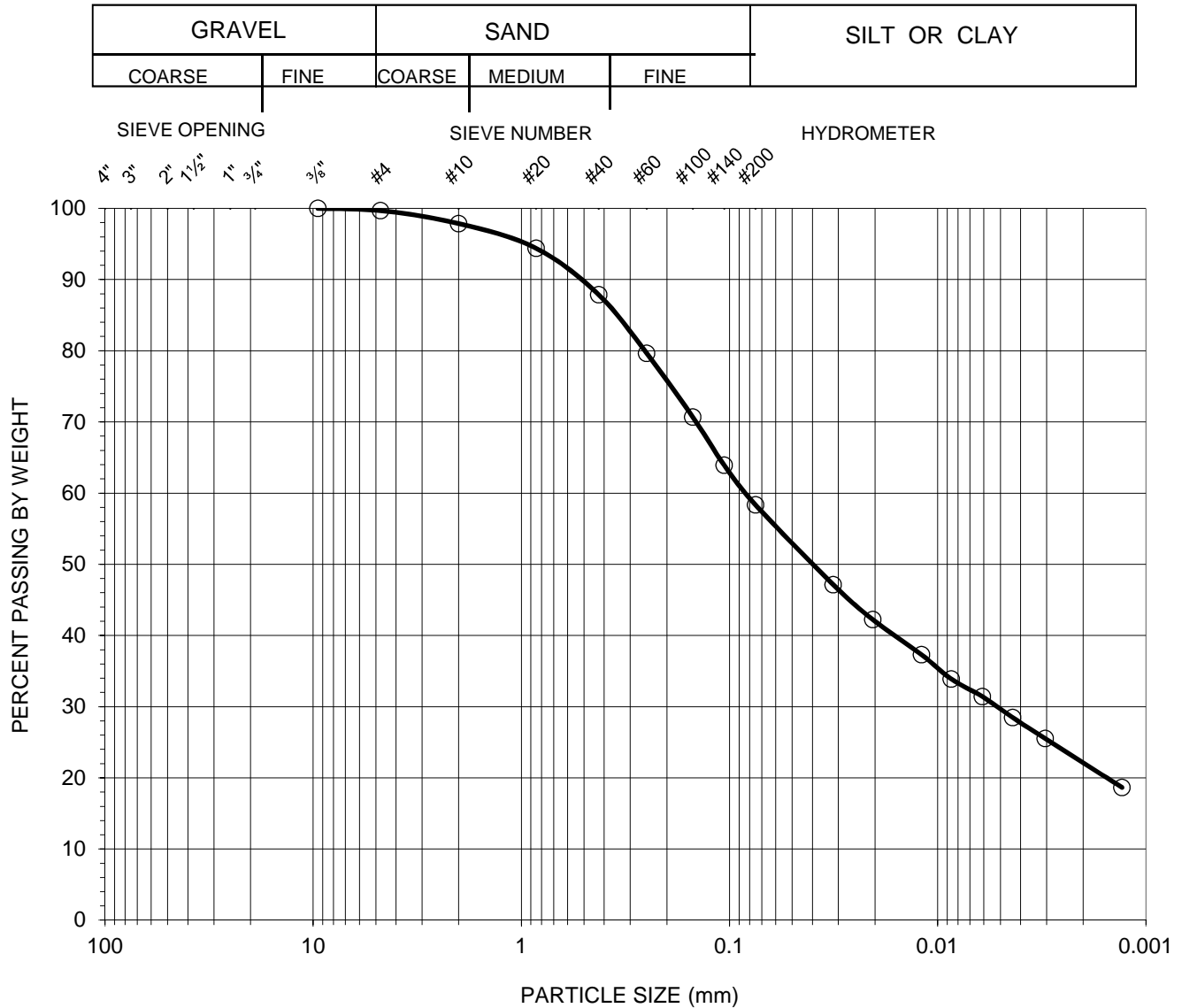


AP Engineering and Testing, Inc.
 DBE|MBE|SBE
 2607 Pomona Boulevard | Pomona, CA 91768
 t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com

Figure B-1

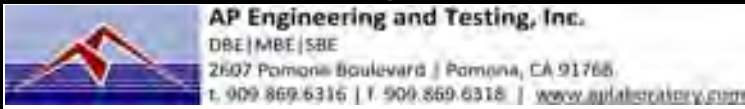
GRAIN SIZE DISTRIBUTION CURVE ASTM D 6913 & D 7928

Client Name: Kleinfelder Tested by: JT Date: 02/09/18
 Project Name: Municipal Water District - West Valley Feeder Computed by: JP Date: 02/09/18
 Project Number: 20180213.002A Checked by: AP Date: 02/09/18



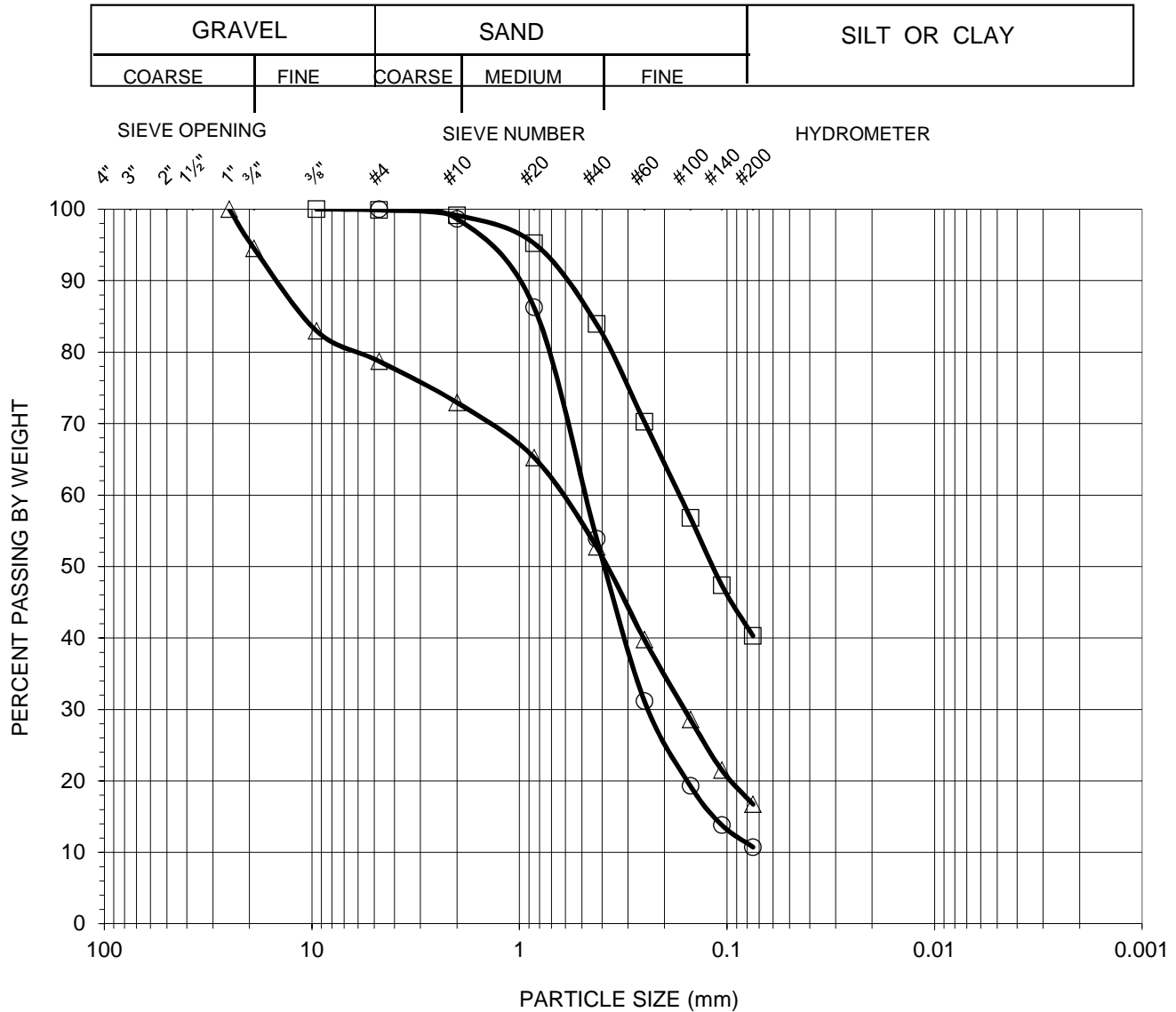
Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	B-4	1	0-5	0	42	58	N/A	CL*

*Note: Based on visual classification of sample

**Figure B-2**

GRAIN SIZE DISTRIBUTION CURVE ASTM D 6913

Client Name: Kleinfelder Tested by: JT Date: 02/09/18
 Project Name: Municipal Water District - West Valley Feeder Computed by: JP Date: 02/09/18
 Project Number: 20180213.002A Checked by: AP Date: 02/09/18



Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	B-2	2	5	0	89	11	N/A	SW-SM
□	B-3	2	2	0	60	40	N/A	SC*
△	B-5	2	2	21	62	17	N/A	SM

*Note: Based on visual classification of sample



AP Engineering and Testing, Inc.
 DBE/MBE/SBE
 2607 Pomona Boulevard | Pomona, CA 91768
 t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com

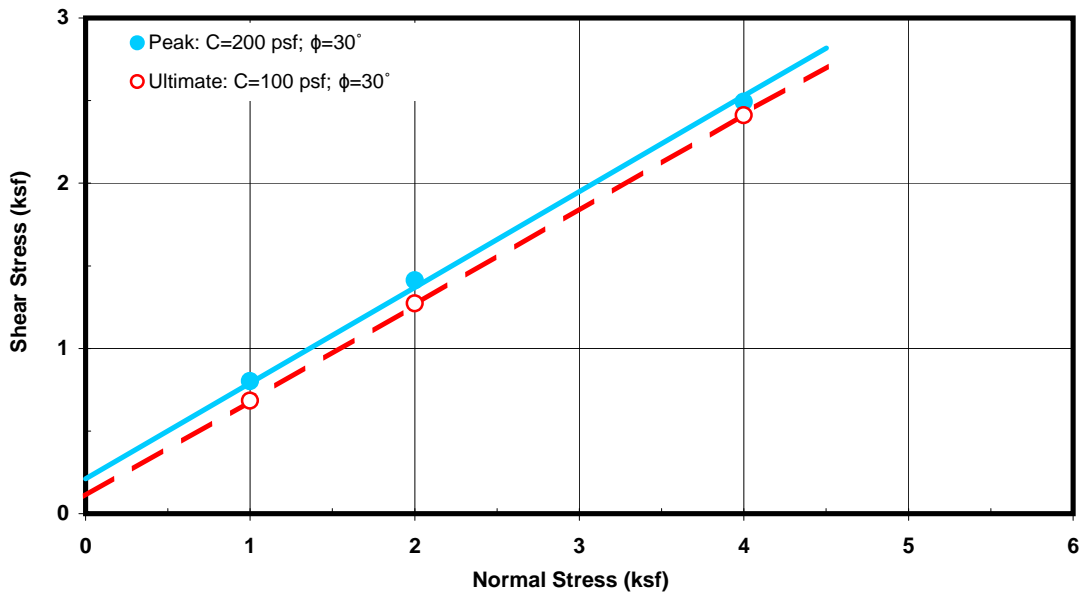
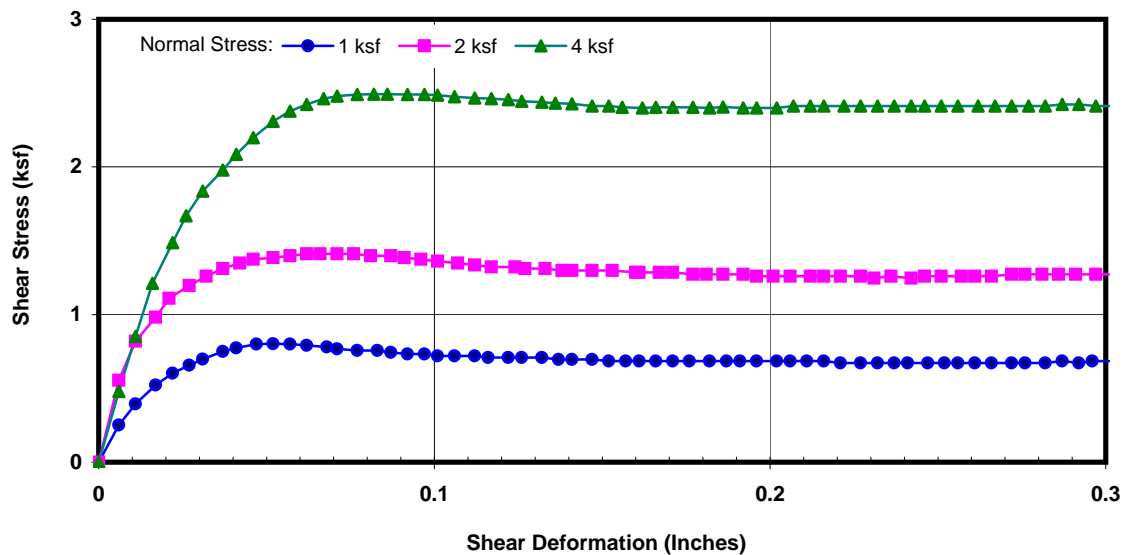
Figure B-3

DIRECT SHEAR TEST RESULTS ASTM D 3080

Project Name: Municipal Water District - West Valley Feeder
Project No.: 20180213.002A
Boring No.: B-1
Sample No.: 1 **Depth (ft):** 0-5
Sample Type: Remolded to 90% RC at opt. MC
Soil Description: Silty Sand
Test Condition: Inundated **Shear Type:** Regular

Tested By: LS **Date:** 02/26/18
Computed By: JP **Date:** 02/27/18
Checked by: AP **Date:** 02/27/18

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
125.6	115.7	8.5	15.3	50	90	1	0.802	0.684
						2	1.411	1.273
						4	2.493	2.412





AP Engineering and Testing, Inc.
 DBE/MBE/SBE
 2607 Pomona Boulevard | Pomona, CA 91768
 t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com

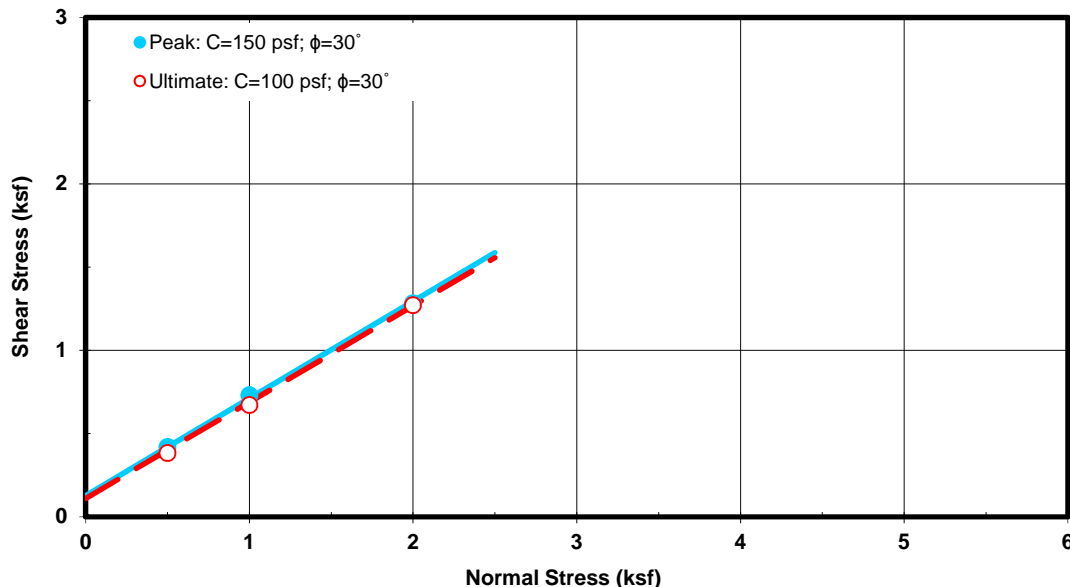
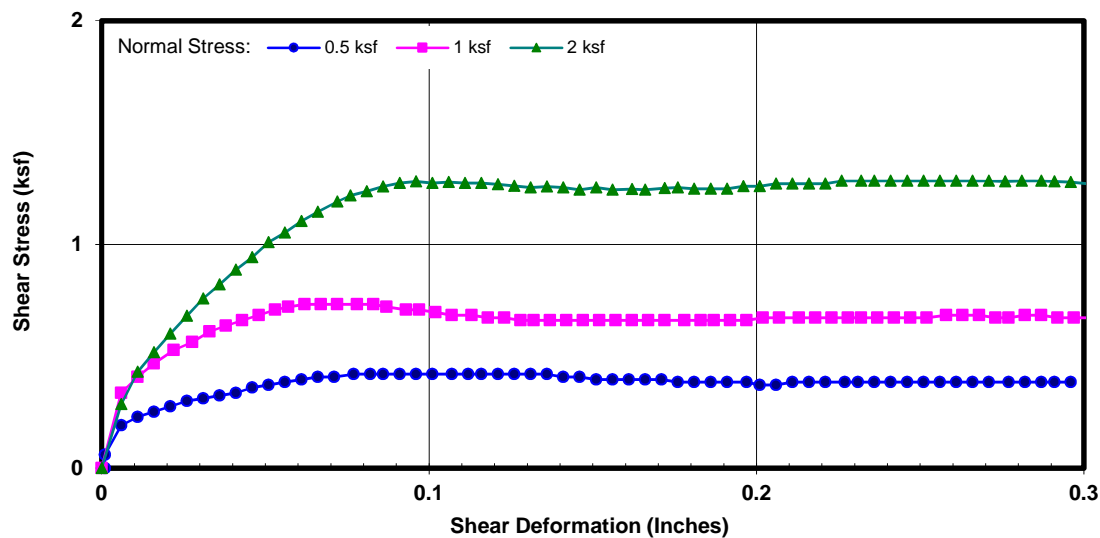
Figure B-4

DIRECT SHEAR TEST RESULTS ASTM D 3080

Project Name: Municipal Water District - West Valley Feeder
Project No.: 20180213.002A
Boring No.: B-1
Sample No.: 3 **Depth (ft):** 5
Sample Type: Mod. Cal.
Soil Description: Silty Sand
Test Condition: Inundated **Shear Type:** Regular

Tested By: ST **Date:** 02/06/18
Computed By: JP **Date:** 02/07/18
Checked by: AP **Date:** 02/09/18

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
112.5	107.6	4.6	18.9	22	90	0.5	0.420	0.384
						1	0.732	0.672
						2	1.284	1.272





AP Engineering and Testing, Inc.
 DBE/MBE/SBE
 2607 Pomona Boulevard | Pomona, CA 91768
 t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com

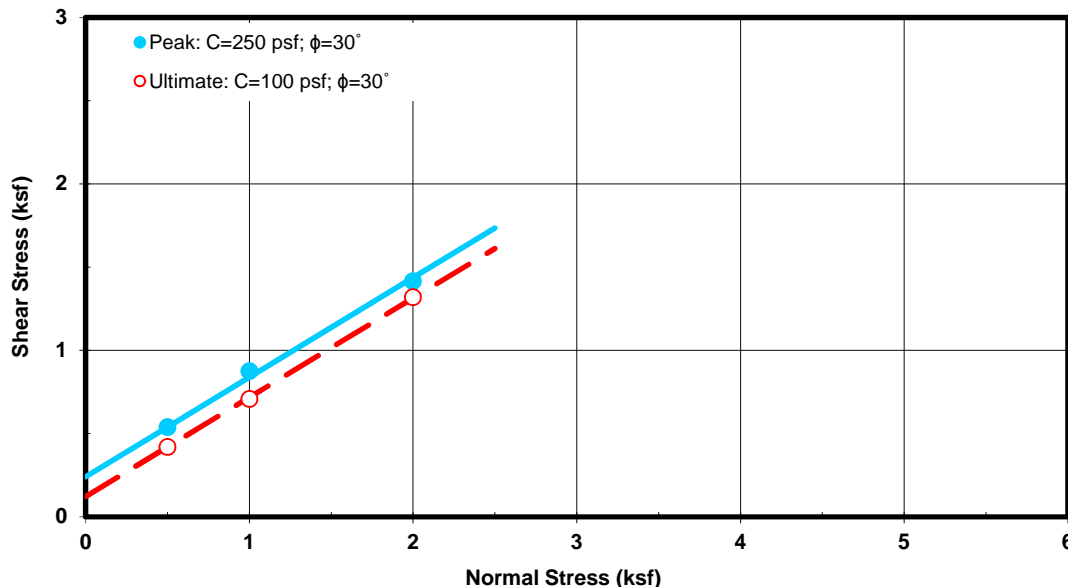
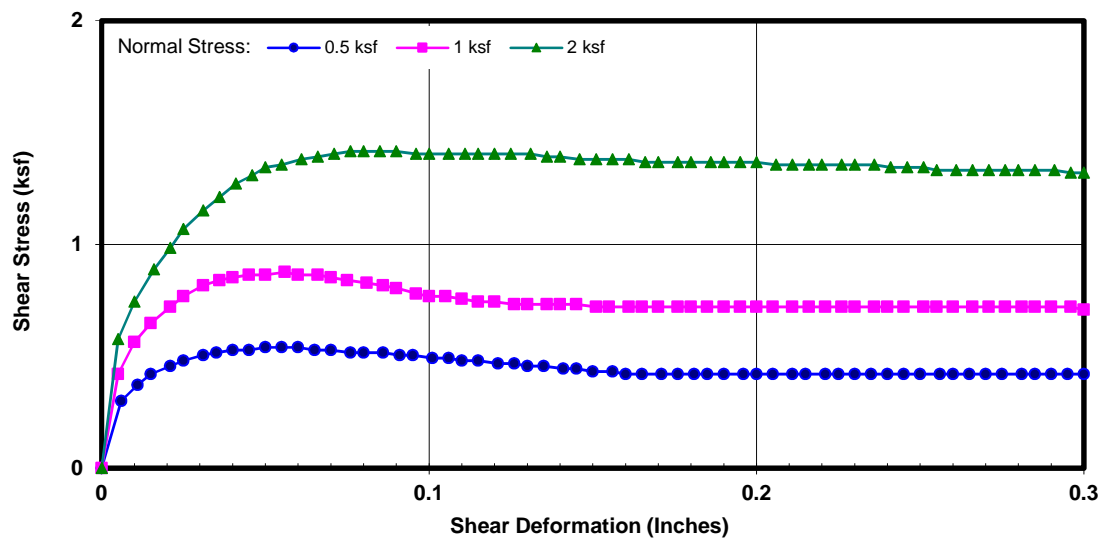
Figure B-5

DIRECT SHEAR TEST RESULTS ASTM D 3080

Project Name: Municipal Water District - West Valley Feeder
Project No.: 20180213.002A
Boring No.: B-4
Sample No.: 2 **Depth (ft):** 5
Sample Type: Mod. Cal.
Soil Description: Silty Sand, fine-grained
Test Condition: Inundated **Shear Type:** Regular

Tested By: ST **Date:** 02/06/18
Computed By: JP **Date:** 02/07/18
Checked by: AP **Date:** 02/09/18

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
121.5	115.2	5.5	17.0	32	99	0.5	0.540	0.420
						1	0.876	0.708
						2	1.416	1.320





AP Engineering and Testing, Inc.
 DBE/MBE/SBE
 2607 Pomona Boulevard | Pomona, CA 91768
 t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com

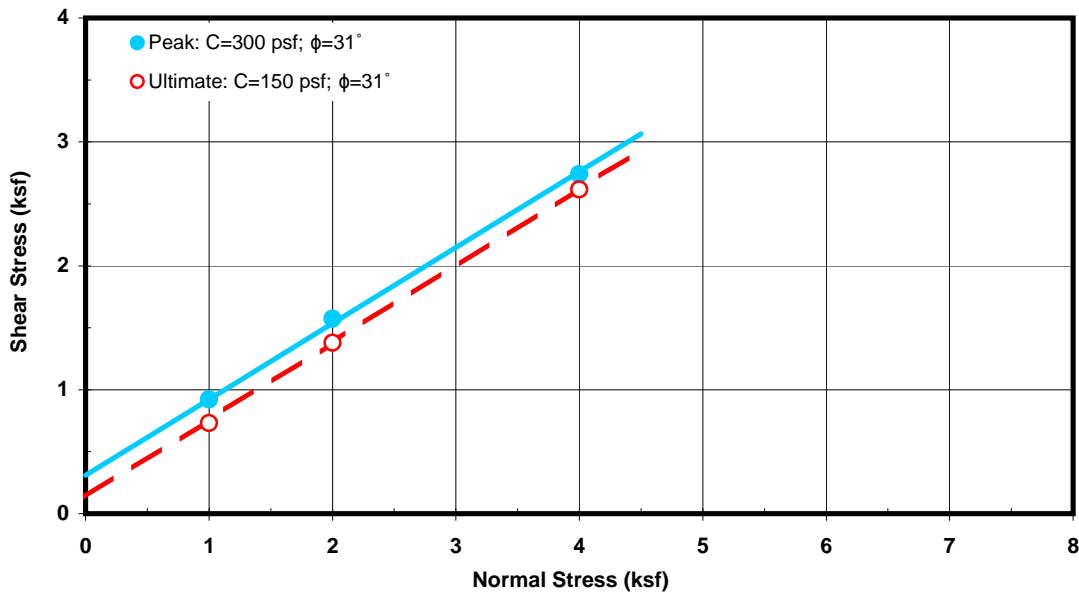
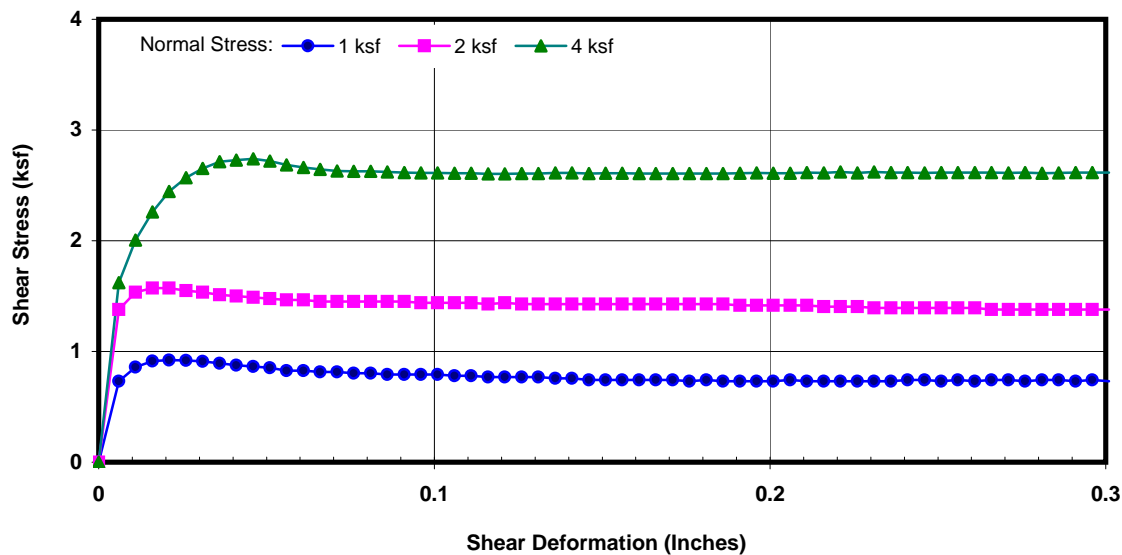
Figure B-6

DIRECT SHEAR TEST RESULTS ASTM D 3080

Project Name: Municipal Water District - West Valley Feeder
Project No.: 20180213.002A
Boring No.: B-5
Sample No.: 1 **Depth (ft):** 0-5
Sample Type: Remolded to 90% RC at opt. MC
Soil Description: Silty Sand
Test Condition: Inundated **Shear Type:** Regular

Tested By: LS **Date:** 02/26/18
Computed By: JP **Date:** 02/27/18
Checked by: AP **Date:** 02/27/18

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
126.6	117.3	7.9	14.6	49	90	1	0.923	0.732
						2	1.572	1.380
						4	2.739	2.616





AP Engineering and Testing, Inc.
 DBE/MBE/SBE
 2607 Pomona Boulevard | Pomona, CA 91768
 t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com

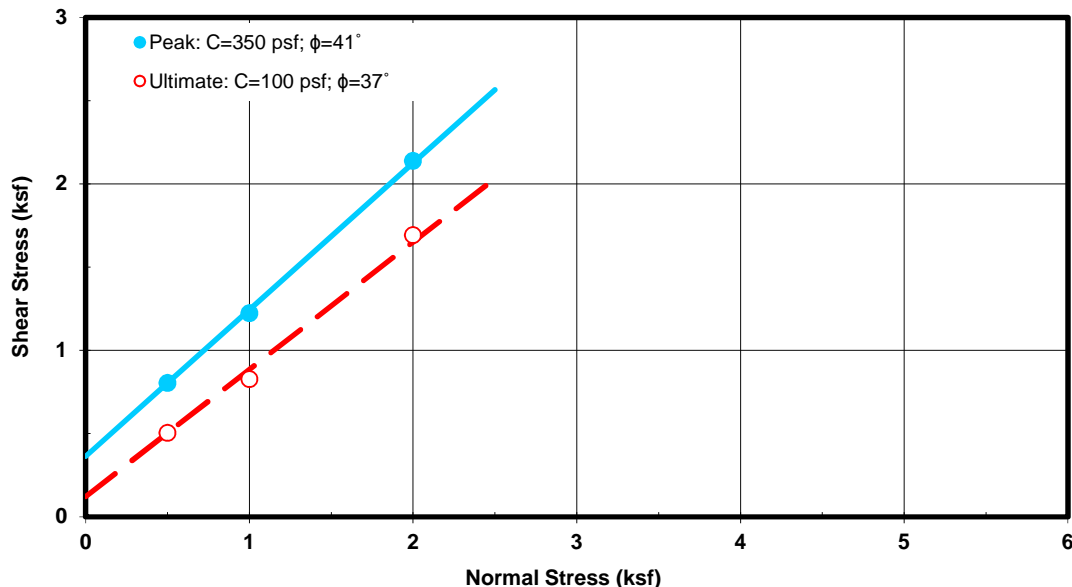
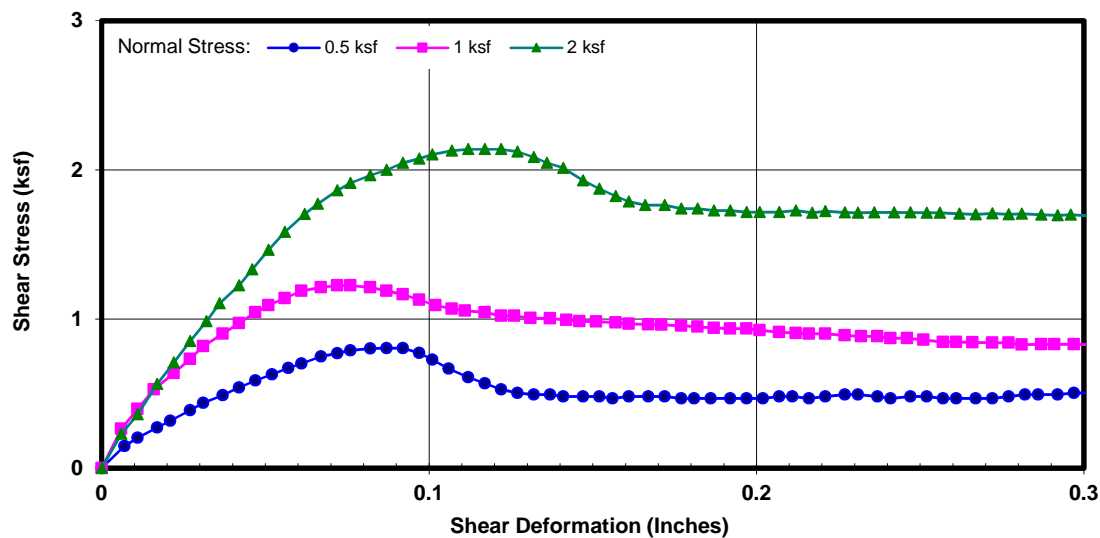
Figure B-7

DIRECT SHEAR TEST RESULTS ASTM D 3080

Project Name: Municipal Water District - West Valley Feeder
Project No.: 20180213.002A
Boring No.: B-5
Sample No.: 3 **Depth (ft):** 5
Sample Type: Mod. Cal.
Soil Description: Silty Sand
Test Condition: Inundated **Shear Type:** Regular

Tested By: ST **Date:** 02/06/18
Computed By: JP **Date:** 02/07/18
Checked by: AP **Date:** 02/09/18

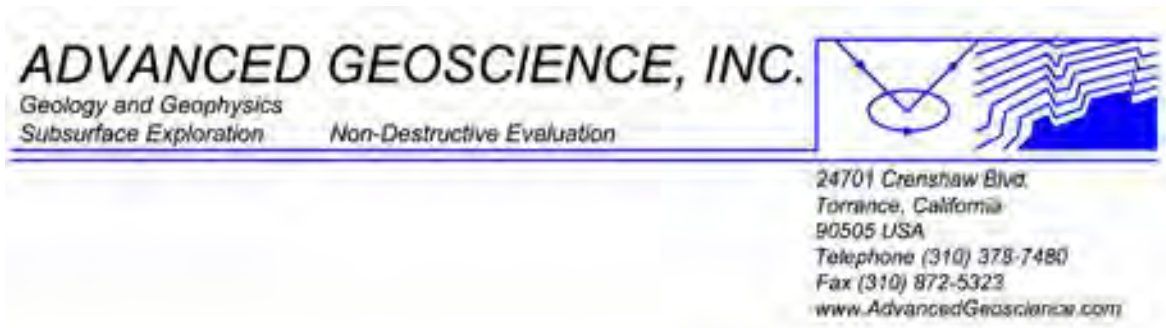
Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
125.0	118.2	5.7	15.5	36	98	0.5	0.804	0.504
						1	1.224	0.828
						2	2.138	1.692





APPENDIX C

Seismic Refraction Survey Report



February 6, 2018
via. Email (4 pages + Attachments)

Kleinfelder, Inc.
2280 Market Street
Suite 300
Riverside, California 92501

Attention: Mr. Richard Escandon, PG, CEG

Re: **Summary Report**
Seismic Refraction Survey for Bedrock Investigation
At MWD West Valley Feeders
Chatsworth, California

1.0 INTRODUCTION

This report summarizes the seismic refraction survey completed by Advanced Geoscience, Inc. at referenced site. This survey recorded the arrival times of seismic waves generated at the ground surface to prepare subsurface seismic velocity profiles for investigation of bedrock structure and rippability. The survey was performed along seismic survey lines positioned across the area shown on the site map in Figure 1 where grading is proposed for a future road.

The seismic refraction tomography data were recorded by Advanced Geoscience during a one-day field program completed on January 11, 2018. The data were recorded along two survey lines designated as Lines 1 and 2 (Figure 1). The data underwent computer processing to prepare 2D subsurface profiles showing seismic compressional-wave velocity layering in the upper 40 feet.

The following sections of this report provide a summary of our field survey procedures and methods of data processing and evaluation. A concluding section discusses the results of this seismic velocity profiling and compares these estimated subsurface velocities to the range of rippability for various Caterpillar ripping equipment.

Kleinfelder, Inc.
February 6, 2018
Page 2

2.0 FIELD SURVEY

Advanced Geoscience set up two survey lines designated as Lines 1 and 2. Line 1 was positioned across the proposed grading area along a south-to-north traverse extending across a hillside (Figure 1). Line 2 was positioned along a northwest-to-southeast traverse along a trail leading to Line 1. Both survey lines were positioned along straight-line traverses set up to avoid the heavier brush.

The seismic data were recorded using a multi-channel Seistronix EX-6 data acquisition system. This recording system was connected to geophones (seismic motion detectors) positioned in the ground at 10-foot intervals along the survey lines. Lines 1 and 2 were both set up with 21 geophones to provide a total line length of 200 feet. The geophones were 4-Hertz (lower-cutoff frequency), vertically-aligned velocity transducers.

The refraction data were recorded from eleven seismic energy “source points” positioned along each survey line. The source points started 5 feet off the first geophone position and continued at 20 to 30-foot intervals between the geophone positions. The last source point was positioned 5 feet off the last geophone position.

The seismic energy was generated using a 20-pound sledge hammer. The sledge hammer was used to make three impacts on a metal plate placed on the ground surface. At each source point, the recordings from the impacts were summed together to increase the amplitude of the seismic wave arrivals.

The positions of Lines 1 and 2 were marked by stakes placed at the end points of the lines and various breaks in the topography along the lines. The Metropolitan Water District (MWD) later arranged for a survey crew to measure the coordinates and elevations of these stakes.

3.0 DATA PROCESSING AND EVALUATION

The seismic data quality was good and adequate for the purposes of this investigation. The field records showed seismic wave arrivals from subsurface refraction events at all of the geophone positions.

The field records were input into the RAYFRACT seismic refraction tomography software developed by Intelligent Resources, Inc. (www.rayfract.com). RAYFRACT was used to generate seismic compressional-wave velocity profiles. This refraction tomography modeling procedure is generally more capable of imaging sharper lateral velocity variations due to bedrock structure than other refraction data modeling methods.

Kleinfelder, Inc.
February 6, 2018
Page 3

RAYFRACT was first used to graphically pick first arrival times (“first breaks”) for refracted waves traveling through the surface layer and into deeper higher-velocity layers. These time-distance data were used together with the geophone coordinates and elevations to conduct refraction tomography imaging of the subsurface seismic velocity layering. RAYFRACT first used the Delta TV (turning ray-based) method to generate an initial 2D velocity-depth model. This initial model was then refined to produce a closer fit to the arrival time data using the Wavepath Eikonal Traveltime (WET) tomographic inversion method with 25 iterations with a maximum velocity 3,500 m/sec. The best-fit velocity-depth models were then gridded and color contoured with SURFER (written by Golden Software, Inc.) to show estimated vertical and lateral velocity variations.

Figures 2 and 3 show the resulting seismic compressional-wave velocity profiles for Lines 1 and 2.

4.0 DISCUSSION OF RESULTS

The seismic compressional-wave velocity profiles for Lines 1 and 2 show 2,000 ft/sec or lower velocity layering in the upper 5 to 10 feet below ground surface (BGS). The materials in this depth interval are mostly colluvial soils and unconsolidated, decomposed bedrock. Below this depth the 3,000+ ft/sec velocity layering probably represents the upper weathered surface of the intact bedrock, which is mapped in this area as the late Cretaceous, Chatsworth Formation sandstone (reference: Preliminary Geologic Map of Los Angeles Quadrangle, USGS Open-File Report 2005-1019). Below this depth the bedrock velocities increase. Line 1 shows bedrock velocities as high as 8,000 ft/sec at the 40-foot depth level. Line 2 shows lower velocities in the range 5,000 to 5,500 ft/sec at the 40-foot depth level.

We understand that the depth of grading for the proposed road in this area is less than 20 feet BGS. The seismic velocities estimated along Lines 1 and 2 for this 20-foot depth interval are less than 6,000 ft/sec which indicates this upper bedrock material is mostly rippable for the Caterpillar D8R through D11R grading equipment. Figures 2 and 3 display the seismic velocity ranges for the rippability of sandstone bedrock estimated based on the graphs in the Caterpillar Handbook of Ripping, 12th Edition (Caterpillar, Inc., 2000). These velocity ranges are shown superimposed on the color velocity scales for the compressional-wave velocity profiles for Lines 1 and 2.

Kleinfelder, Inc.
February 6, 2016
Page 4

Advanced Geoscience appreciates this opportunity to be of service to Kleinfelder and the Metropolitan Water District. If you have any questions or additional requests concerning this seismic refraction survey please contact the undersigned.

Sincerely,

Advanced Geoscience, Inc.



Mark G. Olson, PGp, PG, CHG
Advanced Geoscience, Inc.
Principal Geophysicist

Attachments:

- | | |
|----------|--|
| Figure 1 | Site Plan Showing Seismic Survey Lines 1 and 2 |
| Figure 2 | Line 1- Seismic Refraction Compressional-Wave Velocity Profile |
| Figure 3 | Line 2- Seismic Refraction Compressional-Wave Velocity Profile |

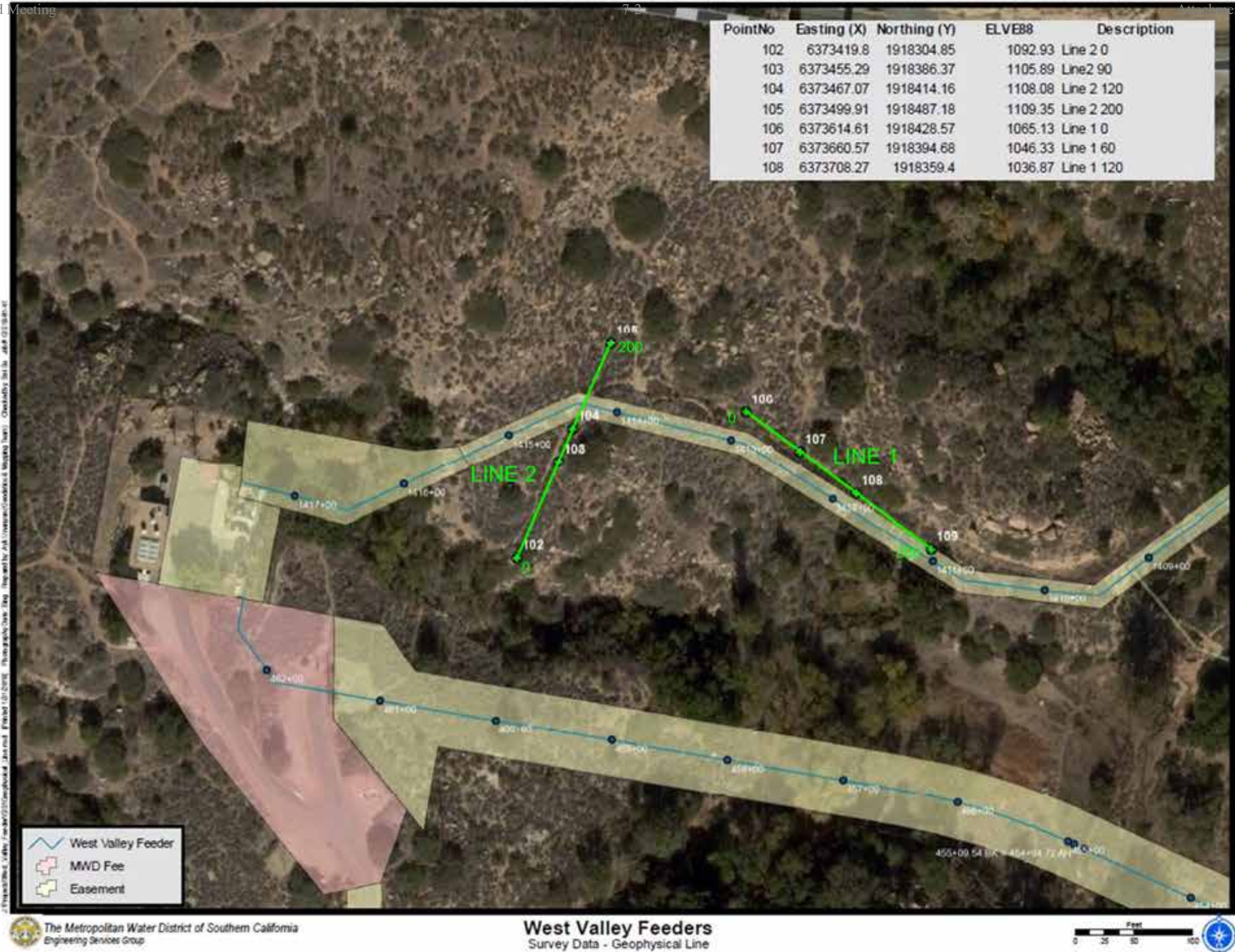
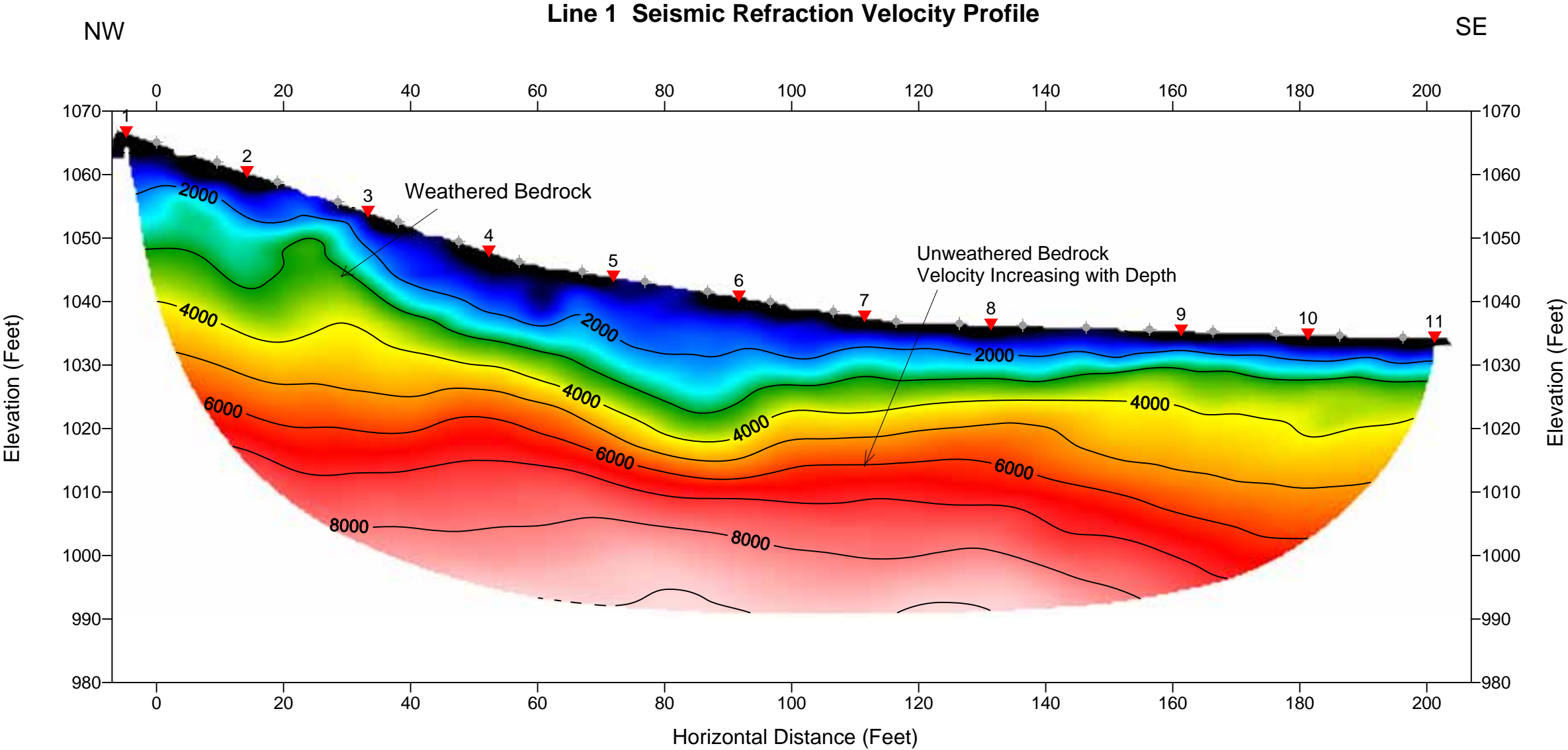


Figure 1
Advanced Geoscience, Inc.



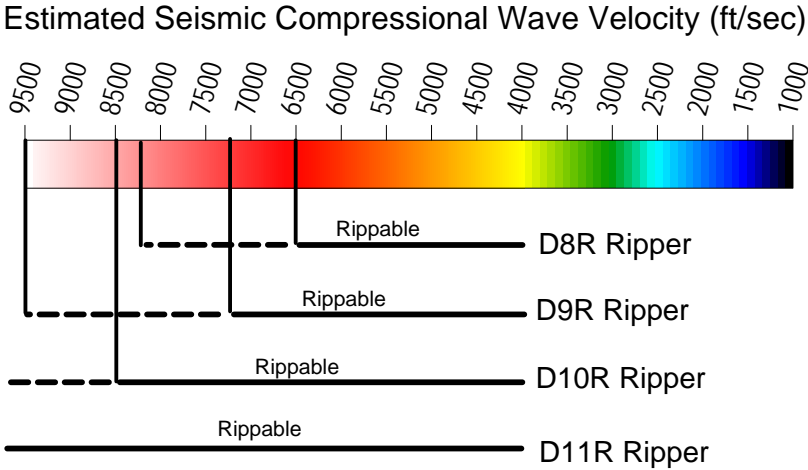
Horizontal & Vertical Scale 1 inch= 20 Feet
Seismic Velocity Contour Interval 1,000 ft/sec

Based on RAYFRAC T Refraction Tomography
Initial Delta TV Velocity Model + 25 WET Iterations w/Vmax= 3,500 m/sec

Estimated Rippability for Caterpillar Equipment
Based on Caterpillar Handbook of Ripping, 12th Edition

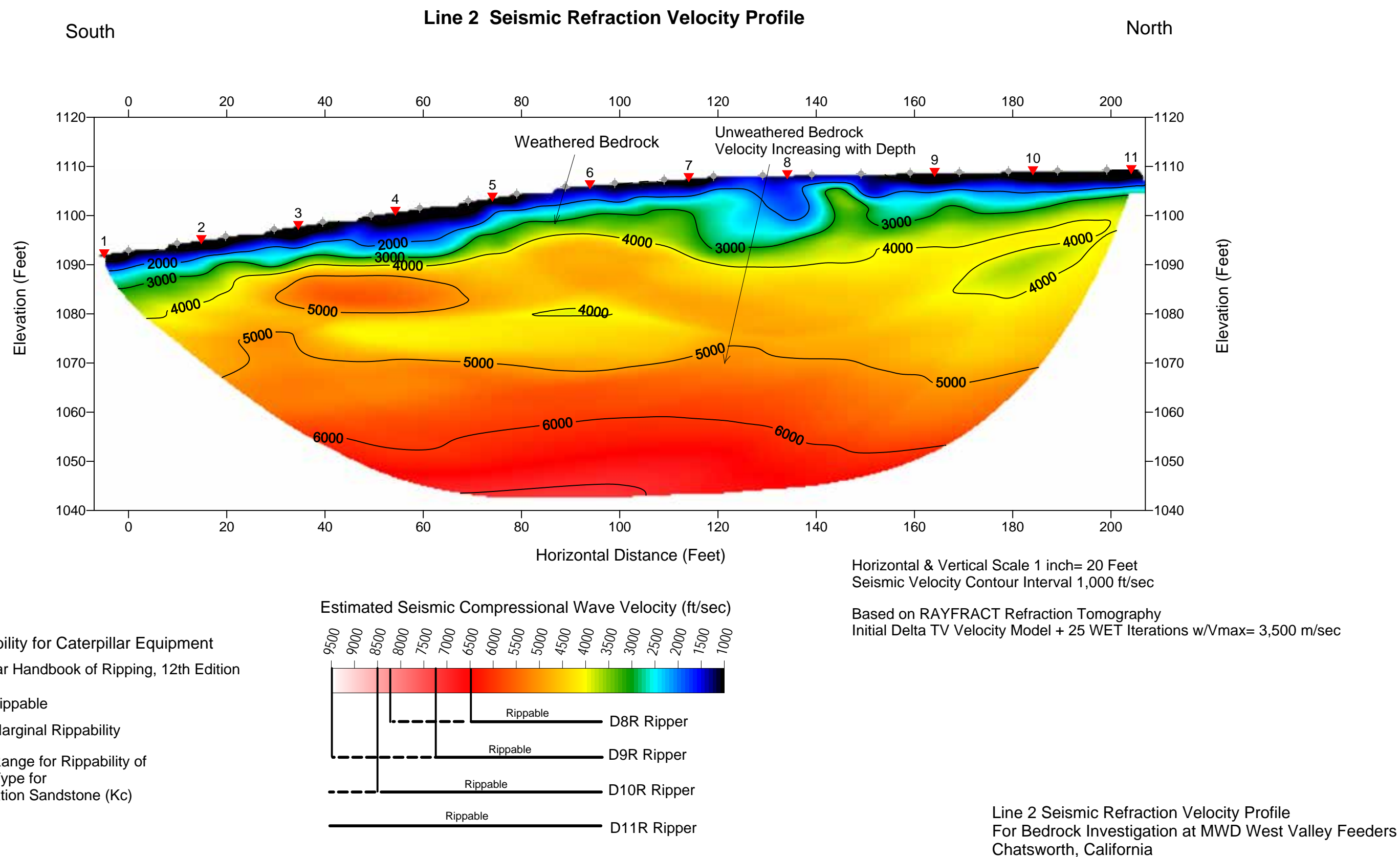
- Rippable
- - - - - Marginal Rippability

Seismic Velocity Range for Rippability of
Sandstone Rock Type for
Chatsworth Formation Sandstone (Kc)



Line 1 Seismic Refraction Velocity Profile
For Bedrock Investigation at MWD West Valley Feeders
Chatsworth, California

Figure 2
Advanced Geoscience, Inc.



APPENDIX G
PALEONTOLOGICAL RECORDS SEARCH

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007
tel 213.763.DINO
www.nhm.org



Vertebrate Paleontology Section
Telephone: (213) 763-3325

e-mail: smcleod@nhm.org

12 July 2018

Psomas
3 Hutton Centre Drive, Suite 200
Santa Ana, CA 92707-8794

Attn: Melissa Macias, Paleontologist

re: Paleontological Resources for the proposed West Valley Feeder Project, Psomas Project
3MWD010204, near the Chatsworth Reservoir, Los Angeles County, project area

Dear Melissa:

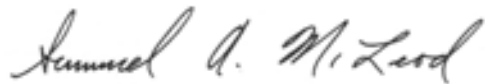
I have conducted a thorough search of our Vertebrate Paleontology records for the proposed West Valley Feeder Project, Psomas Project 3MWD010204, near the Chatsworth Reservoir, Los Angeles County, project area as outlined on the portion of the Oat Mountain USGS topographic quadrangle map that you sent to me via e-mail on 9 July 2018. We have no vertebrate fossil localities that lie directly within the boundaries of the proposed project area, but we do have localities nearby from the same sedimentary deposits that occur in the proposed project area.

In the entire proposed project area there are exposures of the marine late Cretaceous Chatsworth Formation. Our closest vertebrate fossil localities from the Chatsworth Formation are LACM 4913-1914, southwest of the proposed project area on the south side of Dayton Canyon, that produced fossil shark specimens including sand sharks, *Carcharhiniformes*, mackerel shark, *Cretolamna appendiculata*, crow shark, *Squalicorax kaupi*, dogfish shark, *Squalus*, and angel shark, *Squatina hassei*. Specimens of all of these sharks from localities LACM 4913-4914 were figured in the scientific literature by Welton and Alderson (1981. A Preliminary Note on the Late Cretaceous Sharks of the Chatsworth Formation at Dayton Canyon, Simi Hills, Los Angeles County, California. Society of Economic Paleontologists & Mineralogists Guidebook, 1981).

Any excavations in the Chatsworth Formation exposed throughout the proposed project area may well encounter significant remains of fossil vertebrates. Any substantial excavations in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains while not impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed project area. Any fossils collected should be placed in an accredited scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

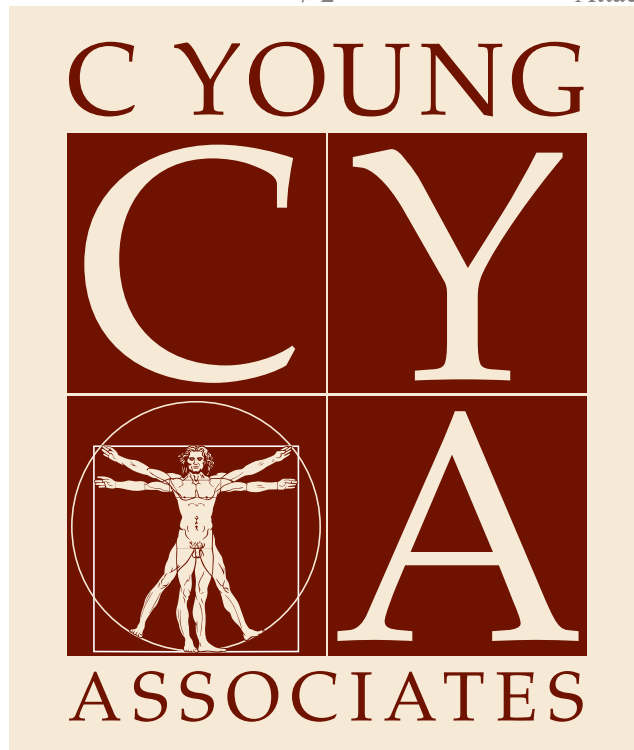
Sincerely,

A handwritten signature in dark ink, reading "Samuel A. McLeod". The signature is fluid and cursive, with the first name "Samuel" and last name "McLeod" clearly legible.

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

APPENDIX H
PHASE I ENVIRONMENTAL SITE ASSESSMENT



PHASE I ENVIRONMENTAL SITE ASSESSMENT

Metropolitan Water District of Southern California
West Valley Feeder No. 1 Stage 3 Improvements Project

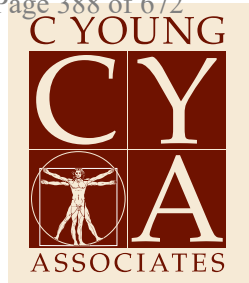
July 27, 2018 (Revised August 24, 2018)

Prepared for:

PSOMAS
3 Hutton Centre Drive, Ste 200
Santa Ana, CA 92807

Prepared by:

C Young Associates
1042 Skylark Drive
La Jolla, CA 92037



1042 Skylark Drive
La Jolla, CA 92037
Tel.: (858) 454-8885

July 27, 2018 (Revised August 24, 2018)

Jennifer Y. Marks
PSOMAS
3 Hutton Centre Drive, Ste 200
Santa Ana, CA 92807

Subject: **Phase I Environmental Site Assessment
Metropolitan Water District of Southern California
West Valley Feeder No. 1 Stage 3 Improvements Project
Los Angeles County, California**

Dear Ms. Marks:

C Young Associates (CYA) has performed a Phase I Environmental Site Assessment (ESA) of the above-referenced property in conformance with the scope and limitations of American Society for Testing and Materials (ASTM) *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, ASTM Designation E1527-13 and Title 40 of the Code of Federal Regulations (40 CFR) Part 312. This ESA included public environmental agency and historical record reviews, interviews, site observations and this report preparation.

We appreciate the opportunity to be of service to you on this project. If you should have any questions regarding this report, or if we can be of further assistance, please contact us at (858) 945-7029.

C YOUNG ASSOCIATES

A handwritten signature in dark ink, appearing to read 'Colin P. Young'.

Colin P. Young, CIH
Principal

A handwritten signature in dark ink, appearing to read 'Daniel Weis'.

Daniel Weis, R.E.H.S.
Associate Environmental Scientist

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1.0 INTRODUCTION	4
1.1 PURPOSE	4
1.2 DETAILED SCOPE OF SERVICES.....	5
1.3 SIGNIFICANT ASSUMPTIONS	6
1.4 LIMITATIONS AND EXCEPTIONS	6
1.5 SPECIAL TERMS AND CONDITIONS	7
1.6 USER RELIANCE.....	7
2.0 SITE DESCRIPTION	8
2.1 LOCATION AND LEGAL DESCRIPTION.....	8
2.2 SITE AND VICINITY GENERAL CHARACTERISTICS.....	8
2.3 CURRENT USE OF THE SITE	8
2.4 DESCRIPTION OF STRUCTURES, ROADS, OTHER IMPROVEMENTS ON THE SITE.....	8
2.5 CURRENT USES OF THE ADJOINING PROPERTIES.....	9
3.0 USER PROVIDED INFORMATION.....	10
3.1 TITLE RECORDS.....	10
3.2 ENVIRONMENTAL LIENS OR ACTIVITY AND USE LIMITATIONS	10
3.3 SPECIALIZED KNOWLEDGE	10
3.4 COMMONLY KNOWN OR REASONABLY ASCERTAINABLE INFORMATION	10
3.5 VALUATION REDUCTION FOR ENVIRONMENTAL ISSUES	10
3.6 OWNER, PROPERTY MANAGER, AND OCCUPANT INFORMATION.....	10
3.7 REASON FOR PERFORMING PHASE I ESA	11
4.0 RECORDS REVIEW	12
4.1 STANDARD ENVIRONMENTAL RECORD SOURCES.....	12
4.2 ADDITIONAL ENVIRONMENTAL RECORD SOURCES	16
4.3 PHYSICAL SETTING SOURCES	18
4.3.1 TOPOGRAPHY AND HYDROLOGY	19
4.3.2 GEOLOGY	19
4.3.3 HYDROGEOLOGY.....	19
4.4 HISTORICAL USE INFORMATION ON THE SUBJECT SITE.....	19
4.4.1 AERIAL PHOTOGRAPHS AND TOPOGRAPHIC MAPS.....	20
4.4.2 STATE OF CALIFORNIA DIVISION OF OIL AND GAS RECORDS	20
4.5 HISTORICAL USE INFORMATION ON ADJOINING PROPERTIES.....	20
4.5.1 AERIAL PHOTOGRAPHS AND TOPOGRAPHIC MAPS.....	20
4.5.2 STATE OF CALIFORNIA DIVISION OF OIL AND GAS RECORDS	21

5.0	SITE RECONNAISSANCE.....	22
5.1	METHODOLOGY AND LIMITING CONDITIONS	22
5.2	GENERAL SITE SETTING	22
5.3	SITE OBSERVATIONS	22
6.0	INTERVIEW INFORMATION	24
6.1.	INTERVIEW WITH OWNER.....	24
6.2	INTERVIEW WITH SITE MANAGER	24
6.3	INTERVIEWS WITH OCCUPANTS.....	24
6.4	INTERVIEW WITH LOCAL GOVERNMENT OFFICIAL.....	24
6.5	INTERVIEW WITH OTHERS.....	24
7.0	FINDINGS, OPINION AND CONCLUSIONS AND RECOMMENDATIONS	25
8.0	DEVIATIONS AND DATA GAPS.....	26
	REFERENCES.....	27
	SIGNATURES AND QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS .	28
 APPENDICES		
APPENDIX A	VICINITY MAP AND TOPOGRAPHIC MAP	
APPENDIX B	SITE PLANS	
APPENDIX C	SITE PHOTOGRAPHS	
APPENDIX D	REGULATORY DATABASE REPORT	
APPENDIX E	REGULATORY AGENCY CORRESPONDENCE	
APPENDIX F	CRIMSON PIPELINE L.P. INFORMATION REGARDING PIPELINE AT/NEAR SITE	
APPENDIX G	QUALIFICATIONS OF THE ENVIRONMENTAL PROFESSIONALS	

EXECUTIVE SUMMARY

At the request of PSOMAS, C Young Associates (CYA) conducted a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Standard Practice E1527-13 and Title 40 of the Code of Federal Regulations (40 CFR) Part 312 at the property identified as the Metropolitan Water District of Southern California (MWD) West Valley Feeder No. 1 Stage 3 Improvements Project in the Chatsworth community of Los Angeles, California (the Site). The findings of this ESA revealed the following:

- The Site is situated within Chatsworth Park South, which has a physical address of 22360 West Devonshire Street. The Site is situated in the central portion of the park generally between two water pump stations. These stations include the Twin Lakes pump station (Las Virgines Municipal Water District) to the east and a pump station operated by the Calleguas Municipal Water District to the west. The Site is further identified as portions of four legal parcels that include Assessor's Parcel Numbers (APNs) 2723-010-094, 2723-010-270, 2723-010-902 and 2723-010-903.
- The Site consists of multiple areas of varying sizes where future water infrastructure-related work is proposed. These areas are situated in the central portion of Chatsworth Park South between two water pump stations. The majority of the areas are unimproved, vacant land. Remaining areas are portions of access roads and trails or consist of existing infrastructure including air releases and blow-off valves. Portions of the Site are also underlain by the West Valley Feeder No. 1 and No. 2 water pipelines and a, reportedly abandoned, six-inch oil pipeline near the southwestern perimeter of the Site. The Site has remained predominately vacant and undeveloped over time. No significant environmental concerns were noted during our reconnaissance of the Site.
- The Chatsworth Park South property (of which the Site is a part) is listed on the Envirostor and Voluntary Cleanup Program (VCP) standard regulatory databases. The park is referenced as an active voluntary cleanup facility with a past use of a small arms firing range. The overall park property is under the regulatory agency oversight of the California Department of Toxic Substances Control (DTSC). There are no off-Site properties listed on regulatory databases that are considered to be environmental concerns to the Site.
- Section 4.2 of this report includes information pertaining to prior assessment and remedial activities completed at the Chatsworth South Park property, of which the Site is a part. The overall 72-acre park property was subject to DTSC regulatory agency oversight beginning in 2008 due to environmental impacts resulting from a former small arms firing range in the southern portion of the park. This use reportedly occurred from the early to mid-1950s until sometime in the mid-1960s. The operation of the firing range resulted in wide surficial spreading of lead shot and clay pigeon debris. Following the completion of the investigation

work, a Remedial Action Plan (RAP) for the park property was prepared in 2013. In the RAP, the overall park property was divided into 14 remedial areas identified as Areas "A" through "N." The various portions of the park property that comprise the Site (subject to our current Phase I ESA) are not mapped in any of the Remedial Areas, thus indicating that significant environmental impacts did not result at the Site from the former firing range activities that occurred to the south. However, being that the Site is situated within the overall park property that was subject to DTSC regulatory oversight and that a land use covenant (LUC) has yet to be negotiated with the City of Los Angeles, compliance with any and all DTSC directives relative to the RAP and the park will be required. The DTSC approved the RAP for the park and the RAP was implemented during the period of April 5, 2016 through December 30, 2016.

- Following completion of the RAP implementation, a Remedial Action Completion Report (RACR) was issued in December 2016. The RACR described in detail the implementation of the RAP. Because impacted soil remains beneath the engineered surface cap at depths ranging from one to four feet in the remedial areas at the park property, it was stated in the RACR that the City of Los Angeles and the DTSC will execute an LUC pertaining to the park property. The LUC would incorporate an Operations and Maintenance Plan (OMP) that will outline the requirements for future site work in order to maintain the constructed remedial components (i.e., engineered cap, fencing, etc.) and the requirements for future invasive work that could expose workers to residual contaminants. The DTSC reviewed the RACR and concurred with its findings as stated in a letter dated April 20, 2017. According to a DTSC representative, and as referenced above, the finalization and execution of the LUC and OMP is pending at this time.

In summary, this ESA has revealed no evidence of current *recognized environmental conditions* in connection with the Site. Historical impacts at the Site and its adjacent properties resulting from the former firing range activity to the south of the Site are considered to be a *controlled recognized environmental condition* that does not warrant additional assessment at this time.

As stated previously, although the subject Site was not considered to be significantly impacted and was not subject to remedial activities, the forthcoming LUC and OMP to be executed between the City and the DTSC may still apply to the Site, as it is part of the overall Chatsworth Park South property. Until such time that the Site is formally excluded from the LUC and OMP, all work performed in support of the Valley West Feeder No. 1 Access Road project shall comply with DTSCs directives relative to the RAP and the park.

In addition, while the reportedly abandoned six-inch oil pipeline in proximity to the Site limits was not deemed to be of environmental concern during prior assessment and remedial work completed under DTSC oversight, and no reports of a release of petroleum products from the pipeline have been reported, CYA cannot comment on actual subsurface conditions in the area of the pipeline. While CYA does not consider the pipeline to be a "recognized environmental condition" in connection with the Site, the client may desire a higher level of confidence regarding underlying subsurface

conditions in its vicinity. If so, it should consider additional evaluation. CYA has confirmed that the pipeline is maintained by Crimson Pipeline L.P. (Crimson), and Crimson has provided support documentation relative to the location of the pipeline. Crimson recommends that it be contacted either directly or via Underground Service Alert (USA) when Site construction activities begin in the area.

1.0 INTRODUCTION

1.1 Purpose

The purpose of this Phase I ESA is to provide a professional opinion on the presence of “recognized environmental conditions” and other suspect environmental conditions in connection with the Site, as they existed on the date of the site inspection, and to recommend whether further assessment is warranted. ASTM E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (hereinafter referred to as the “ASTM Standard”), specifies minimum requirements for conducting a Phase I ESA of a parcel of commercial real estate with respect to the range of contaminants pertinent to the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as well as petroleum products. As such, this Phase I ESA is intended to satisfy one of the threshold criteria for satisfying the landowner liability protections to CERCLA liability assuming compliance with other elements of the defense. In other words, this Phase I ESA represents one of the practices that constitute “all appropriate inquiry” into the previous ownership and uses of the property consistent with good commercial or customary practice, as defined in Title 42 of the United States Code (42 USC) Section 9601(35)(B) and 40 CFR Part 312, *Standards and Practices for All Appropriate Inquiry: Final Rule*.

The goal of the process is to identify “recognized environmental conditions,” which are defined by the ASTM Standard as “the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to any release to the environment; 2) under conditions indicative of a release to the environment, or; 3) under conditions that pose a material threat of a future release to the environment.” The term “recognized environmental condition” includes hazardous substances or petroleum products even under conditions in compliance with laws. In addition, the term also included *historical recognized environmental conditions* and “controlled recognized environmental conditions.” A “historical recognized environmental condition” is defined by the ASTM Standard as “a past release of hazardous substances or petroleum products that has occurred in connection with a property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).” A “controlled recognized environmental condition” is defined by the ASTM Standard as “a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).” The term “recognized environmental condition” is not intended to include *de minimis* conditions that generally do not present a material risk of harm to

public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

The term "environment" is defined in CERCLA 42 USC 9601(8) as "(A) the navigable waters, the water of the contiguous zone, and the ocean waters of which the natural resources are under the exclusive management authority of the United States under the Magnuson-Stevens Fishery Conservation and Management Act", and "(B) any other surface water, groundwater, drinking water supply, land surface or subsurface strata, or ambient air within the United States or under the jurisdiction of the United States."

The term "release" means any "spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant)", but excludes "(A) any release which results in exposure to persons solely within a workplace, with respect to a claim which such persons may assert against the employer of such persons, (B) emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine, (C) release of source, byproduct, or special nuclear material from a nuclear incident, as those terms are defined in the Atomic Energy Act of 1954 [42 USC 2011 et seq.], if such release is subject to requirements with respect to financial protection established by the Nuclear Regulatory Commission under section 170 of such Act [42 USC 2210], or, for the purposes of 42 USC 9604 or any other response action, any release of source byproduct, or special nuclear material from any processing site designated under section 7912(a)(1) or 7942(a) of this title, and (D) the normal application of fertilizer."

1.2 Detailed Scope of Services

The Phase I ESA was conducted in accordance with the above-referenced ASTM Standard, 40 CFR Part 312 and CYA's Agreement by and between CYA and the client. The following services were provided for this assessment:

- A search for environmental liens recorded against the Site.
- An evaluation of standard environmental record sources contained within Federal, State and local environmental databases within specific search distances.
- An evaluation of additional environmental record sources obtained from local regulatory departments/agencies.
- A qualitative evaluation of the physical characteristics of the Site through a review of: published topographic, geologic, and hydrogeologic maps; published groundwater data, and; area observations to characterize surface water flow in the Site area.

-
- An evaluation of past Site and adjacent/nearby property uses through a review of historical resources including aerial photographs, topographic maps and city directories.
 - A physical inspection of the Site conducted to search for conditions indicative of potential environmental concerns including USTs, aboveground storage tanks (ASTs), associated tank piping, stained soil or pavement, equipment that may contain or have historically contained polychlorinated biphenyls (PCBs), and other potential environmental concerns as defined in the ASTM Standard.
 - A physical assessment of indications of past uses and visual observations of adjacent and surrounding properties (from curbside or public spaces) to assess potential impacts to the Site.
 - Interviews completed with the client, the Site owner(s) and local regulatory officials.
 - The preparation of this Phase I ESA report, which includes the findings of the assessment, our opinion (i.e., conclusions) regarding their respective levels of significance, and recommendations, as appropriate.

1.3 Significant Assumptions

This Phase I ESA was conducted in accordance with the scope and terms referenced above. No other warranty, express or implied, is made by CYA. CYA's evaluations, analyses, and opinions should not be taken as representations regarding subsurface conditions or the actual value of the Site. Subsurface conditions may differ from the conditions implied by the surficial observations and the data resources reviewed, and can only be reliably evaluated through intrusive techniques.

Documentation and data provided by the client, designated representatives of the client, other interested third parties, or from the public domain, and referred to in the preparation of this assessment, are assumed to be complete and correct and have been used and referenced with the understanding that CYA assumes no responsibility or liability for their accuracy. CYA's conclusions are based upon such information and documentation and on our observations of Site conditions, as they existed on the date of the site inspection. Because Site conditions may change significantly over a short period of time and additional data may become available, data reported and conclusions drawn in this report are limited to current conditions and should be considered less reliable with passing time.

1.4 Limitations and Exceptions

Reasonable efforts have been made during this assessment to uncover evidence of USTs, ASTs, ancillary equipment associated with such tanks, and other subsurface structures. "Reasonable efforts" are limited to information gained from visual

observation of unobstructed areas, recorded database information held in public record, and available information gathered from interviews. Such methods may not identify subsurface equipment that may have been hidden from view due to paving, construction or debris pile storage, or incorrect information from sources.

This investigation was not an environmental compliance audit. While some observations and discussion in this report may address conditions and/or operations that may be regulated, the regulatory compliance of those conditions and/or operations is outside the scope of this investigation. Nothing in this report constitutes a legal opinion or legal advice. For information regarding specific individual or organizational liability, CYA recommends consultation with independent legal counsel.

According to 40 CFR Part 312, CERCLA liability rests with the owner or operator of a property and not with an environmental professional hired by the prospective landowner and who is not involved with the ownership or operation of the property. This report meets the requirements set forth in 40 CFR Part 312. However, in order to qualify for certain landowner liability protections under CERCLA, "Bona Fide Prospective Purchasers, Contiguous Property Owners, and/or Innocent Landowners" must meet additional requirements of CERCLA (42 USC 9601 (35)(B)).

This ESA does not address non-ASTM scope considerations, including asbestos-containing materials, radon, lead-based paint, lead in drinking water, wetlands, protected environments and habitat, industrial hygiene concerns, indoor air quality (unrelated to releases of hazardous substances or petroleum products into the environment) and high voltage power lines.

1.5 Special Terms and Conditions

No special terms and conditions between CYA pertinent to the findings of this Phase I ESA or methodology used to complete this assessment are noted. In addition, CYA does not have a financial interest in the Site.

1.6 User Reliance

This report was prepared for the sole and exclusive use of the client and its client, and is not for the use or benefit of, nor may it be relied upon by, any other person or entity for any purpose without the advance written consent of CYA and the client. CYA makes no representation to any third party except that it has used the degree of care and skill ordinarily exercised by a reasonably prudent qualified environmental professional in the same community and in the same time frame given the same or similar facts and circumstances. No other use or disclosure is intended or authorized by CYA. In the preparation of this Phase I ESA, CYA has used the degree of care and skill ordinarily exercised by a reasonably prudent environmental professional in the same community and in the same time frame given the same or similar facts and circumstances. No other warranties are made, express or implied.

2.0 SITE DESCRIPTION

2.1 Location and Legal Description

The Site is known as the West Valley Feeder No. 1 Stage 3 Improvements Project in the Chatsworth community of Los Angeles, California. The Site is situated within Chatsworth Park South, which has a physical address of 22360 West Devonshire Street. The Site is situated in the central portion of the park, generally between two water pump stations. These stations include the Twin Lakes pump station operated by the Las Virgines Municipal Water District to the east, and a pump station operated by the Calleguas Municipal Water District to the west. The Site is further identified as portions of four legal parcels that include APNs 2723-010-094, 2723-010-270, 2723-010-902 and 2723-010-903. A Vicinity Map and Topographic Map depicting the general location of the Site are included in Appendix A.

2.2 Site and Vicinity General Characteristics

The Site and its adjacent/nearby properties are situated within the Chatsworth community of Los Angeles, California and, more specifically, within Chatsworth Park South, which is owned and managed by the City of Los Angeles. The general Site vicinity consists of other portions of Chatsworth Park South, open space and residential development.

2.3 Current Use of the Site

The majority of the Site is vacant land situated in the central portion of Chatsworth Park south between the above-referenced two water pump stations. Limited areas of the Site consist of portions of access roads and trails or consist of existing water infrastructure.

2.4 Description of Structures, Roads, Other Improvements on the Site

The majority of the Site is unimproved. Some areas of the Site are situated between existing access roads and trails or consist of existing water infrastructure. Portions of the Site are also underlain by the West Valley Feeder No. 1 and No. 2 water pipelines and a, reportedly abandoned, six-inch oil pipeline near the southwestern perimeter of the Site. Please refer to Section 4.2 for additional information pertaining to the noted oil pipeline. Potable water and sanitary sewer services in the area are provided by the Los Angeles Department of Water and Power. Electrical service in the area is also provided by the Los Angeles Department of Water and Power and natural gas services are provided by Southern California Gas Company. Site Plans are included in Appendix B. Photographs taken of the Site are included in Appendix C.

2.5 Current Uses of the Adjoining Properties

CYA performed a visual inspection of adjoining properties from adjacent roadways and public right-of-ways. The following table identifies the adjacent property uses:

General Direction	Adjoining Property Use
North	Vacant land (Chatsworth Park South) and railroad tracks
South	Chatsworth Park South (vacant and improved portions)
West	Water pump station and vacant land (Chatsworth Park South)
East	Chatsworth Park South (vacant and improved portions) and residential development

None of the adjoining properties were observed to be a significant environmental concern to the Site based on CYA's visual inspection from public right-of-ways.

3.0 USER PROVIDED INFORMATION

3.1 Title Records

No current environmentally related liens, deed restrictions or activity and use limitations pertaining to the Site were noted during research conducted with the County of Los Angeles Tax Assessor. In addition, the client is unaware of such encumbrances recorded against the Site.

3.2 Environmental Liens or Activity and Use Limitations

The client reportedly has no knowledge of any environmental related liens or activity and use limitations (i.e. engineering or institutional controls) that are related to potential environmental issues at the Site.

3.3 Specialized Knowledge

The client reportedly has no specialized knowledge pertinent to potential “recognized environmental conditions” at the Site.

3.4 Commonly Known or Reasonably Ascertainable Information

The client has no other knowledge of commonly known or reasonably ascertainable information pertinent to potential “recognized environmental conditions” at the Site.

3.5 Valuation Reduction for Environmental Issues

As of the date of this report, the client reportedly has no information pertaining to the relationship of the appraised value of the Site to the estimated fair market value of the Site that might indicate that significant contamination exists.

3.6 Owner, Property Manager, and Occupant Information

As stated previously, the Site includes portions of Los Angeles County APNs 2723-010-094, 2723-010-270, 2723-010-902 and 2723-010-903. Ownership of these parcels is as follows:

- APN 2723-010-094 - City of Los Angeles
- APN 2723-010-270 - Calleguas Municipal Water District
- APN 2723-010-902 - Metropolitan Water District
- APN 2723-010-903 - Metropolitan Water District

The Site owners are also considered to be the Site managers. The Site has no known occupants.

3.7 Reason for Performing Phase I ESA

CYA, as an independent consultancy, has been retained to conduct this Phase I ESA to identify environmental issues that may be present and to comply with 40 CFR Part 312.

4.0 RECORDS REVIEW

4.1 Standard Environmental Record Sources

CYA reviewed Federal and State environmental databases provided by EDR of Shelton, Connecticut for information pertaining to documented and/or suspected releases of regulated hazardous substances and/or petroleum products within specified search distances. A copy of the EDR report is included in Appendix D.

CYA also reviewed unmappable sites listed in the environmental database report by cross-referencing addresses and site names. Unmappable sites are sites that cannot be plotted with confidence but can be located by zip code or city name. In general, a site cannot be mapped because of inaccurate or missing location information in the record provided by the regulatory agency. Any unmappable sites that CYA identifies within the specified search radii were evaluated as part of the preparation of this report.

The following Federal databases related to potential on-site and off-site sources of contamination were reviewed and interpreted by CYA:

Federal Databases	Search Distance From Site
National Priorities List (NPL)	One mile
Proposed NPL	One mile
NPL Liens	Target Property
Delisted NPL	One mile
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) – FEDERAL FACILITY AND SEMS	One-half mile
CERCLIS No Further Remedial Action Planned (NFRAP) – SEMS ARCHIVE	One-half mile
Resource Conservation and Recovery Act (RCRA) CORRACTS Facilities List	One mile
RCRA NON-CORRACTS Hazardous Waste Treatment, Storage and Disposal (TSD) Facilities	One-half mile
RCRA Hazardous Waste Generators (RCRA GEN) – Large Quantity Generators (LQG), Small Quantity Generators (SQG) and Conditionally Exempt Small Quantity Generators (CESQG)	One-eighth mile
Federal Institutional/Engineering Control Registries (IC/EC) – LUCIS, US ENG CONTROLS, and US INST CONTROLS	One-half mile
Emergency Response Notification System (ERNS)	One-eighth mile

The following State/local databases related to potential on-site and off-site sources of contamination were also searched and reviewed:

State/Local Databases	Search Distance From Site
State Equivalent NPL and CERCLIS (RESPONSE and Envirostor)	One mile
Inactive, Active, and/or Permitted Solid Waste/Landfill Facilities (SWF/LF)	One-half mile
San Diego County DEH Site Assessment and Mitigation (SAM)	One-half mile
Leaking Underground Storage Tanks (LUST)	One-half mile
Spills, Leaks, Investigations, and cleanup (SLIC)	One-half mile

State/Local Databases	Search Distance From Site
Registered Storage Tanks (UST/AST)	One-eighth mile
State Voluntary Cleanup Program (VCP)	One-half mile
State Brownfield Sites (BROWNFIELDS)	One-half mile

Descriptions/sources of each of the above-referenced regulatory databases and the dates these databases were last updated by the applicable regulatory agencies are included in the EDR report.

Site

The Chatsworth Park South property (of which the Site is a part) is listed on the Envirostor and VCP standard regulatory databases. The park is referenced as an active voluntary cleanup facility with a past use of a small arms firing range. The overall park property is under the regulatory agency oversight of the DTSC. Please refer to Section 4.2 below for information pertaining to prior assessment and remedial activities completed at the park property.

Adjoining and Nearby Properties

One property was identified in the standard regulatory databases mapped within one mile of the Site. The property is identified as Chime Charter Middle School and is mapped approximately one-half mile to the east-southeast at 22280 Devonshire Street. The property was issued a no further action status in 2007. This property is not considered to be an environmental concern to the Site.

Non-ASTM Database Reviews

Below is a list of non-ASTM databases searched by EDR and reviewed by CYA during the preparation of this assessment. The descriptions of each database and their data release frequency are included in the EDR report, included in Appendix D.

Local Brownfield Lists

US BROWNFIELDS - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT - Waste Management Unit Database

SWRCY - Recycler Database

HAULERS - Registered Waste Tire Haulers Listing

INDIAN ODI - Report on the Status of Open Dumps on Indian Lands

ODI - Open Dump Inventory

DEBRIS REGION 9 - Torres Martinez Reservation Illegal Dump Site Locations

IHS OPEN DUMPS - Open Dumps on Indian Land

Local Lists of Hazardous Waste / Contaminated Sites

AOCONCERN - San Gabriel Valley Areas of Concern

US HIST CDL - National Clandestine Laboratory Register**HIST Cal-Sites - Historical Cal-Sites Database****SCH - School Property Evaluation Program****CDL - Clandestine Drug Labs****Toxic Pits - Toxic Pits Cleanup Act Sites****US CDL - Clandestine Drug Labs****Local Lists of Registered Storage Tanks****SWEEPS UST - SWEEPS UST Listing****HIST UST - Hazardous Substance Storage Container Database****CA FID UST - Facility Inventory Database****Local Land Records****LIENS - Environmental Liens Listing****LIENS 2 - CERCLA Lien Information****DEED - Deed Restriction Listing****Records of Emergency Release Reports****HMIRS - Hazardous Materials Information Reporting System****CHMIRS - California Hazardous Material Incident Report System****LDS - Land Disposal Sites Listing****MCS - Military Cleanup Sites Listing****SPILLS 90 - SPILLS 90 data from FirstSearch****Other Ascertainable Records****RCRA - NonGen - RCRA - Non-Generators****FUDS - Formerly Used Defense Sites****DOD - Department of Defense Sites****SCRD DRYCLEANERS - State Coalition for Remediation of Drycleaners Listing****US FIN ASSUR - Financial Assurance Information****EPA WATCH LIST - EPA WATCH LIST****2020 COR ACTION - 2020 Corrective Action Program List****TSCA - Toxic Substances Control Act****TRIS - Toxic Chemical Release Inventory System****SSTS - Section 7 Tracking Systems****ROD - Records Of Decision****RMP - Risk Management Plans****RAATS - RCRA Administrative Action Tracking System****PRP - Potentially Responsible Parties****PADS - PCB Activity Database System****ICIS - Integrated Compliance Information System****FTTS - FIFRA/TSCA Tracking System – FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)****MLTS - Material Licensing Tracking System****COAL ASDH DOE - Sleam Electric Plan Operation Data Listing****COAL ASH EPA - Coal Combustion Residues Surface Impoundments List****PCB TRANSFORMER - PCB Transformer Registration Database****RADINFO - Radiation Information Database**

HIST FTTS - FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS - Incident and Accident Data
CONSENT - Superfund (CERCLA) Consent Decrees
INDIAN RESERV - Indian Reservations
FUSRAP - Formerly Utilized Sites Remedial Action Program
UMTRA - Uranium Mill Tailings Sites
LEAD SMELTERS - Lead Smelter Sites
US AIRS - Aerometric Information Retrieval System Facility Subsystem
US MINES - Mines Master Index File
ABANDONED MINES - Abandoned Mines
FINDS - Facility Index System/Facility Registry System
UXO - Unexploded Ordnance Sites
DOCKET HWC - Hazardous Waste Compliance Docket Listing
ECHO - Enforcement and Compliance History Information
FUELS PROGRAM - EPA Fuels Program Registered Listing
CA BOND EXP. PLAN - Bond Expenditure Plan
Cortese - "Cortese" Hazardous Waste & Substances Sites List
CUPA Listings - CUPA Resources List
DRYCLEANERS - Cleaner Facilities
EMI - Emissions Inventory Data
ENF - Enforcement Action List
Financial Assurance - Financial Assurance Information Listing
ICE
HIST CORTESE - Hazardous Waste & Substance Site List
HAZNET - Facility and Manifest Data
LOS ANGELES CO. HMS - HMS: Street Number List
HWP - Envirostor Permitted Facilities List
HWT - Registered Hazardous Waste Transporter Database
MINES - Mines Master Index File
MWMP - Medical Waste Management Program Listing
NPDES - NPDES Permits Listing
PEST LIC - Pesticide Regulation Licenses Listing
PROC - Certified Processors Database
Notify 65 - Proposition 65 Records
LA Co. Site Mitigation - Site Mitigation List
UIC - UIC Listing
WASTEWATER PITS - Oil Wastewater Pits Listing
WDS - Waste Discharge System
WIP - Well Investigation Program Case List
NON-CASE INFO
SAMPLING POINT
PROD WATER PONDS
MILITARY PRIV SITES
OTHER OIL GAS
WELL STIM PROJ - Well Stimulation Project
UIC GEO
PROJECT
CIWQS - The California Integrated Water Quality System

The Chatsworth Park South property (of which the Site is a part) is listed on the non-ASTM Haznet, CIWQS and NPDES databases. The park property is referenced on the Haznet database for the disposal of hazardous waste generated during cleanup activities. Please refer to Section 4.2 below for information pertaining to prior assessment and recent remedial activities completed at the park property. The park property appears on the CIWQS and NPDES databases for stormwater permit and control related requirements. The permits are noted as being held by the City of Los Angeles Department of Recreation and Parks.

One property was identified in the non-ASTM regulatory databases mapped within one mile of the Site. The property is identified as Chime Charter Middle School and is located at 22280 Devonshire Street. As stated previously, this property is not considered to be an environmental concern to the Site.

4.2 Additional Environmental Record Sources

California Department of Toxic Substances Control

The overall Chatsworth Park South property was subject to DTSC regulatory agency oversight beginning in 2008 due to environmental impacts resulting from a former small arms firing range in the southern portion of the park. This use reportedly occurred from the early to mid-1950s until sometime in the mid-1960s. The operation of the firing range resulted in wide surficial spreading of lead shot and clay pigeon debris. The City of Los Angeles acquired the park property in 1973 and developed the relatively level portions of the park area with recreational improvements. The development and grading activities occurred during the 1970s and 1980s. The grading activities were associated with the leveling of the former skeet range area, planting of trees, soil removal and compaction for development of an existing recreation building, and preparation for a parking area, play areas, a basketball court, and tennis courts. Grading also occurred during placement of water/oil transmission pipelines at the property.

Multiple environmental investigations throughout the park property were conducted between 2008 and 2012. The investigations included the drilling of multiple soil borings and the collection of soil and groundwater samples. A human health risk assessment was also conducted. During the investigation work, the overall park property was divided in to seven areas of environmental concern. Of the seven areas, two appear to have been situated within portions of the Site. These areas were identified as Area Four (Visible Lead Pellet Accumulation Area) and Area 5 (Former Fish Pond). Contaminants of potential concern in these areas included lead, arsenic and polycyclic aromatic hydrocarbons (PAHs). The contaminant concentrations in such areas were noted as being relatively low and not of significant concern to human health.

Following the completion of the investigation work, a RAP for the park property was prepared in 2013. The objective of the RAP was to mitigate potential risk from contaminants in soil that may pose a threat to human health and the environment. Based on the comparative evaluation of the three alternatives considered in the RAP, Containment Through Surface Capping was selected as the remedial action alternative

for addressing the metal and PAH-impacted shallow soils at the park property. This alternative was selected because it was determined to be effective, implementable, and cost effective. In the RAP, the overall park property was divided into 14 remedial areas identified as Areas "A" through "N." The various portions of the park property that comprise the Site (subject to our current Phase I ESA), including the two areas referenced above, are not mapped in any of the Remedial Areas as remedial work within the limits of the Site was not deemed warranted based on the results of the investigation activities. This indicates that significant environmental impacts did not result at the Site from the former firing range activities that occurred to the south. However, being that the Site is situated within the overall park property that was subject to DTSC regulatory oversight and that an LUC has yet to be negotiated with the City of Los Angeles, compliance with any and all DTSC directives relative to the RAP and the park will be required.

The DTSC approved the RAP for the park and the RAP was implemented during the period of April 5, 2016 through December 30, 2016. The RAP implementation included the following:

- Manually removing readily visible lead pellets with vacuums, rakes, and/or shovels.
- Removing all short shrubs and seasonal vegetation to expose the underlying surface.
- Removing remaining visible lead pellets and surficial soil using manual labor equipped with vacuums, rakes, and shovels.
- Containing all recovered lead pellets and any associated soil or debris in appropriate containers.
- Profiling the waste and disposing of approximately 500 tons of hazardous waste at off-property locations.
- Hydro-seeding an impacted rocky outcrop with native grasses.
- Completion of controlled rough and fine grading (one foot surface cap construction).
- Export of non-hazardous and hazardous waste soils (approximately 6,000 tons).
- Sampling and analysis of clean import aggregate base and soil.
- Import of clean import aggregate base and soil.
- Revegetation of the surface cap area.
- Improving the stormwater drainage system.

Following completion of the RAP implementation, a RACR was issued in December 2016. The RACR described in detail the implementation of the RAP. Because impacted soil remains beneath the engineered surface cap at depths ranging from one to four feet in the remedial areas at the park property, it was stated in the RACR that the City of Los Angeles and the DTSC will execute an LUC pertaining to the park property. This institutional control will limit the potential for future exposure of receptors to contaminated soils through controlling and limiting future excavation, routine maintenance and any other disturbances to the cap in an effort to protect human health and the environment. The LUC would incorporate an OMP that will outline the requirements for future site work in order to maintain the constructed remedial

components (i.e., engineered cap, fencing, etc.) and the requirements for future invasive work that could expose workers to residual contaminants.

The DTSC reviewed the RACR and concurred with its findings as stated in a letter dated April 20, 2017. A copy of the letter is included in Appendix E. At the time of this report, finalization and execution of the LUC and OMP is pending at this time.

Although the subject Site of this Phase I ESA was not considered to be significantly impacted and was not subject to remedial activities, the forthcoming LUC and OMP between the City and the DTSC may still apply to the Site, as it is part of the overall Chatsworth Park South property. Until such time that the Site is formally excluded from the LUC and OMP, all work performed in support of the Valley West Feeder No. 1 Access Road project shall comply with DTSCs directives relative to the RAP and the park.

As stated previously and according to the URS RAP and RACR documents, a portion of a reportedly abandoned six-inch oil pipeline appears to be present near the southwestern perimeter of the Site. While the pipeline was not deemed to be of environmental concern during prior assessment and remedial work completed under DTSC oversight, and no reports of a release of petroleum products from the pipeline have been reported, CYA cannot comment on actual subsurface conditions in the area of the pipeline. While CYA does not consider the pipeline to be a “recognized environmental condition” in connection with the Site, the client may desire a higher level of confidence regarding underlying subsurface conditions in its vicinity. If so, it should consider additional evaluation.

CYA has confirmed that the pipeline is maintained by Crimson, and Crimson has provided support documentation relative to the location of the pipeline (Appendix F). In the referenced correspondence, Crimson recommends that it be contacted either directly or via Underground Service Alert (USA) when Site construction activities begin in the area

Other Agency Records

Based on DTSC involvement with the Chatsworth Park South Property and documentation of prior subsurface assessment activities and remedial work at the park property, additional public agency records searches were not deemed warranted by CYA.

4.3 Physical Setting Sources

The following physical setting sources were reviewed to provide information about the topographic, hydrologic, geologic and/or hydrogeologic characteristics of the Site.

4.3.1 Topography and Hydrology

USGS Topographic Quadrangle

According to the U.S. Geological Survey topographic map for the Los Angeles California 7.5 minute Oat Mountain quadrangle (2015), the Site is situated at elevations ranging from approximately 1,000 feet to 1,100 feet above mean sea level. Site topography trends generally downward toward the east and southeast. Streets/roadways bordering the Site are shown similar to their current configurations on the map.

Hydrology/Storm Water Management

The Site slopes downward generally to the east and southeast toward municipal storm drain systems maintained by the City of Los Angeles. The Site may receive drainage from up-gradient, off-Site properties during significant rain events.

4.3.2 Geology

The Site is located in the western portion of the Transverse Ranges Geomorphic Province at the extreme west end of the San Fernando Valley. The ranges extend from west of Point Conception eastward approximately 500 kilometers into the Mojave and Colorado Desert. The geology and topography of the ranges express three distinct segments that have contrasting elevations, rock types, and vegetation. Sedimentary rocks of the Cretaceous Chatsworth Formation are exposed in the area. There is also alluvium present in the general Site vicinity and potentially at the Site.

4.3.3 Hydrogeology

According to the Water Quality Control Plan for the Los Angeles Basin (Region 4) published by the California Regional Water Quality Control Board (RWQCB), the Site is located within the Bull Canyon Hydrologic Sub Area of the San Fernando Hydrologic Area of the Los Angeles-San Gabriel Hydrologic Unit. The basin has been classified as having existing beneficial uses for municipal, agricultural and industrial service supply. Groundwater beneath the Site is expected to be present at a depth greater than approximately 10 feet below the ground surface with an anticipated flow direction to the east.

4.4 Historical Use Information on the Subject Site

CYA reviewed historical sources (as described in the following sections) to develop a history of the previous uses of the Site, in order to help identify the likelihood of past uses having led to “recognized environmental conditions” in connection with the Site. Only historical aerial photographs, topographic maps and oil/gas records were selected as pertinent historical sources to be reviewed during the completion of this Phase I ESA. Other historical resources such as city directories and fire insurance maps would not be useful in rendering an opinion regarding environmental conditions at the Site.

4.4.1 Aerial Photographs and Topographic Maps

CYA reviewed historical aerial photographs from the years 1947, 1952, 1959, 1967, 1969, 1977, 1980, 1994, 2003, 2005, 2009, 2010, 2012, and 2014 and topographic maps from the years 1903, 1908, 1916, 1924, 1925, 1927, 1929, 1930, 1933, 1939, 1940, 1943, 1948, 1953, 1958, 1964, 1965, 1967, 1970, 1980, 1984, 1992 and 2012, provided via online resources. On all of the aerial photographs and topographic maps, the Site appears to be vacant and undeveloped with no discernable feature except for portions of a few unimproved roads and/or trails. No significant environmental concerns in connection to the Site were noted during CYA's review of the historical aerial photographs and topographic maps.

4.4.2 State of California Division of Oil and Gas Records

According to online resources provided by the California Department of Conservation, Division of Oil, Gas and Geothermal Resources, there are no oil, gas or geothermal wells located on the Site.

4.5 Historical Use Information on Adjoining Properties

CYA also reviewed historical sources (as described in the following sections) to develop a history of the previous uses of adjoining properties and the surrounding area, in order to help identify the likelihood of past uses having led to "recognized environmental conditions" in connection with the Site.

4.5.1 Aerial Photographs and Topographic Maps

As stated previously, CYA reviewed historical aerial photographs from the years 1947, 1952, 1959, 1967, 1969, 1977, 1980, 1994, 2003, 2005, 2009, 2010, 2012, and 2014 and topographic maps from the years 1903, 1908, 1916, 1924, 1925, 1927, 1929, 1930, 1933, 1939, 1940, 1943, 1948, 1953, 1958, 1964, 1965, 1967, 1970, 1980, 1984, 1992 and 2012, provided via online resources. In the aerial photographs from 1947 to 1952, the surrounding properties appear vacant and undeveloped. In the 1959 to 1969 aerial photographs, a reservoir and a shooting range appear in the near vicinity to the west and south, respectively. Two pump stations (or ground disturbance in these areas) situated adjacent to the east and west of the Site, first appear in the 1967 aerial photograph. In the 1977 to 2014 aerial photographs, the adjacent properties appear generally in their current configurations.

The adjacent and surrounding properties appear predominantly vacant and undeveloped with a small track and limited structures on the topographic maps from 1903 to 1924. Structures are depicted in the vicinity of the two current pump stations situated adjacent to the east and west of the Site on the topographic maps from 1970 to 2012. No significant environmental concerns to the Site relative to adjacent and nearby properties were noted during the historical aerial photograph and topographic map review.

4.5.2 State of California Division of Oil and Gas Records

According to online resources provided by the California Department of Conservation, Division of Oil, Gas and Geothermal Resources, there are no oil, gas or geothermal wells located on adjoining properties of the Site.

5.0 SITE RECONNAISSANCE

The objective of the Site reconnaissance was to obtain information indicating the likelihood of “recognized environmental conditions” in connection with the Site. The reconnaissance was conducted on June 5, 2018, by CYA. CYA was unescorted during the Site reconnaissance.

5.1 Methodology and Limiting Conditions

The Site reconnaissance consisted of walking the Site and along public access roads (for viewing of adjacent/nearby properties). CYA was granted full access to the Site. However, the ground surface of some areas of the Site was obstructed from view by dense vegetation. Given the existing land uses of the Site, the lack of complete visibility of the surface area of the Site is not considered to be a data gap of significance. As stated previously, Site Plans are included in Appendix B. Photographs of the Site were taken to document existing Site conditions and several are included and described in Appendix C.

5.2 General Site Setting

The Site and its adjacent/nearby properties are situated within the Chatsworth community of Los Angeles, California and more specifically within Chatsworth Park South, which is owned and managed by the City of Los Angeles. The Site consists of multiple areas of varying sizes where future water infrastructure related work is proposed. These areas are situated in the central portion of Chatsworth Park south between the two aforementioned water pump stations. The majority of the areas are unimproved, vacant land. Remaining areas are portions of access roads and trails or consist of existing plumbing infrastructure. The current uses of the Site and its adjoining properties are not ones that are indicative of the use, treatment, storage, disposal or generation of significant quantities of hazardous substances or petroleum products that are resulting in active impacts to the Site.

5.3 Site Observations

CYA examined the Site for evidence of the following potential environmental concerns:

Conditions	Observed or Noted	Significant Concern?
Hazardous Substances/Petroleum Products	No	Not Applicable
Waste Generation/Storage/Disposal	No	Not Applicable
ASTs	No	Not Applicable
USTs	No	Not Applicable
PCB-Containing Equipment	No	Not Applicable
Chemical/Petroleum Odors	No	Not Applicable
Pools of Liquid	No	Not Applicable
Floor Drains/Sumps/Wells	No	Not Applicable
Drums	No	Not Applicable
Stains or Corrosion	No	Not Applicable

Conditions	Observed or Noted	Significant Concern?
Unidentified Substance Containers	No	Not Applicable
Stained Soil or Pavement	No	Not Applicable
Stressed Vegetation	No	Not Applicable
Pits, Ponds or Lagoons	No	Not Applicable
Wastewater Discharges/Disposal Systems	No	Not Applicable
Septic Systems/Cesspools	No	Not Applicable
Non-Hazardous Solid Waste Disposal Areas	No	Not Applicable
Drinking Water Systems/Water Wells/Other Wells	No	Not Applicable

No remarkable observations relative to potential environmental concerns were noted during the Site reconnaissance.

6.0 INTERVIEW INFORMATION

6.1. Interview With Owner

As stated previously, ownership of the Site parcels is as follows:

- APN 2723-010-094 - City of Los Angeles
- APN 2723-010-270 - Calleguas Municipal Water District
- APN 2723-010-902 - Metropolitan Water District
- APN 2723-010-903 - Metropolitan Water District

During the completion of this Phase I ESA, environmental questionnaires were provided to the Site owners for completion. At the time of this report, completed questionnaires have not been returned to CYA. Given the information available pertaining to the historical assessment and remedial work completed at the overall park property, of which the Site is a part, the lack of interviews with Site owners is not anticipated to be a data gap of significance. However, in the event that the Site owners are available to be interviewed verbally or by way of environmental questionnaires in the future, CYA can and will conduct the interviews at the request of the client.

6.2 Interview With Site Manager

The Site owners are also considered to be the Site Managers. Please refer to Section 6.1 above.

6.3 Interviews With Occupants

The Site has no known long-term occupants.

6.4 Interview With Local Government Official

During the preparation of this assessment, a representative of the DTSC was contacted regarding the status of the regulatory case for the overall park property of which the Site is a part. CYA was informed that while the RACR for the property has been accepted and approved, the LUC has yet to be executed by the City of Los Angeles and the DTSC.

6.5 Interview With Others

No other interviews were conducted as a part of this assessment.

7.0 FINDINGS, OPINION AND CONCLUSIONS AND RECOMMENDATIONS

This ESA has revealed no evidence of current “recognized environmental conditions” in connection with the Site and no basis to consider non-ASTM scope issues (e.g., asbestos containing materials, lead-based paint, etc.). Historical impacts at the Site and its adjacent properties resulting from the former firing range activity to the south of the Site are considered to be a “controlled recognized environmental condition” that does not warrant additional assessment at this time.

As stated previously, although the subject Site was not considered to be significantly impacted and was not subject to remedial activities, the forthcoming LUC and OMP to be executed between the City and the DTSC may still apply to the Site as it is part of the overall Chatsworth Park South property. Until such time that the Site is formally excluded from the LUC and OMP, all work performed in support of the Valley West Feeder No. 1 Access Road project shall comply with DTSCs directives relative to the RAP and the park.

In addition, while the reportedly abandoned six-inch oil pipeline in proximity to the Site limits was not deemed to be of environmental concern during prior assessment and remedial work completed under DTSC oversight, and no reports of a release of petroleum products from the pipeline have been reported, CYA cannot comment on actual subsurface conditions in the area of the pipeline. While CYA does not consider the pipeline to be a “recognized environmental condition” in connection with the Site, the client may desire a higher level of confidence regarding underlying subsurface conditions in its vicinity. If so, it should consider additional evaluation. CYA has confirmed that the pipeline is maintained by Crimson Pipeline L.P. (Crimson), and Crimson has provided support documentation relative to the location of the pipeline. Crimson recommends that it be contacted either directly or via USA when Site construction activities begin in the area.

8.0 DEVIATIONS AND DATA GAPS

No deviations or data gaps of significance as defined in the ASTM Standard are noted.

REFERENCES

“All Appropriate Inquiry” as necessary to satisfy the defenses available under 42 USC §§ 9607(b)(3), 9607(r)(1), and 9607(q), relying on definitions provided at 42 USC §§ 9601(35)(B); and as further explained in 40 CFR §§ 312.1 - 312.31.

ASTM International, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, ASTM Designation E1527-13, Published November 2013.

California State Water Resources Control Board, GeoTracker online database: <http://www.geotracker.swrcb.ca.gov>.

EDR Radius Map Report dated June 4, 2018.

State of California Department of Conservation, Division of Oil and Gas and Geothermal Resources: http://www.consrv.ca.gov/DOG/maps/index_map.htm.

USGS Topographic Map, Los Angeles, California Oat Mountain Quadrangle (2015).

California State Water Resources Control Board, Water Quality Control Plan for the Los Angeles Basin (4), Los Angeles, California, Published 1994.

URS, Remedial Action Plan, Chatsworth Park South, Chatsworth, California, dated Feb 15, 2013 (Revised March 15, 2013).

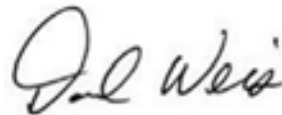
URS, Remedial Action Completion Report, Chatsworth Park South, Chatsworth, California, dated December 20, 2016.

SIGNATURES AND QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

We declare that, to the best of our professional knowledge and belief, we meet the definition of "Environmental Professional" as defined in 40 CFR 312.10. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject Site. We have developed and performed the "all appropriate inquiries" in conformance with the standards and practices set forth in 40 CFR Part 312.



Colin P. Young, CIH
Principal



Daniel Weis, R.E.H.S.
Associate Environmental Scientist

Environmental professional qualifications are included in Appendix G.

APPENDICES

Appendix A
Vicinity Map and Topographic Map



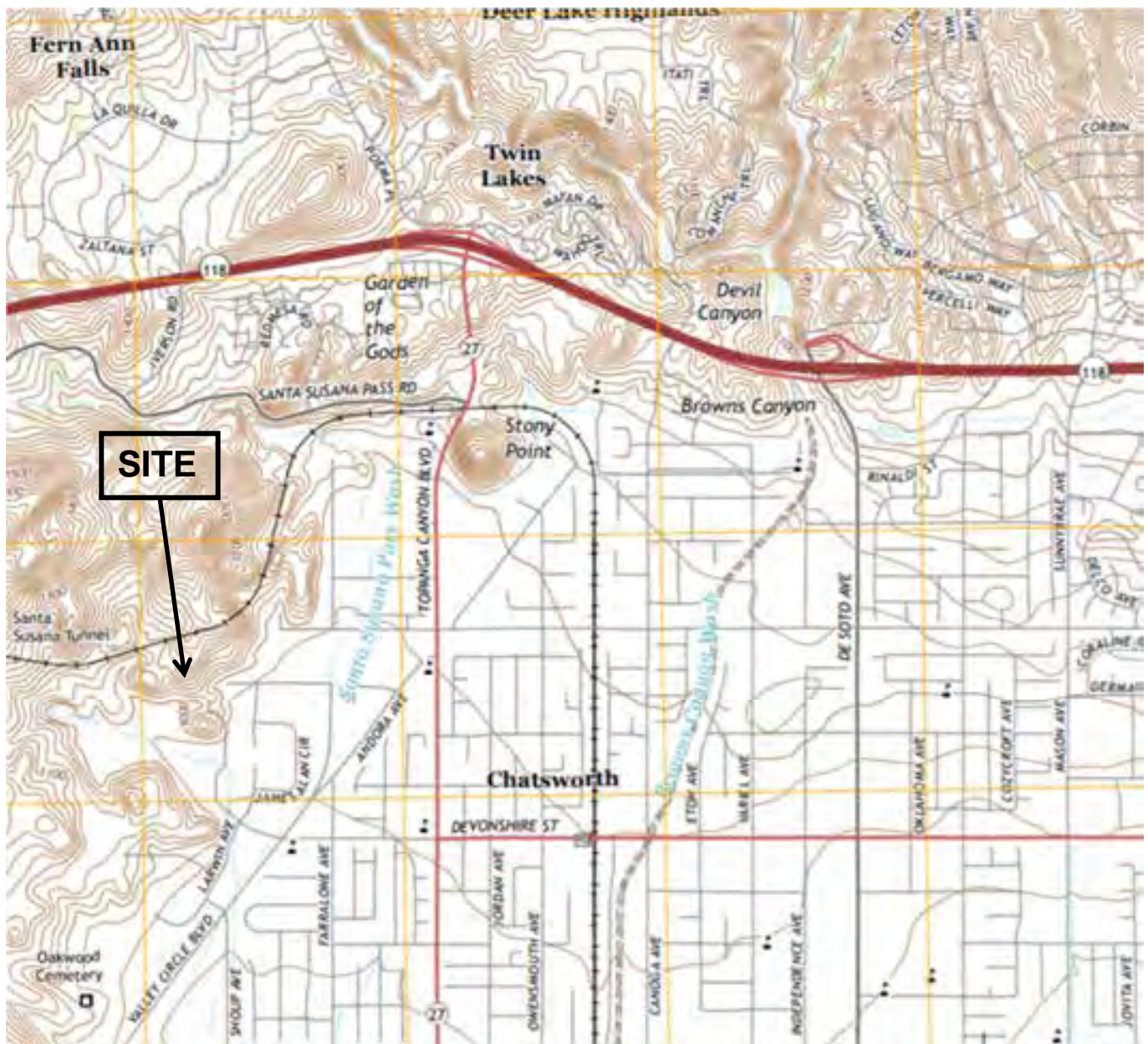
Not to Scale



C Young Associates
1042 Skylark Drive
La Jolla, CA 92037

Vicinity Map

West Valley Feeder No. 1 Stage 3 Improvements
Los Angeles County, California



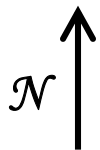
Not to Scale



C Young Associates
1042 Skylark Drive
La Jolla, CA 92037

Topographic Map
West Valley Feeder No. 1 Stage 3 Improvements
Los Angeles County, California

Appendix B Site Plans

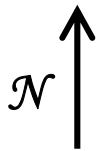


Not to Scale



C Young Associates
1042 Skylark Drive
La Jolla, CA 92037

Site Plan #1
West Valley Feeder No. 1 Stage 3 Improvements
Los Angeles County, California



Not to Scale



C Young Associates
1042 Skylark Drive
La Jolla, CA 92037

Site Plan #2
West Valley Feeder No. 1 Stage 3 Improvements
Los Angeles County, California



Appendix C

Site Photographs

View west at Contractor's Laydown Area
40' X 50' (Partially Undisturbed Area).



PHOTO 2.

View north at Contractor's Laydown Area
40' X 50' (Partially Undisturbed Area).



PHOTO 3.

View east at Contractor's Laydown Area
40' X 50' (Partially Undisturbed Area).



View northwest along West Valley Feeder No. 1
Near WVF1 STA 1405+23.



PHOTO 5.

View west at WVF1 STA 1405+23 Existing air
release.



PHOTO 6.

View northeast at the Contractor's Laydown Area
20' X 120'.



View west along asphalt paved access to WVF1
STA 1407+45 Existing Blowoff.



PHOTO 8.

View of WVF1 STA 1407+45 Existing Blowoff



PHOTO 9.

View west along West Valley Feeder No. 1.



PHOTO 10.

Off-Site signage indicating the presence of hazardous substances in the area.



PHOTO 11.

View southeast along West Valley Feeder No. 1 near the permanent access road/turnaround area.



PHOTO 12.

View southwest along West Valley Feeder No. 1, facing WVF1 STA 1415+42.



PHOTO 13.

View southwest along proposed new permanent access road.



PHOTO 14.

View southwest along West Valley Feeder No. 1, facing WVF1 STA 1415+42.



PHOTO 15.

View south near WVF1 STA 1415+42, existing air release and vacuum valve.



PHOTO 16.

View north near WVF1 STA 1415+42, proposed vault and pump well.



PHOTO 17.

View northeast along proposed new permanent access road.



PHOTO 18.

View east along proposed new permanent access road.



PHOTO 19.

View west near WVF1 1416+33, existing blowoff (to be abandoned).



PHOTO 20.

View north at contractor's laydown area 12' X 35'



PHOTO 21.

View north at contractor's laydown area 20' X 80'



PHOTO 22.

View northeast along proposed new permanent access road.



PHOTO 23.

View east along West Valley Feeder No. 2 near contractor's laydown area 20' X 80'.



PHOTO 24.

View west along West Valley Feeder No. 2.



Appendix D

Regulatory Database Report

West Valley Feeder No. 1 Stage 3 Improvements Project

22360 West Devonshire Street

Chatsworth, CA 91311

Inquiry Number: 5375619.1s

July 27, 2018

The EDR Radius Map™ Report



6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	8
Orphan Summary	26
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

GeoCheck - Not Requested

Thank you for your business.
 Please contact EDR at 1-800-352-0050
 with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2018 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

22360 WEST DEVONSHIRE STREET
CHATSWORTH, CA 91311

COORDINATES

Latitude (North): 34.2619540 - 34° 15' 43.03"
Longitude (West): 118.6210480 - 118° 37' 15.77"
Universal Transverse Mercator: Zone 11
UTM X (Meters): 350750.1
UTM Y (Meters): 3792195.0
Elevation: 1035 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5630759 OAT MOUNTAIN, CA
Version Date:	2012
Southeast Map:	5630737 CANOGA PARK, CA
Version Date:	2012
Southwest Map:	5630735 CALABASAS, CA
Version Date:	2012
Northwest Map:	5630769 SIMI VALLEY EAST, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from: 20140531
Source: USDA

MAPPED SITES SUMMARY

Target Property Address:
22360 WEST DEVONSHIRE STREET
CHATSWORTH, CA 91311

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	CHATSWORTH PARK SOUT	22360 DEVONSHIRE STR	NPDES		TP
A2	CHATSWORTH PARK SOUT	22360 DEVONSHIRE ST	ENVIROSTOR, VCP, HAZNET, CIWQS		TP
3	CHIME CHARTER MIDDLE	22280 DEVONSHIRE STR	ENVIROSTOR, SCH	Lower	2616, 0.495, ESE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 8 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
CHATSWORTH PARK SOUT 22360 DEVONSHIRE STR CHATSWORTH, CA 91311	NPDES Facility Status: Active	N/A
CHATSWORTH PARK SOUT 22360 DEVONSHIRE ST CHATSWORTH, CA 91311	ENVIROSTOR Facility Id: 60000893 Status: Active VCP Status: Active Facility Id: 60000893 HAZNET GEPAID: CAP000263467 GEPAID: CAC002721760 CIWQS	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
NPL LIENS..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY..... Federal Facility Site Information listing
SEMS..... Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE..... Superfund Enterprise Management System Archive

EXECUTIVE SUMMARY

Federal RCRA CORRACTS facilities list

CORRACTS..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG..... RCRA - Large Quantity Generators

RCRA-SQG..... RCRA - Small Quantity Generators

RCRA-CESQG..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS..... Land Use Control Information System

US ENG CONTROLS..... Engineering Controls Sites List

US INST CONTROL..... Sites with Institutional Controls

Federal ERNS list

ERNS..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE..... State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... Solid Waste Information System

State and tribal leaking storage tank lists

LUST..... Geotracker's Leaking Underground Fuel Tank Report

INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land

CPS-SLIC..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST..... Underground Storage Tank Listing

UST..... Active UST Facilities

AST..... Aboveground Petroleum Storage Tank Facilities

INDIAN UST..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP..... Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS..... Considered Brownfields Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

EXECUTIVE SUMMARY

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT.....	Waste Management Unit Database
SWRCY.....	Recycler Database
HAULERS.....	Registered Waste Tire Haulers Listing
INDIAN ODI.....	Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9.....	Torres Martinez Reservation Illegal Dump Site Locations
ODI.....	Open Dump Inventory
IHS OPEN DUMPS.....	Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL.....	Delisted National Clandestine Laboratory Register
AOCONCERN.....	San Gabriel Valley Areas of Concern
HIST Cal-Sites.....	Historical Calsites Database
SCH.....	School Property Evaluation Program
CDL.....	Clandestine Drug Labs
Toxic Pits.....	Toxic Pits Cleanup Act Sites
US CDL.....	National Clandestine Laboratory Register
CERS HAZ WASTE.....	CERS HAZ WASTE

Local Lists of Registered Storage Tanks

SWEEPS UST.....	SWEEPS UST Listing
HIST UST.....	Hazardous Substance Storage Container Database
CA FID UST.....	Facility Inventory Database
CERS TANKS.....	California Environmental Reporting System (CERS) Tanks

Local Land Records

LIENS.....	Environmental Liens Listing
LIENS 2.....	CERCLA Lien Information
DEED.....	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS.....	Hazardous Materials Information Reporting System
CHMIRS.....	California Hazardous Material Incident Report System
LDS.....	Land Disposal Sites Listing
MCS.....	Military Cleanup Sites Listing
SPILLS 90.....	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR.....	RCRA - Non Generators / No Longer Regulated
FUDS.....	Formerly Used Defense Sites
DOD.....	Department of Defense Sites
SCRD DRYCLEANERS.....	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR.....	Financial Assurance Information
EPA WATCH LIST.....	EPA WATCH LIST
2020 COR ACTION.....	2020 Corrective Action Program List
TSCA.....	Toxic Substances Control Act
TRIS.....	Toxic Chemical Release Inventory System
SSTS.....	Section 7 Tracking Systems

EXECUTIVE SUMMARY

ROD.....	Records Of Decision
RMP.....	Risk Management Plans
RAATS.....	RCRA Administrative Action Tracking System
PRP.....	Potentially Responsible Parties
PADS.....	PCB Activity Database System
ICIS.....	Integrated Compliance Information System
FTTS.....	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS.....	Material Licensing Tracking System
COAL ASH DOE.....	Steam-Electric Plant Operation Data
COAL ASH EPA.....	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER.....	PCB Transformer Registration Database
RADINFO.....	Radiation Information Database
HIST FTTS.....	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS.....	Incident and Accident Data
CONSENT.....	Superfund (CERCLA) Consent Decrees
INDIAN RESERV.....	Indian Reservations
FUSRAP.....	Formerly Utilized Sites Remedial Action Program
UMTRA.....	Uranium Mill Tailings Sites
LEAD SMELTERS.....	Lead Smelter Sites
US AIRS.....	Aerometric Information Retrieval System Facility Subsystem
US MINES.....	Mines Master Index File
ABANDONED MINES.....	Abandoned Mines
FINDS.....	Facility Index System/Facility Registry System
UXO.....	Unexploded Ordnance Sites
DOCKET HWC.....	Hazardous Waste Compliance Docket Listing
ECHO.....	Enforcement & Compliance History Information
FUELS PROGRAM.....	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN.....	Bond Expenditure Plan
Cortese.....	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings.....	CUPA Resources List
DRYCLEANERS.....	Cleaner Facilities
EMI.....	Emissions Inventory Data
ENF.....	Enforcement Action Listing
Financial Assurance.....	Financial Assurance Information Listing
ICE.....	ICE
HIST CORTESE.....	Hazardous Waste & Substance Site List
LOS ANGELES CO. HMS.....	HMS: Street Number List
HWP.....	EnviroStor Permitted Facilities Listing
HWT.....	Registered Hazardous Waste Transporter Database
MINES.....	Mines Site Location Listing
MWMP.....	Medical Waste Management Program Listing
PEST LIC.....	Pesticide Regulation Licenses Listing
PROC.....	Certified Processors Database
Notify 65.....	Proposition 65 Records
LA Co. Site Mitigation.....	Site Mitigation List
UIC.....	UIC Listing
WASTEWATER PITS.....	Oil Wastewater Pits Listing
WDS.....	Waste Discharge System
WIP.....	Well Investigation Program Case List
MILITARY PRIV SITES.....	MILITARY PRIV SITES (GEOTRACKER)
UIC GEO.....	UIC GEO (GEOTRACKER)
CERS.....	CERS
WELL STIM PROJ.....	Well Stimulation Project (GEOTRACKER)
SAMPLING POINT.....	SAMPLING POINT (GEOTRACKER)

EXECUTIVE SUMMARY

OTHER OIL GAS.....	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS.....	PROD WATER PONDS (GEOTRACKER)
PROJECT.....	PROJECT (GEOTRACKER)
NON-CASE INFO.....	NON-CASE INFO (GEOTRACKER)

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP.....	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto.....	EDR Exclusive Historical Auto Stations
EDR Hist Cleaner.....	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF.....	Recovered Government Archive Solid Waste Facilities List
RGA LUST.....	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.

Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifies sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 04/30/2018 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.

EXECUTIVE SUMMARY

<u>Lower Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
CHIME CHARTER MIDDLE Facility Id: 70000135 Status: No Further Action	22280 DEVONSHIRE STR	ESE 1/4 - 1/2 (0.495 mi.)	3	23

EXECUTIVE SUMMARY

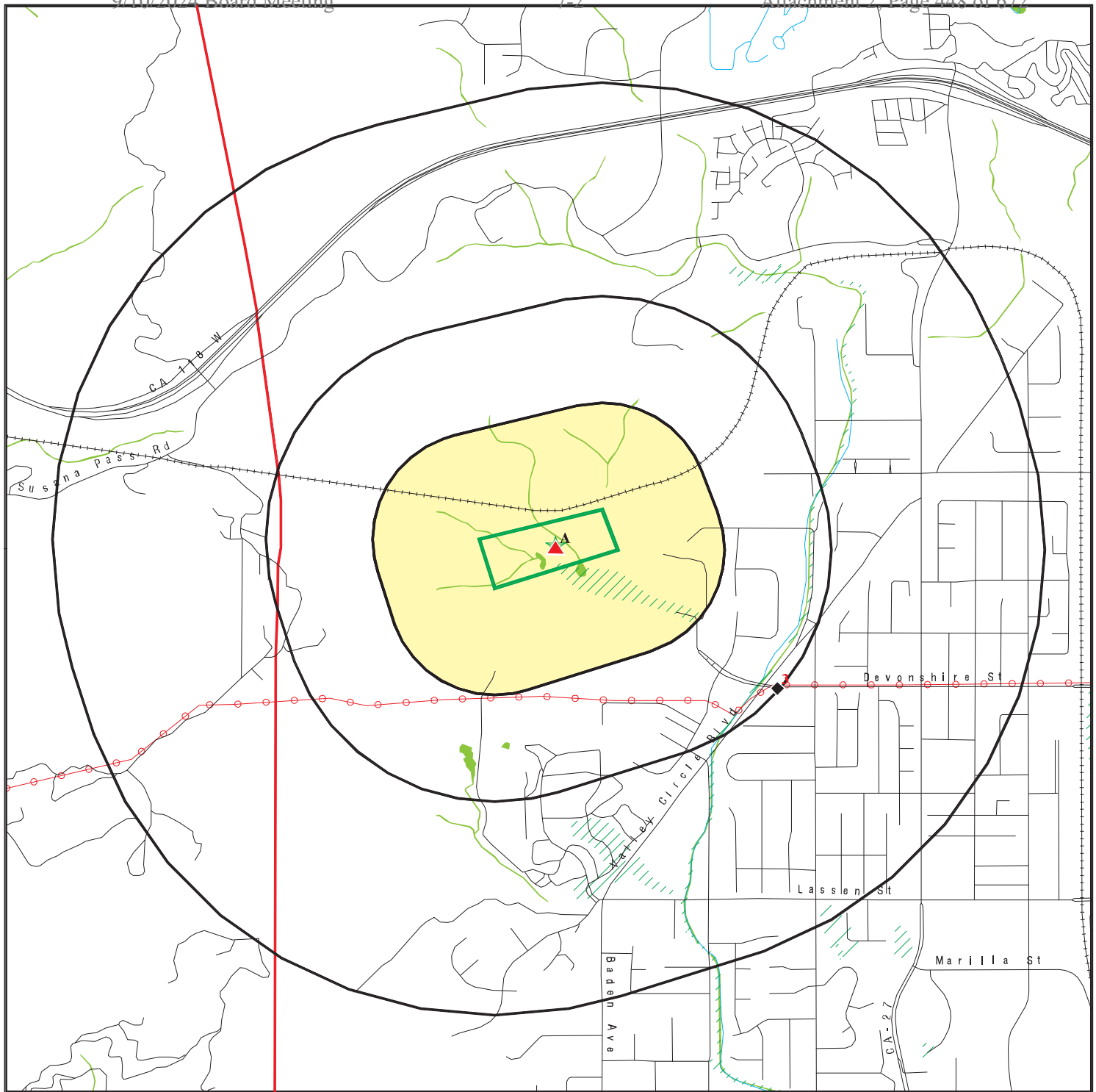
Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name

JIM DANDY DRY CLEANERS,JULIUS ALLI

Database(s)

DRYCLEANERS



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

Indian Reservations BIA

County Boundary

Power transmission lines

100-year flood zone

500-year flood zone

National Wetland Inventory

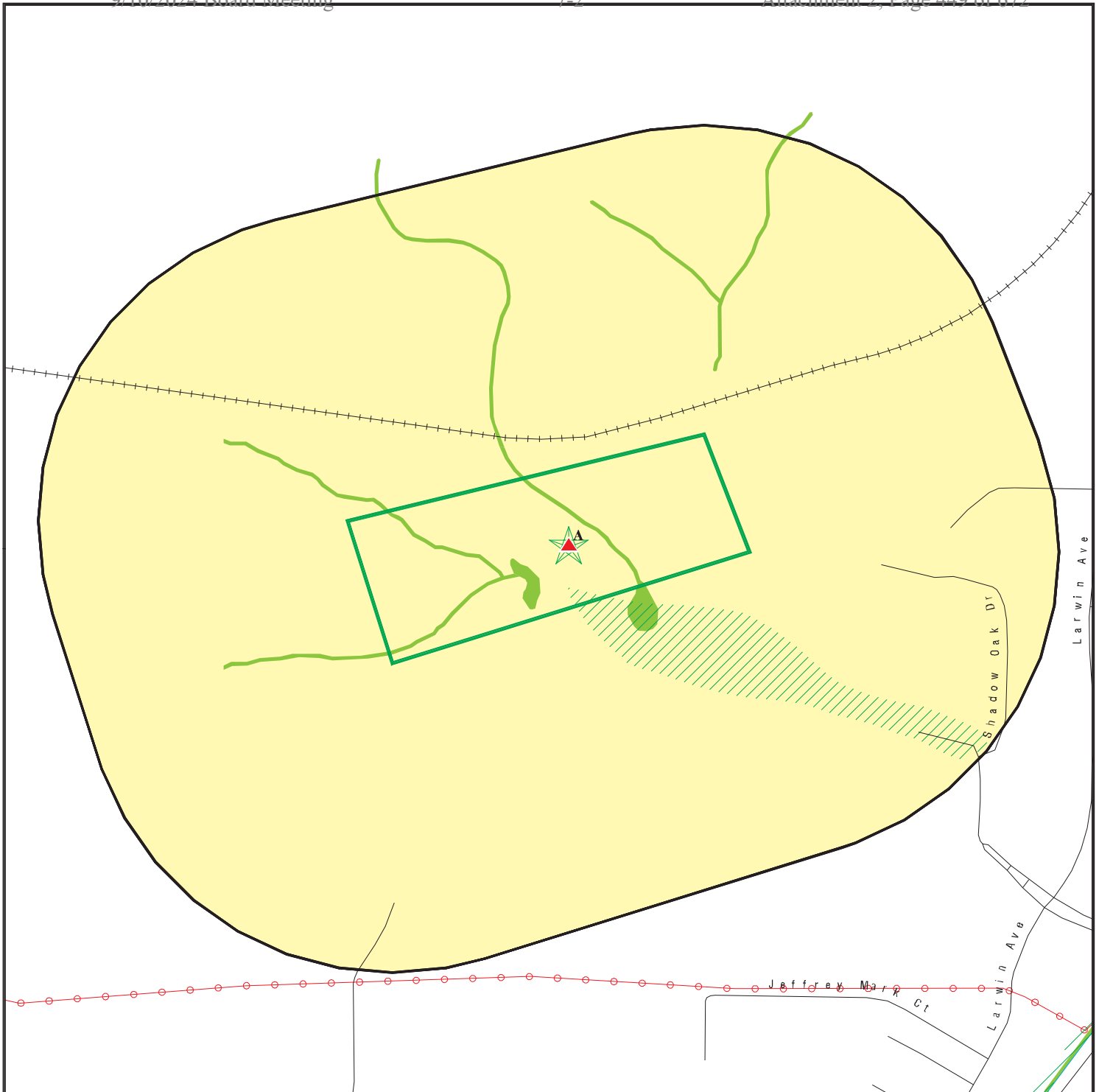
State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: West Valley Feeder No. 1 Stage 3 Improvements Project
 ADDRESS: 22360 West Devonshire Street
 Chatsworth CA 91311
 LAT/LONG: 34.261954 / 118.621048

CLIENT: C Young Associates
 CONTACT: Daniel Weis
 INQUIRY #: 5375619.1S
 DATE: July 27, 2018 5:29 pm



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

Indian Reservations BIA

Power transmission lines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: West Valley Feeder No. 1 Stage 3 Improvements Project
 ADDRESS: 22360 West Devonshire Street
 Chatsworth CA 91311
 LAT/LONG: 34.261954 / 118.621048

CLIENT: C Young Associates
 CONTACT: Daniel Weis
 INQUIRY #: 5375619.1s
 DATE: July 27, 2018 5:31 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
<i>Federal NPL site list</i>								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	0.001		0	NR	NR	NR	NR	0
<i>Federal Delisted NPL site list</i>								
Delisted NPL	1.000		0	0	0	0	NR	0
<i>Federal CERCLIS list</i>								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
<i>Federal CERCLIS NFRAP site list</i>								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
<i>Federal RCRA CORRACTS facilities list</i>								
CORRACTS	1.000		0	0	0	0	NR	0
<i>Federal RCRA non-CORRACTS TSD facilities list</i>								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
<i>Federal RCRA generators list</i>								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
<i>Federal institutional controls / engineering controls registries</i>								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
<i>Federal ERNS list</i>								
ERNS	0.001		0	NR	NR	NR	NR	0
<i>State- and tribal - equivalent NPL</i>								
RESPONSE	1.000		0	0	0	0	NR	0
<i>State- and tribal - equivalent CERCLIS</i>								
ENVIROSTOR	1.000	1	0	0	1	0	NR	2
<i>State and tribal landfill and/or solid waste disposal site lists</i>								
SWF/LF	0.500		0	0	0	NR	NR	0
<i>State and tribal leaking storage tank lists</i>								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500	1	0	0	0	NR	NR	1
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
AOCONCERN	1.000		0	0	0	0	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	0.001		0	NR	NR	NR	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.001		0	NR	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001	1	0	NR	NR	NR	NR	1
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
LOS ANGELES CO. HMS	0.001		0	NR	NR	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.001		0	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001	1	0	NR	NR	NR	NR	1
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
LA Co. Site Mitigation	0.001		0	NR	NR	NR	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
CIWQS	0.001	1	0	NR	NR	NR	NR	1
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0

- Totals --		5	0	0	1	0	0	6
-------------	--	---	---	---	---	---	---	---

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

A1
Target
Property

CHATSWORTH PARK SOUTH
22360 DEVONSHIRE STREET
CHATSWORTH, CA 91311

NPDES **S118590651**
N/A

Site 1 of 2 in cluster A

Actual:
1035 ft.

NPDES:

Facility Status: Active
NPDES Number: CAS000002
Region: 4
Agency Number: 0
Regulatory Measure ID: 471130
Place ID: Not reported
Order Number: 2009-0009-DWQ
WDID: 4 19C375884
Regulatory Measure Type: Enrollee
Program Type: Construction
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: 04/05/2016
Termination Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Discharge Address: 221 N Figueroa Street
Discharge Name: Department of Recreation and Parks
Discharge City: Los Angeles
Discharge State: California
Discharge Zip: 90012
Status: Not reported
Status Date: Not reported
Operator Name: Not reported
Operator Address: Not reported
Operator City: Not reported
Operator State: Not reported
Operator Zip: Not reported

NPDES as of 03/2018:

NPDES Number: Not reported
Status: Not reported
Agency Number: Not reported
Region: 4
Regulatory Measure ID: 471130
Order Number: Not reported
Regulatory Measure Type: Construction
Place ID: Not reported
WDID: 4 19C375884
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: Not reported
Discharge Name: Not reported
Discharge Address: Not reported
Discharge City: Not reported
Discharge State: Not reported
Discharge Zip: Not reported
Received Date: 03/31/2016
Processed Date: 04/05/2016
Status: Active
Status Date: 04/05/2016
Place Size: 81
Place Size Unit: Acres

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S118590651

Contact:	Paul Davis
Contact Title:	Not reported
Contact Phone:	213-202-2667
Contact Phone Ext:	Not reported
Contact Email:	Paul.J.Davis@lacity.org
Operator Name:	Department of Recreation and Parks
Operator Address:	221 N Figueroa Street
Operator City:	Los Angeles
Operator State:	California
Operator Zip:	90012
Operator Contact:	Paul Davis
Operator Contact Title:	Environmental Supervisor
Operator Contact Phone:	213-202-2681
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Paul.J.Davis@lacity.org
Operator Type:	County Agency
Developer:	American Integrated Services Inc
Developer Address:	1502 Opp Street
Developer City:	Wilmington
Developer State:	California
Developer Zip:	90744
Developer Contact:	Nathan Stanley
Developer Contact Title:	Dir. of Preconstruction
Constype Linear Utility Ind:	N
Emergency Phone:	951-907-8952
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	N
Constype Below Ground Ind:	N
Constype Cable Line Ind:	N
Constype Comm Line Ind:	N
Constype Commercial Ind:	N
Constype Electrical Line Ind:	N
Constype Gas Line Ind:	N
Constype Industrial Ind:	N
Constype Other Description:	Remediation and park
Constype Other Ind:	N
Constype Recons Ind:	N
Constype Residential Ind:	N
Constype Transport Ind:	N
Constype Utility Description:	Not reported
Constype Utility Ind:	N
Constype Water Sewer Ind:	N
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Indirect discharge
Certifier:	Paul Davis
Certifier Title:	Environmental Supervisor
Certification Date:	30-NOV-16
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000002
Status:	Active
Agency Number:	0
Region:	4
Regulatory Measure ID:	471130
Order Number:	2009-0009-DWQ

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S118590651

Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	4 19C375884
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	04/05/2016
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Department of Recreation and Parks
Discharge Address:	221 N Figueroa Street
Discharge City:	Los Angeles
Discharge State:	California
Discharge Zip:	90012
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commercial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S118590651

Constype Transport Ind: Not reported
Constype Utility Description: Not reported
Constype Utility Ind: Not reported
Constype Water Sewer Ind: Not reported
Dir Discharge Uswater Ind: Not reported
Receiving Water Name: Not reported
Certifier: Not reported
Certifier Title: Not reported
Certification Date: Not reported
Primary Sic: Not reported
Secondary Sic: Not reported
Tertiary Sic: Not reported

Facility Status: Not reported
NPDES Number: Not reported
Region: Not reported
Agency Number: Not reported
Regulatory Measure ID: Not reported
Place ID: Not reported
Order Number: Not reported
WDID: 4 19C375884
Regulatory Measure Type: Construction
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Discharge Address: Not reported
Discharge Name: Not reported
Discharge City: Not reported
Discharge State: Not reported
Discharge Zip: Not reported
Status: Active
Status Date: 09/14/2017
Operator Name: Department of Recreation and Parks
Operator Address: 221 N Figueroa Street
Operator City: Los Angeles
Operator State: California
Operator Zip: 90012

NPDES as of 03/2018:
NPDES Number: Not reported
Status: Not reported
Agency Number: Not reported
Region: 4
Regulatory Measure ID: 471130
Order Number: Not reported
Regulatory Measure Type: Construction
Place ID: Not reported
WDID: 4 19C375884
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: Not reported
Discharge Name: Not reported
Discharge Address: Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S118590651

Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	03/31/2016
Processed Date:	04/05/2016
Status:	Active
Status Date:	04/05/2016
Place Size:	81
Place Size Unit:	Acres
Contact:	Paul Davis
Contact Title:	Not reported
Contact Phone:	213-202-2667
Contact Phone Ext:	Not reported
Contact Email:	Paul.J.Davis@lacity.org
Operator Name:	Department of Recreation and Parks
Operator Address:	221 N Figueroa Street
Operator City:	Los Angeles
Operator State:	California
Operator Zip:	90012
Operator Contact:	Paul Davis
Operator Contact Title:	Environmental Supervisor
Operator Contact Phone:	213-202-2681
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Paul.J.Davis@lacity.org
Operator Type:	County Agency
Developer:	American Integrated Services Inc
Developer Address:	1502 Opp Street
Developer City:	Wilmington
Developer State:	California
Developer Zip:	90744
Developer Contact:	Nathan Stanley
Developer Contact Title:	Dir. of Preconstruction
Constype Linear Utility Ind:	N
Emergency Phone:	951-907-8952
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	N
Constype Below Ground Ind:	N
Constype Cable Line Ind:	N
Constype Comm Line Ind:	N
Constype Commercial Ind:	N
Constype Electrical Line Ind:	N
Constype Gas Line Ind:	N
Constype Industrial Ind:	N
Constype Other Description:	Remediation and park
Constype Other Ind:	N
Constype Recons Ind:	N
Constype Residential Ind:	N
Constype Transport Ind:	N
Constype Utility Description:	Not reported
Constype Utility Ind:	N
Constype Water Sewer Ind:	N
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Indirect discharge
Certifier:	Paul Davis
Certifier Title:	Environmental Supervisor
Certification Date:	30-NOV-16
Primary Sic:	Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S118590651

Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000002
Status:	Active
Agency Number:	0
Region:	4
Regulatory Measure ID:	471130
Order Number:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	4 19C375884
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	04/05/2016
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Department of Recreation and Parks
Discharge Address:	221 N Figueroa Street
Discharge City:	Los Angeles
Discharge State:	California
Discharge Zip:	90012
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S118590651

Constype Comm Line Ind: Not reported
Constype Commercial Ind: Not reported
Constype Electrical Line Ind: Not reported
Constype Gas Line Ind: Not reported
Constype Industrial Ind: Not reported
Constype Other Description: Not reported
Constype Other Ind: Not reported
Constype Recons Ind: Not reported
Constype Residential Ind: Not reported
Constype Transport Ind: Not reported
Constype Utility Description: Not reported
Constype Utility Ind: Not reported
Constype Water Sewer Ind: Not reported
Dir Discharge Uswater Ind: Not reported
Receiving Water Name: Not reported
Certifier: Not reported
Certifier Title: Not reported
Certification Date: Not reported
Primary Sic: Not reported
Secondary Sic: Not reported
Tertiary Sic: Not reported

**A2
Target
Property**

**CHATSWORTH PARK SOUTH
22360 DEVONSHIRE ST
CHATSWORTH, CA 91311**

**ENVIROSTOR
VCP
HAZNET
CIWQS**

**S109034309
N/A**

Site 2 of 2 in cluster A

**Actual:
1035 ft.**

ENVIROSTOR:
Facility ID: 60000893
Status: Active
Status Date: 03/03/2010
Site Code: 301384
Site Type: Voluntary Cleanup
Site Type Detailed: Voluntary Cleanup
Acres: 81
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Chand Sultana
Supervisor: Allan Plaza
Division Branch: Cleanup Chatsworth
Assembly: 38
Senate: 27
Special Program: Voluntary Cleanup Program
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Responsible Party
Latitude: 34.25814
Longitude: -118.6148
APN: NONE SPECIFIED
Past Use: FIRING RANGE - SMALL ARMS ETC...
Potential COC: Under Investigation Arsenic Dioxin (as 2,3,7,8-TCDD TEQ Lead
Polynuclear aromatic hydrocarbons (PAHs)
Confirmed COC: 30001-NO 30009-NO Lead Polynuclear aromatic hydrocarbons (PAHs
31001-NO
Potential Description: SOIL, SURFW

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S109034309

Alias Name: 301384
Alias Type: Project Code (Site Code)
Alias Name: 60000893
Alias Type: Envirostor ID Number

Completed Info:

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 09/08/2008
Comments: Proponent signed VCA

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: CEQA - Responsible Agency Review
Completed Date: 07/23/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: State/Federal Funded Site Contract
Completed Date: 04/30/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 09/25/2014
Comments: 2014-2015 Estimated Oversight Costs

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 09/11/2015
Comments: completed

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 09/15/2016
Comments: Annual Cost Estimate Letter sent out

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 09/28/2017
Comments: 2017-2018 Annual Oversight Cost Estimate

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: State/Federal Funded Site Work Order
Completed Date: 01/25/2010
Comments: Start Work issued.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Workplan
Completed Date: 03/04/2010

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S109034309

Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Report
Completed Date: 01/10/2011
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Application
Completed Date: 09/28/2009
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Risk Assessment Workplan
Completed Date: 03/30/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Risk Assessment Report
Completed Date: 04/28/2010
Comments: HHRA Report approved.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Risk Assessment Report
Completed Date: 09/23/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Action Plan
Completed Date: 07/23/2013
Comments: The RAP has specified remedial action objectives, evaluated alternatives, and described the alternative proposed for the Site. The objective of the RAP is to mitigate potential risk from the contaminants in soil that may pose a threat to human health and the environment. DTSC received 50 comments during the public comment period held between March 21, 2013 to April 22, 2013 and at the public meeting held on April 2, 2013. Subsequently, a Responses to Comments (RTCs) document was prepared and sent to each commenter who provided an e-mail or a physical address. In addition, as a part of the approval process, DTSC prepared Responsible Agency Checklist and filed a Notice of Determination (NOD) document with the Office of Planning and Research to comply with the California Environmental Quality Act (CEQA) requirements for this project. However, the City was the lead agency who fulfilled the requirements for the CEQA and prepared Initial Study/Mitigation Negative Declaration (IS/MND) documents and filed a NOD to adopt MND. They were also responsible for responding to public and agencies comments received on the IS/MND. Modification to the draft RAP was not necessary based on the comments received. DTSC approved the Report.

Completed Area Name: PROJECT WIDE

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S109034309

Completed Sub Area Name: Not reported
Completed Document Type: Public Participation Plan / Community Relations Plan
Completed Date: 12/27/2012
Comments: Community Profile ready for public review.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fact Sheets
Completed Date: 03/18/2013
Comments: Fact Sheet sent to the public. No formal DTSC letter required.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 05/30/2014
Comments: Tree removal done. Plan was submitted to DTSC for the record.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Design/Implementation Workplan
Completed Date: 10/25/2012
Comments: DTSC approved the Interim Action Plan for opening the recreation building.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Action Completion Report
Completed Date: 04/18/2017
Comments: RACR approved.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 03/18/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 12/30/2016
Comments: Field work completed.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Participation Plan / Community Relations Plan
Completed Date: 04/02/2015
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Work Notice
Completed Date: 04/04/2016
Comments: Not reported

Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Land Use Restriction

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S109034309

Future Due Date: 2018
Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Certification
Future Due Date: 2018
Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Operations and Maintenance Plan
Future Due Date: 2018
Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: 5 Year Review Reports
Future Due Date: 2022
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

VCP:

Facility ID: 60000893
Site Type: Voluntary Cleanup
Site Type Detail: Voluntary Cleanup
Site Mgmt. Req.: NONE SPECIFIED
Acres: 81
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Chand Sultana
Supervisor: Allan Plaza
Division Branch: Cleanup Chatsworth
Site Code: 301384
Assembly: 38
Senate: 27
Special Programs Code: Voluntary Cleanup Program
Status: Active
Status Date: 03/03/2010
Restricted Use: NO
Funding: Responsible Party
Lat/Long: 34.25814 / -118.6148
APN: NONE SPECIFIED
Past Use: FIRING RANGE - SMALL ARMS ETC...
Potential COC: 31001, 30001, 30009, 30013, 30472
Confirmed COC: 30001-NO,30009-NO,30013,30472,31001-NO
Potential Description: SOIL, SURFW
Alias Name: 301384
Alias Type: Project Code (Site Code)
Alias Name: 60000893
Alias Type: Envirostor ID Number

Completed Info:

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 09/08/2008
Comments: Proponent signed VCA

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S109034309

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: CEQA - Responsible Agency Review
Completed Date: 07/23/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: State/Federal Funded Site Contract
Completed Date: 04/30/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 09/25/2014
Comments: 2014-2015 Estimated Oversight Costs

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 09/11/2015
Comments: completed

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 09/15/2016
Comments: Annual Cost Estimate Letter sent out

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 09/28/2017
Comments: 2017-2018 Annual Oversight Cost Estimate

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: State/Federal Funded Site Work Order
Completed Date: 01/25/2010
Comments: Start Work issued.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Workplan
Completed Date: 03/04/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Report
Completed Date: 01/10/2011
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Application

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S109034309

Completed Date: 09/28/2009
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Risk Assessment Workplan
Completed Date: 03/30/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Risk Assessment Report
Completed Date: 04/28/2010
Comments: HHRA Report approved.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Risk Assessment Report
Completed Date: 09/23/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Action Plan
Completed Date: 07/23/2013
Comments: The RAP has specified remedial action objectives, evaluated alternatives, and described the alternative proposed for the Site. The objective of the RAP is to mitigate potential risk from the contaminants in soil that may pose a threat to human health and the environment. DTSC received 50 comments during the public comment period held between March 21, 2013 to April 22, 2013 and at the public meeting held on April 2, 2013. Subsequently, a Responses to Comments (RTCs) document was prepared and sent to each commenter who provided an e-mail or a physical address. In addition, as a part of the approval process, DTSC prepared Responsible Agency Checklist and filed a Notice of Determination (NOD) document with the Office of Planning and Research to comply with the California Environmental Quality Act (CEQA) requirements for this project. However, the City was the lead agency who fulfilled the requirements for the CEQA and prepared Initial Study/Mitigation Negative Declaration (IS/MND) documents and filed a NOD to adopt MND. They were also responsible for responding to public and agencies comments received on the IS/MND. Modification to the draft RAP was not necessary based on the comments received. DTSC approved the Report.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Participation Plan / Community Relations Plan
Completed Date: 12/27/2012
Comments: Community Profile ready for public review.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fact Sheets
Completed Date: 03/18/2013
Comments: Fact Sheet sent to the public. No formal DTSC letter required.

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S109034309

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 05/30/2014
Comments: Tree removal done. Plan was submitted to DTSC for the record.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Design/Implementation Workplan
Completed Date: 10/25/2012
Comments: DTSC approved the Interim Action Plan for opening the recreation building.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Action Completion Report
Completed Date: 04/18/2017
Comments: RACR approved.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 03/18/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 12/30/2016
Comments: Field work completed.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Participation Plan / Community Relations Plan
Completed Date: 04/02/2015
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Work Notice
Completed Date: 04/04/2016
Comments: Not reported

Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Land Use Restriction
Future Due Date: 2018
Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Certification
Future Due Date: 2018
Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Operations and Maintenance Plan
Future Due Date: 2018
Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S109034309

Future Document Type: 5 Year Review Reports
Future Due Date: 2022
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

HAZNET:

envid: S109034309
Year: 2016
GEPAID: CAP000263467
Contact: PAUL DAVIS
Telephone: 2132022667
Mailing Name: Not reported
Mailing Address: 221 N FIGUEROA ST FL 4
Mailing City,St,Zip: LOS ANGELES, CA 900122639
Gen County: Los Angeles
TSD EPA ID: NVT330010000
TSD County: 99
Waste Category: Contaminated soil from site clean-up
Disposal Method: Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons: 455.43
Cat Decode: Contaminated soil from site clean-up
Method Decode: Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Facility County: Los Angeles

envid: S109034309
Year: 2013
GEPAID: CAC002721760
Contact: EMMANUEL AMES
Telephone: 2139783798
Mailing Name: Not reported
Mailing Address: 111 E FIRST ST RM 600
Mailing City,St,Zip: LOS ANGELES, CA 900120000
Gen County: Los Angeles
TSD EPA ID: CAD980675276
TSD County: Kern
Waste Category: Not reported
Disposal Method: Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons: 0.42
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Not reported

CIWQS:

Agency: Department of Recreation and Parks
Agency Address: 221 N Figueroa Street Suite 100, Los Angeles, CA 90012
Place/Project Type: Construction
SIC/NAICS: Not reported
Region: 4
Program: CONSTW
Regulatory Measure Status: Terminated

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHATSWORTH PARK SOUTH (Continued)

S109034309

Regulatory Measure Type: Storm water construction
Order Number: 2009-0009-DWQ
WDID: 4 19C375884
NPDES Number: CAS000002
Adoption Date: Not reported
Effective Date: 04/05/2016
Termination Date: 09/06/2017
Expiration/Review Date: Not reported
Design Flow: Not reported
Major/Minor: Not reported
Complexity: Not reported
TTWQ: Not reported
Enforcement Actions within 5 years: 0
Violations within 5 years: 0
Latitude: 34.25789
Longitude: -118.614375

3
ESE
1/4-1/2
0.495 mi.
2616 ft.

CHIME CHARTER MIDDLE SCHOOL
22280 DEVONSHIRE STREET
CHATSWORTH, CA 91311

ENVIROSTOR S107736119
SCH N/A

Relative:
Lower
Actual:
957 ft.

ENVIROSTOR:
Facility ID: 70000135
Status: No Further Action
Status Date: 04/27/2007
Site Code: 304518
Site Type: School Investigation
Site Type Detailed: School
Acres: 2.7
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Not reported
Supervisor: Javier Hinojosa
Division Branch: Southern California Schools & Brownfields Outreach
Assembly: 38
Senate: 27
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 34.25668
Longitude: -118.6120
APN: NONE SPECIFIED
Past Use: NONE
Potential COC: Chlordane Lead Methane
Confirmed COC: NONE SPECIFIED
Potential Description: IA, SOIL, SV
Alias Name: 304518
Alias Type: Project Code (Site Code)
Alias Name: 70000135
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHIME CHARTER MIDDLE SCHOOL (Continued)

S107736119

Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 02/07/2008
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 06/07/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 02/09/2006
Comments: PEAR for potential methane and LBP.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 10/25/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 04/27/2007
Comments: Public review and comment from March 1, 2007 through March 30, 2007 and a public hearing was held on April 18, 2007

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Facility ID: 70000135
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 2.7
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Not reported
Supervisor: Javier Hinojosa
Division Branch: Southern California Schools & Brownfields Outreach
Site Code: 304518
Assembly: 38
Senate: 27
Special Program Status: Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHIME CHARTER MIDDLE SCHOOL (Continued)

S107736119

Status: No Further Action
Status Date: 04/27/2007
Restricted Use: NO
Funding: School District
Latitude: 34.25668
Longitude: -118.6120
APN: NONE SPECIFIED
Past Use: NONE
Potential COC: Chlordane, Lead, Methane
Confirmed COC: NONE SPECIFIED
Potential Description: IA, SOIL, SV
Alias Name: 304518
Alias Type: Project Code (Site Code)
Alias Name: 70000135
Alias Type: Envirostor ID Number

Completed Info:

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 02/07/2008
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 06/07/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 02/09/2006
Comments: PEAR for potential methane and LBP.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 10/25/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 04/27/2007
Comments: Public review and comment from March 1, 2007 through March 30, 2007 and a public hearing was held on April 18, 2007

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

Count: 1 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
CHATSWORTH	S121700613	JIM DANDY DRY CLEANERS,JULIUS ALLI	17505 CHATSWORTH ST	91311	DRYCLEANERS

9/10/2024 Board Meeting

7-2

Attachment 2, Page 472 of 672

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 05/13/2018	Source: EPA
Date Data Arrived at EDR: 05/30/2018	Telephone: N/A
Date Made Active in Reports: 06/22/2018	Last EDR Contact: 07/06/2018
Number of Days to Update: 23	Next Scheduled EDR Contact: 10/15/2018
	Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 05/13/2018	Source: EPA
Date Data Arrived at EDR: 05/30/2018	Telephone: N/A
Date Made Active in Reports: 06/22/2018	Last EDR Contact: 07/06/2018
Number of Days to Update: 23	Next Scheduled EDR Contact: 10/15/2018
	Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991	Source: EPA
Date Data Arrived at EDR: 02/02/1994	Telephone: 202-564-4267
Date Made Active in Reports: 03/30/1994	Last EDR Contact: 08/15/2011
Number of Days to Update: 56	Next Scheduled EDR Contact: 11/28/2011
	Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING***Federal Delisted NPL site list*****Delisted NPL: National Priority List Deletions**

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 05/13/2018	Source: EPA
Date Data Arrived at EDR: 05/30/2018	Telephone: N/A
Date Made Active in Reports: 06/22/2018	Last EDR Contact: 07/06/2018
Number of Days to Update: 23	Next Scheduled EDR Contact: 10/15/2018
	Data Release Frequency: Quarterly

Federal CERCLIS list**FEDERAL FACILITY: Federal Facility Site Information listing**

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016	Source: Environmental Protection Agency
Date Data Arrived at EDR: 01/05/2017	Telephone: 703-603-8704
Date Made Active in Reports: 04/07/2017	Last EDR Contact: 07/06/2018
Number of Days to Update: 92	Next Scheduled EDR Contact: 10/15/2018
	Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly known as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 05/18/2018	Source: EPA
Date Data Arrived at EDR: 05/30/2018	Telephone: 800-424-9346
Date Made Active in Reports: 06/22/2018	Last EDR Contact: 07/06/2018
Number of Days to Update: 23	Next Scheduled EDR Contact: 10/29/2018
	Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list**SEMS-ARCHIVE: Superfund Enterprise Management System Archive**

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 05/18/2018	Source: EPA
Date Data Arrived at EDR: 05/30/2018	Telephone: 800-424-9346
Date Made Active in Reports: 06/22/2018	Last EDR Contact: 07/06/2018
Number of Days to Update: 23	Next Scheduled EDR Contact: 10/29/2018
	Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/01/2018	Source: EPA
Date Data Arrived at EDR: 03/28/2018	Telephone: 800-424-9346
Date Made Active in Reports: 06/22/2018	Last EDR Contact: 06/28/2018
Number of Days to Update: 86	Next Scheduled EDR Contact: 10/08/2018
	Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/01/2018	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/28/2018	Telephone: (415) 495-8895
Date Made Active in Reports: 06/22/2018	Last EDR Contact: 06/28/2018
Number of Days to Update: 86	Next Scheduled EDR Contact: 10/08/2018
	Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/01/2018	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/28/2018	Telephone: (415) 495-8895
Date Made Active in Reports: 06/22/2018	Last EDR Contact: 06/28/2018
Number of Days to Update: 86	Next Scheduled EDR Contact: 10/08/2018
	Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**RCRA-SQG: RCRA - Small Quantity Generators**

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/01/2018	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/28/2018	Telephone: (415) 495-8895
Date Made Active in Reports: 06/22/2018	Last EDR Contact: 06/28/2018
Number of Days to Update: 86	Next Scheduled EDR Contact: 10/08/2018
	Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/01/2018	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/28/2018	Telephone: (415) 495-8895
Date Made Active in Reports: 06/22/2018	Last EDR Contact: 06/28/2018
Number of Days to Update: 86	Next Scheduled EDR Contact: 10/08/2018
	Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries**LUCIS: Land Use Control Information System**

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/14/2018	Source: Department of the Navy
Date Data Arrived at EDR: 05/18/2018	Telephone: 843-820-7326
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 05/09/2018
Number of Days to Update: 63	Next Scheduled EDR Contact: 08/27/2018
	Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/13/2018	Source: Environmental Protection Agency
Date Data Arrived at EDR: 02/27/2018	Telephone: 703-603-0695
Date Made Active in Reports: 05/11/2018	Last EDR Contact: 05/29/2018
Number of Days to Update: 73	Next Scheduled EDR Contact: 09/10/2018
	Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/13/2018	Source: Environmental Protection Agency
Date Data Arrived at EDR: 02/27/2018	Telephone: 703-603-0695
Date Made Active in Reports: 05/11/2018	Last EDR Contact: 05/29/2018
Number of Days to Update: 73	Next Scheduled EDR Contact: 09/10/2018
	Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING***Federal ERNS list***

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 03/19/2018

Date Data Arrived at EDR: 03/27/2018

Date Made Active in Reports: 06/08/2018

Number of Days to Update: 73

Source: National Response Center, United States Coast Guard

Telephone: 202-267-2180

Last EDR Contact: 06/27/2018

Next Scheduled EDR Contact: 10/08/2018

Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity.

These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 04/30/2018

Date Data Arrived at EDR: 05/02/2018

Date Made Active in Reports: 06/22/2018

Number of Days to Update: 51

Source: Department of Toxic Substances Control

Telephone: 916-323-3400

Last EDR Contact: 05/02/2018

Next Scheduled EDR Contact: 08/13/2018

Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifies sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 04/30/2018

Date Data Arrived at EDR: 05/02/2018

Date Made Active in Reports: 06/22/2018

Number of Days to Update: 51

Source: Department of Toxic Substances Control

Telephone: 916-323-3400

Last EDR Contact: 05/02/2018

Next Scheduled EDR Contact: 08/13/2018

Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inventory of solid waste disposal facilities or landfills. These may be active or inactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/14/2018

Date Data Arrived at EDR: 05/16/2018

Date Made Active in Reports: 06/22/2018

Number of Days to Update: 37

Source: Department of Resources Recycling and Recovery

Telephone: 916-341-6320

Last EDR Contact: 05/16/2018

Next Scheduled EDR Contact: 08/27/2018

Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**LUST REG 7: Leaking Underground Storage Tank Case Listing**

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/11/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 34

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 07/01/2008
 Date Data Arrived at EDR: 07/22/2008
 Date Made Active in Reports: 07/31/2008
 Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
 Telephone: 916-464-4834
 Last EDR Contact: 07/01/2011
 Next Scheduled EDR Contact: 10/17/2011
 Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
 Date Data Arrived at EDR: 09/07/2004
 Date Made Active in Reports: 10/12/2004
 Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
 Telephone: 213-576-6710
 Last EDR Contact: 09/06/2011
 Next Scheduled EDR Contact: 12/19/2011
 Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
 Date Data Arrived at EDR: 05/19/2003
 Date Made Active in Reports: 06/02/2003
 Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
 Telephone: 805-542-4786
 Last EDR Contact: 07/18/2011
 Next Scheduled EDR Contact: 10/31/2011
 Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
 Date Data Arrived at EDR: 10/20/2004
 Date Made Active in Reports: 11/19/2004
 Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
 Telephone: 510-622-2433
 Last EDR Contact: 09/19/2011
 Next Scheduled EDR Contact: 01/02/2012
 Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
 Date Data Arrived at EDR: 02/28/2001
 Date Made Active in Reports: 03/29/2001
 Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
 Telephone: 707-570-3769
 Last EDR Contact: 08/01/2011
 Next Scheduled EDR Contact: 11/14/2011
 Data Release Frequency: No Update Planned

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/25/2018
 Date Data Arrived at EDR: 05/18/2018
 Date Made Active in Reports: 07/20/2018
 Number of Days to Update: 63

Source: EPA Region 8
 Telephone: 303-312-6271
 Last EDR Contact: 05/18/2018
 Next Scheduled EDR Contact: 08/06/2018
 Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/10/2018
 Date Data Arrived at EDR: 05/18/2018
 Date Made Active in Reports: 07/20/2018
 Number of Days to Update: 63

Source: Environmental Protection Agency
 Telephone: 415-972-3372
 Last EDR Contact: 05/18/2018
 Next Scheduled EDR Contact: 08/06/2018
 Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land**
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/24/2018	Source: EPA Region 7
Date Data Arrived at EDR: 05/18/2018	Telephone: 913-551-7003
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 05/18/2018
Number of Days to Update: 63	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/01/2018	Source: EPA Region 6
Date Data Arrived at EDR: 05/18/2018	Telephone: 214-665-6597
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 05/18/2018
Number of Days to Update: 63	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 05/08/2018	Source: EPA Region 4
Date Data Arrived at EDR: 05/18/2018	Telephone: 404-562-8677
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 05/16/2018
Number of Days to Update: 63	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018	Source: EPA Region 1
Date Data Arrived at EDR: 05/18/2018	Telephone: 617-918-1313
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 05/18/2018
Number of Days to Update: 63	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/12/2018	Source: EPA, Region 5
Date Data Arrived at EDR: 05/18/2018	Telephone: 312-886-7439
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 05/18/2018
Number of Days to Update: 63	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/12/2018	Source: EPA Region 10
Date Data Arrived at EDR: 05/18/2018	Telephone: 206-553-2857
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 05/18/2018
Number of Days to Update: 63	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)

Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/11/2018	Source: State Water Resources Control Board
Date Data Arrived at EDR: 06/13/2018	Telephone: 866-480-1028
Date Made Active in Reports: 07/17/2018	Last EDR Contact: 12/12/2018
Number of Days to Update: 34	Next Scheduled EDR Contact: 09/24/2018
	Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**SLIC REG 1: Active Toxic Site Investigations**

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**SLIC REG 6L: SLIC Sites**

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists**FEMA UST: Underground Storage Tank Listing**

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 06/11/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/10/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/11/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/09/2018
Number of Days to Update: 26

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Semi-Annually

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 06/11/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/18/2018
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 06/21/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/25/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**INDIAN UST R7: Underground Storage Tanks on Indian Land**

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/24/2018	Source: EPA Region 7
Date Data Arrived at EDR: 05/18/2018	Telephone: 913-551-7003
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 05/18/2018
Number of Days to Update: 63	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/01/2018	Source: EPA Region 6
Date Data Arrived at EDR: 05/18/2018	Telephone: 214-665-7591
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 05/18/2018
Number of Days to Update: 63	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/13/2018	Source: EPA, Region 1
Date Data Arrived at EDR: 05/18/2018	Telephone: 617-918-1313
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 05/18/2018
Number of Days to Update: 63	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 05/08/2018	Source: EPA Region 4
Date Data Arrived at EDR: 05/18/2018	Telephone: 404-562-9424
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 05/16/2018
Number of Days to Update: 63	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/12/2018	Source: EPA Region 5
Date Data Arrived at EDR: 05/18/2018	Telephone: 312-886-6136
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 05/18/2018
Number of Days to Update: 63	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Varies

State and tribal voluntary cleanup sites**VCP: Voluntary Cleanup Program Properties**

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/30/2018
 Date Data Arrived at EDR: 05/02/2018
 Date Made Active in Reports: 06/22/2018
 Number of Days to Update: 51

Source: Department of Toxic Substances Control
 Telephone: 916-323-3400
 Last EDR Contact: 05/02/2018
 Next Scheduled EDR Contact: 08/13/2018
 Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
 Date Data Arrived at EDR: 09/29/2015
 Date Made Active in Reports: 02/18/2016
 Number of Days to Update: 142

Source: EPA, Region 1
 Telephone: 617-918-1102
 Last EDR Contact: 06/22/2018
 Next Scheduled EDR Contact: 10/08/2018
 Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
 Date Data Arrived at EDR: 04/22/2008
 Date Made Active in Reports: 05/19/2008
 Number of Days to Update: 27

Source: EPA, Region 7
 Telephone: 913-551-7365
 Last EDR Contact: 04/20/2009
 Next Scheduled EDR Contact: 07/20/2009
 Data Release Frequency: Varies

State and tribal Brownfields sites**BROWNFIELDS: Considered Brownfields Sites Listing**

A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 03/26/2018
 Date Data Arrived at EDR: 03/27/2018
 Date Made Active in Reports: 05/04/2018
 Number of Days to Update: 38

Source: State Water Resources Control Board
 Telephone: 916-323-7905
 Last EDR Contact: 06/27/2018
 Next Scheduled EDR Contact: 10/08/2018
 Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS**Local Brownfield lists****US BROWNFIELDS: A Listing of Brownfields Sites**

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 03/19/2018
 Date Data Arrived at EDR: 03/21/2018
 Date Made Active in Reports: 06/08/2018
 Number of Days to Update: 79

Source: Environmental Protection Agency
 Telephone: 202-566-2777
 Last EDR Contact: 06/20/2018
 Next Scheduled EDR Contact: 10/01/2018
 Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites**WMUDS/SWAT: Waste Management Unit Database**

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 07/24/2018
Next Scheduled EDR Contact: 11/12/2018
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 05/29/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 48

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/22/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 01/30/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/17/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Services, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 05/04/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**Local Lists of Hazardous waste / Contaminated Sites****US HIST CDL: National Clandestine Laboratory Register**

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 02/22/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 05/11/2018
Number of Days to Update: 71

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/30/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 04/30/2018
Date Data Arrived at EDR: 05/02/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 51

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 08/18/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 07/05/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 02/22/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 05/11/2018
Number of Days to Update: 71

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/30/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Quarterly

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/07/2018
Number of Days to Update: 44

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 07/25/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks**SWEEPS UST: SWEEPS UST Listing**

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 03/28/2018
Date Data Arrived at EDR: 05/25/2018
Date Made Active in Reports: 07/10/2018
Number of Days to Update: 46

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 05/22/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 04/19/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 10

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/07/2018
Number of Days to Update: 44

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 07/25/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Quarterly

Local Land Records**LIENS: Environmental Liens Listing**

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/05/2018
Date Made Active in Reports: 07/18/2018
Number of Days to Update: 43

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 05/13/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 30

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 06/04/2018
Date Data Arrived at EDR: 06/06/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 41

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**HMIRS: Hazardous Materials Information Reporting System**

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/26/2018	Source: U.S. Department of Transportation
Date Data Arrived at EDR: 03/27/2018	Telephone: 202-366-4555
Date Made Active in Reports: 06/08/2018	Last EDR Contact: 03/27/2018
Number of Days to Update: 73	Next Scheduled EDR Contact: 07/09/2018
	Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 04/06/2018	Source: Office of Emergency Services
Date Data Arrived at EDR: 04/24/2018	Telephone: 916-845-8400
Date Made Active in Reports: 06/14/2018	Last EDR Contact: 04/24/2018
Number of Days to Update: 51	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/11/2018	Source: State Water Quality Control Board
Date Data Arrived at EDR: 06/13/2018	Telephone: 866-480-1028
Date Made Active in Reports: 07/17/2018	Last EDR Contact: 12/12/2018
Number of Days to Update: 34	Next Scheduled EDR Contact: 09/24/2018
	Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/11/2018	Source: State Water Resources Control Board
Date Data Arrived at EDR: 06/13/2018	Telephone: 866-480-1028
Date Made Active in Reports: 07/17/2018	Last EDR Contact: 12/12/2018
Number of Days to Update: 34	Next Scheduled EDR Contact: 09/24/2018
	Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012	Source: FirstSearch
Date Data Arrived at EDR: 01/03/2013	Telephone: N/A
Date Made Active in Reports: 02/22/2013	Last EDR Contact: 01/03/2013
Number of Days to Update: 50	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

Other Ascertainable Records**RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated**

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/28/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 05/25/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/13/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/15/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 87

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 06/27/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**EPA WATCH LIST: EPA WATCH LIST**

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/21/2014	Telephone: 617-520-3000
Date Made Active in Reports: 06/17/2014	Last EDR Contact: 05/07/2018
Number of Days to Update: 88	Next Scheduled EDR Contact: 08/20/2018
	Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017	Source: Environmental Protection Agency
Date Data Arrived at EDR: 05/08/2018	Telephone: 703-308-4044
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 05/08/2018
Number of Days to Update: 73	Next Scheduled EDR Contact: 08/20/2018
	Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016	Source: EPA
Date Data Arrived at EDR: 06/21/2017	Telephone: 202-260-5521
Date Made Active in Reports: 01/05/2018	Last EDR Contact: 06/22/2018
Number of Days to Update: 198	Next Scheduled EDR Contact: 10/01/2018
	Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016	Source: EPA
Date Data Arrived at EDR: 01/10/2018	Telephone: 202-566-0250
Date Made Active in Reports: 01/12/2018	Last EDR Contact: 05/25/2018
Number of Days to Update: 2	Next Scheduled EDR Contact: 09/03/2018
	Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009	Source: EPA
Date Data Arrived at EDR: 12/10/2010	Telephone: 202-564-4203
Date Made Active in Reports: 02/25/2011	Last EDR Contact: 04/09/2018
Number of Days to Update: 77	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**ROD: Records Of Decision**

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 05/13/2018	Source: EPA
Date Data Arrived at EDR: 05/30/2018	Telephone: 703-416-0223
Date Made Active in Reports: 06/29/2018	Last EDR Contact: 07/06/2018
Number of Days to Update: 30	Next Scheduled EDR Contact: 10/15/2018
	Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 11/02/2017	Source: Environmental Protection Agency
Date Data Arrived at EDR: 11/17/2017	Telephone: 202-564-8600
Date Made Active in Reports: 12/08/2017	Last EDR Contact: 07/20/2018
Number of Days to Update: 21	Next Scheduled EDR Contact: 11/05/2018
	Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995	Source: EPA
Date Data Arrived at EDR: 07/03/1995	Telephone: 202-564-4104
Date Made Active in Reports: 08/07/1995	Last EDR Contact: 06/02/2008
Number of Days to Update: 35	Next Scheduled EDR Contact: 09/01/2008
	Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013	Source: EPA
Date Data Arrived at EDR: 10/17/2014	Telephone: 202-564-6023
Date Made Active in Reports: 10/20/2014	Last EDR Contact: 07/06/2018
Number of Days to Update: 3	Next Scheduled EDR Contact: 08/20/2018
	Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/01/2017	Source: EPA
Date Data Arrived at EDR: 06/09/2017	Telephone: 202-566-0500
Date Made Active in Reports: 10/13/2017	Last EDR Contact: 07/13/2018
Number of Days to Update: 126	Next Scheduled EDR Contact: 10/22/2018
	Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**ICIS: Integrated Compliance Information System**

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016	Source: Environmental Protection Agency
Date Data Arrived at EDR: 11/23/2016	Telephone: 202-564-2501
Date Made Active in Reports: 02/10/2017	Last EDR Contact: 07/09/2018
Number of Days to Update: 79	Next Scheduled EDR Contact: 10/22/2018
	Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009	Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Date Data Arrived at EDR: 04/16/2009	Telephone: 202-566-1667
Date Made Active in Reports: 05/11/2009	Last EDR Contact: 08/18/2017
Number of Days to Update: 25	Next Scheduled EDR Contact: 12/04/2017
	Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009	Source: EPA
Date Data Arrived at EDR: 04/16/2009	Telephone: 202-566-1667
Date Made Active in Reports: 05/11/2009	Last EDR Contact: 08/18/2017
Number of Days to Update: 25	Next Scheduled EDR Contact: 12/04/2017
	Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016	Source: Nuclear Regulatory Commission
Date Data Arrived at EDR: 09/08/2016	Telephone: 301-415-7169
Date Made Active in Reports: 10/21/2016	Last EDR Contact: 07/23/2018
Number of Days to Update: 43	Next Scheduled EDR Contact: 11/05/2018
	Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005	Source: Department of Energy
Date Data Arrived at EDR: 08/07/2009	Telephone: 202-586-8719
Date Made Active in Reports: 10/22/2009	Last EDR Contact: 06/07/2018
Number of Days to Update: 76	Next Scheduled EDR Contact: 09/17/2018
	Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014	Source: Environmental Protection Agency
Date Data Arrived at EDR: 09/10/2014	Telephone: N/A
Date Made Active in Reports: 10/20/2014	Last EDR Contact: 06/04/2018
Number of Days to Update: 40	Next Scheduled EDR Contact: 09/17/2018
	Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**PCB TRANSFORMER: PCB Transformer Registration Database**

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017	Source: Environmental Protection Agency
Date Data Arrived at EDR: 11/30/2017	Telephone: 202-566-0517
Date Made Active in Reports: 12/15/2017	Last EDR Contact: 04/27/2018
Number of Days to Update: 15	Next Scheduled EDR Contact: 08/06/2018
	Data Release Frequency: Varies

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/03/2018	Source: Environmental Protection Agency
Date Data Arrived at EDR: 04/05/2018	Telephone: 202-343-9775
Date Made Active in Reports: 06/29/2018	Last EDR Contact: 07/05/2018
Number of Days to Update: 85	Next Scheduled EDR Contact: 10/15/2018
	Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/01/2007	Telephone: 202-564-2501
Date Made Active in Reports: 04/10/2007	Last EDR Contact: 12/17/2007
Number of Days to Update: 40	Next Scheduled EDR Contact: 03/17/2008
	Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/01/2007	Telephone: 202-564-2501
Date Made Active in Reports: 04/10/2007	Last EDR Contact: 12/17/2008
Number of Days to Update: 40	Next Scheduled EDR Contact: 03/17/2008
	Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transportation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012	Source: Department of Transportation, Office of Pipeline Safety
Date Data Arrived at EDR: 08/07/2012	Telephone: 202-366-4595
Date Made Active in Reports: 09/18/2012	Last EDR Contact: 05/03/2018
Number of Days to Update: 42	Next Scheduled EDR Contact: 08/13/2018
	Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 03/31/2018
Date Data Arrived at EDR: 04/16/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 74

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 07/09/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 06/28/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 05/07/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 05/13/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 30

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931 and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 05/03/2018
Date Data Arrived at EDR: 05/31/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 29

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/30/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/30/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**ABANDONED MINES: Abandoned Mines**

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/08/2018	Source: Department of Interior
Date Data Arrived at EDR: 03/13/2018	Telephone: 202-208-2609
Date Made Active in Reports: 06/08/2018	Last EDR Contact: 06/20/2018
Number of Days to Update: 87	Next Scheduled EDR Contact: 09/24/2018
	Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/21/2018	Source: EPA
Date Data Arrived at EDR: 02/23/2018	Telephone: (415) 947-8000
Date Made Active in Reports: 03/23/2018	Last EDR Contact: 06/06/2018
Number of Days to Update: 28	Next Scheduled EDR Contact: 09/17/2018
	Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 02/25/2018	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/17/2018	Telephone: 202-564-2280
Date Made Active in Reports: 06/08/2018	Last EDR Contact: 06/06/2018
Number of Days to Update: 83	Next Scheduled EDR Contact: 09/17/2018
	Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 01/04/2018	Source: Environmental Protection Agency
Date Data Arrived at EDR: 01/19/2018	Telephone: 202-564-0527
Date Made Active in Reports: 04/13/2018	Last EDR Contact: 06/01/2018
Number of Days to Update: 84	Next Scheduled EDR Contact: 09/10/2018
	Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 09/30/2016	Source: Department of Defense
Date Data Arrived at EDR: 10/31/2017	Telephone: 703-704-1564
Date Made Active in Reports: 01/12/2018	Last EDR Contact: 07/13/2018
Number of Days to Update: 73	Next Scheduled EDR Contact: 10/29/2018
	Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 02/20/2018
Date Data Arrived at EDR: 02/21/2018
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 30

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/23/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 03/26/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 38

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/27/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

CUPA SAN FRANCISCO CO: CUPA SAN FRANCISCO CO

Cupa facilities

Date of Government Version: 04/20/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 10

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Varies

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 04/03/2018
Date Data Arrived at EDR: 05/07/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 39

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 05/07/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Varies

DRYCLEAN AVAQMD: DRYCLEAN AVAQMD

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 03/08/2018
Date Data Arrived at EDR: 03/13/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 52

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 06/22/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 03/27/2018
 Date Data Arrived at EDR: 03/29/2018
 Date Made Active in Reports: 05/04/2018
 Number of Days to Update: 36

Source: Department of Toxic Substance Control
 Telephone: 916-327-4498
 Last EDR Contact: 05/30/2018
 Next Scheduled EDR Contact: 09/17/2018
 Data Release Frequency: Annually

DRYCLEAN SOUTH COAST: DRYCLEAN SOUTH COAST

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 03/16/2018
 Date Data Arrived at EDR: 03/20/2018
 Date Made Active in Reports: 05/04/2018
 Number of Days to Update: 45

Source: South Coast Air Quality Management District
 Telephone: 909-396-3211
 Last EDR Contact: 06/11/2018
 Next Scheduled EDR Contact: 09/10/2018
 Data Release Frequency: Varies

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2015
 Date Data Arrived at EDR: 03/21/2017
 Date Made Active in Reports: 08/15/2017
 Number of Days to Update: 147

Source: California Air Resources Board
 Telephone: 916-322-2990
 Last EDR Contact: 06/20/2018
 Next Scheduled EDR Contact: 10/01/2018
 Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 04/18/2018
 Date Data Arrived at EDR: 04/24/2018
 Date Made Active in Reports: 07/06/2018
 Number of Days to Update: 73

Source: State Water Resources Control Board
 Telephone: 916-445-9379
 Last EDR Contact: 07/17/2018
 Next Scheduled EDR Contact: 11/05/2018
 Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 04/18/2018
 Date Data Arrived at EDR: 04/20/2018
 Date Made Active in Reports: 06/19/2018
 Number of Days to Update: 60

Source: Department of Toxic Substances Control
 Telephone: 916-255-3628
 Last EDR Contact: 07/17/2018
 Next Scheduled EDR Contact: 11/05/2018
 Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 05/14/2018
 Date Data Arrived at EDR: 05/15/2018
 Date Made Active in Reports: 06/22/2018
 Number of Days to Update: 38

Source: California Integrated Waste Management Board
 Telephone: 916-341-6066
 Last EDR Contact: 05/09/2018
 Next Scheduled EDR Contact: 08/27/2018
 Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/12/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 97

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/13/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 05/21/2018
Date Data Arrived at EDR: 05/23/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 55

Source: Department of Toxic Substances Control
Telephone: 877-786-9427
Last EDR Contact: 05/23/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 05/21/2018
Date Data Arrived at EDR: 05/23/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 55

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/23/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/09/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 69

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing

A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 05/23/2018
Date Data Arrived at EDR: 06/06/2018
Date Made Active in Reports: 07/18/2018
Number of Days to Update: 42

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Varies

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 05/14/2018
Date Data Arrived at EDR: 05/16/2018
Date Made Active in Reports: 07/05/2018
Number of Days to Update: 50

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing

A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 06/04/2018
Date Data Arrived at EDR: 06/06/2018
Date Made Active in Reports: 07/19/2018
Number of Days to Update: 43

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Quarterly

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 03/23/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 38

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 06/14/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: No Update Planned

UIC: UIC Listing

A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 04/27/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 34

Source: Department of Conservation
Telephone: 916-445-2408
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing

Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 04/13/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 67

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Varies

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/25/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 06/11/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/18/2018
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)

Projects sites

Date of Government Version: 06/11/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/18/2018
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 06/11/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/18/2018
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)

Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 06/11/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/18/2018
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**CIWQS: California Integrated Water Quality System**

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 06/04/2018	Source: State Water Resources Control Board
Date Data Arrived at EDR: 06/06/2018	Telephone: 866-794-4977
Date Made Active in Reports: 07/13/2018	Last EDR Contact: 06/06/2018
Number of Days to Update: 37	Next Scheduled EDR Contact: 09/17/2018
	Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 06/11/2018	Source: State Water Resources Control Board
Date Data Arrived at EDR: 06/13/2018	Telephone: 866-480-1028
Date Made Active in Reports: 07/18/2018	Last EDR Contact: 12/12/2018
Number of Days to Update: 35	Next Scheduled EDR Contact: 09/24/2018
	Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)

Sampling point - public sites

Date of Government Version: 06/11/2018	Source: State Water Resources Control Board
Date Data Arrived at EDR: 06/13/2018	Telephone: 866-480-1028
Date Made Active in Reports: 07/18/2018	Last EDR Contact: 12/12/2018
Number of Days to Update: 35	Next Scheduled EDR Contact: 09/24/2018
	Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)

Underground control injection sites

Date of Government Version: 06/11/2018	Source: State Water Resource Control Board
Date Data Arrived at EDR: 06/13/2018	Telephone: 866-480-1028
Date Made Active in Reports: 07/18/2018	Last EDR Contact: 12/12/2018
Number of Days to Update: 35	Next Scheduled EDR Contact: 09/24/2018
	Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 04/23/2018	Source: California Environmental Protection Agency
Date Data Arrived at EDR: 04/24/2018	Telephone: 916-323-2514
Date Made Active in Reports: 06/07/2018	Last EDR Contact: 07/25/2018
Number of Days to Update: 44	Next Scheduled EDR Contact: 11/05/2018
	Data Release Frequency: Varies

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)

Military privatized sites

Date of Government Version: 06/11/2018	Source: State Water Resources Control Board
Date Data Arrived at EDR: 06/13/2018	Telephone: 866-480-1028
Date Made Active in Reports: 07/18/2018	Last EDR Contact: 12/12/2018
Number of Days to Update: 35	Next Scheduled EDR Contact: 09/24/2018
	Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**EDR HIGH RISK HISTORICAL RECORDS*****EDR Exclusive Records*****EDR MGP: EDR Proprietary Manufactured Gas Plants**

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES***Exclusive Recovered Govt. Archives*****RGA LF: Recovered Government Archive Solid Waste Facilities List**

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS**ALAMEDA COUNTY:****Contaminated Sites**

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/05/2018
Date Data Arrived at EDR: 04/10/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 65

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/17/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/05/2018
Date Data Arrived at EDR: 04/10/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 24

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/05/2018
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:**CUPA Facility List**

Cupa Facility List

Date of Government Version: 03/31/2018
Date Data Arrived at EDR: 04/05/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 70

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 06/14/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Varies

BUTTE COUNTY:**CUPA Facility Listing**

Cupa facility list.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 07/05/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: No Update Planned

CALVERAS COUNTY:**CUPA Facility Listing****Cupa Facility Listing**

Date of Government Version: 05/07/2018
Date Data Arrived at EDR: 05/09/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 36

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/25/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

COLUSA COUNTY:**CUPA Facility List****Cupa facility list.**

Date of Government Version: 05/23/2018
Date Data Arrived at EDR: 05/24/2018
Date Made Active in Reports: 07/13/2018
Number of Days to Update: 50

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:**Site List**

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 05/21/2018
Date Data Arrived at EDR: 05/25/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 56

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 04/30/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:**CUPA Facility List****Cupa Facility list**

Date of Government Version: 04/27/2018
Date Data Arrived at EDR: 05/02/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 44

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 07/24/2018
Next Scheduled EDR Contact: 11/12/2018
Data Release Frequency: Varies

EL DORADO COUNTY:**CUPA Facility List****CUPA facility list.**

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 03/05/2018
Date Data Arrived at EDR: 03/08/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 39

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 07/12/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Varies

FRESNO COUNTY:**CUPA Resources List**

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/05/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 9

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Semi-Annually

GLENN COUNTY:**CUPA Facility List**

Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 07/17/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

HUMBOLDT COUNTY:**CUPA Facility List**

CUPA facility list.

Date of Government Version: 03/05/2018
Date Data Arrived at EDR: 03/08/2018
Date Made Active in Reports: 04/30/2018
Number of Days to Update: 53

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/21/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:**CUPA Facility List**

Cupa facility list.

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 50

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 07/17/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INYO COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**CUPA Facility List**

Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/30/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

KERN COUNTY:**Underground Storage Tank Sites & Tank Listing**
Kern County Sites and Tanks Listing.

Date of Government Version: 05/02/2018
Date Data Arrived at EDR: 05/07/2018
Date Made Active in Reports: 07/18/2018
Number of Days to Update: 72

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 07/20/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

KINGS COUNTY:**CUPA Facility List**

A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 06/12/2018
Date Data Arrived at EDR: 06/15/2018
Date Made Active in Reports: 07/13/2018
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

LAKE COUNTY:**CUPA Facility List**

Cupa facility list

Date of Government Version: 05/09/2018
Date Data Arrived at EDR: 05/11/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 34

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 07/16/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Varies

LASSEN COUNTY:**CUPA Facility List**

Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 07/17/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

LOS ANGELES COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**San Gabriel Valley Areas of Concern**

San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: No Update Planned

HMS: Street Number List

Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 04/16/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 60

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 07/05/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities

Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/16/2018
Date Data Arrived at EDR: 04/17/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 63

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/18/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Varies

City of Los Angeles Landfills

Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2018
Date Data Arrived at EDR: 05/01/2018
Date Made Active in Reports: 05/14/2018
Number of Days to Update: 13

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Varies

Site Mitigation List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 04/17/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 63

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/20/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank

Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank

Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/17/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

City of Torrance Underground Storage Tank

Underground storage tank sites located in the city of Torrance.

Date of Government Version: 01/04/2018

Date Data Arrived at EDR: 01/05/2018

Date Made Active in Reports: 01/18/2018

Number of Days to Update: 13

Source: City of Torrance Fire Department

Telephone: 310-618-2973

Last EDR Contact: 07/23/2018

Next Scheduled EDR Contact: 10/22/2018

Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List

A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 02/21/2018

Date Data Arrived at EDR: 02/22/2018

Date Made Active in Reports: 04/03/2018

Number of Days to Update: 40

Source: Madera County Environmental Health

Telephone: 559-675-7823

Last EDR Contact: 05/16/2018

Next Scheduled EDR Contact: 09/03/2018

Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites

Currently permitted USTs in Marin County.

Date of Government Version: 03/30/2018

Date Data Arrived at EDR: 04/06/2018

Date Made Active in Reports: 05/04/2018

Number of Days to Update: 28

Source: Public Works Department Waste Management

Telephone: 415-473-6647

Last EDR Contact: 07/11/2018

Next Scheduled EDR Contact: 10/15/2018

Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 05/30/2018

Date Data Arrived at EDR: 06/01/2018

Date Made Active in Reports: 07/13/2018

Number of Days to Update: 42

Source: Merced County Environmental Health

Telephone: 209-381-1094

Last EDR Contact: 05/16/2018

Next Scheduled EDR Contact: 09/03/2018

Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List

CUPA Facility List

Date of Government Version: 05/22/2018

Date Data Arrived at EDR: 05/24/2018

Date Made Active in Reports: 07/13/2018

Number of Days to Update: 50

Source: Mono County Health Department

Telephone: 760-932-5580

Last EDR Contact: 05/22/2018

Next Scheduled EDR Contact: 09/10/2018

Data Release Frequency: Varies

MONTEREY COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**CUPA Facility Listing**

CUPA Program listing from the Environmental Health Division.

Date of Government Version: 06/13/2018
Date Data Arrived at EDR: 06/19/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 31

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 07/02/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Varies

NAPA COUNTY:**Sites With Reported Contamination**

A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/22/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites

Underground storage tank sites located in Napa county.

Date of Government Version: 05/23/2018
Date Data Arrived at EDR: 05/31/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 41

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/22/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: No Update Planned

NEVADA COUNTY:**CUPA Facility List**

CUPA facility list.

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/01/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 45

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 07/24/2018
Next Scheduled EDR Contact: 11/12/2018
Data Release Frequency: Varies

ORANGE COUNTY:**List of Industrial Site Cleanups**

Petroleum and non-petroleum spills.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 05/11/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 42

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/07/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups

Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 05/11/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 45

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/07/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

List of Underground Storage Tank Facilities

Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/10/2018
Number of Days to Update: 63

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/08/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities

List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/05/2018
Date Made Active in Reports: 07/18/2018
Number of Days to Update: 43

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA Facility List

Plumas County CUPA Program facilities.

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/15/2018
Number of Days to Update: 50

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 07/17/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites

Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/05/2018
Date Data Arrived at EDR: 04/10/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 24

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/18/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Quarterly

Underground Storage Tank Tank List

Underground storage tank sites located in Riverside county.

Date of Government Version: 04/05/2018
Date Data Arrived at EDR: 04/10/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 24

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/18/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List

List of sites where unauthorized releases of potentially hazardous materials have occurred.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 02/02/2018
Date Data Arrived at EDR: 04/04/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 71

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/03/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/02/2018
Date Data Arrived at EDR: 04/04/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 76

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/03/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Quarterly

SAN BENITO COUNTY:**CUPA Facility List**

Cupa facility list

Date of Government Version: 05/16/2018
Date Data Arrived at EDR: 05/22/2018
Date Made Active in Reports: 07/13/2018
Number of Days to Update: 52

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:**Hazardous Material Permits**

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 04/09/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 69

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:**Hazardous Materials Management Division Database**

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 06/04/2018
Date Data Arrived at EDR: 06/06/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 41

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**Solid Waste Facilities**

San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/17/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/23/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 11

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 07/17/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:**Local Oversight Facilities**

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 06/07/2018
Date Data Arrived at EDR: 06/12/2018
Date Made Active in Reports: 07/10/2018
Number of Days to Update: 28

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:**San Joaquin Co. UST**

A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/14/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**CUPA Facility List**

Cupa Facility List.

Date of Government Version: 05/16/2018
Date Data Arrived at EDR: 05/22/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 56

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

SAN MATEO COUNTY:**Business Inventory**

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 03/14/2018
Date Data Arrived at EDR: 03/20/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 45

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Annually

Fuel Leak List

A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/15/2018
Date Data Arrived at EDR: 03/20/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 45

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:**CUPA Facility Listing**

CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

SANTA CLARA COUNTY:**Cupa Facility List**

Cupa facility list

Date of Government Version: 05/16/2018
Date Data Arrived at EDR: 05/23/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 55

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report

A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**LOP Listing**

A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 05/22/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Annually

Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 05/16/2018
Date Data Arrived at EDR: 05/22/2018
Date Made Active in Reports: 07/19/2018
Number of Days to Update: 58

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Annually

SANTA CRUZ COUNTY:**CUPA Facility List**

CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

SHASTA COUNTY:**CUPA Facility List**

Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

SOLANO COUNTY:**Leaking Underground Storage Tanks**

A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2018
Date Data Arrived at EDR: 06/08/2018
Date Made Active in Reports: 07/18/2018
Number of Days to Update: 40

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Quarterly

Underground Storage Tanks

Underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2018
Date Data Arrived at EDR: 06/12/2018
Date Made Active in Reports: 07/12/2018
Number of Days to Update: 30

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Quarterly

SONOMA COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Cupa Facility List

Cupa Facility list

Date of Government Version: 06/19/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 21

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/21/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/03/2018
Date Data Arrived at EDR: 04/06/2018
Date Made Active in Reports: 05/09/2018
Number of Days to Update: 33

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/21/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/11/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 35

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 07/16/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Varies

SUTTER COUNTY:

Underground Storage Tanks

Underground storage tank sites located in Sutter county.

Date of Government Version: 06/04/2018
Date Data Arrived at EDR: 06/08/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 33

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA Facility List

Cupa facilities

Date of Government Version: 01/26/2018
Date Data Arrived at EDR: 02/02/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 47

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 05/03/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA Facility List

Cupa facility list

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 51

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 07/17/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

TULARE COUNTY:**CUPA Facility List**

Cupa program facilities

Date of Government Version: 03/19/2018
Date Data Arrived at EDR: 03/22/2018
Date Made Active in Reports: 04/17/2018
Number of Days to Update: 26

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 07/16/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Varies

TUOLUMNE COUNTY:**CUPA Facility List**

Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Division of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 07/17/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

VENTURA COUNTY:**Business Plan, Hazardous Waste Producers, and Operating Underground Tanks**

The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 03/26/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 58

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/23/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites

Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/27/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/09/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**Medical Waste Program List**

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 03/26/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/23/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 04/26/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 28

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Quarterly

YOLO COUNTY:**Underground Storage Tank Comprehensive Facility Report**

Underground storage tank sites located in Yolo county.

Date of Government Version: 06/20/2018
Date Data Arrived at EDR: 07/03/2018
Date Made Active in Reports: 07/12/2018
Number of Days to Update: 9

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/27/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Annually

YUBA COUNTY:**CUPA Facility List**

CUPA facility listing for Yuba County.

Date of Government Version: 05/10/2018
Date Data Arrived at EDR: 05/15/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 31

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 07/24/2018
Next Scheduled EDR Contact: 11/12/2018
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 01/03/2018
Date Data Arrived at EDR: 02/14/2018
Date Made Active in Reports: 03/22/2018
Number of Days to Update: 36

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**NJ MANIFEST: Manifest Information**

Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 107

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/13/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 04/30/2018
Date Data Arrived at EDR: 05/03/2018
Date Made Active in Reports: 06/07/2018
Number of Days to Update: 35

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/03/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/25/2017
Date Made Active in Reports: 09/25/2017
Number of Days to Update: 62

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/12/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 04/09/2018
Number of Days to Update: 45

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/21/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/15/2018
Date Made Active in Reports: 07/09/2018
Number of Days to Update: 24

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/11/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Annually

Oil/Gas Pipelines

Source: PennWell Corporation

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data

Source: PennWell Corporation

This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING**AHA Hospitals:**

Source: American Hospital Association, Inc.

Telephone: 312-280-5991

The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services

Telephone: 410-786-3000

A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes

Source: National Institutes of Health

Telephone: 301-594-6248

Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities

Source: Department of Social Services

Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.

Source: FEMA

Telephone: 877-336-2627

Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory

Source: Department of Fish & Game

Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map

Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

© 2015 TomTom North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

Appendix E
Regulatory Agency Correspondence



Department of Toxic Substances Control



Matthew Rodriguez
Secretary for
Environmental Protection

Barbara A. Lee, Director
9211 Oakdale Avenue
Chatsworth, California 91311

Edmund G. Brown Jr.
Governor

April 20, 2017

Mr. Michael A. Shull
Superintendent
Planning and Construction
City of Los Angeles Department of Recreation and Parks
221 North Figueroa Street, Suite 100
Los Angeles, California 90012

APPROVAL OF REMEDIAL ACTION COMPLETION REPORT - CHATSWORTH PARK
SOUTH, 22360 DEVONSHIRE STREET, CHATSWORTH, CALIFORNIA
SITE CODE: 301384-11

Dear Mr. Shull:

The Department of Toxic Substances Control (DTSC) has reviewed the Remedial Action Completion Report (Report) dated December 20, 2016 prepared by URS on behalf of the City of Los Angeles, Department of Recreation and Parks for the above referenced site (Site). The Report documents the removal and off-site disposal of soils contaminated with lead, metal, and polycyclic aromatic hydrocarbons (PAH) in accordance with an approved Remedial Action Workplan (RAP) (URS Corporation, March 2013) for the Site. The Report was prepared pursuant to Voluntary Cleanup Agreement (VCA), Docket No. HSA-VCA 08/09-021.

The 72 acre Site, identified by Los Angeles County Office of the Assessor parcel number 2723-010-904 had a small arms firing range (SAFR) on a portion of the Site from the early to the mid-1960s. The operation of the SAFR resulted in wide surficial spreading of lead shot and clay pigeon debris containing elevated polycyclic aromatic hydrocarbons (PAHs). The City of Los Angeles acquired the property in 1973 and developed approximately 21 acres of the Site with recreational facilities during the 1970s and 1980s. Historical investigations indicated that significant amounts of lead pellets and clay pigeon debris were present on the surface of many areas of the Site. Metals (lead, arsenic, antimony); PAHs (benzo(a)pyrene-equivalent, naphthalene), and dioxins/furans were identified as the primary contaminants of concern (COC) in the soil depth interval of 0 to 4 feet below ground surface (bgs) and were the targets for remediation at the Site.

The approved RAP proposed remediation of COCs in soil which included installation of an engineered surface cap, and some soil excavation with off-site disposal. To achieve the Remedial Action Objectives, various alternatives were evaluated in the RAP and the preferred remedial action alternative selected was Surface Capping to mitigate and/or remediate impacted shallow soil for non-volatile COC concentrations above risk-based cleanup levels established in the Human Health Risk Assessment document. In the rocky outcrop area (Area E), with extensive accumulation of visible lead pellets on the rock surface and shallow soil, pellets were

Mr. Michael A. Shull

April 20, 2017

Page 2

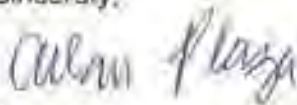
removed manually by vacuums, rakes, and shovels. Approximately 496 tons RCRA hazardous waste and 5,773 tons of grubbed material and excess excavated soil were lawfully transported offsite for disposal as non-hazardous and non-RCRA hazardous waste. In total, approximately 915,000 square feet of engineered surface cap were installed. In addition to approximately 4 acres of tree groves, the surface cap was vegetated and/or covered with 6,590 shrubs, native grass hydro-seed, and mulch to provide long-term erosion protection for the engineered cap.

As impacted soil remains beneath the site's engineered surface cap, from approximately 1 to 4 feet bgs, a land use covenant (LUC) is reasonably necessary to protect present or future human health or safety or the environment as a result of the presence of hazardous materials on the Site as defined in Health and Safety Code section 25260. The LUC will incorporate an Operation and Maintenance Plan (OMP) and Soil Management Plan (SMP) that will outline the requirements for future site work in order to maintain the constructed remedial components (i.e., engineered cap, fencing, etc.) and the requirements for future invasive site work that could expose workers to the residual COCs on the Site.

Based on the information provided, DTSC agrees with the Report's recommendations for land restriction and institutional controls through a long term Operations and Monitoring (O&M) Plan. DTSC hereby approves the Report.

If you have any questions, please contact Chand Sultana, Ph. D, Project Manager, at (818) 717-6552 or me, at (818) 717-6609.

Sincerely,



Allan Plaza

Unit Chief

Brownfields and Environmental Restoration Program – Chatsworth Office

cc: Mr. Paul Davis
Environmental Specialist, DRP/P&C
221 North Figueroa Street, Suite 100
Los Angeles, California 90012

Mr. Brian J. Jacobs, P.G., C.HG.
Program Manager
URS Corporation
915 Wilshire Boulevard, Suite 700
Los Angeles, California 90017

Nicole Bernson
Deputy Chief of Staff
Councilmember Mitchell Englander
200 North Spring Streets, Suite 405
Los Angeles, California 90012

Appendix F
Crimson Pipeline L.P. Information Regarding Pipeline At/Near Site

CRIMSON PIPELINE L.P.
3760 Kilroy Airport Way, Suite 300
Long Beach, CA 90806

August 22, 2018

Colin Young,
C. Young Forensics
1042 Skylark Dr.
La Jolla CA
92037

Re: C08202018E - Notice of Improvement Response Letter
FIRST UTILITY NOTICE FACILITY RESEARCH AND REQUEST FOR COMMENTS FOR C. YOUNG
FORENSICS
22360 WEST DEVONSHIRE STREET, LOS ANGELES

Dear Colin Young,

Pursuant to your request dated August 16, 2018, pertaining to the above referenced project, please be advised that Crimson Pipeline Department maintains pipelines within the vicinity of your proposed project. We are prepared to mark our facilities upon receiving 48-hour advanced Underground Service Alert (USA) notice.

Enclosed for your information are drawings that depict the general alignment of our pipelines. Upon completion of your final project drawings, please provide us a detailed set of your plans for our review to determine if there is a conflict with any of our existing facilities.

Crimson requires a representative to be on site during any construction activities within the vicinity of our facilities. Therefore, you or your contractors are hereby notified to contact, in addition to the above referenced USA notice, Crimson's designated representative, Tim Eggleston cell: 805-791-0028, between the hours of 6:30 A.M. and 5:00 P.M., Monday through Friday, a minimum of 48 hours in advance of commencing said construction activities.

Please be advised that any and all facilities identified as "Active", "Idle", or "Abandoned", unless otherwise clearly specified, remain the property of Crimson, and that all activities affecting these facilities must be approved and controlled by Crimson. Should it be determined that said facility potentially interferes with your project this office must be notified immediately, at which time Crimson personnel will review the issues to determine what actions will be necessary to identify and resolve any conflicts.

If you have questions or require additional information regarding this submittal, please contact Nick Lisica at 562-285-4187.

Sincerely,



Nick Lisica
Utilities Coordinator

Construction Requirements in the Proximity of Crimson Pipelines

Crimson Pipeline L.P. (Crimson) is committed to the continued, safe operation of its pipeline. The listed construction requirements are designed to help ensure that the pipeline is protected from excavation damage, encroachment or other risks that could adversely impact the pipeline or prevent required inspection and maintenance activities.

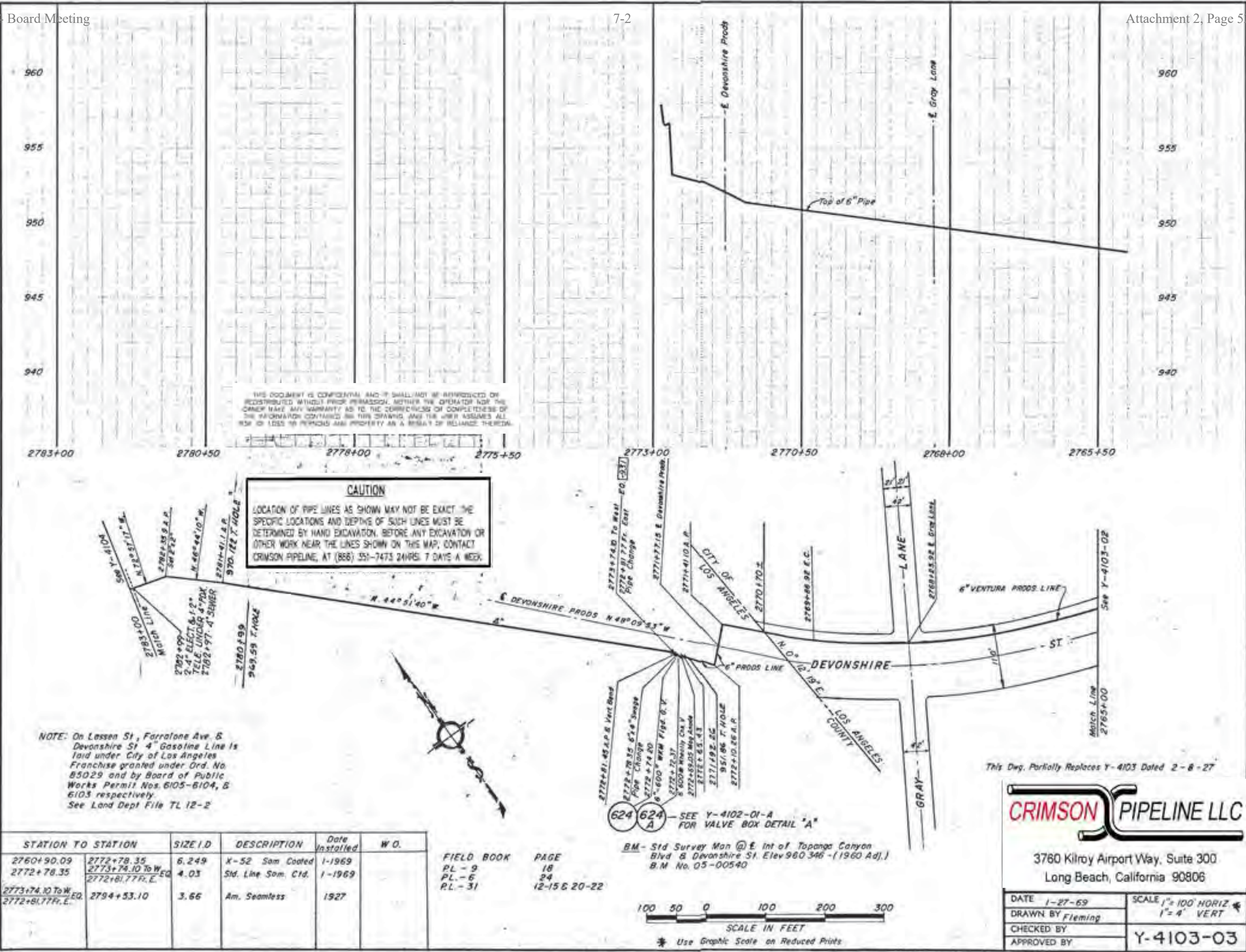
1. Crimson requires two copies of any proposed plans for work within Crimson's right-of-way. Plans shall be provided 45 calendar days prior to commencement of work to the address listed above.
2. Above ground structures and improvements that interfere with the construction, maintenance or repair of the pipeline are prohibited within Crimson's right-of-way. Structures and improvements include, but are not limited to, buildings, fences and walls.
3. Landscaped areas are permitted within the right-of-way. Trees and large bushes that impede the visual inspection of the ground surface are not permitted within the right-of-way. Crimson shall review all plans that encroach the pipeline and the pipeline right of way prior to 4.
4. Federal law prohibits removing, damaging or defacing of pipelines, pipeline signs, or other appurtenances installed on the pipelines right of way.
5. Other utilities may be installed within the right-of-way with permission from Crimson. Such utilities must maintain a minimum of 5 feet parallel and 1-foot vertical clearances unless approved in writing by Crimson prior to their installation. All clearances must conform to existing state and federal regulations.
6. A minimum of 3 feet, but not more than 6 feet of cover must be maintained over the pipeline at all times, unless otherwise approved by Crimson Pipeline in writing. The ground contour cannot be changed within the right-of-way without prior written permission by Crimson.
7. Proposed roads and utility crossings should cross Crimson's right-of-way as close to 90 degrees as possible. If, in Crimson's sole judgment, additional precautions are required to protect Crimson's pipeline, Crimson shall review and approve the construction plans in writing prior to the start of construction.
8. California State Law requires that parties notify Underground Service Alert at 1-800-227-2600, two full working days prior to digging.
9. All work on/or around the Crimson facility must comply with appropriate sections of Code of Federal Regulations Title 49, Part 195 - **TRANSPORTATION OF HAZARDOUS LIQUIDS BY PIPELINE.**
10. Crimson may choose to have an inspector on-site during any grading or excavation activities near the Crimson pipeline. Arrangements may be made for on-site inspection by contacting Crimson Utilities Coordinator at the address shown above.
11. Crimson requires that all excavation in the vicinity of the pipeline be done with hand tools in the presence of the Crimson's inspector consistent with California State Law requirements. Any damage to the pipeline shall be reported immediately. Crimson shall perform the necessary repair to insure the safety of the public safety. Crimson shall be reimbursed for all repair work necessary to continue with the safe, reliable operation of the pipeline.
12. In an emergency, including any damage or suspected damage to the Crimson pipeline, immediately notify Crimson at: 1-866-351-7473.
13. Any questions regarding construction activities in the vicinity of Crimson's pipeline shall be directed to:

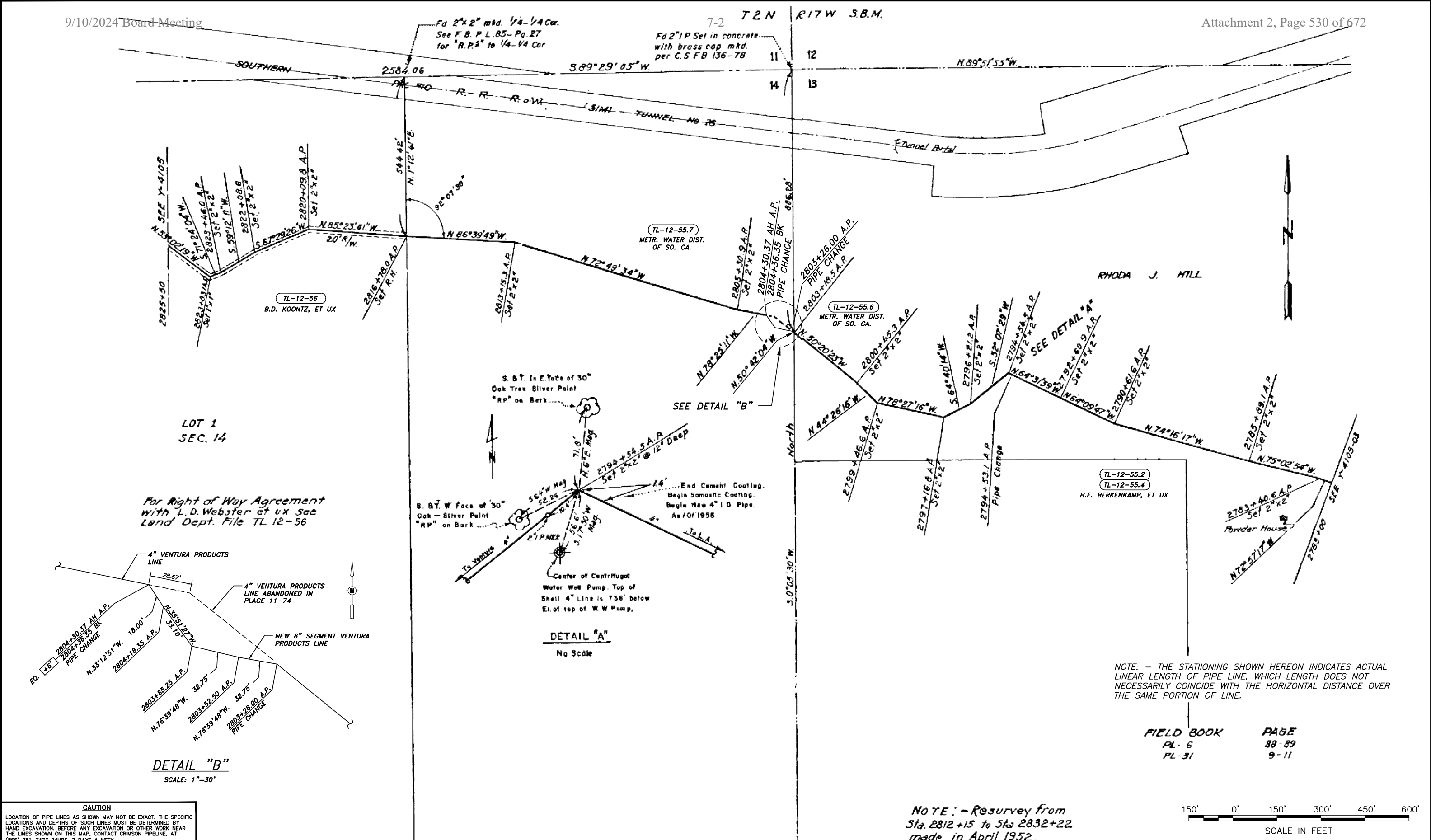
UTILITIES COORDINATOR

Ph: (562) 285-4112 or (833) 876-4589

Fx: (562) 285-4141

Email: landdepartment@crimsonpl.com





<p>THIS DOCUMENT IS CONFIDENTIAL AND IT SHALL NOT BE REPRODUCED OR REDISTRIBUTED WITHOUT PRIOR PERMISSION. NEITHER THE OPERATOR NOR THE OWNER MAKE ANY WARRANTY AS TO THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION CONTAINED ON THIS DRAWING, AND THE USER ASSUMES ALL RISK OF LOSS TO PERSONS AND PROPERTY AS A RESULT OF RELIANCE THEREON.</p>										<p>CRIMSON PIPELINE L.P.</p> <p>3760 Kilroy Airport Way, Suite 300 Long Beach, California 90806</p>		<p>VENTURA PRODUCTS LINE</p> <p>Sec. 14-T. 2N./R. 17W. S.B.B. & M.</p> <p>LOS ANGELES COUNTY</p>	
<p>CAUTION</p> <p>LOCATION OF PIPE LINES AS SHOWN MAY NOT BE EXACT. THE SPECIFIC LOCATIONS AND DEPTHS OF SUCH LINES MUST BE DETERMINED BY HAND EXCAVATION. BEFORE ANY EXCAVATION OR OTHER WORK NEAR THE LINES SHOWN ON THIS MAP, CONTACT CRIMSON PIPELINE, AT (866) 351-7473 24HRS. 7 DAYS A WEEK</p>										<p>71967</p>		<p>SCALE: SEE GR. SCL. DATE: 6-24-99</p>	
<p>REV. NO. DATE REVISION DESCRIPTION BY CHK. ENGR APP.</p>										<p>71967</p>		<p>Sheet 1 of 1</p>	
<p>STATION TO STATION</p>										<p>Y-4104</p>		<p>566</p>	
<p>SIZE (I.D.) GRADE COATING DATE W.O.</p>										<p>1-30-02</p>		<p>3:30pm</p>	

Appendix G
Qualifications of the Environmental Professionals

COLIN P. YOUNG, CIH**PROFESSIONAL HISTORY****Current**

- C Young Associates (CYA), La Jolla, California, 1996-2000, 2003, 01/2009-Present

Previous

- ERM-West, Inc., San Diego, California, Partner-Managing Principal, San Diego Office, 12/03-01/09
- Geocon, Inc., San Diego, California, Vice President/Southern California Operations Manager, 2000-2003, Project Manager/ Marketing Coordinator, 1989-1991
- Metcalf & Eddy, Inc., San Diego, California, Associate/Business Manager-Environmental Services Division, October 1994-1996
- University of California, San Diego (UCSD), Instructor for Occupational Medicine/Public Health & Safety Extension Certificate Program, 1992-2003
- Brown & Root Environmental/Halliburton NUS Corporation
 - San Diego, California, West Region Manager-Western Division Operations, 1991-1993
 - Boston, Massachusetts, U.S. EPA, Region 1 FIT Public Health Specialist, 1982-1985
- Westec Services, Inc./ERCE, San Diego, California, Project Manager/ Manager of Corporate Health & Safety, 1986-1989

PROFESSIONAL EXPERIENCE and QUALIFICATIONS-Academic

- UCSD, Course Instructor for Occupational Medicine Certificate Program, *Industrial Hygiene for the Occupational Health Nurse*, 1992-1995
- UCSD, Course Instructor for Occupational Health & Safety/ Hazardous Materials Certificate Program, *Principles in Industrial Hygiene*, 1995-2003

PROFESSIONAL EXPERIENCE and QUALIFICATIONS-Technical**Industrial Hygiene**

Provide, or have provided, forensic investigation, human health assessment and exposure/injury prevention related services, including the performance of "sick-building"/indoor air quality evaluations, worker exposure assessments, biological contamination (e.g., bioaerosol/mold) studies, litigation support, workers' comp. investigations, asbestos and lead assessments, industrial process safety evaluations, health & safety training and support programs for environmental, hazardous waste, industrial and construction projects and activities. Services have been provided to legal, insurance, industrial, commercial and governmental (e.g., Navy, DOE, regulatory, etc.) clients, alike. Experience representations are summarized, as follows:

- Provide technical and risk management counsel on civil and exposure/toxic tort matters involving alleged environmental impairment and human exposures to hazardous materials, including chemicals and bioaerosols. To date, approximately 200 legal matters have been

COLIN P. YOUNG, CIH

CV (cont.)

supported.

- Provided industrial hygiene/health & safety support and programs for more than 400 environmental and hazardous waste investigations and remediation programs for the US EPA and private entities. Typical projects involved the handling of, and/or potential for exposure to, biological contaminants, fuel and chlorinated hydrocarbons, pesticides, PCBs, asbestos, lead and explosive materials.
- Performed numerous surveys of commercial, industrial and residential structures believed to contain unhealthy and/or potentially hazardous indoor air-quality conditions, including chemical and bioaerosol intrusion.
- Performed numerous industrial process safety evaluations in support of both Workers' Compensation claim-reduction (i.e., limitation of liability) programs and impending Workers' Compensation claims. The services have been provided for the benefit of employers, property owners and business/property insurers and legal counsel.
- Provided training and developed corporate health and safety programs for more than thirty industrial facilities, environmental laboratories and/or engineering consulting firms.
- Performed a Job Safety Analysis (JSA) of more than 300 aerospace manufacturing processes in support of the company's existing and developing Industrial Health & Safety Program.
- Developed and managed a complex health and safety program for a multi-million dollar remediation project for the Department of Energy at Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tennessee. The remedial and site safety program innovatively employed the use of remotely operated vehicles (i.e., submarines) to retrieve and decommission over 7000 containers of explosive, water-reactive and radiologically-contaminated materials.
- Developed and managed a health & safety/quality assurance-quality control (QA/QC) program for a study involving the assessment of 15 uncontrolled disposal sites at the Naval Air Weapons Station (NAWS) in China Lake, California. The studies evaluated the degree of environmental impact from chemical, biological and live ordnance wastes in the (typical) 115°F area climate.
- Contributed to the development of health and safety Standard Operating Procedures and training protocols currently used by each of the U.S. EPA FIT, Zone 1 offices.

Environmental Engineering

Provide, or have provided, forensic studies, environmental site assessments; remediation programs; environmental litigation support, and; regulatory compliance support and permitting.

- Developed and managed a multimillion-dollar burn dump remediation project for a client who was redeveloping a former Navy facility. Provided project management and oversight, data interpretation, training, and HASP development. The contaminants of concern include burn ash, lead, asbestos, PCBs, chlorinated and/or petroleum hydrocarbons.
- Managed multiple environmental assessments and mitigation programs of former

COLIN P. YOUNG, CIH

CV (cont.)

agricultural properties. Many possessed impairment by the historic and legal application of pesticides and/or natural occurrence of arsenic. In all situations, the impairment was managed on-site by controlled burial of the impaired soils, resulting in no need for costly or wasteful removal, transport and treatment/disposal of the same.

- Provided technical support for an underground storage tank (UST) investigation at San Diego International Airport's (Lindbergh Field) tank farm. The project was performed for the local Port Authority and involved the in situ inspection of the interior of numerous fuel tanks throughout the fuel farm. This activity required the use of Level B PPE in confined space environments.
- Provided management of a million-dollar environmental design contract for Naval Public Works Center (PWC), San Diego, California. Services included the development of SPCC Plans, preparation of RCRA Part B permits, performance of cathodic protection evaluations and the design of TSD facilities.
- Planned and managed a multitude of UST investigations for the Department of Defense at MCB Camp Pendleton, North Island NAS and 32nd Street Naval Station, California. The results of each investigation were used to develop remediation specifications for MCON projects planned at each site. The remedial programs were subsequently implemented using fixed or unit-cost pricing structures dependent on the prepared specifications. Remediation technologies applied included controlled aeration, vapor extraction (VES), pump and treat, and dig and dispose. All of the projects were performed either on or under budget.
- Provided operations management of a multi-million dollar fuel recovery/remediation project at the fuel farm at Naval Air Station North Island (NASNI), California. Ground water at the site had been impaired by a 2-3 foot thick layer of fuel hydrocarbon, released from a multitude of concrete USTs on the base. The remediation technology applied to date included pump and treat.
- Provided Delivery Order management of a large-scale asbestos survey project at Naval Amphibious Base, Coronado for Southwest Division NAVFACENGCOM.
- Planned and managed an assessment and remediation project at Fire Fighting Training Areas at Pacific Missile Test Center (PMTTC) in Point Mugu and CBC Port Hueneme, California, for the Western Division NAVFACENGCOM. The remedial programs were subsequently implemented using fixed or unit-cost pricing structures dependent on the prepared specifications. Remediation technologies applied included VES and dig and dispose. Each of the projects was performed under budget.
- Removed and performed an investigation of multiple USTs located on agricultural property owned by the Viejas Indian Reservation. The property is slated for Casino and Resort expansion.
- Performed a UST investigation at several commercial service stations. Determined MTBE impacts to beneficial-use ground water. Data used to initiate a ground water investigation and remediation plans.
- Provided environmental support and waste characterization services for engineering (i.e.,

COLIN P. YOUNG, CIH

CV (cont.)

clean-out) projects performed within lead-impacted storm water basins throughout San Diego County.

- Provided technical and environmental management support for numerous engineering projects performed within lead-impacted areas along the highways of Orange County. Formulated a Lead Management Plan for the engineering/utility contractor providing the construction services for Caltrans.
- Provided environmental compliance support services to supplement an aerospace manufacturing company's environmental department. Products supported include the Hazardous Materials Business Plan, Storm Water Pollution Prevention (SWPP) Plan, Underground Storage Tank (UST) Program, Compliance Audit Program, etc.
- Providing environmental support to the owners of a property involved in litigation over the condemnation of the property by the local municipality acquisition.

ACADEMIC HISTORY

- University of Massachusetts, Amherst, Massachusetts, B.S., School of Environmental Science and Public Health, 1982
- Harvard School of Public Health, Boston, Massachusetts, Certificate of Risk Analysis in Environmental Health, 1985

PROFESSIONAL CERTIFICATIONS

- Certified Industrial Hygienist (CIH) No. 3987, American Board of Industrial Hygiene (ABIH), 1988; Recertified 1995, 2001, 2006, 2011, 2015
- Certified Safety Specialist/Executive (CSS/CSE), World Safety Organization (WSO), 1986 (inactive)
- AHERA-Certified Asbestos Inspector-California No. 855, U.S. EPA/UC Berkeley, 1989 (inactive)

PROFESSIONAL TRAINING

- Certificate in Professional Engineering Practice, ASFE/Institute for Professional Practice, 1990
 - Program Facilitator, 1991
- Professional "Loss Prevention" Training, ASFE, 1989
- Professional Management Training, Management Action Programs (MAP), 1990
- HazWOpER (29CFR 1910.120) Training, 1982; - Trainer, 1986-Present
- Guidelines for the Assessment of Microbiological Contamination, AIHA, 2002

PUBLICATIONS

- Fung M.D., F. Y., Young CIH, C. P., Mold-Associated Asthma, IAQ 2001, ASHRAE

COLIN P. YOUNG, CIH

CV (cont.)

PROFESSIONAL AFFILIATION HISTORY

- American Industrial Hygiene Association (AIHA), Fairfax, VA
- American Academy of Industrial Hygiene (AAIH), Lansing, MI
- American Lung Association, San Diego and Imperial Counties, CA, Member-Board of Directors, 2002-2006, Board Chair 2006
- ASFE, Silver Spring, MD
 - "Loss Prevention Education" Committee (1990-1991)
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- Association for Environmental Health and Sciences (AEHS), Amherst, MA
- American Conference of Governmental Industrial Hygienists (ACGIH), Cincinnati, OH
- Institute for Professional Practice (IPP), Silver Spring, MD
- Society of American Military Engineers (SAME), San Diego, CA
- American Indoor Air Quality Council

PROFESSIONAL HISTORY

Current

- C Young Associates (CYA), La Jolla, California, Senior Associate/Technical Advisor, 01/2009-Present
- Advantage Environmental Consultants (AEC), San Marcos, California, Branch Manager, 11/2005-Present

Previous

- Rincon Consultants, Carlsbad, California, Project Manager, 11/2003-11/2005
- Geocon, Inc., San Diego, California, Project Manager, 11/2001-11/2003
- Geosoils, Inc., Carlsbad, California, Field Technician, 11/1999-11/2001

PROFESSIONAL EXPERIENCE SUMMARY

17 years of experience in the environmental sciences consulting field. Responsibilities include client development and management, project management, technical oversight and quality control for assessment, and remediation and construction oversight services. Clients include, but are not limited to, local government entities, developers (affordable housing and market rate), Federal government entities, law firms, architectural and engineering firms, commercial lending institutions, conservancies, commercial/industrial real estate owners/managers, insurance companies, wireless telecommunication carriers and other real estate developers. Experienced in the completion of assessment, construction and remediation quality assurance during the completion of urban redevelopment/brownfields projects, many of which have been located in downtown areas of San Diego, Los Angeles, Oakland, San Francisco, and other urban communities throughout the State of California.

Completed or managed over 2,500 due diligence related environmental assessments and completed or managed over 500 subsurface environmental investigations of soil gas, soil, groundwater and other media. Investigations have included human health and ecological risk assessments, evaluations of indoor air conditions based on interpretations of subsurface conditions, underground storage tank (UST) evaluation/closure and hazardous waste characterization/management. Subsurface activities performed include the completion of soil borings using various drilling technologies, soil and groundwater sampling, installation and sampling of groundwater monitoring wells, free product evaluations, exploratory trenching and real-time delineation using mobile analytical laboratories and other soil screening technology. Assets evaluated include industrial, commercial, residential, agricultural and vacant land sites throughout the State of California and numerous other states, with many of the assessments completed under the regulatory oversight of local environmental regulatory agencies, the California Regional Water Quality Control Boards (RWQCBs) and the California Environmental Protection Agency Department of Toxic Substances Control (DTSC). Has also conducted and/or managed hundreds of public/environmental health related assessments including electromagnetic field surveys, radionuclide surveys, indoor air quality investigations, radon surveys, drinking water assessments, asbestos containing materials (ACM) and lead-based paint (LBP) surveys and mold/microbial evaluations.

Managed over 100 remediation or construction management related projects primarily related to source removal of subsurface contaminants, including but not limited to, petroleum hydrocarbons, chlorinated solvents, heavy metals, organochlorine pesticides and other agricultural related chemicals, dioxins and furans and polychlorinated biphenyls (PCBs). Has also assisted in cost recovery efforts from private parties and State/Federal funding programs for environmental assessment and remediation work and has served as an expert witness during legal proceedings pertaining to environmental related claims.

SPECIFIC PROJECT EXPERIENCE

- 14th and Island, San Diego, California – Development of Site Mitigation Plan, contaminated soil management and disposal concurrent with site construction activities at the superblock construction site in downtown San Diego and achievement of regulatory closure with the County of San Diego Department of Environmental Health.
- 2198 Market Street, San Francisco, California – Phase I and II Environmental Site Assessments, supplemental subsurface investigation, Site Mitigation Plan development, contaminated soil management and disposal concurrent with site construction activities and negotiation/achievement of regulatory closure with the City of San Francisco Department of Public Health.
- Former EZ Serve, 9305 Mission Gorge Road, Santee, California – Closure report preparation and San Diego Regional Water Quality Control Board interface and negotiation/achievement of regulatory closure under State of California low-threat policy.
- French Field – Former Vista Burn Dump, Oceanside, California – Oversight of the capping of a former burn dump/landfill facility and restoration for public use as a sports facility. Negotiation and achievement of regulatory closure with the California Department of Toxic Substances Control with concurrence from the San Diego Regional Water Quality Control Board and the County of San Diego Local Enforcement Agency.
- Indoor Skydiving Facility, 1401 Imperial Avenue, San Diego, California – Development of Soil Management Plan and contaminated soil management and disposal concurrent with site construction activities in downtown San Diego.
- Lemon Grove Avenue Realignment Project, Lemon Grove, California – Development of Impacted Soil Management Plan, Community Health and Safety Plan and Worker Health and Safety Plan and oversight of the implementation of such plans during construction activities.
- North Side Interior Road and Utilities Project at San Diego International Airport, San Diego, California - Subsurface assessment, development of Soil Management Plan and Work Health and Safety Plan and implementation and monitoring of soil management strategies.
- Olympic and Hill, Los Angeles, California – Removal of multiple underground storage tanks and underlying contaminated soil and achievement of regulatory closure with the City of Los Angeles Fire Department.
- San Ysidro - U.S. Land Port of Entry, San Diego, California – Subsurface assessment and development and implementation of soil management strategies.
- Tabata Ranch Site, Carlsbad, California – Development of Soil Management Plan and Community Health and Safety Plan, completion of soil removal action of petroleum hydrocarbon impacted soil, oversight and management of selective reuse and replacement of

pesticide impacted soil and subsequent export of inert soils and achievement of regulatory closure with the County of San Diego Department of Environmental Health. Consent to discharge inert soils at an off-site receiving location was granted by the San Diego Regional Water Quality Control Board.

- VA Medical Center Long Beach, 5901 East 7th Street, Long Beach, California - VA Long Beach: Seismic Corrections – Mental Health, Community Living Center and Chiller Replacements Project – Asbestos containing materials and lead-based paint surveys and preparation of abatement contractor bid specifications.

EDUCATION

- Bachelor of Arts - University of Delaware, Newark, DE (1995)
- Master of Science – Public Health, San Diego State University, San Diego, CA (1998)

PROFESSIONAL REGISTRATIONS, LICENSES, AND CERTIFICATIONS

- Registered Environmental Health Specialist #8172 in the State of California
- OSHA 40-hour Hazardous Waste Operations Worker and Supervisor Certifications and Annual Refreshers

PUBLICATIONS

- Gersberg, R.M., Brown, C., Zambrano, V., Worthington, K., and Weis, D. (2000) Quality of urban runoff in the Tijuana River watershed. In Westerhoff, P. (editors), SCERP Monograph Series (no.2) on Water Issues Along the United States and Mexico Border. : Southwest Center for Environmental Research and Policy, 31-45.
- Weis, D.A., Callaway, J.C., and R.M. Gersberg (2001). Vertical Accretion Rates and Heavy Metal Chronologies in Wetland Sediments of the Tijuana Estuary. Estuaries 24(6A).
- Gersberg, R.M., Pitt, J.L., Weis, D.A., and D.D. Yorkey. Characterizing In-Stream Metal Loading in the Tijuana River Watershed. (2002). National TMDL Science and Policy Conference, Specialty Conference Proceeding on CD Rom, November 13-16, Phoenix, Arizona

PROFESSIONAL AFFILIATIONS

- Building Industry Association
- San Diego Environmental Professionals
- San Diego Housing Federation

APPENDIX I
HYDROLOGY AND HYDRAULIC ANALYSES



MWD

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

**Hydrology and Hydraulic Analyses for
West Valley Feeder No 1
Valve Structures Improvements (Stage 3)**



Project No.104924

May 2018

Contents

SECTION 1	INTRODUCTION.....	3
1.1	GENERAL	3
1.2	SITE DESCRIPTION	5
SECTION 2	HYDROLOGY ANALYSES.....	7
2.1	DRAINAGE BOUNDARIES AND DESIGN DISCHARGE	7
2.2	EXISTING CONDITIONS	7
2.3	PROJECT CONDITIONS.....	8
SECTION 3	HYDRAULIC ANALYSES	9
3.1	VENTED FORD CROSSINGS	9
3.2	ROAD DRAINAGE.....	9
SECTION 4	CONCLUSIONS AND RECOMMENDATIONS.....	9
SECTION 5	REFERENCES.....	10
SECTION 6	Appendices	11
	Appendix A – Hydrology Analysis.....	11
	Appendix B – Culvert Crossing Calculations	11
	Appendix C – Preliminary Design Drawings	11

SECTION 1 INTRODUCTION

1.1 GENERAL

West Valley Feeder No 1 and No 2 are Treated Water Pipelines that travel through Chatsworth Park South. There are several Pipeline Structures in Chatsworth Park South that are not accessible by Metropolitan maintenance vehicles. The primary objective of this project is to construct access roads to isolated pipeline structures and provide manholes to house pipeline structures. The project drainage system would be developed to protect the proposed access roads and pipeline structures from erosion and storm water runoff from adjacent hillsides. A hydrologic and hydraulic study was prepared to characterize the storm water runoff within the project area. Results of this study would be used to support final design of the proposed drainage system. This report was developed in support of this task and summarizes the existing and project hydrologic and hydraulics study conducted for the site.

Chatsworth Park South is a City of Los Angeles Department of Recreation and Parks (LADRP) facility located at 22360 West Devonshire Street in the community of Chatsworth, in the City of Los Angeles, County of Los Angeles, California (Figure 1). This site located in the western portion of the San Fernando Valley consists of a recreational building, an adjoining fenced children's play area, parking lots, sand pit play area, two tennis courts, a basketball court, and landscaped fields. Residential housing abuts the site boundary to the east; and undeveloped hillside terrain borders the site to the north, west, and south. Various recreational trails for pedestrians, hikers, and equestrian use surround the level park facility areas. A railroad right-of-way is adjacent to the north. The park was closed to public access and use during the spring of 2008 because of hazards associated with lead pellets and sporting clay pigeon (target) debris from a former onsite small arms firing range (SAFR). The park was remediated by the LADRP in 2017. The remedial plan included an engineered cap on the park area considered hazardous and implementation of storm water management practices that limit the runoff from the site. It is important to note that the area north of the park between West Valley Feeder No 1 and West Valley Feeder No 2 was not remediated with the engineered cap.



Figure 1 - Project Location

1.2 SITE DESCRIPTION

The site occupies a box canyon with hills that ascend from the level portion of the developed recreational area to the north, west, and south and west into the alluvial canyon bottom with surface flow generally towards the east. A former fishing pond located northeast of the former SAFR was previously filled using onsite groundwater production and through damming of seasonal stream flows that drained from the upland areas to the west.

The existing drainage pattern mimics the historic predevelopment drainage conditions. The main drainage is along the alluvial canyon bottom (Figure 2) with surface flow generally towards the east and south towards the remediated park detention basins (Figure 3). The drainage path is shown as a blue line stream on the U. S. Geological Survey (USGS) topographic quadrangle (Figure 3). Several drainage culverts, pipes and detention basins were placed across the park to facilitate storm water runoff.



Figure 2 - WVF1 STA 1407+45 at Stream Crossing and WVF1 STA 1416+33 at Stream Bottom



Figure 3 - Canyon Drainage Path and USGS Blue Stream

Storm water runoff from the north-west of the project site sheet flows from the surrounding hillsides towards a central canyon bottom where it is conveyed towards WVF1 STA 1416+33. Runoff continues into an earthen flood control basin located south of the proposed access road and spills through a broken spillway into a Stone Lined stream leading to the park Detention Basins (Figure 4). Storm water runoff on the northerly side of the project site sheet flows towards a central canyon bottom where it is conveyed near WVF1 STA 1407+45. The northerly runoff joins the north-west runoff past WVF1 STA 1407+45 and continues into the Stone Lined stream towards the park Detention Basins (Figure 5). There is a non-operational culvert along the proposed access road alignment that was used to facilitate runoff from a small hillside tributary north of the road.



Figure 4 - Earthen Flood Control Basin and Broken Spillway



Figure 5 - Stone Lined Stream and Park Detention Basin

SECTION 2 HYDROLOGY ANALYSES

2.1 DRAINAGE BOUNDARIES AND DESIGN DISCHARGE

The existing condition drainage boundaries for the study area were delineated using two USGS digital elevation models (DEM) for 7.5-minute Oat Mountain Quadrangle and Simi Valley East Quadrangle overlaid with a ground survey prepared by Metropolitan through Survey Job Number 06-158. For project conditions, the project grading plan was overlaid on the USGS DEM. The horizontal datum for the topographic data is North American Datum of 1983 (NAD 83); the vertical datum is North American Vertical Datum of 1988 (NAVD 88). The total watershed for the project was 142 acres.

The Los Angeles County Department of Public Works (LACDPW) Modified Rational Method was used for completing the hydrologic analyses for this study. The LACDPW Tc Calculator was used to implement the MODRAT for each subarea to calculate peak flows. Soil Type, land use, rain depth, temporal distribution series were obtained from LACDPW hydrology manual hydrologic map and Los Angeles County GIS files.

MWD's distribution system is considered critical infrastructure. Design of improvements will be based on 100-year return period storms, similar storm events, or the regulating agency's recommended flow. Distribution system manholes that are subject to flooding will be raised to at least 1-foot above the 100-year water surface elevation.

Access related improvements are not as critical as structure or pipeline protection therefore the general approach is to design these improvements based on LACDPW's Capital Flood Protection criteria.

2.2 EXISTING CONDITIONS

A site walk was completed on March 15, 2017, to verify location of any catch basins, culverts, general drainage patterns and land use. The initial drainage boundary delineation was adjusted based on findings from the site walk. Exhibit 1 shows the existing watershed delineation. The watershed currently drains to the park Detention Basins.

Hydrologic model parameters such as sub-basin areas, basin slopes were calculated using the LACDPW's 2006 Hydrology Manual Section 7.2 Rational Method. The time of concentration was calculated using the LACDPW's Tc calculator. The results of the hydrologic analysis and supporting documentation can be found in Appendix A.

2.3 PROJECT CONDITIONS

The drainage boundaries for the project conditions, for the most part, remain similar to those of the existing conditions. The proposed access roads will consist of concrete pavement at steep slopes with v-ditches to convey runoff away from the road. Vented Ford style water crossings will be placed at sites where the access road crosses a stream. Grouted stone is recommended for erosion control at sites where pipeline structures are exposed to stream erosion. Existing canyon flow is retained and acts as the main drainage feature across the project site. Major changes between the existing and project conditions occur at the outlet of Subareas A3 and A7. The hydrology map for project conditions is shown on Exhibit 1.

The project grading plans incorporate two possible access roads with water crossing features near West Valley Feeder No 1 STA 1407+45 and West Valley Feeder No 1 STA 1416+33. The high water surface elevations at these two sites were calculated to determine the size of the water crossings and the extent of erosion protection.

The results of the hydrologic analyses for the proposed project conditions are shown in Table 1. All hydrologic calculations and supporting documentation for project conditions can be found in Appendix A. Results of hydraulic calculations for water crossings are shown in Appendix B.

Table 1- Summary of Hydrology Analyses

Water Crossing	100-Year (cfs)	50-Year (cfs)	2-Year (cfs)
WVF1 STA 1407+45 (Subarea A7, Node 21)	162	138	28
WVF1 STA 1416+33 (Subarea A1, A2 and A3, Node 15)	393	337	72

SECTION 3 HYDRAULIC ANALYSES

3.1 VENTED FORD CROSSINGS

The project grading concept includes “Vented Ford” or Culvert crossings to convey flow across access the access road at two stream crossing locations. The Vented Fords were sized using the results of the Hydrologic Analyses and the U.S. Department of Transportation Federal Highway Administration HY-8 Culvert Hydraulic Analyses Program. Culvert designs include headwalls at both ends and energy dissipater structures at culvert outlets. The culvert sizing calculations are provided in Appendix B.

3.2 ROAD DRAINAGE

Road drainage design reduces energy generated by flowing water. The drainage system includes v-ditches to catch roadway flows and convey them to the culvert inlets. Roadway overtopping was calculated using the HY-8 Culvert Hydraulic Analyses Program. Typical roadway sections are shown in Appendix C.

SECTION 4 CONCLUSIONS AND RECOMMENDATIONS

The Hydrology and Hydraulics Analyses conducted on the existing and proposed systems evaluated the project drainage system to adequately protect the proposed access roads. The existing condition 50-Year peak flow at WVF1 STA 1407+45 was determined to be 138 csf and at WVF1 STA 1416+33 was 337 cfs. There is no significant increase in runoff expected between existing conditions and project conditions.

As part of stream crossing design, culverts were incorporated as protective features for the roadway. Box culverts sizes 4ft provide adequate Capital Flood protection when used with v-ditches, headwalls and energy dissipaters.

SECTION 5 REFERENCES

1. Los Angeles County Department of Public Works, 2006. Hydrology Manual. January.
2. Los Angeles County Department of Public Works. Hydraulic Design Manual. March.
3. U.S. DOT Federal Highway Administration, 2012. Hydraulic Design of Highway Culverts. April.
4. NOAA, National Climatic Data Center.
5. USGS, StreamStats

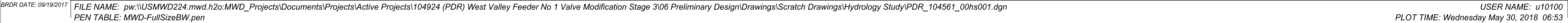
SECTION 6 APPENDICES

Appendix A – Hydrology Analysis

Appendix B – Culvert Crossing Calculations

Appendix C – Preliminary Design Drawings

Appendix A Hydrology Analyses



2006 Los Angeles County Hydrology Manual

Appendix B - Hydrological Maps
USGS Map Grids: Oat Mountain, Santa Susana
Soil Classification Area - 65
Debris Potential Area - 4

Appendix C - Soil Type and Runoff Coefficient Data

Soil Identification Table		
Number	Original Name	Name
65	ULAR-13	UPPER LOS ANGELES RIVER

RAINFALL FREQUENCY MULTIPLICATION FACTORS	
FREQUENCY, YR	FACTOR
2	0.387
5	0.584
10	0.714
25	0.878
50	1
100	1.122
500	1.402

See Runoff Coefficient Curve Soil Type No 65

Table 6.3.3 - Design Fire Factors
Los Angeles River Watershed - 0.71

WATERSHED DATA													
SUBAREA	AREA, AC	IMPERVIOUS, %	SOIL TYPE	HIGH EL, FT	LOW EL, FT	LENGTH, FT	SLOPE, FT/FT	50 YR 24 HR	2 YR 24 HR	5 YR 24 HR	10 YR 24 HR	25 YR 24 HR	100 YR 24 HR
A1	38.99	0.01	65	1695	1460	1655	0.14	7.6	2.9	4.4	5.4	6.7	8.5
A2	36.7	0.03	65	1995	1310	3110	0.22	7.4	2.9	4.3	5.3	6.5	8.3
A3	33.81	0.01	65	1580	1090	2040	0.24	7.5	2.9	4.4	5.4	6.6	8.4
A4	35.42	0.03	65	1995	1210	3450	0.23	7.4	2.9	4.3	5.3	6.5	8.3
A5	40.41	0.03	65	1780	1300	2285	0.21	7.4	2.9	4.3	5.3	6.5	8.3
A6	42.51	0.01	65	1700	1015	2945	0.23	7.4	2.9	4.3	5.3	6.5	8.3
A7	49.65	0.01	65	1750	1015	3160	0.23	7.5	2.9	4.4	5.4	6.6	8.4

RESULTS				URS CHATSWORTH PARK HYDROLOGY REPORT		
Confluence Point	Q10, CFS	Q50, CFS	Q100, CFS	Q10, CFS	DIFF, CFS	PERCENT
CONFLUENCE AT NODE 15	204	337	393	172.64	31	18%
CONFLUENCE AT NODE 21 WEST	405	673	783	370.7	34	9%
CONFLUENCE AT NODE 21 NORTH	83	138	162	65.2	17	27%

- Q50 IS THE CAPITAL FLOOD OR DESIGN STORM PER LOS ANGELES COUNTY HYDROLOGY MANUAL

Los Angeles County HydroCalc Calculator Version 1.0.3

Summary of Input Data

Project	Subarea	Area	Length	Slope	Depth	Imp	Soil	Frequency	Fire
CP2	A1	38.99	1655	0.1420	7.6	0.01	65	2-yr	0.71
CP2	A2	36.7	3110	0.2203	7.4	0.03	65	2-yr	0.71
CP2	A3	33.81	2040	0.2402	7.5	0.01	65	2-yr	0.71
CP2	A4	35.42	3450	0.2275	7.4	0.03	65	2-yr	0.71
CP2	A5	40.41	2285	0.2626	7.4	0.03	65	2-yr	0.71
CP2	A6	42.51	2945	0.2326	7.4	0.01	65	2-yr	0.71
CP2	A7	49.65	3160	0.2326	7.5	0.01	65	2-yr	0.71
CP5	A1	38.99	1655	0.1420	7.6	0.01	65	5-yr	0.71
CP5	A2	36.7	3110	0.2203	7.4	0.03	65	5-yr	0.71
CP5	A3	33.81	2040	0.2402	7.5	0.01	65	5-yr	0.71
CP5	A4	35.42	3450	0.2275	7.4	0.03	65	5-yr	0.71
CP5	A5	40.41	2285	0.2626	7.4	0.03	65	5-yr	0.71
CP5	A6	42.51	2945	0.2326	7.4	0.01	65	5-yr	0.71
CP5	A7	49.65	3160	0.2326	7.5	0.01	65	5-yr	0.71
CP10	A1	38.99	1655	0.1420	7.6	0.01	65	10-yr	0.71
CP10	A2	36.7	3110	0.2203	7.4	0.03	65	10-yr	0.71
CP10	A3	33.81	2040	0.2402	7.5	0.01	65	10-yr	0.71
CP10	A4	35.42	3450	0.2275	7.4	0.03	65	10-yr	0.71
CP10	A5	40.41	2285	0.2626	7.4	0.03	65	10-yr	0.71
CP10	A6	42.51	2945	0.2326	7.4	0.01	65	10-yr	0.71
CP10	A7	49.65	3160	0.2326	7.5	0.01	65	10-yr	0.71
CP25	A1	38.99	1655	0.1420	7.6	0.01	65	25-yr	0.71
CP25	A2	36.7	3110	0.2203	7.4	0.03	65	25-yr	0.71
CP25	A3	33.81	2040	0.2402	7.5	0.01	65	25-yr	0.71
CP25	A4	35.42	3450	0.2275	7.4	0.03	65	25-yr	0.71
CP25	A5	40.41	2285	0.2626	7.4	0.03	65	25-yr	0.71
CP25	A6	42.51	2945	0.2326	7.4	0.01	65	25-yr	0.71
CP25	A7	49.65	3160	0.2326	7.5	0.01	65	25-yr	0.71
CP50	A1	38.99	1655	0.1420	7.6	0.01	65	50-yr	0.71
CP50	A2	36.7	3110	0.2203	7.4	0.03	65	50-yr	0.71
CP50	A3	33.81	2040	0.2402	7.5	0.01	65	50-yr	0.71
CP50	A4	35.42	3450	0.2275	7.4	0.03	65	50-yr	0.71
CP50	A5	40.41	2285	0.2626	7.4	0.03	65	50-yr	0.71
CP50	A6	42.51	2945	0.2326	7.4	0.01	65	50-yr	0.71
CP50	A7	49.65	3160	0.2326	7.5	0.01	65	50-yr	0.71
CP100	A1	38.99	1655	0.1420	7.6	0.01	65	100-yr	0.71
CP100	A2	36.7	3110	0.2203	7.4	0.03	65	100-yr	0.71
CP100	A3	33.81	2040	0.2402	7.5	0.01	65	100-yr	0.71
CP100	A4	35.42	3450	0.2275	7.4	0.03	65	100-yr	0.71
CP100	A5	40.41	2285	0.2626	7.4	0.03	65	100-yr	0.71
CP100	A6	42.51	2945	0.2326	7.4	0.01	65	100-yr	0.71
CP100	A7	49.65	3160	0.2326	7.5	0.01	65	100-yr	0.71

Los Angeles County HydroCalc Calculator Version 1.0.3
Summary of Output Data

Subarea	Modeled (2-yr) Rainfall Depth (in)	Tc, (min)	Clear Peak Flow Rate (cfs)	24-Hr Clear Runoff Volume (ac-ft)	Burned Peak Flow Rate (cfs)	Peak Intensity (in/hr)	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)
A1	2.9	17	28	2.22	31	0.99	0.73	0.74
A2	2.9	25	20	2.11	22	0.80	0.68	0.69
A3	2.9	18	23	1.88	25	0.95	0.72	0.72
A4	2.9	27	19	2.03	21	0.77	0.67	0.68
A5	2.9	20	26	2.33	28	0.89	0.71	0.71
A6	2.9	24	24	2.30	26	0.82	0.69	0.69
A7	2.9	25	28	2.75	30	0.81	0.68	0.69

Subarea	Modeled (5-yr) Rainfall Depth (in)	Tc, (min)	Clear Peak Flow Rate (cfs)	24-Hr Clear Runoff Volume (ac-ft)	Burned Peak Flow Rate (cfs)	Peak Intensity (in/hr)	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)
A1	4.4	12	57	4.45	60	1.75	0.83	0.83
A2	4.3	17	43	4.15	45	1.45	0.80	0.80
A3	4.4	13	46	3.77	49	1.67	0.82	0.82
A4	4.3	18	40	4.00	42	1.41	0.80	0.80
A5	4.3	13	55	4.58	58	1.65	0.82	0.82
A6	4.3	16	51	4.63	54	1.49	0.81	0.81
A7	4.4	17	59	5.53	62	1.47	0.80	0.81

Subarea	Modeled (10-yr) Rainfall Depth (in)	Tc, (min)	Clear Peak Flow Rate (cfs)	24-Hr Clear Runoff Volume (ac-ft)	Burned Peak Flow Rate (cfs)	Peak Intensity (in/hr)	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)
A1	5.4	10	79	6.36	82	2.34	0.87	0.87
A2	5.3	14	60	5.87	63	1.94	0.84	0.84
A3	5.4	11	64	5.38	67	2.21	0.86	0.86
A4	5.3	15	56	5.67	59	1.88	0.84	0.84
A5	5.3	11	76	6.47	79	2.18	0.86	0.86
A6	5.3	14	70	6.60	73	1.94	0.84	0.84
A7	5.4	14	83	7.89	87	1.97	0.84	0.85

Subarea	Modeled (25-yr) Rainfall Depth (in)	Tc, (min)	Clear Peak Flow Rate (cfs)	24-Hr Clear Runoff Volume (ac-ft)	Burned Peak Flow Rate (cfs)	Peak Intensity (in/hr)	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)
A1	6.7	8	112	9.21	116	3.19	0.90	0.90
A2	6.5	12	83	8.46	86	2.57	0.88	0.88
A3	6.6	9	90	7.80	93	2.98	0.90	0.90
A4	6.5	13	77	8.16	80	2.47	0.88	0.88
A5	6.5	10	101	9.31	104	2.80	0.89	0.89
A6	6.5	12	96	9.57	100	2.57	0.88	0.88
A7	6.6	12	114	11.45	118	2.60	0.88	0.88

Subarea	Modeled (50-yr) Rainfall Depth (in)	Tc, (min)	Clear Peak Flow Rate (cfs)	24-Hr Clear Runoff Volume (ac-ft)	Burned Peak Flow Rate (cfs)	Peak Intensity (in/hr)	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)
A1	7.6	8	128	11.48	132	3.64	0.90	0.90
A2	7.4	11	101	10.54	104	3.05	0.90	0.90
A3	7.5	8	109	9.74	113	3.59	0.90	0.90
A4	7.4	12	93	10.17	96	2.93	0.89	0.89
A5	7.4	9	122	11.60	126	3.35	0.90	0.90
A6	7.4	10	122	11.98	126	3.19	0.90	0.90
A7	7.5	11	138	14.30	142	3.09	0.90	0.90

Subarea	Modeled (100-yr) Rainfall Depth (in)	Tc, (min)	Clear Peak Flow Rate (cfs)	24-Hr Clear Runoff Volume (ac-ft)	Burned Peak Flow Rate (cfs)	Peak Intensity (in/hr)	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)
A1	8.5	7	152	13.82	157	4.34	0.90	0.90
A2	8.3	10	118	12.69	122	3.58	0.90	0.90
A3	8.4	8	122	11.74	126	4.03	0.90	0.90
A4	8.3	11	109	12.25	112	3.42	0.90	0.90
A5	8.3	8	144	13.96	149	3.97	0.90	0.90
A6	8.3	10	137	14.46	141	3.58	0.90	0.90
A7	8.4	10	162	17.25	167	3.62	0.90	0.90

Los Angeles County HydroCalc Calculator Version 1.0.3
Summary of Output Data

Subarea	Modeled (2-yr) Rainfall Depth (in)	Tc, (min)	Clear Peak Flow Rate (cfs)	24-Hr Clear Runoff Volume (ac-ft)	Burned Peak Flow Rate (cfs)	Peak Intensity (in/hr)	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)
A1	2.9	17	28	2.22	31	0.99	0.73	0.74
A2	2.9	25	20	2.11	22	0.80	0.68	0.69
A3	2.9	18	23	1.88	25	0.95	0.72	0.72
A4	2.9	27	19	2.03	21	0.77	0.67	0.68
A5	2.9	20	26	2.33	28	0.89	0.71	0.71
A6	2.9	24	24	2.30	26	0.82	0.69	0.69
A7	2.9	25	28	2.75	30	0.81	0.68	0.69

Subarea	Modeled (5-yr) Rainfall Depth (in)	Tc, (min)	Clear Peak Flow Rate (cfs)	24-Hr Clear Runoff Volume (ac-ft)	Burned Peak Flow Rate (cfs)	Peak Intensity (in/hr)	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)
A1	4.4	12	57	4.45	60	1.75	0.83	0.83
A2	4.3	17	43	4.15	45	1.45	0.80	0.80
A3	4.4	13	46	3.77	49	1.67	0.82	0.82
A4	4.3	18	40	4.00	42	1.41	0.80	0.80
A5	4.3	13	55	4.58	58	1.65	0.82	0.82
A6	4.3	16	51	4.63	54	1.49	0.81	0.81
A7	4.4	17	59	5.53	62	1.47	0.80	0.81

Subarea	Modeled (10-yr) Rainfall Depth (in)	Tc, (min)	Clear Peak Flow Rate (cfs)	24-Hr Clear Runoff Volume (ac-ft)	Burned Peak Flow Rate (cfs)	Peak Intensity (in/hr)	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)
A1	5.4	10	79	6.36	82	2.34	0.87	0.87
A2	5.3	14	60	5.87	63	1.94	0.84	0.84
A3	5.4	11	64	5.38	67	2.21	0.86	0.86
A4	5.3	15	56	5.67	59	1.88	0.84	0.84
A5	5.3	11	76	6.47	79	2.18	0.86	0.86
A6	5.3	14	70	6.60	73	1.94	0.84	0.84
A7	5.4	14	83	7.89	87	1.97	0.84	0.85

Subarea	Modeled (25-yr) Rainfall Depth (in)	Tc, (min)	Clear Peak Flow Rate (cfs)	24-Hr Clear Runoff Volume (ac-ft)	Burned Peak Flow Rate (cfs)	Peak Intensity (in/hr)	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)
A1	6.7	8	112	9.21	116	3.19	0.90	0.90
A2	6.5	12	83	8.46	86	2.57	0.88	0.88
A3	6.6	9	90	7.80	93	2.98	0.90	0.90
A4	6.5	13	77	8.16	80	2.47	0.88	0.88
A5	6.5	10	101	9.31	104	2.80	0.89	0.89
A6	6.5	12	96	9.57	100	2.57	0.88	0.88
A7	6.6	12	114	11.45	118	2.60	0.88	0.88

Subarea	Modeled (50-yr) Rainfall Depth (in)	Tc, (min)	Clear Peak Flow Rate (cfs)	24-Hr Clear Runoff Volume (ac-ft)	Burned Peak Flow Rate (cfs)	Peak Intensity (in/hr)	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)
A1	7.6	8	128	11.48	132	3.64	0.90	0.90
A2	7.4	11	101	10.54	104	3.05	0.90	0.90
A3	7.5	8	109	9.74	113	3.59	0.90	0.90
A4	7.4	12	93	10.17	96	2.93	0.89	0.89
A5	7.4	9	122	11.60	126	3.35	0.90	0.90
A6	7.4	10	122	11.98	126	3.19	0.90	0.90
A7	7.5	11	138	14.30	142	3.09	0.90	0.90

Subarea	Modeled (100-yr) Rainfall Depth (in)	Tc, (min)	Clear Peak Flow Rate (cfs)	24-Hr Clear Runoff Volume (ac-ft)	Burned Peak Flow Rate (cfs)	Peak Intensity (in/hr)	Undeveloped Runoff Coefficient (Cu)	Developed Runoff Coefficient (Cd)
A1	8.5	7	152	13.82	157	4.34	0.90	0.90
A2	8.3	10	118	12.69	122	3.58	0.90	0.90
A3	8.4	8	122	11.74	126	4.03	0.90	0.90
A4	8.3	11	109	12.25	112	3.42	0.90	0.90
A5	8.3	8	144	13.96	149	3.97	0.90	0.90
A6	8.3	10	137	14.46	141	3.58	0.90	0.90
A7	8.4	10	162	17.25	167	3.62	0.90	0.90

SUMMARY OF HYDROGRAPGH FOR PEAK FLOWS AT CONFLUENCE NODES

- CONFLUENCE IS MADE USING RATIONAL METHOD
- STORAGE ROUTING IS NOT CONSIDERED

2 YEAR - 24 HOUR HYDROGRAPGH FOR PEAK FLOWS AT CONFLUENCE NODES

CONFLUENCE AT NODE 15	72	cfs
CONFLUENCE AT NODE 21 WEST	140	cfs
CONFLUENCE AT NODE 21 NORTH	28	cfs

5 YEAR - 24 HOUR HYDROGRAPGH FOR PEAK FLOWS AT CONFLUENCE NODES

CONFLUENCE AT NODE 15	146	cfs
CONFLUENCE AT NODE 21 WEST	292	cfs
CONFLUENCE AT NODE 21 NORTH	59	cfs

10 YEAR - 24 HOUR HYDROGRAPGH FOR PEAK FLOWS AT CONFLUENCE NODES

CONFLUENCE AT NODE 15	204	cfs
CONFLUENCE AT NODE 21 WEST	405	cfs
CONFLUENCE AT NODE 21 NORTH	83	cfs

25 YEAR - 24 HOUR HYDROGRAPGH FOR PEAK FLOWS AT CONFLUENCE NODES

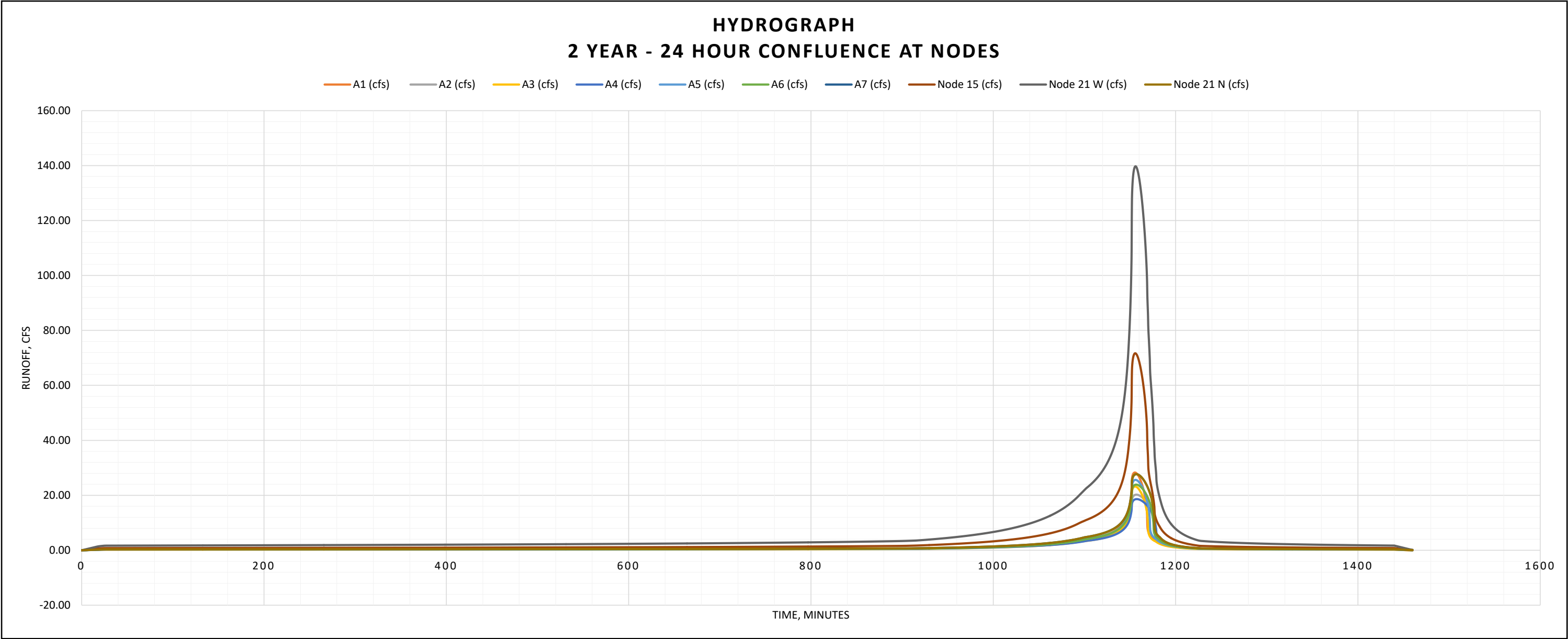
CONFLUENCE AT NODE 15	285	cfs
CONFLUENCE AT NODE 21 WEST	558	cfs
CONFLUENCE AT NODE 21 NORTH	114	cfs

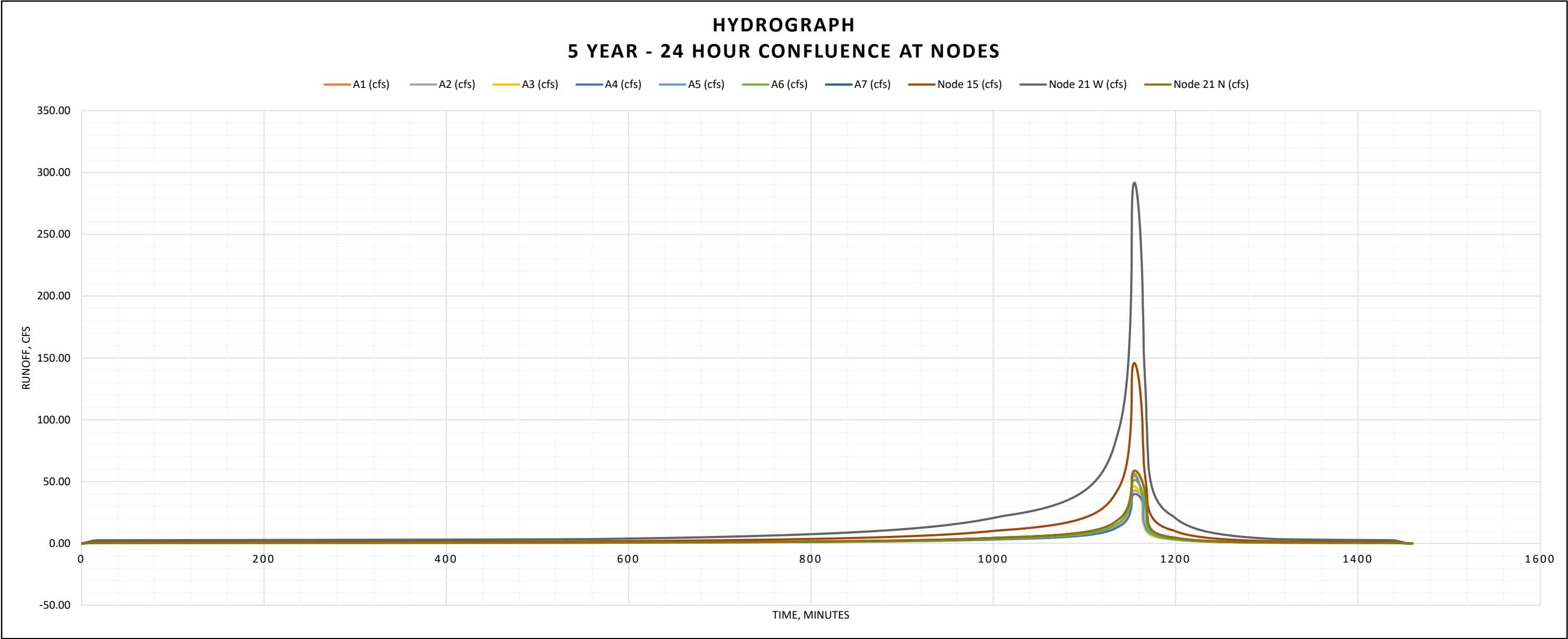
50 YEAR - 24 HOUR HYDROGRAPGH FOR PEAK FLOWS AT CONFLUENCE NODES

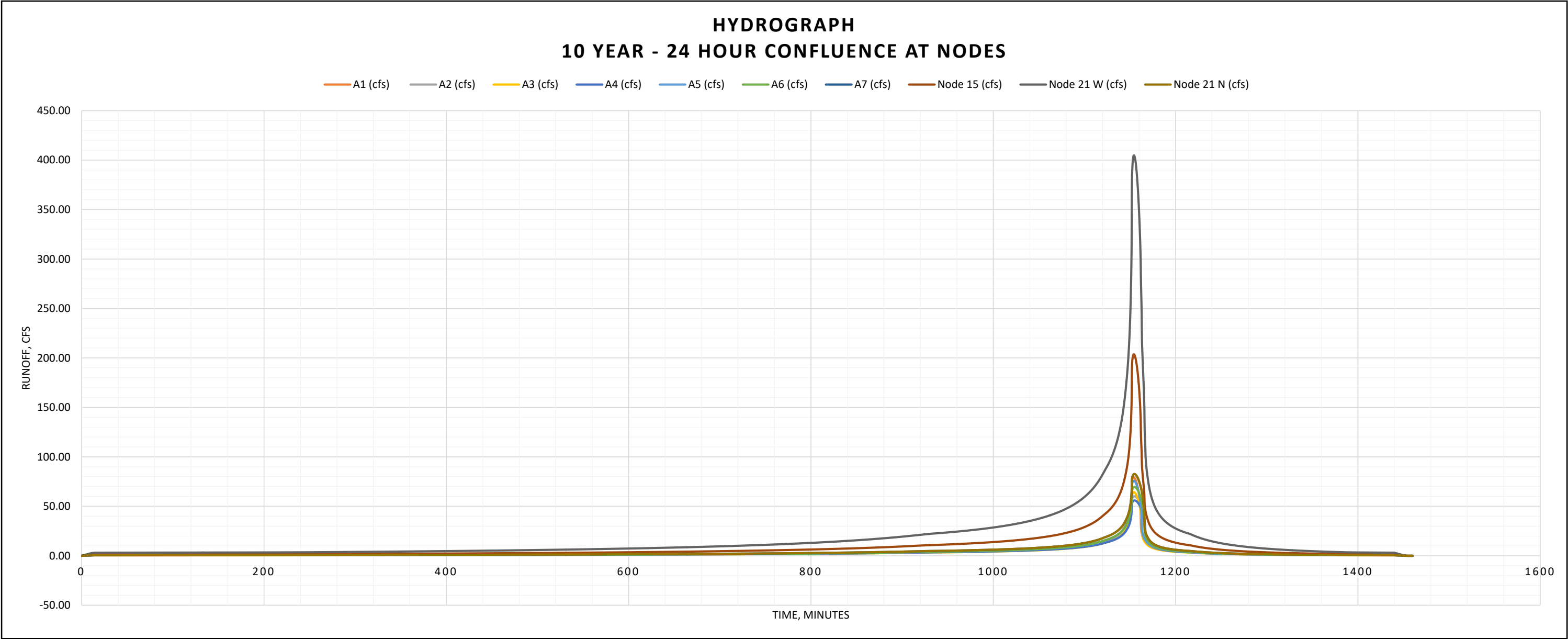
CONFLUENCE AT NODE 15	337	cfs
CONFLUENCE AT NODE 21 WEST	673	cfs
CONFLUENCE AT NODE 21 NORTH	138	cfs

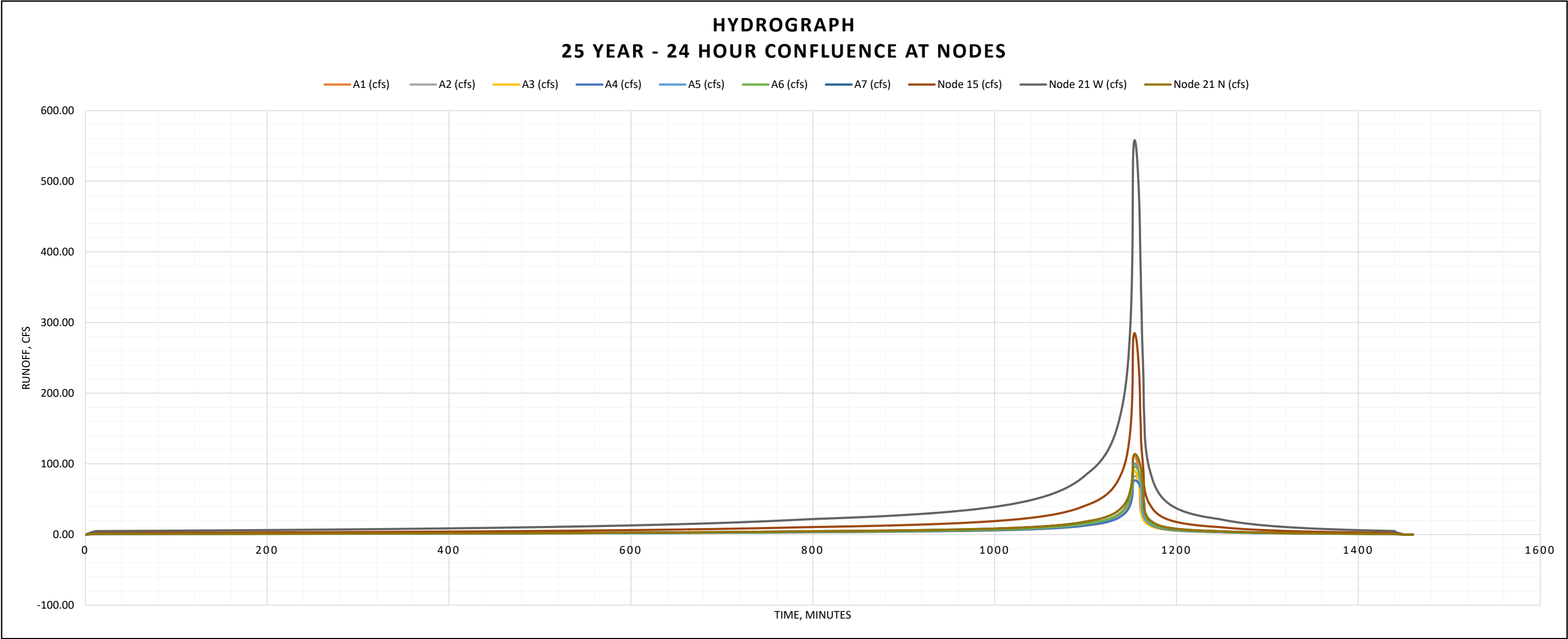
100 YEAR - 24 HOUR HYDROGRAPGH FOR PEAK FLOWS AT CONFLUENCE NODES

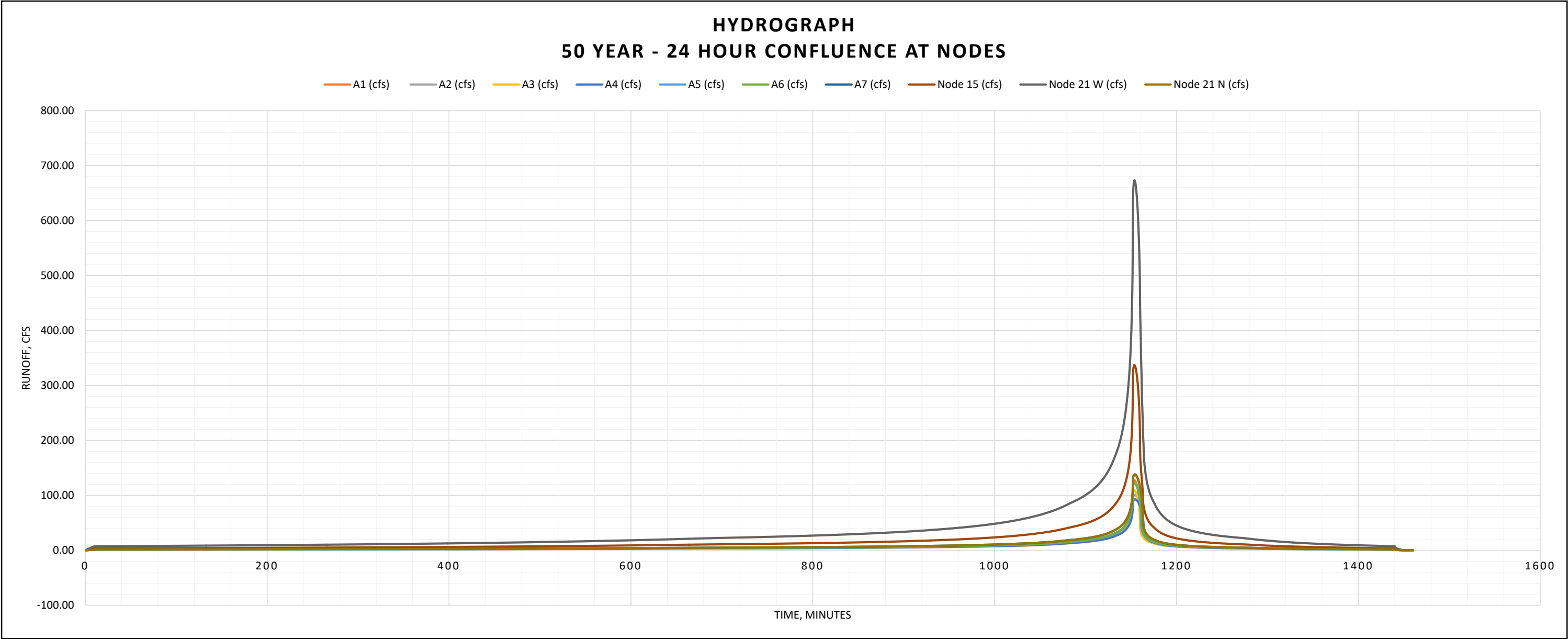
CONFLUENCE AT NODE 15	393	cfs
CONFLUENCE AT NODE 21 WEST	783	cfs
CONFLUENCE AT NODE 21 NORTH	162	cfs

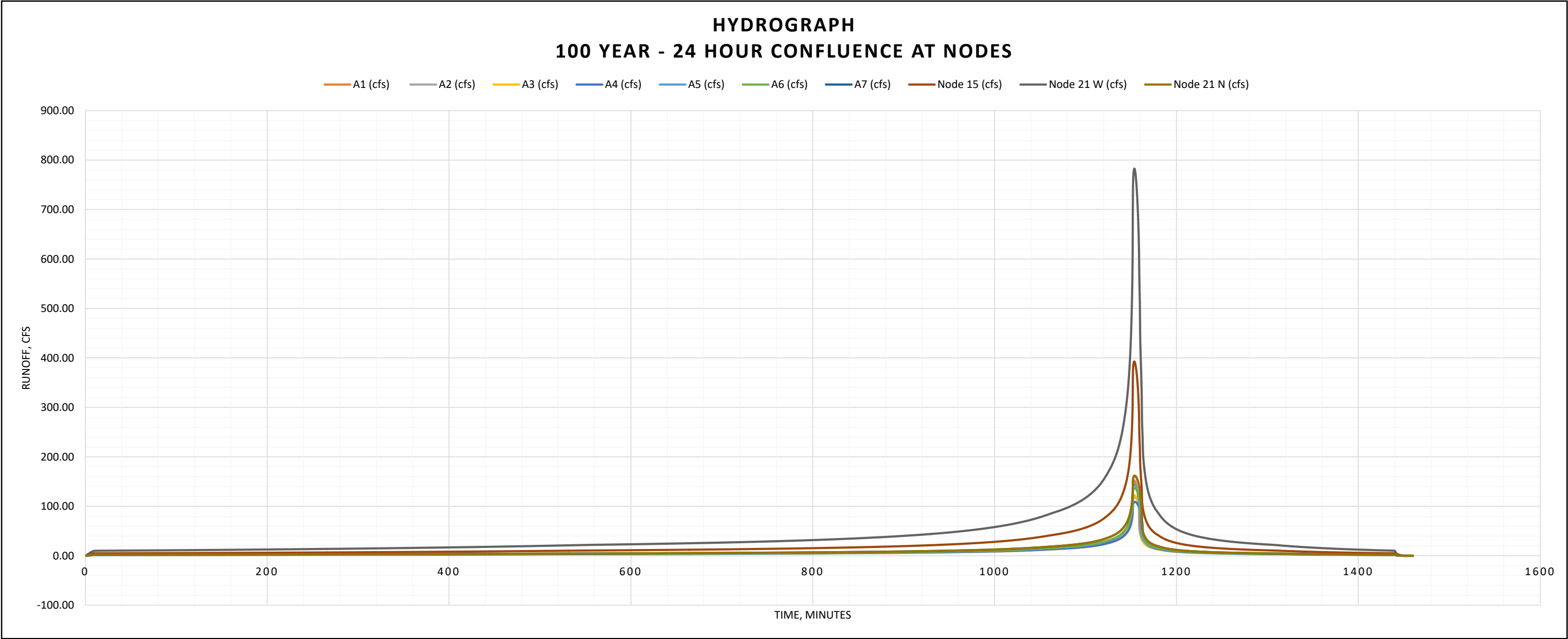






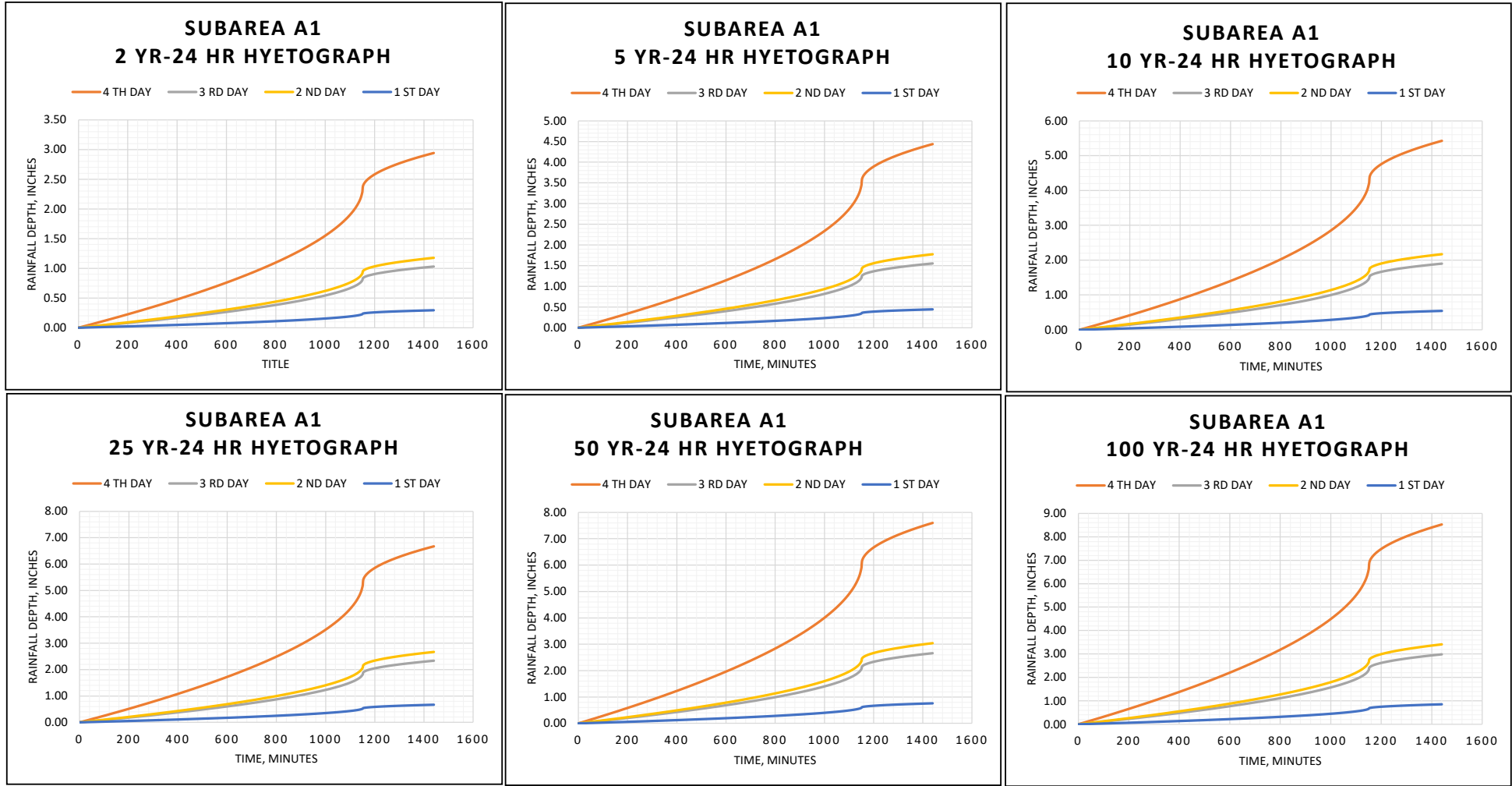






SUBAREA A1 HYETOGRAPHS
- Per 2006 Los Angeles County Hydrology Manual Appendix A

24 HR ISOHYETS,IN					
50 YR	2 YR	5 YR	10 YR	25 YR	100 YR
7.6	2.9	4.4	5.4	6.7	8.5



UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.01	0.08	0.03	0.03	0.01	0.03	0.01	0.01	0.00	0.05	0.02	0.02	0.00	0.06	0.02	0.02	0.01	0.07	0.03	0.03	0.01	0.09	0.03	0.04	0.01
60	0.02	0.17	0.06	0.07	0.02	0.07	0.02	0.03	0.01	0.10	0.03	0.04	0.01	0.12	0.04	0.05	0.01	0.15	0.05	0.06	0.01	0.19	0.07	0.08	0.02
90	0.03	0.26	0.09	0.10	0.03	0.10	0.03	0.04	0.01	0.15	0.05	0.06	0.01	0.18	0.06	0.07	0.02	0.23	0.08	0.09	0.02	0.29	0.10	0.12	0.03
120	0.05	0.34	0.12	0.14	0.03	0.13	0.05	0.05	0.01	0.20	0.07	0.08	0.02	0.25	0.09	0.10	0.02	0.30	0.11	0.12	0.03	0.39	0.14	0.15	0.04
150	0.06	0.43	0.15	0.17	0.04	0.17	0.06	0.07	0.02	0.25	0.09	0.10	0.03	0.31	0.11	0.12	0.03	0.38	0.13	0.15	0.04	0.49	0.17	0.19	0.05
180	0.07	0.52	0.18	0.21	0.05	0.20	0.07	0.08	0.02	0.31	0.11	0.12	0.03	0.37	0.13	0.15	0.04	0.46	0.16	0.18	0.05	0.59	0.21	0.23	0.06
210	0.08	0.62	0.22	0.25	0.06	0.24	0.08	0.10	0.02	0.36	0.13	0.14	0.04	0.44	0.15	0.18	0.04	0.54	0.19	0.22	0.05	0.69	0.24	0.28	0.07
240	0.09	0.71	0.25	0.28	0.07	0.27	0.10	0.11	0.03	0.41	0.14	0.17	0.04	0.51	0.18	0.20	0.05	0.62	0.22	0.25	0.06	0.79	0.28	0.32	0.08
270	0.11	0.80	0.28	0.32	0.08	0.31	0.11	0.12	0.03	0.47	0.16	0.19	0.05	0.57	0.20	0.23	0.06	0.70	0.25	0.28	0.07	0.90	0.32	0.36	0.09
300	0.12	0.90	0.31	0.36	0.09	0.35	0.12	0.14	0.03	0.52	0.18	0.21	0.05	0.64	0.22	0.26	0.06	0.79	0.28	0.32	0.08	1.01	0.35	0.40	0.10
330	0.13	1.00	0.35	0.40	0.10	0.39	0.13	0.15	0.04	0.58	0.20	0.23	0.06	0.71	0.25	0.28	0.07	0.87	0.31	0.35	0.09	1.12	0.39	0.45	0.11
360	0.14	1.10	0.38	0.44	0.11	0.42	0.15	0.17	0.04	0.64	0.22	0.26	0.06	0.78	0.27	0.31	0.08	0.96	0.34	0.38	0.10	1.23	0.43	0.49	0.12
390	0.16	1.20	0.42	0.48	0.12	0.46	0.16	0.19	0.05	0.70	0.24	0.28	0.07	0.85	0.30	0.34	0.09	1.05	0.37	0.42	0.11	1.34	0.47	0.54	0.13
420	0.17	1.30	0.45	0.52	0.13	0.50	0.18	0.20	0.05	0.76	0.27	0.30	0.08	0.93	0.32	0.37	0.09	1.14	0.40	0.46	0.11	1.46	0.51	0.58	0.15
450	0.18	1.40	0.49	0.56	0.14	0.54	0.19	0.22	0.05	0.82	0.29	0.33	0.08	1.00	0.35	0.40	0.10	1.23	0.43	0.49	0.12	1.58	0.55	0.63	0.16
480	0.20	1.51	0.53	0.60	0.15	0.58	0.20	0.23	0.06	0.88	0.31	0.35	0.09	1.08	0.38	0.43	0.11	1.33	0.46	0.53	0.13	1.70	0.59	0.68	0.17
510	0.21	1.62	0.57	0.65	0.16	0.63	0.22	0.25	0.06	0.95	0.33	0.38	0.09	1.16	0.40	0.46	0.12	1.42	0.50	0.57	0.14	1.82	0.64	0.73	0.18

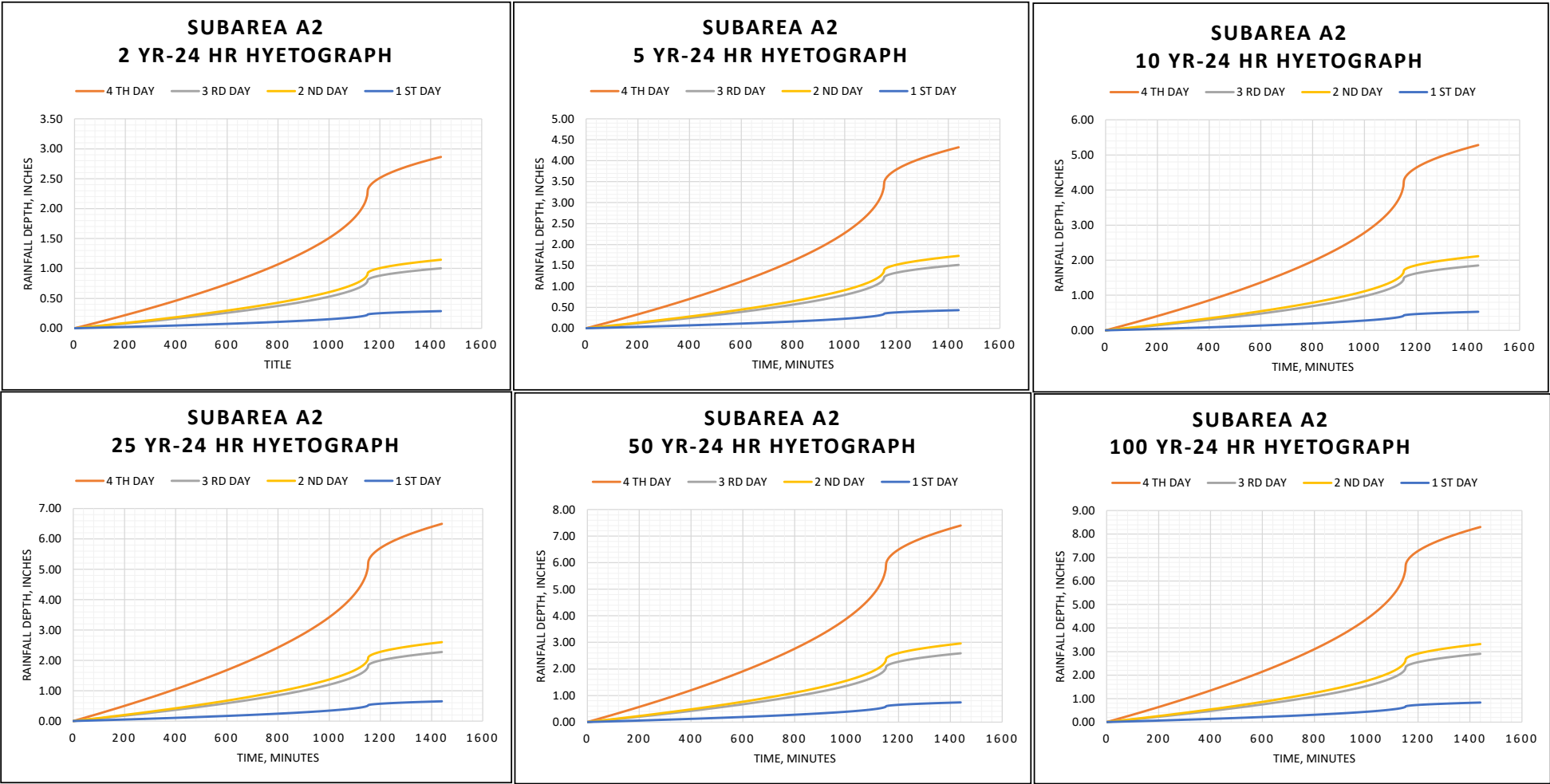
UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
540	0.23	1.73	0.61	0.69	0.17	0.67	0.23	0.27	0.07	1.01	0.35	0.40	0.10	1.24	0.43	0.49	0.12	1.52	0.53	0.61	0.15	1.94	0.68	0.78	0.19
570	0.24	1.85	0.65	0.74	0.18	0.71	0.25	0.29	0.07	1.08	0.38	0.43	0.11	1.32	0.46	0.53	0.13	1.62	0.57	0.65	0.16	2.07	0.72	0.83	0.21
600	0.26	1.96	0.69	0.79	0.20	0.76	0.27	0.30	0.08	1.15	0.40	0.46	0.11	1.40	0.49	0.56	0.14	1.72	0.60	0.69	0.17	2.20	0.77	0.88	0.22
630	0.27	2.08	0.73	0.83	0.21	0.81	0.28	0.32	0.08	1.22	0.43	0.49	0.12	1.49	0.52	0.59	0.15	1.83	0.64	0.73	0.18	2.34	0.82	0.93	0.23
660	0.29	2.21	0.77	0.88	0.22	0.85	0.30	0.34	0.09	1.29	0.45	0.52	0.13	1.58	0.55	0.63	0.16	1.94	0.68	0.78	0.19	2.48	0.87	0.99	0.25
690	0.31	2.33	0.82	0.93	0.23	0.90	0.32	0.36	0.09	1.36	0.48	0.55	0.14	1.67	0.58	0.67	0.17	2.05	0.72	0.82	0.20	2.62	0.92	1.05	0.26
720	0.32	2.46	0.86	0.99	0.25	0.95	0.33	0.38	0.10	1.44	0.50	0.58	0.14	1.76	0.62	0.70	0.18	2.16	0.76	0.87	0.22	2.77	0.97	1.11	0.28
750	0.34	2.60	0.91	1.04	0.26	1.01	0.35	0.40	0.10	1.52	0.53	0.61	0.15	1.86	0.65	0.74	0.19	2.28	0.80	0.91	0.23	2.92	1.02	1.17	0.29
780	0.36	2.74	0.96	1.10	0.27	1.06	0.37	0.42	0.11	1.60	0.56	0.64	0.16	1.96	0.68	0.78	0.20	2.41	0.84	0.96	0.24	3.07	1.08	1.23	0.31
810	0.38	2.89	1.01	1.15	0.29	1.12	0.39	0.45	0.11	1.69	0.59	0.67	0.17	2.06	0.72	0.82	0.21	2.53	0.89	1.01	0.25	3.24	1.13	1.30	0.32
840	0.40	3.04	1.06	1.21	0.30	1.18	0.41	0.47	0.12	1.77	0.62	0.71	0.18	2.17	0.76	0.87	0.22	2.67	0.93	1.07	0.27	3.41	1.19	1.36	0.34
870	0.42	3.20	1.12	1.28	0.32	1.24	0.43	0.49	0.12	1.87	0.65	0.75	0.19	2.28	0.80	0.91	0.23	2.81	0.98	1.12	0.28	3.59	1.26	1.43	0.36
900	0.44	3.36	1.18	1.35	0.34	1.30	0.46	0.52	0.13	1.96	0.69	0.79	0.20	2.40	0.84	0.96	0.24	2.95	1.03	1.18	0.30	3.77	1.32	1.51	0.38
930	0.47	3.54	1.24	1.42	0.35	1.37	0.48	0.55	0.14	2.07	0.72	0.83	0.21	2.53	0.88	1.01	0.25	3.11	1.09	1.24	0.31	3.97	1.39	1.59	0.40
960	0.49	3.73	1.30	1.49	0.37	1.44	0.50	0.58	0.14	2.18	0.76	0.87	0.22	2.66	0.93	1.06	0.27	3.27	1.15	1.31	0.33	4.18	1.46	1.67	0.42
970	0.50	3.79	1.33	1.52	0.38	1.47	0.51	0.59	0.15	2.22	0.78	0.89	0.22	2.71	0.95	1.08	0.27	3.33	1.17	1.33	0.33	4.26	1.49	1.70	0.43
980	0.51	3.86	1.35	1.54	0.39	1.49	0.52	0.60	0.15	2.25	0.79	0.90	0.23	2.76	0.96	1.10	0.28	3.39	1.19	1.36	0.34	4.33	1.52	1.73	0.43
990	0.52	3.93	1.38	1.57	0.39	1.52	0.53	0.61	0.15	2.30	0.80	0.92	0.23	2.81	0.98	1.12	0.28	3.45	1.21	1.38	0.35	4.41	1.54	1.76	0.44
1000	0.53	4.00	1.40	1.60	0.40	1.55	0.54	0.62	0.15	2.34	0.82	0.93	0.23	2.86	1.00	1.14	0.29	3.51	1.23	1.41	0.35	4.49	1.57	1.80	0.45
1010	0.54	4.08	1.43	1.63	0.41	1.58	0.55	0.63	0.16	2.38	0.83	0.95	0.24	2.91	1.02	1.16	0.29	3.58	1.25	1.43	0.36	4.57	1.60	1.83	0.46
1020	0.55	4.15	1.45	1.66	0.42	1.61	0.56	0.64	0.16	2.42	0.85	0.97	0.24	2.96	1.04	1.19	0.30	3.64	1.28	1.46	0.36	4.66	1.63	1.86	0.47
1030	0.56	4.23	1.48	1.69	0.42	1.64	0.57	0.65	0.16	2.47	0.86	0.99	0.25	3.02	1.06	1.21	0.30	3.71	1.30	1.49	0.37	4.75	1.66	1.90	0.47
1040	0.57	4.31	1.51	1.72	0.43	1.67	0.58	0.67	0.17	2.52	0.88	1.01	0.25	3.08	1.08	1.23	0.31	3.79	1.33	1.51	0.38	4.84	1.69	1.94	0.48
1050	0.58	4.40	1.54	1.76	0.44	1.70	0.60	0.68	0.17	2.57	0.90	1.03	0.26	3.14	1.10	1.26	0.31	3.86	1.35	1.54	0.39	4.93	1.73	1.97	0.49
1060	0.59	4.49	1.57	1.79	0.45	1.74	0.61	0.69	0.17	2.62	0.92	1.05	0.26	3.20	1.12	1.28	0.32	3.94	1.38	1.58	0.39	5.03	1.76	2.01	0.50
1070	0.60	4.58	1.60	1.83	0.46	1.77	0.62	0.71	0.18	2.68	0.94	1.07	0.27	3.27	1.14	1.31	0.33	4.02	1.41	1.61	0.40	5.14	1.80	2.06	0.51
1080	0.62	4.68	1.64	1.87	0.47	1.81	0.63	0.72	0.18	2.73	0.96	1.09	0.27	3.34	1.17	1.34	0.33	4.11	1.44	1.64	0.41	5.25	1.84	2.10	0.53
1090	0.63	4.79	1.68	1.92	0.48	1.85	0.65	0.74	0.19	2.80	0.98	1.12	0.28	3.42	1.20	1.37	0.34	4.20	1.47	1.68	0.42	5.37	1.88	2.15	0.54
1100	0.65	4.90	1.72	1.96	0.49	1.90	0.66	0.76	0.19	2.86	1.00	1.15	0.29	3.50	1.23	1.40	0.35	4.30	1.51	1.72	0.43	5.50	1.93	2.20	0.55
1110	0.66	5.03	1.76	2.01	0.50	1.95	0.68	0.78	0.19	2.94	1.03	1.17	0.29	3.59	1.26	1.44	0.36	4.42	1.55	1.77	0.44	5.64	1.97	2.26	0.56
1115	0.67	5.10	1.78	2.04	0.51	1.97	0.69	0.79	0.20	2.98	1.04	1.19	0.30	3.64	1.27	1.46	0.36	4.48	1.57	1.79	0.45	5.72	2.00	2.29	0.57
1120	0.68	5.17	1.81	2.07	0.52	2.00	0.70	0.80	0.20	3.02	1.06	1.21	0.30	3.69	1.29	1.48	0.37	4.54	1.59	1.82	0.45	5.80	2.03	2.32	0.58
1125	0.69	5.25	1.84	2.10	0.52	2.03	0.71	0.81	0.20	3.07	1.07	1.23	0.31	3.75	1.31	1.50	0.37	4.61	1.61	1.84	0.46	5.89			

UNIT HYETOGRAPH		50 YR - 24 HR					2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth		
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	
1174	0.85	6.47	2.26	2.59	0.65	2.50	0.88	1.00	0.25	3.78	1.32	1.51	0.38	4.62	1.62	1.85	0.46	5.68	1.99	2.27	0.57	7.26	2.54	2.90	0.73	
1175	0.85	6.48	2.27	2.59	0.65	2.51	0.88	1.00	0.25	3.78	1.32	1.51	0.38	4.63	1.62	1.85	0.46	5.69	1.99	2.28	0.57	7.27	2.54	2.91	0.73	
1176	0.85	6.49	2.27	2.59	0.65	2.51	0.88	1.00	0.25	3.79	1.33	1.52	0.38	4.63	1.62	1.85	0.46	5.70	1.99	2.28	0.57	7.28	2.55	2.91	0.73	
1177	0.85	6.50	2.27	2.60	0.65	2.51	0.88	1.01	0.25	3.79	1.33	1.52	0.38	4.64	1.62	1.86	0.46	5.70	2.00	2.28	0.57	7.29	2.55	2.92	0.73	
1178	0.86	6.50	2.28	2.60	0.65	2.52	0.88	1.01	0.25	3.80	1.33	1.52	0.38	4.64	1.63	1.86	0.46	5.71	2.00	2.28	0.57	7.30	2.55	2.92	0.73	
1179	0.86	6.51	2.28	2.61	0.65	2.52	0.88	1.01	0.25	3.80	1.33	1.52	0.38	4.65	1.63	1.86	0.47	5.72	2.00	2.29	0.57	7.31	2.56	2.92	0.73	
1180	0.86	6.52	2.28	2.61	0.65	2.52	0.88	1.01	0.25	3.81	1.33	1.52	0.38	4.66	1.63	1.86	0.47	5.73	2.00	2.29	0.57	7.32	2.56	2.93	0.73	
1181	0.86	6.53	2.29	2.61	0.65	2.53	0.88	1.01	0.25	3.81	1.33	1.53	0.38	4.66	1.63	1.87	0.47	5.73	2.01	2.29	0.57	7.33	2.56	2.93	0.73	
1182	0.86	6.54	2.29	2.62	0.65	2.53	0.89	1.01	0.25	3.82	1.34	1.53	0.38	4.67	1.63	1.87	0.47	5.74	2.01	2.30	0.57	7.34	2.57	2.93	0.73	
1183	0.86	6.55	2.29	2.62	0.65	2.53	0.89	1.01	0.25	3.82	1.34	1.53	0.38	4.67	1.64	1.87	0.47	5.75	2.01	2.30	0.57	7.35	2.57	2.94	0.73	
1184	0.86	6.55	2.29	2.62	0.66	2.54	0.89	1.01	0.25	3.83	1.34	1.53	0.38	4.68	1.64	1.87	0.47	5.75	2.01	2.30	0.58	7.35	2.57	2.94	0.74	
1185	0.86	6.56	2.30	2.62	0.66	2.54	0.89	1.02	0.25	3.83	1.34	1.53	0.38	4.69	1.64	1.										

UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
1255	0.92	6.96	2.44	2.78	0.70	2.69	0.94	1.08	0.27	4.07	1.42	1.63	0.41	4.97	1.74	1.99	0.50	6.11	2.14	2.44	0.61	7.81	2.73	3.12	0.78
1260	0.92	6.98	2.44	2.79	0.70	2.70	0.95	1.08	0.27	4.08	1.43	1.63	0.41	4.99	1.75	1.99	0.50	6.13	2.15	2.45	0.61	7.84	2.74	3.13	0.78
1265	0.92	7.01	2.45	2.80	0.70	2.71	0.95	1.08	0.27	4.09	1.43	1.64	0.41	5.00	1.75	2.00	0.50	6.15	2.15	2.46	0.62	7.86	2.75	3.14	0.79
1270	0.92	7.03	2.46	2.81	0.70	2.72	0.95	1.09	0.27	4.10	1.44	1.64	0.41	5.02	1.76	2.01	0.50	6.17	2.16	2.47	0.62	7.88	2.76	3.15	0.79
1275	0.93	7.05	2.47	2.82	0.70	2.73	0.95	1.09	0.27	4.12	1.44	1.65	0.41	5.03	1.76	2.01	0.50	6.19	2.17	2.48	0.62	7.91	2.77	3.16	0.79
1280	0.93	7.07	2.47	2.83	0.71	2.74	0.96	1.09	0.27	4.13	1.44	1.65	0.41	5.05	1.77	2.02	0.50	6.21	2.17	2.48	0.62	7.93	2.78	3.17	0.79
1285	0.93	7.09	2.48	2.84	0.71	2.74	0.96	1.10	0.27	4.14	1.45	1.66	0.41	5.06	1.77	2.02	0.51	6.22	2.18	2.49	0.62	7.95	2.78	3.18	0.80
1290	0.94	7.11	2.49	2.84	0.71	2.75	0.96	1.10	0.28	4.15	1.45	1.66	0.42	5.08	1.78	2.03	0.51	6.24	2.18	2.50	0.62	7.98	2.79	3.19	0.80
1295	0.94	7.13	2.50	2.85	0.71	2.76	0.97	1.10	0.28	4.16	1.46	1.67	0.42	5.09	1.78	2.04	0.51	6.26	2.19	2.50	0.63	8.00	2.80	3.20	0.80
1300	0.94	7.15	2.50	2.86	0.71	2.77	0.97	1.11	0.28	4.17	1.46	1.67	0.42	5.10	1.79	2.04	0.51	6.28	2.20	2.51	0.63	8.02	2.81	3.21	0.80
1305	0.94	7.17	2.51	2.87	0.72	2.77	0.97	1.11	0.28	4.19	1.46	1.67	0.42	5.12	1.79	2.05	0.51	6.29	2.20	2.52	0.63	8.04	2.81	3.22	0.80
1310	0.95	7.19	2.52	2.87	0.72	2.78	0.97	1.11	0.28	4.20	1.47	1.68	0.42	5.13	1.80	2.05	0.51	6.31	2.21	2.52	0.63	8.06	2.82	3.22	0.81
1315	0.95	7.20	2.52	2.88	0.72	2.79	0.98	1.12	0.28	4.21	1.47	1.68	0.42	5.14	1.80	2.06	0.51	6.33	2.21	2.53	0.63	8.08	2.83	3.23	0.81
1320	0.95	7.22	2.53	2.89	0.72	2.80	0.98	1.12	0.28	4.22	1.48	1.69	0.42	5.16	1.80	2.06	0.52	6.34	2.22	2.54	0.63	8.10	2.84	3.24	0.81
1325	0.95	7.24	2.53	2.90	0.72	2.80	0.98	1.12	0.28	4.23	1.48	1.69	0.42	5.17	1.81	2.07	0.52	6.36	2.22	2.54	0.64	8.12	2.84	3.25	0.81
1330	0.95	7.26	2.54	2.90	0.73	2.81	0.98	1.12	0.28	4.24	1.48	1.70	0.42	5.18	1.81	2.07	0.52	6.37	2.23	2.55	0.64	8.14	2.85	3.26	0.81
1335	0.96	7.28	2.55	2.91	0.73	2.82	0.99	1.13	0.28	4.25	1.49	1.70	0.42	5.19	1.82	2.08	0.52	6.39	2.24	2.56	0.64	8.16	2.86	3.27	0.82
1340	0.96	7.29	2.55	2.92	0.73	2.82	0.99	1.13	0.28	4.26	1.49	1.70	0.43	5.21	1.82	2.08	0.52	6.40	2.24	2.56	0.64	8.18	2.86	3.27	0.82
1345	0.96	7.31	2.56	2.92	0.73	2.83	0.99	1.13	0.28	4.27	1.49	1.71	0.43	5.22	1.83	2.09	0.52	6.42	2.25	2.57	0.64	8.20	2.87	3.28	0.82
1350	0.96	7.33	2.56	2.93	0.73	2.84	0.99	1.13	0.28	4.28	1.50	1.71	0.43	5.23	1.83	2.09	0.52	6.43	2.25	2.57	0.64	8.22	2.88	3.29	0.82
1355	0.97	7.34	2.57	2.94	0.73	2.84	0.99	1.14	0.28	4.29	1.50	1.72	0.43	5.24	1.83	2.10	0.52	6.45	2.26	2.58	0.64	8.24	2.88	3.30	0.82
1360	0.97	7.36	2.58	2.94	0.74	2.85	1.00	1.14	0.28	4.30	1.50	1.72	0.43	5.25	1.84	2.10	0.53	6.46	2.26	2.58	0.65	8.26	2.89	3.30	0.83
1365	0.97	7.38	2.58	2.95	0.74	2.85	1.00	1.14	0.29	4.31	1.51	1.72	0.43	5.27	1.84	2.11	0.53	6.48	2.27	2.59	0.65	8.28	2.90	3.31	0.83
1370	0.97	7.39	2.59	2.96	0.74	2.86	1.00	1.14	0.29	4.32	1.51	1.73	0.43	5.28	1.85	2.11	0.53	6.49	2.27	2.60	0.65	8.29	2.90	3.32	0.83
1375	0.97	7.41	2.59	2.96	0.74	2.87	1.00	1.15	0.29	4.33	1.51	1.73	0.43	5.29	1.85	2.12	0.53	6.50	2.28	2.60	0.65	8.31	2.91	3.32	0.83
1380	0.98	7.42	2.60	2.97	0.74	2.87	1.01	1.15	0.29	4.34	1.52	1.73	0.43	5.30	1.86	2.12	0.53	6.52	2.28	2.61	0.65	8.33	2.92	3.33	0.83
1385	0.98	7.44	2.60	2.98	0.74	2.88	1.01	1.15	0.29	4.34	1.52	1.74	0.43	5.31	1.86	2.12	0.53	6.53	2.29	2.61	0.65	8.35	2.92	3.34	0.83
1390	0.98	7.45	2.61	2.98	0.75	2.88	1.01	1.15	0.29	4.35	1.52	1.74	0.44	5.32	1.86	2.13	0.53	6.54	2.29	2.62	0.65	8.36	2.93	3.35	0.84
1395	0.98	7.47	2.61	2.99	0.75	2.89	1.01	1.16	0.29	4.36	1.53	1.74	0.44	5.33	1.87	2.13	0.53	6.56	2.30	2.62	0.66	8.38	2.93	3.35	0.84
1400	0.98	7.48	2.62	2.99	0.75	2.90	1.01	1.16	0.29	4.37	1.53	1.75	0.44	5.34	1.87	2.14	0.53	6.57	2.30	2.63	0.66	8.40	2.94	3.36	0.84
1405	0.99	7.50	2.62	3.00	0.75	2.90	1.02	1.16	0.29	4.38	1.53	1.75	0.44	5.35	1.87	2.14	0.54	6.58	2.30	2.63	0.66	8.41	2.94	3.37	0.84
1410	0.99	7.51	2.63	3.01	0.75	2.91	1.02	1.16	0.29	4.39	1.54	1.76	0.44	5.36	1.88	2.15	0.54	6.60	2.31	2.64	0.66	8.43	2.95	3.37	0.84
1415	0.99	7.53	2.64	3.01	0.75	2.91	1.02	1.17	0.29	4.40	1.54	1.76	0.44	5.38	1.88	2.15	0.54	6.61	2.31	2.64	0.66	8.45	2.96	3.38	0.84
1420	0.99	7.54	2.64	3.02	0.75	2.92	1.02	1.17	0.29	4.41	1.54	1.76	0.44	5.39	1.89	2.15	0.54	6.62	2.32	2.65	0.66	8.46	2.96	3.39	0.85
1425	0.99	7.56	2.65	3.02	0.76	2.92	1.02	1.17	0.29	4.41	1.54	1.77	0.44	5.40	1.89	2.16	0.54	6.64	2.32	2.65	0.66	8.48	2.97	3.39	0.85
1430	1.00	7.57	2.65	3.03	0.76	2.93	1.03	1.17	0.29	4.42	1.55	1.77	0.44	5.41	1.89	2.16	0.54	6.65	2.33	2.66	0.66	8.50	2.97	3.40	0.85
1435	1.00	7.59	2.66	3.03	0.76	2.94	1.03	1.17	0.29	4.43	1.55	1.77	0.44	5.42	1.90	2.17	0.54	6.66	2.33	2.66	0.67	8.51	2.98	3.40	0.85
1440	1.00	7.60	2.66	3.04	0.76	2.94	1.03	1.18	0.29	4.44	1.55	1.78	0.44	5.43	1.90	2.17	0.54	6.67	2.34	2.67	0.67	8.53	2.98	3.41	0.85

SUBAREA A2 HYETOPGRAPHS
- Per 2006 Los Angeles County Hydrology Manual Appendix A

24 HR ISOHYETS,IN					
50 YR	2 YR	5 YR	10 YR	25 YR	100 YR
7.4	2.9	4.3	5.3	6.5	8.3



UNIT HYETOGRAPH		50 YR - 24 HR					2 YR - 24 HR					5 YR - 24 HR					10 YR - 24 HR					25 YR - 24 HR					100 YR - 24 HR				
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth				
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY		
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
30	0.01	0.08	0.03	0.03	0.01	0.03	0.01	0.01	0.00	0.05	0.02	0.02	0.00	0.06	0.02	0.02	0.01	0.07	0.03	0.03	0.01	0.09	0.03	0.04	0.01	0.09	0.03	0.04	0.01		
60	0.02	0.17	0.06	0.07	0.02	0.06	0.02	0.03	0.01	0.10	0.03	0.04	0.01	0.12	0.04	0.05	0.01	0.15	0.05	0.06	0.01	0.19	0.06	0.07	0.02	0.19	0.06	0.07	0.02		
90	0.03	0.25	0.09	0.10	0.02	0.10	0.03	0.04	0.01	0.15	0.05	0.06	0.01	0.18	0.06	0.07	0.02	0.22	0.08	0.09	0.02	0.28	0.10	0.11	0.03	0.28	0.10	0.11	0.03		
120	0.05	0.34	0.12	0.13	0.03	0.13	0.05	0.05	0.01	0.20	0.07	0.08	0.02	0.24	0.08	0.10	0.02	0.29	0.10	0.12	0.03	0.38	0.13	0.15	0.04	0.38	0.13	0.15	0.04		
150	0.06	0.42	0.15	0.17	0.04	0.16	0.06	0.07	0.02	0.25	0.09	0.10	0.02	0.30	0.11	0.12	0.03	0.37	0.13	0.15	0.04	0.47	0.17	0.19	0.05	0.47	0.17	0.19	0.05		
180	0.07	0.51	0.18	0.20	0.05	0.20	0.07	0.08	0.02	0.30	0.10	0.12	0.03	0.36	0.13	0.15	0.04	0.45	0.16	0.18	0.04	0.57	0.20	0.23	0.06	0.57	0.20	0.23	0.06		
210	0.08	0.60	0.21	0.24	0.06	0.23	0.08	0.09	0.02	0.35	0.12	0.14	0.03	0.43	0.15	0.17	0.04	0.53	0.18	0.21	0.05	0.67	0.24	0.27	0.07	0.67	0.24	0.27	0.07		
240	0.09	0.69	0.24	0.28	0.07	0.27	0.09	0.11	0.03	0.40	0.14	0.16	0.04	0.49	0.17	0.20	0.05	0.61	0.21	0.24	0.06	0.77	0.27	0.31	0.08	0.77	0.27	0.31	0.08		
270	0.11	0.78	0.27	0.31	0.08	0.30	0.11	0.12	0.03	0.46	0.16	0.18	0.05	0.56	0.20	0.22	0.06	0.69	0.24	0.27	0.07	0.88	0.31	0.35	0.09	0.88	0.31	0.35	0.09		
300	0.12	0.87	0.31	0.35	0.09	0.34	0.12	0.14	0.03	0.51	0.18	0.20	0.05	0.62	0.22	0.25	0.06	0.77	0.27	0.31	0.08	0.98	0.34	0.39	0.10	0.98	0.34	0.39	0.10		
330	0.13	0.97	0.34	0.39	0.10	0.38	0.13	0.15	0.04	0.57	0.20	0.23	0.06	0.69	0.24	0.28	0.07	0.85	0.30	0.34	0.09	1.09	0.38	0.44	0.11	1.09	0.38	0.44	0.11		
360	0.14	1.07	0.37	0.43	0.11	0.41	0.14	0.17	0.04	0.62	0.22	0.25	0.06	0.76	0.27	0.30	0.08	0.94	0.33	0.37	0.09	1.20	0.42	0.48	0.12	1.20	0.42	0.48	0.12		
390	0.16	1.16	0.41	0.47	0.12	0.45	0.16	0.18	0.05	0.68	0.24	0.27	0.07	0.83	0.29	0.33	0.08	1.02	0.36	0.41	0.10	1.31	0.46	0.52	0.13	1.31	0.46	0.52	0.13		
420	0.17	1.26	0.44	0.51	0.13	0.49	0.17	0.20	0.05	0.74	0.26	0.30	0.07	0.90	0.32	0.36	0.09	1.11	0.39	0.44	0.11	1.42	0.50	0.57	0.14	1.42	0.50	0.57	0.14		
450	0.18	1.37	0.48	0.55	0.14	0.53	0.19	0.21	0.05	0.80	0.28	0.32	0.08	0.98	0.34	0.39	0.10	1.20	0.42	0.48	0.12	1.53	0.54	0.61	0.15	1.53	0.54	0.61	0.15		
480	0.20	1.47	0.51	0.59	0.15	0.57	0.20	0.23	0.06	0.86	0.30	0.34	0.09	1.05	0.37	0.42	0.11	1.29	0.45	0.52	0.13	1.65	0.58	0.66	0.17	1.65	0.58	0.66	0.17		
510	0.21	1.58	0.55	0.63	0.16	0.61	0.21	0.24	0.06	0.92	0.32	0.37	0.09	1.13	0.39	0.45	0.11	1.38	0.48	0.55	0.14	1.77	0.62	0.71	0.18	1.77	0.62	0.71	0.18		
540	0.23	1.69	0.59	0.67	0.17	0.65	0.23	0.26	0.07	0.98	0.34	0.39	0.10	1.20	0.42	0.48	0.12	1.48	0.52	0.59	0.15	1.89	0.66	0.76	0.19	1.89	0.66	0.76	0.19		
570	0.24	1.80	0.63	0.72	0.18	0.70	0.24	0.28	0.07	1.05	0.37	0.42	0.10	1.28	0.45	0.51	0.13	1.58	0.55	0.63	0.16	2.02	0.71	0.81	0.20	2.02	0.71	0.81	0.20		

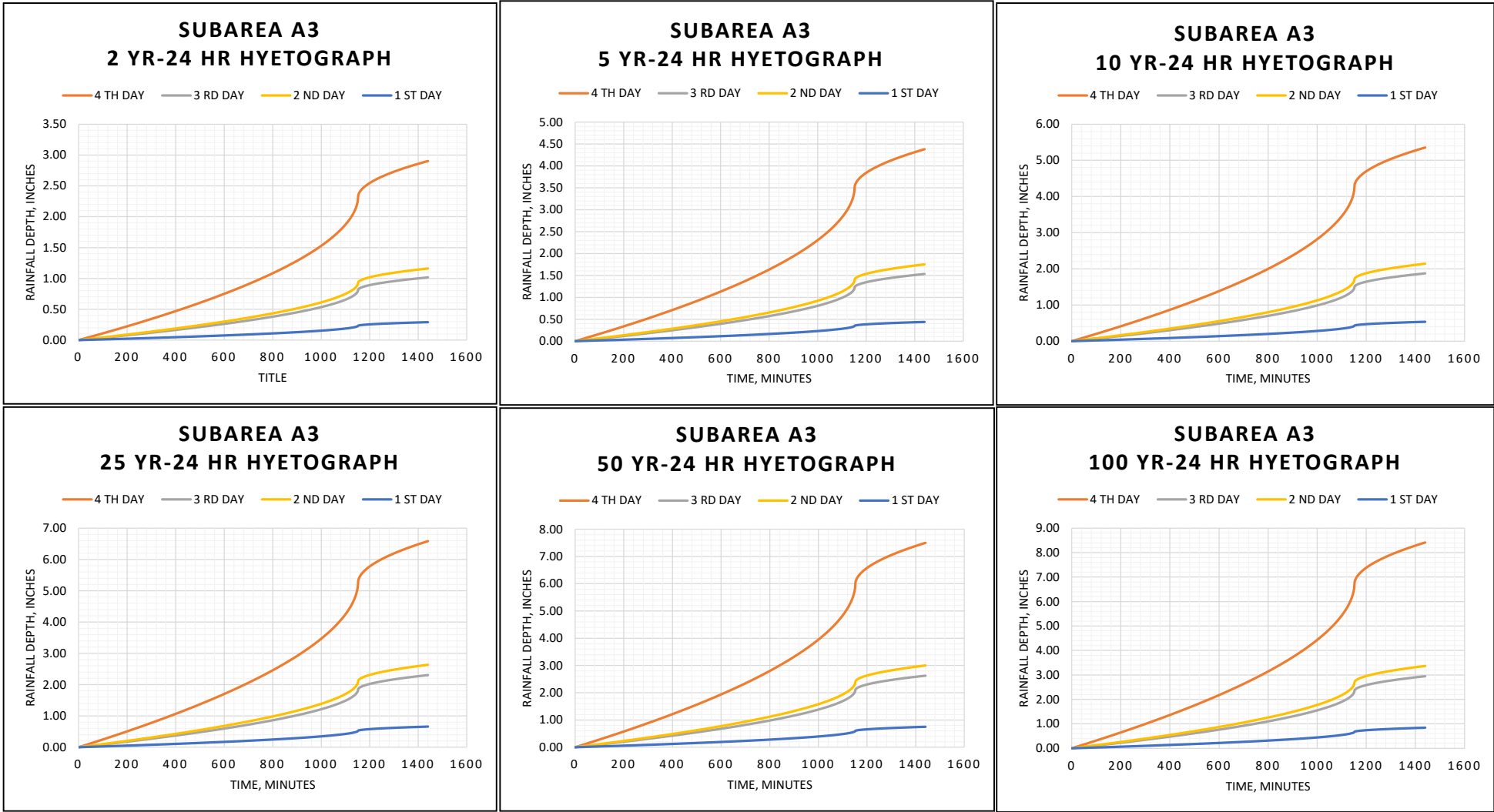
UNIT HYETOGRAPH	50 YR - 24 HR					2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
600	0.26	1.91	0.67	0.76	0.19	0.74	0.26	0.30	0.07	1.12	0.39	0.45	0.11	1.36	0.48	0.55	0.14	1.68	0.59	0.67	0.17	2.14	0.75	0.86	0.21
630	0.27	2.03	0.71	0.81	0.20	0.79	0.27	0.31	0.08	1.18	0.41	0.47	0.12	1.45	0.51	0.58	0.14	1.78	0.62	0.71	0.18	2.28	0.80	0.91	0.23
660	0.29	2.15	0.75	0.86	0.21	0.83	0.29	0.33	0.08	1.25	0.44	0.50	0.13	1.53	0.54	0.61	0.15	1.89	0.66	0.75	0.19	2.41	0.84	0.96	0.24
690	0.31	2.27	0.80	0.91	0.23	0.88	0.31	0.35	0.09	1.33	0.46	0.53	0.13	1.62	0.57	0.65	0.16	2.00	0.70	0.80	0.20	2.55	0.89	1.02	0.25
720	0.32	2.40	0.84	0.96	0.24	0.93	0.33	0.37	0.09	1.40	0.49	0.56	0.14	1.71	0.60	0.69	0.17	2.11	0.74	0.84	0.21	2.69	0.94	1.08	0.27
750	0.34	2.53	0.89	1.01	0.25	0.98	0.34	0.39	0.10	1.48	0.52	0.59	0.15	1.81	0.63	0.72	0.18	2.22	0.78	0.89	0.22	2.84	0.99	1.14	0.28
780	0.36	2.67	0.93	1.07	0.27	1.03	0.36	0.41	0.10	1.56	0.55	0.62	0.16	1.91	0.67	0.76	0.19	2.34	0.82	0.94	0.23	2.99	1.05	1.20	0.30
810	0.38	2.81	0.98	1.12	0.28	1.09	0.38	0.43	0.11	1.64	0.57	0.66	0.16	2.01	0.70	0.80	0.20	2.47	0.86	0.99	0.25	3.15	1.10	1.26	0.32
840	0.40	2.96	1.04	1.18	0.30	1.14	0.40	0.46	0.11	1.73	0.60	0.69	0.17	2.11	0.74	0.84	0.21	2.60	0.91	1.04	0.26	3.32	1.16	1.33	0.33
870	0.42	3.11	1.09	1.24	0.31	1.20	0.42	0.48	0.12	1.82	0.64	0.73	0.18	2.22	0.78	0.89	0.22	2.73	0.96	1.09	0.27	3.49	1.22	1.40	0.35
900	0.44	3.27	1.15	1.31	0.33	1.27	0.44	0.51	0.13	1.91	0.67	0.76	0.19	2.34	0.82	0.94	0.23	2.88	1.01	1.15	0.29	3.67	1.29	1.47	0.37
930	0.47	3.45	1.21	1.38	0.34	1.33	0.47	0.53	0.13	2.01	0.70	0.81	0.20	2.46	0.86	0.98	0.25	3.03	1.06	1.21	0.30	3.87	1.35	1.55	0.39
960	0.49	3.63	1.27	1.45	0.36	1.40	0.49	0.56	0.14	2.12	0.74	0.85	0.21	2.59	0.91	1.04	0.26	3.19	1.12	1.27	0.32	4.07	1.43	1.63	0.41
970	0.50	3.69	1.29	1.48	0.37	1.43	0.50	0.57	0.14	2.16	0.75	0.86	0.22	2.64	0.92	1.05	0.26	3.24	1.14	1.30	0.32	4.14	1.45	1.66	0.41
980	0.51	3.76	1.32	1.50	0.38	1.45	0.51	0.58	0.15	2.20	0.77	0.88	0.22	2.68	0.94	1.07	0.27	3.30	1.16	1.32	0.33	4.22	1.48	1.69	0.42
990	0.52	3.83	1.34	1.53	0.38	1.48	0.52	0.59	0.15	2.23	0.78	0.89	0.22	2.73	0.96	1.09	0.27	3.36	1.18	1.34	0.34	4.29	1.50	1.72	0.43
1000	0.53	3.90	1.36	1.56	0.39	1.51	0.53	0.60	0.15	2.28	0.80	0.91	0.23	2.78	0.97	1.11	0.28	3.42	1.20	1.37	0.34	4.37	1.53	1.75	0.44
1010	0.54	3.97	1.39	1.59	0.40	1.54	0.54	0.61	0.15	2.32	0.81	0.93	0.23	2.83	0.99	1.13	0.28	3.48	1.22	1.39	0.35	4.45	1.56	1.78	0.45
1020	0.55	4.04	1.41	1.62	0.40	1.56	0.55	0.63	0.16	2.36	0.83	0.94	0.24	2.89	1.01	1.15	0.29	3.55	1.24	1.42	0.35	4.54	1.59	1.81	0.45
1030	0.56	4.12	1.44	1.65	0.41	1.59	0.56	0.64	0.16	2.41	0.84	0.96	0.24	2.94	1.03	1.18	0.29	3.62	1.27	1.45	0.36	4.62	1.62	1.85	0.46
1040	0.57	4.20	1.47	1.68	0.42	1.62	0.57	0.65	0.16	2.45	0.86	0.98	0.25	3.00	1.05	1.20	0.30	3.69	1.29	1.47	0.37	4.71	1.65	1.88	0.47
1050	0.58	4.28	1.50	1.71	0.43	1.66	0.58	0.66	0.17	2.50	0.88	1.00	0.25	3.06	1.07	1.22	0.31	3.76	1.32	1.50	0.38	4.80	1.68	1.92	0.48
1060	0.59	4.37	1.53	1.75	0.44	1.69	0.59	0.68	0.17	2.55	0.89	1.02	0.26	3.12	1.09	1.25	0.31	3.84	1.34	1.53	0.38	4.90	1.72	1.96	0.49
1070	0.60	4.46	1.56	1.78	0.45	1.73	0.60	0.69	0.17	2.61	0.91	1.04	0.26	3.19	1.11	1.27	0.32	3.92	1.37	1.57	0.39	5.01	1.75	2.00	0.50
1080	0.62	4.56	1.60	1.82	0.46	1.76	0.62	0.71	0.18	2.66	0.93	1.06	0.27	3.25	1.14	1.30	0.33	4.00	1.40	1.60	0.40	5.11	1.79	2.05	0.51
1090	0.63	4.66	1.63	1.86	0.47	1.80	0.63	0.72	0.18	2.72	0.95	1.09	0.27	3.33	1.17	1.33	0.33	4.09	1.43	1.64	0.41	5.23	1.83	2.09	0.52
1100	0.65	4.77	1.67	1.91	0.48	1.85	0.65	0.74	0.18	2.79	0.98	1.12	0.28	3.41	1.19	1.36	0.34	4.19	1.47	1.68	0.42	5.36	1.87	2.14	0.54
1110	0.66	4.90	1.71	1.96	0.49	1.89	0.66	0.76	0.19	2.86	1.00	1.14	0.29	3.50	1.22	1.40	0.35	4.30	1.50	1.72	0.43	5.49	1.92	2.20	0.55
1115	0.67	4.96	1.74	1.99	0.50	1.92	0.67	0.77	0.19	2.90	1.01	1.16	0.29	3.54	1.24	1.42	0.35	4.36	1.53	1.74	0.44	5.57	1.95	2.23	0.56
1120	0.68	5.03	1.76	2.01	0.50	1.95	0.68	0.78	0.19	2.94	1.03	1.18	0.29	3.59	1.26	1.44	0.36	4.42	1.55	1.77	0.44	5.65	1.98	2.26	0.56
1125	0.69	5.11	1.79	2.04	0.51	1.98	0.69	0.79	0.20	2.98	1.04	1.19	0.30	3.65	1.28	1.46	0.36	4.49	1.57	1.79	0.45	5.73	2.01	2.29	0.57
1130	0.70	5.19	1.82	2.08	0.52	2.01	0.70	0.80	0.20	3.03	1.06	1.21	0.30	3.71	1.30	1.48	0.37	4.56	1.60	1.82	0.46	5.83	2.04	2.33	0.58
1135	0.71	5.29	1.85	2.11	0.53	2.05	0.72	0.82	0.20	3.09	1.08	1.23	0.31	3.77	1.32	1.51	0.38	4.64	1.62	1.86	0.46	5.9			

UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
1178	0.86	6.33	2.22	2.53	0.63	2.45	0.86	0.98	0.25	3.70	1.29	1.48	0.37	4.52	1.58	1.81	0.45	5.56	1.95	2.22	0.56	7.11	2.49	2.84	0.71
1179	0.86	6.34	2.22	2.54	0.63	2.45	0.86	0.98	0.25	3.70	1.30	1.48	0.37	4.53	1.58	1.81	0.45	5.57	1.95	2.23	0.56	7.12	2.49	2.85	0.71
1180	0.86	6.35	2.22	2.54	0.64	2.46	0.86	0.98	0.25	3.71	1.30	1.48	0.37	4.53	1.59	1.81	0.45	5.58	1.95	2.23	0.56	7.13	2.49	2.85	0.71
1181	0.86	6.36	2.23	2.54	0.64	2.46	0.86	0.98	0.25	3.71	1.30	1.49	0.37	4.54	1.59	1.82	0.45	5.58	1.95	2.23	0.56	7.13	2.50	2.85	0.71
1182	0.86	6.37	2.23	2.55	0.64	2.46	0.86	0.99	0.25	3.72	1.30	1.49	0.37	4.55	1.59	1.82	0.45	5.59	1.96	2.24	0.56	7.14	2.50	2.86	0.71
1183	0.86	6.37	2.23	2.55	0.64	2.47	0.86	0.99	0.25	3.72	1.30	1.49	0.37	4.55	1.59	1.82	0.46	5.60	1.96	2.24	0.56	7.15	2.50	2.86	0.72
1184	0.86	6.38	2.23	2.55	0.64	2.47	0.86	0.99	0.25	3.73	1.30	1.49	0.37	4.56	1.59	1.82	0.46	5.60	1.96	2.24	0.56	7.16	2.51	2.86	0.72
1185	0.86	6.39	2.24	2.56	0.64	2.47	0.87	0.99	0.25	3.73	1.31	1.49	0.37	4.56	1.60	1.82	0.46	5.61	1.96	2.24	0.56	7.17	2.51	2.87	0.72
1186	0.86	6.40	2.24	2.56	0.64	2.48	0.87	0.99	0.25	3.74	1.31	1.49	0.37	4.57	1.60	1.83	0.46	5.62	1.97	2.25	0.56	7.18	2.51	2.87	0.72
1187	0.87	6.40	2.24	2.56	0.64	2.48	0.87	0.99	0.25	3.74	1.31	1.50	0.37	4.57	1.60	1.83	0.46	5.62	1.97	2.25	0.56	7.19	2.51	2.87	0.72
1188	0.87	6.41	2.24	2.56	0.64	2.48	0.87	0.99	0.25	3.74	1.31	1.50	0.37	4.58	1.60	1.83	0.46	5.63	1.97	2.25	0.56	7.19	2.52	2.88	0.72
1189	0.87	6.42	2.25	2.57	0.64	2.48	0.87	0.99	0.25	3.75	1.31	1.50	0.37	4.58	1.60	1.83	0.46	5.64	1.97	2.25	0.56	7.20	2.52	2.88	0.72
1190	0.87	6.43	2.25	2.57	0.64	2.49	0.87	0.99	0.25	3.75	1.31	1.50	0.38	4.59	1.61	1.84	0.46	5.64	1.97	2.26	0.				

UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
1285	0.93	6.90	2.42	2.76	0.69	2.67	0.93	1.07	0.27	4.03	1.41	1.61	0.40	4.93	1.72	1.97	0.49	6.06	2.12	2.42	0.61	7.74	2.71	3.10	0.77
1290	0.94	6.92	2.42	2.77	0.69	2.68	0.94	1.07	0.27	4.04	1.41	1.62	0.40	4.94	1.73	1.98	0.49	6.08	2.13	2.43	0.61	7.77	2.72	3.11	0.78
1295	0.94	6.94	2.43	2.78	0.69	2.69	0.94	1.07	0.27	4.05	1.42	1.62	0.41	4.96	1.73	1.98	0.50	6.09	2.13	2.44	0.61	7.79	2.73	3.12	0.78
1300	0.94	6.96	2.44	2.78	0.70	2.69	0.94	1.08	0.27	4.06	1.42	1.63	0.41	4.97	1.74	1.99	0.50	6.11	2.14	2.44	0.61	7.81	2.73	3.12	0.78
1305	0.94	6.98	2.44	2.79	0.70	2.70	0.95	1.08	0.27	4.08	1.43	1.63	0.41	4.98	1.74	1.99	0.50	6.13	2.14	2.45	0.61	7.83	2.74	3.13	0.78
1310	0.95	7.00	2.45	2.80	0.70	2.71	0.95	1.08	0.27	4.09	1.43	1.63	0.41	5.00	1.75	2.00	0.50	6.14	2.15	2.46	0.61	7.85	2.75	3.14	0.79
1315	0.95	7.01	2.46	2.81	0.70	2.71	0.95	1.09	0.27	4.10	1.43	1.64	0.41	5.01	1.75	2.00	0.50	6.16	2.16	2.46	0.62	7.87	2.75	3.15	0.79
1320	0.95	7.03	2.46	2.81	0.70	2.72	0.95	1.09	0.27	4.11	1.44	1.64	0.41	5.02	1.76	2.01	0.50	6.17	2.16	2.47	0.62	7.89	2.76	3.16	0.79
1325	0.95	7.05	2.47	2.82	0.70	2.73	0.95	1.09	0.27	4.12	1.44	1.65	0.41	5.03	1.76	2.01	0.50	6.19	2.17	2.48	0.62	7.91	2.77	3.16	0.79
1330	0.95	7.07	2.47	2.83	0.71	2.73	0.96	1.09	0.27	4.13	1.44	1.65	0.41	5.05	1.77	2.02	0.50	6.20	2.17	2.48	0.62	7.93	2.78	3.17	0.79
1335	0.96	7.08	2.48	2.83	0.71	2.74	0.96	1.10	0.27	4.14	1.45	1.65	0.41	5.06	1.77	2.02	0.51	6.22	2.18	2.49	0.62	7.95	2.78	3.18	0.79
1340	0.96	7.10	2.49	2.84	0.71	2.75	0.96	1.10	0.27	4.15	1.45	1.66	0.41	5.07	1.77	2.03	0.51	6.23	2.18	2.49	0.62	7.97	2.79	3.19	0.80
1345	0.96	7.12	2.49	2.85	0.71	2.75	0.96	1.10	0.28	4.16	1.45	1.66	0.42	5.08	1.78	2.03	0.51	6.25	2.19	2.50	0.62	7.99	2.79	3.19	0.80
1350	0.96	7.13	2.50	2.85	0.71	2.76	0.97	1.10	0.28	4.17	1.46	1.67	0.42	5.09	1.78	2.04	0.51	6.26	2.19	2.51	0.63	8.00	2.80	3.20	0.80
1355	0.97	7.15	2.50	2.86	0.71	2.77	0.97	1.11	0.28	4.18	1.46	1.67	0.42	5.10	1.79	2.04	0.51	6.28	2.20	2.51	0.63	8.02	2.81	3.21	0.80
1360	0.97	7.17	2.51	2.87	0.72	2.77	0.97	1.11	0.28	4.18	1.46	1.67	0.42	5.12	1.79	2.05	0.51	6.29	2.20	2.52	0.63	8.04	2.81	3.22	0.80
1365	0.97	7.18	2.51	2.87	0.72	2.78	0.97	1.11	0.28	4.19	1.47	1.68	0.42	5.13	1.79	2.05	0.51	6.31	2.21	2.52	0.63	8.06	2.82	3.22	0.81
1370	0.97	7.20	2.52	2.88	0.72	2.79	0.97	1.11	0.28	4.20	1.47	1.68	0.42	5.14	1.80	2.06	0.51	6.32	2.21	2.53	0.63	8.07	2.83	3.23	0.81
1375	0.97	7.21	2.52	2.88	0.72	2.79	0.98	1.12	0.28	4.21	1.47	1.68	0.42	5.15	1.80	2.06	0.51	6.33	2.22	2.53	0.63	8.09	2.83	3.24	0.81
1380	0.98	7.23	2.53	2.89	0.72	2.80	0.98	1.12	0.28	4.22	1.48	1.69	0.42	5.16	1.81	2.06	0.52	6.35	2.22	2.54	0.63	8.11	2.84	3.24	0.81
1385	0.98	7.24	2.53	2.90	0.72	2.80	0.98	1.12	0.28	4.23	1.48	1.69	0.42	5.17	1.81	2.07	0.52	6.36	2.23	2.54	0.64	8.13	2.84	3.25	0.81
1390	0.98	7.26	2.54	2.90	0.73	2.81	0.98	1.12	0.28	4.24	1.48	1.70	0.42	5.18	1.81	2.07	0.52	6.37	2.23	2.55	0.64	8.14	2.85	3.26	0.81
1395	0.98	7.27	2.55	2.91	0.73	2.81	0.99	1.13	0.28	4.25	1.49	1.70	0.42	5.19	1.82	2.08	0.52	6.39	2.23	2.55	0.64	8.16	2.86	3.26	0.82
1400	0.98	7.29	2.55	2.91	0.73	2.82	0.99	1.13	0.28	4.26	1.49	1.70	0.43	5.20	1.82	2.08	0.52	6.40	2.24	2.56	0.64	8.18	2.86	3.27	0.82
1405	0.99	7.30	2.56	2.92	0.73	2.83	0.99	1.13	0.28	4.26	1.49	1.71	0.43	5.21	1.82	2.09	0.52	6.41	2.24	2.56	0.64	8.19	2.87	3.28	0.82
1410	0.99	7.32	2.56	2.93	0.73	2.83	0.99	1.13	0.28	4.27	1.50	1.71	0.43	5.22	1.83	2.09	0.52	6.42	2.25	2.57	0.64	8.21	2.87	3.28	0.82
1415	0.99	7.33	2.57	2.93	0.73	2.84	0.99	1.13	0.28	4.28	1.50	1.71	0.43	5.23	1.83	2.09	0.52	6.44	2.25	2.57	0.64	8.22	2.88	3.29	0.82
1420	0.99	7.34	2.57	2.94	0.73	2.84	0.99	1.14	0.28	4.29	1.50	1.72	0.43	5.24	1.84	2.10	0.52	6.45	2.26	2.58	0.64	8.24	2.88	3.30	0.82
1425	0.99	7.36	2.58	2.94	0.74	2.85	1.00	1.14	0.28	4.30	1.50	1.72	0.43	5.25	1.84	2.10	0.53	6.46	2.26	2.58	0.65	8.26	2.89	3.30	0.83
1430	1.00	7.37	2.58	2.95	0.74	2.85	1.00	1.14	0.29	4.31	1.51	1.72	0.43	5.26	1.84	2.11	0.53	6.47	2.27	2.59	0.65	8.27	2.90	3.31	0.83
1435	1.00	7.39	2.59	2.95	0.74	2.86	1.00	1.14	0.29	4.31	1.51	1.73	0.43	5.27	1.85	2.11	0.53	6.49	2.27	2.59	0.65	8.29	2.90	3.31	0.83
1440	1.00	7.40	2.59	2.96	0.74	2.86	1.00	1.15	0.29	4.32	1.51	1.73	0.43	5.28	1.85	2.11	0.53	6.50	2.27	2.60	0.65	8.30	2.91	3.32	0.83

SUBAREA A3 HYETOPRAPHS
- Per 2006 Los Angeles County Hydrology Manual Appendix A

24 HR ISOHYETS,IN					
50 YR	2 YR	5 YR	10 YR	25 YR	100 YR
7.5	2.9	4.4	5.4	6.6	8.4



UNIT HYETOGRAPH		50 YR - 24 HR					2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
30	0.01	0.08	0.03	0.03	0.01	0.03	0.01	0.01	0.00	0.05	0.02	0.02	0.00	0.06	0.02	0.02	0.01	0.07	0.03	0.03	0.01	0.09	0.03	0.04	0.01	
60	0.02	0.17	0.06	0.07	0.02	0.06	0.02	0.03	0.01	0.10	0.03	0.04	0.01	0.12	0.04	0.05	0.01	0.15	0.05	0.06	0.01	0.19	0.07	0.08	0.02	
90	0.03	0.25	0.09	0.10	0.03	0.10	0.03	0.04	0.01	0.15	0.05	0.06	0.01	0.18	0.06	0.07	0.02	0.22	0.08	0.09	0.02	0.28	0.10	0.11	0.03	
120	0.05	0.34	0.12	0.14	0.03	0.13	0.05	0.05	0.01	0.20	0.07	0.08	0.02	0.24	0.08	0.10	0.02	0.30	0.10	0.12	0.03	0.38	0.13	0.15	0.04	
150	0.06	0.43	0.15	0.17	0.04	0.17	0.06	0.07	0.02	0.25	0.09	0.10	0.02	0.31	0.11	0.12	0.03	0.38	0.13	0.15	0.04	0.48	0.17	0.19	0.05	
180	0.07	0.52	0.18	0.21	0.05	0.20	0.07	0.08	0.02	0.30	0.11	0.12	0.03	0.37	0.13	0.15	0.04	0.45	0.16	0.18	0.05	0.58	0.20	0.23	0.06	
210	0.08	0.61	0.21	0.24	0.06	0.23	0.08	0.09	0.02	0.35	0.12	0.14	0.04	0.43	0.15	0.17	0.04	0.53	0.19	0.21	0.05	0.68	0.24	0.27	0.07	
240	0.09	0.70	0.24	0.28	0.07	0.27	0.09	0.11	0.03	0.41	0.14	0.16	0.04	0.50	0.17	0.20	0.05	0.61	0.21	0.25	0.06	0.78	0.27	0.31	0.08	
270	0.11	0.79	0.28	0.32	0.08	0.31	0.11	0.12	0.03	0.46	0.16	0.18	0.05	0.57	0.20	0.23	0.06	0.70	0.24	0.28	0.07	0.89	0.31	0.36	0.09	
300	0.12	0.89	0.31	0.35	0.09	0.34	0.12	0.14	0.03	0.52	0.18	0.21	0.05	0.63	0.22	0.25	0.06	0.78	0.27	0.31	0.08	0.99	0.35	0.40	0.10	
330	0.13	0.98	0.34	0.39	0.10	0.38	0.13	0.15	0.04	0.57	0.20	0.23	0.06	0.70	0.25	0.28	0.07	0.86	0.30	0.35	0.09	1.10	0.39	0.44	0.11	
360	0.14	1.08	0.38	0.43	0.11	0.42	0.15	0.17	0.04	0.63	0.22	0.25	0.06	0.77	0.27	0.31	0.08	0.95	0.33	0.38	0.09	1.21	0.42	0.49	0.12	
390	0.16	1.18	0.41	0.47	0.12	0.46	0.16	0.18	0.05	0.69	0.24	0.28	0.07	0.84	0.29	0.34	0.08	1.04	0.36	0.41	0.10	1.32	0.46	0.53	0.13	
420	0.17	1.28	0.45	0.51	0.13	0.50	0.17	0.20	0.05	0.75	0.26	0.30	0.07	0.92	0.32	0.37	0.09	1.13	0.39	0.45	0.11	1.44	0.50	0.58	0.14	

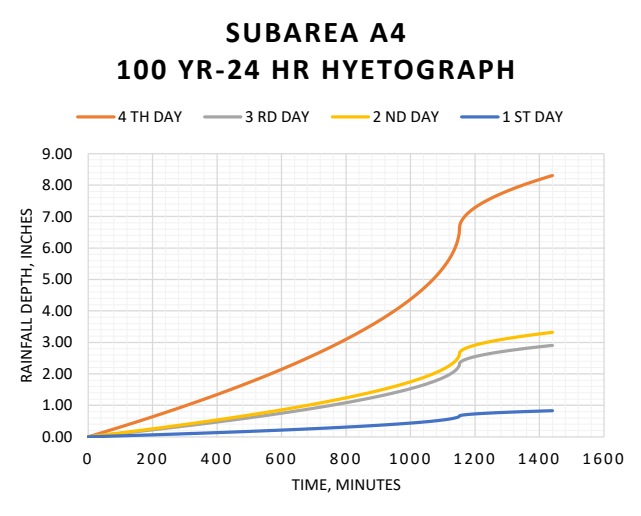
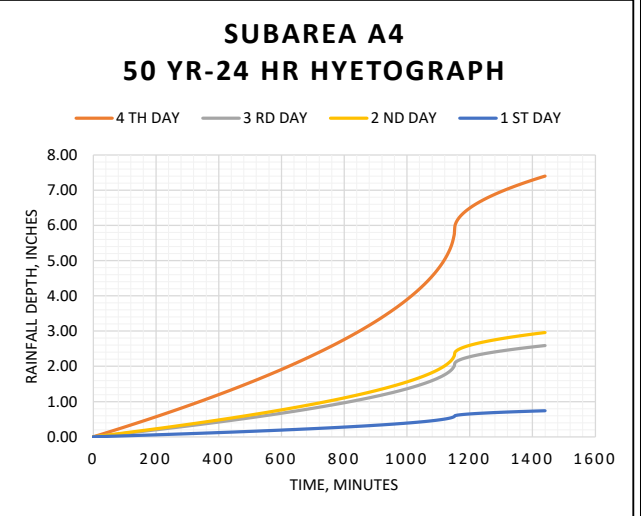
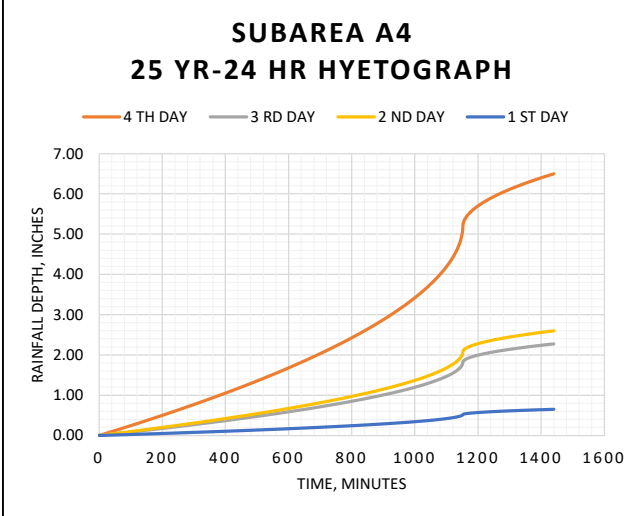
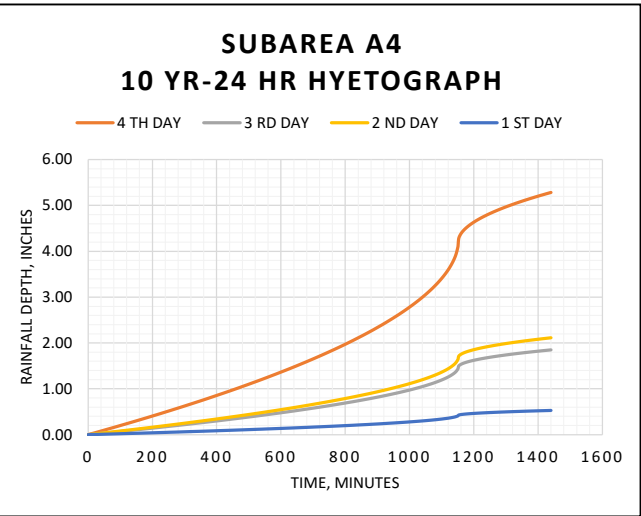
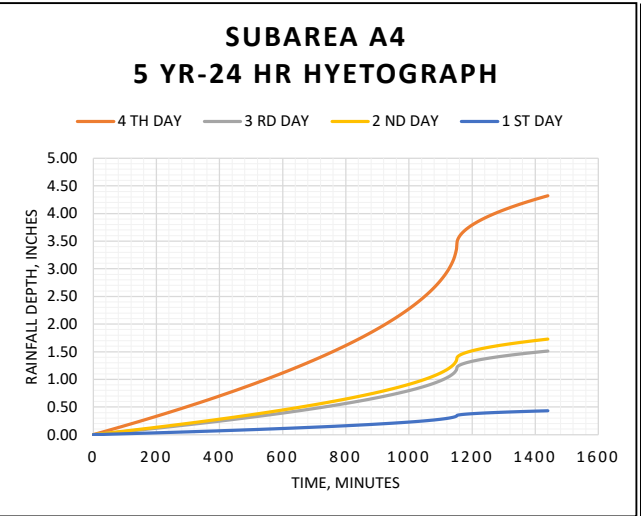
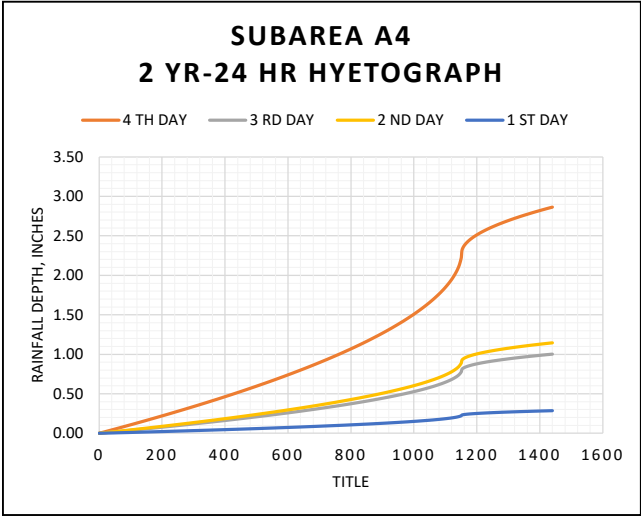
UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
450	0.18	1.39	0.48	0.55	0.14	0.54	0.19	0.21	0.05	0.81	0.28	0.32	0.08	0.99	0.35	0.40	0.10	1.22	0.43	0.49	0.12	1.55	0.54	0.62	0.16
480	0.20	1.49	0.52	0.60	0.15	0.58	0.20	0.23	0.06	0.87	0.30	0.35	0.09	1.06	0.37	0.43	0.11	1.31	0.46	0.52	0.13	1.67	0.59	0.67	0.17
510	0.21	1.60	0.56	0.64	0.16	0.62	0.22	0.25	0.06	0.93	0.33	0.37	0.09	1.14	0.40	0.46	0.11	1.40	0.49	0.56	0.14	1.79	0.63	0.72	0.18
540	0.23	1.71	0.60	0.68	0.17	0.66	0.23	0.26	0.07	1.00	0.35	0.40	0.10	1.22	0.43	0.49	0.12	1.50	0.53	0.60	0.15	1.92	0.67	0.77	0.19
570	0.24	1.82	0.64	0.73	0.18	0.71	0.25	0.28	0.07	1.06	0.37	0.43	0.11	1.30	0.46	0.52	0.13	1.60	0.56	0.64	0.16	2.04	0.72	0.82	0.20
600	0.26	1.94	0.68	0.77	0.19	0.75	0.26	0.30	0.07	1.13	0.40	0.45	0.11	1.38	0.48	0.55	0.14	1.70	0.60	0.68	0.17	2.17	0.76	0.87	0.22
630	0.27	2.06	0.72	0.82	0.21	0.80	0.28	0.32	0.08	1.20	0.42	0.48	0.12	1.47	0.51	0.59	0.15	1.81	0.63	0.72	0.18	2.31	0.81	0.92	0.23
660	0.29	2.18	0.76	0.87	0.22	0.84	0.29	0.34	0.08	1.27	0.45	0.51	0.13	1.55	0.54	0.62	0.16	1.91	0.67	0.76	0.19	2.44	0.86	0.98	0.24
690	0.31	2.30	0.81	0.92	0.23	0.89	0.31	0.36	0.09	1.34	0.47	0.54	0.13	1.64	0.58	0.66	0.16	2.02	0.71	0.81	0.20	2.58	0.90	1.03	0.26
720	0.32	2.43	0.85	0.97	0.24	0.94	0.33	0.38	0.09	1.42	0.50	0.57	0.14	1.74	0.61	0.69	0.17	2.14	0.75	0.85	0.21	2.73	0.96	1.09	0.27
750	0.34	2.57	0.90	1.03	0.26	0.99	0.35	0.40	0.10	1.50	0.52	0.60	0.15	1.83	0.64	0.73	0.18	2.25	0.79	0.90	0.23	2.88	1.01	1.15	0.29
780	0.36	2.70	0.95	1.08	0.27	1.05	0.37	0.42	0.10	1.58	0.55	0.63	0.16	1.93	0.68	0.77	0.19	2.37	0.83	0.95	0.24	3.03	1.06	1.21	0.30
810	0.38	2.85	1.00	1.14	0.28	1.10	0.39	0.44	0.11	1.66	0.58	0.67	0.17	2.03	0.71	0.81	0.20	2.50	0.88	1.00	0.25	3.20	1.12	1.28	0.32
840	0.40	3.00	1.05	1.20	0.30	1.16	0.41	0.46	0.12	1.75	0.61	0.70	0.18	2.14	0.75	0.86	0.21	2.63	0.92	1.05	0.26	3.36	1.18	1.35	0.34
870	0.42	3.15	1.10	1.26	0.32	1.22	0.43	0.49	0.12	1.84	0.64	0.74	0.18	2.25	0.79	0.90	0.23	2.77	0.97	1.11	0.28	3.54	1.24	1.42	0.35
900	0.44	3.32	1.16	1.33	0.33	1.28	0.45	0.51	0.13	1.94	0.68	0.78	0.19	2.37	0.83	0.95	0.24	2.91	1.02	1.17	0.29	3.72	1.30	1.49	0.37
930	0.47	3.49	1.22	1.40	0.35	1.35	0.47	0.54	0.14	2.04	0.71	0.82	0.20	2.49	0.87	1.00	0.25	3.07	1.07	1.23	0.31	3.92	1.37	1.57	0.39
960	0.49	3.68	1.29	1.47	0.37	1.42	0.50	0.57	0.14	2.15	0.75	0.86	0.21	2.63	0.92	1.05	0.26	3.23	1.13	1.29	0.32	4.13	1.44	1.65	0.41
970	0.50	3.74	1.31	1.50	0.37	1.45	0.51	0.58	0.14	2.19	0.77	0.87	0.22	2.67	0.94	1.07	0.27	3.29	1.15	1.31	0.33	4.20	1.47	1.68	0.42
980	0.51	3.81	1.33	1.52	0.38	1.47	0.52	0.59	0.15	2.23	0.78	0.89	0.22	2.72	0.95	1.09	0.27	3.35	1.17	1.34	0.33	4.28	1.50	1.71	0.43
990	0.52	3.88	1.36	1.55	0.39	1.50	0.53	0.60	0.15	2.27	0.79	0.91	0.23	2.77	0.97	1.11	0.28	3.41	1.19	1.36	0.34	4.35	1.52	1.74	0.44
1000	0.53	3.95	1.38	1.58	0.39	1.53	0.53	0.61	0.15	2.31	0.81	0.92	0.23	2.82	0.99	1.13	0.28	3.47	1.21	1.39	0.35	4.43	1.55	1.77	0.44
1010	0.54	4.02	1.41	1.61	0.40	1.56	0.54	0.62	0.16	2.35	0.82	0.94	0.23	2.87	1.01	1.15	0.29	3.53	1.24	1.41	0.35	4.51	1.58	1.80	0.45
1020	0.55	4.10	1.43	1.64	0.41	1.59	0.55	0.63	0.16	2.39	0.84	0.96	0.24	2.93	1.02	1.17	0.29	3.60	1.26	1.44	0.36	4.60	1.61	1.84	0.46
1030	0.56	4.17	1.46	1.67	0.42	1.62	0.57	0.65	0.16	2.44	0.85	0.98	0.24	2.98	1.04	1.19	0.30	3.67	1.28	1.47	0.37	4.68	1.64	1.87	0.47
1040	0.57	4.26	1.49	1.70	0.43	1.65	0.58	0.66	0.16	2.49	0.87	0.99	0.25	3.04	1.06	1.22	0.30	3.74	1.31	1.49	0.37	4.77	1.67	1.91	0.48
1050	0.58	4.34	1.52	1.74	0.43	1.68	0.59	0.67	0.17	2.53	0.89	1.01	0.25	3.10	1.08	1.24	0.31	3.81	1.33	1.52	0.38	4.87	1.70	1.95	0.49
1060	0.59	4.43	1.55	1.77	0.44	1.71	0.60	0.69	0.17	2.59	0.91	1.03	0.26	3.16	1.11	1.26	0.32	3.89	1.36	1.56	0.39	4.97	1.74	1.99	0.50
1070	0.60	4.52	1.58	1.81	0.45	1.75	0.61	0.70	0.17	2.64	0.92	1.06	0.26	3.23	1.13	1.29	0.32	3.97	1.39	1.59	0.40	5.07	1.78	2.03	0.51
1080	0.62	4.62	1.62	1.85	0.46	1.79	0.63	0.72	0.18	2.70	0.94	1.08	0.27	3.30	1.15	1.32	0.33	4.06	1.42	1.62	0.41	5.18	1.81	2.07	0.52
1090	0.63	4.72	1.65	1.89	0.47	1.83	0.64	0.73	0.18	2.76	0.97	1.10	0.28	3.37	1.18	1.35	0.34	4.15	1.45	1.66	0.41	5.30	1.86	2.12	0.53
1100	0.65	4.84	1.69	1.94	0.48	1.87	0.66	0.75	0.19	2.83	0.99	1.13	0.28	3.45	1.21	1.38	0.35	4.25	1.49	1.70	0.42	5.43	1.90	2.17	0.54
1110	0.66	4.96	1.74	1.99	0.50	1.92	0.67	0.77	0.19	2.90	1.01	1.16	0.29	3.54	1.24	1.42	0.35	4.36	1.53</						

UNIT HYEOTOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
1168	0.84	6.32	2.21	2.53	0.63	2.45	0.86	0.98	0.24	3.69	1.29	1.48	0.37	4.52	1.58	1.81	0.45	5.55	1.94	2.22	0.56	7.10	2.48	2.84	0.71
1169	0.84	6.33	2.22	2.53	0.63	2.45	0.86	0.98	0.25	3.70	1.29	1.48	0.37	4.52	1.58	1.81	0.45	5.56	1.95	2.22	0.56	7.11	2.49	2.84	0.71
1170	0.85	6.35	2.22	2.54	0.63	2.46	0.86	0.98	0.25	3.71	1.30	1.48	0.37	4.53	1.59	1.81	0.45	5.57	1.95	2.23	0.56	7.12	2.49	2.85	0.71
1171	0.85	6.36	2.22	2.54	0.64	2.46	0.86	0.98	0.25	3.71	1.30	1.48	0.37	4.54	1.59	1.82	0.45	5.58	1.95	2.23	0.56	7.13	2.50	2.85	0.71
1172	0.85	6.36	2.23	2.55	0.64	2.46	0.86	0.99	0.25	3.72	1.30	1.49	0.37	4.54	1.59	1.82	0.45	5.59	1.96	2.24	0.56	7.14	2.50	2.86	0.71
1173	0.85	6.37	2.23	2.55	0.64	2.47	0.86	0.99	0.25	3.72	1.30	1.49	0.37	4.55	1.59	1.82	0.46	5.60	1.96	2.24	0.56	7.15	2.50	2.86	0.72
1174	0.85	6.38	2.23	2.55	0.64	2.47	0.86	0.99	0.25	3.73	1.30	1.49	0.37	4.56	1.60	1.82	0.46	5.60	1.96	2.24	0.56	7.16	2.51	2.87	0.72
1175	0.85	6.39	2.24	2.56	0.64	2.47	0.87	0.99	0.25	3.73	1.31	1.49	0.37	4.56	1.60	1.83	0.46	5.61	1.96	2.25	0.56	7.17	2.51	2.87	0.72
1176	0.85	6.40	2.24	2.56	0.64	2.48	0.87	0.99	0.25	3.74	1.31	1.50	0.37	4.57	1.60	1.83	0.46	5.62	1.97	2.25	0.56	7.18	2.51	2.87	0.72
1177	0.85	6.41	2.24	2.56	0.64	2.48	0.87	0.99	0.25	3.74	1.31	1.50	0.37	4.58	1.60	1.83	0.46	5.63	1.97	2.25	0.56	7.19	2.52	2.88	0.72
1178	0.86																								

UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
1230	0.90	6.75	2.36	2.70	0.68	2.61	0.91	1.04	0.26	3.94	1.38	1.58	0.39	4.82	1.69	1.93	0.48	5.93	2.07	2.37	0.59	7.57	2.65	3.03	0.76
1231	0.90	6.76	2.36	2.70	0.68	2.61	0.92	1.05	0.26	3.95	1.38	1.58	0.39	4.82	1.69	1.93	0.48	5.93	2.08	2.37	0.59	7.58	2.65	3.03	0.76
1232	0.90	6.76	2.37	2.70	0.68	2.62	0.92	1.05	0.26	3.95	1.38	1.58	0.39	4.83	1.69	1.93	0.48	5.94	2.08	2.37	0.59	7.59	2.65	3.03	0.76
1233	0.90	6.77	2.37	2.71	0.68	2.62	0.92	1.05	0.26	3.95	1.38	1.58	0.40	4.83	1.69	1.93	0.48	5.94	2.08	2.38	0.59	7.59	2.66	3.04	0.76
1234	0.90	6.77	2.37	2.71	0.68	2.62	0.92	1.05	0.26	3.95	1.38	1.58	0.40	4.83	1.69	1.93	0.48	5.94	2.08	2.38	0.59	7.60	2.66	3.04	0.76
1235	0.90	6.78	2.37	2.71	0.68	2.62	0.92	1.05	0.26	3.96	1.38	1.58	0.40	4.84	1.69	1.94	0.48	5.95	2.08	2.38	0.59	7.60	2.66	3.04	0.76
1240	0.91	6.80	2.38	2.72	0.68	2.63	0.92	1.05	0.26	3.97	1.39	1.59	0.40	4.86	1.70	1.94	0.49	5.97	2.09	2.39	0.60	7.63	2.67	3.05	0.76
1245	0.91	6.82	2.39	2.73	0.68	2.64	0.92	1.06	0.26	3.99	1.39	1.59	0.40	4.87	1.71	1.95	0.49	5.99	2.10	2.40	0.60	7.66	2.68	3.06	0.77
1250	0.91	6.85	2.40	2.74	0.68	2.65	0.93	1.06	0.26	4.00	1.40	1.60	0.40	4.89	1.71	1.96	0.49	6.01	2.10	2.40	0.60	7.68	2.69	3.07	0.77
1255	0.92	6.87	2.40	2.75	0.69	2.66	0.93	1.06	0.27	4.01	1.40	1.60	0.40	4.91	1.72	1.96	0.49	6.03	2.11	2.41	0.60	7.71	2.70	3.08	0.77
1260	0.92	6.89	2.41	2.76	0.69	2.67	0.93	1.07	0.27	4.02	1.41	1.61	0.40	4.92	1.72	1.97	0.49	6.05	2.12	2.42	0.61	7.73	2.71	3.09	0.77
1265	0.92	6.91	2.42	2.77	0.69	2.68	0.94	1.07	0.27	4.04	1.41	1.62	0.40	4.94	1.73	1.97	0.49	6.07	2.12	2.43	0.61	7.76	2.71	3.10	0.78
1270	0.92	6.93	2.43	2.77	0.69	2.68	0.94	1.07	0.27	4.05	1.42	1.62	0.40	4.95	1.73	1.98	0.50	6.09	2.13	2.44	0.61	7.78	2.72	3.11	0.78
1275	0.93	6.96	2.43	2.78	0.70	2.69	0.94	1.08	0.27	4.06	1.42	1.62	0.41	4.97	1.74	1.99	0.50	6.11	2.14	2.44	0.61	7.80	2.73	3.12	0.78
1280	0.93	6.98	2.44	2.79	0.70	2.70	0.94	1.08	0.27	4.07	1.43	1.63	0.41	4.98	1.74	1.99	0.50	6.12	2.14	2.45	0.61	7.83	2.74	3.13	0.78
1285	0.93	7.00	2.45	2.80	0.70	2.71	0.95	1.08	0.27	4.09	1.43	1.63	0.41	5.00	1.75	2.00	0.50	6.14	2.15	2.46	0.61	7.85	2.75	3.14	0.78
1290	0.94	7.02	2.46	2.81	0.70	2.72	0.95	1.09	0.27	4.10	1.43	1.64	0.41	5.01	1.75	2.00	0.50	6.16	2.16	2.46	0.62	7.87	2.76	3.15	0.79
1295	0.94	7.04	2.46	2.81	0.70	2.72	0.95	1.09	0.27	4.11	1.44	1.64	0.41	5.02	1.76	2.01	0.50	6.18	2.16	2.47	0.62	7.89	2.76	3.16	0.79
1300	0.94	7.05	2.47	2.82	0.71	2.73	0.96	1.09	0.27	4.12	1.44	1.65	0.41	5.04	1.76	2.01	0.50	6.19	2.17	2.48	0.62	7.91	2.77	3.17	0.79
1305	0.94	7.07	2.48	2.83	0.71	2.74	0.96	1.09	0.27	4.13	1.45	1.65	0.41	5.05	1.77	2.02	0.50	6.21	2.17	2.48	0.62	7.94	2.78	3.17	0.79
1310	0.95	7.09	2.48	2.84	0.71	2.74	0.96	1.10	0.27	4.14	1.45	1.66	0.41	5.06	1.77	2.03	0.51	6.23	2.18	2.49	0.62	7.96	2.78	3.18	0.80
1315	0.95	7.11	2.49	2.84	0.71	2.75	0.96	1.10	0.28	4.15	1.45	1.66	0.42	5.08	1.78	2.03	0.51	6.24	2.18	2.50	0.62	7.98	2.79	3.19	0.80
1320	0.95	7.13	2.49	2.85	0.71	2.76	0.97	1.10	0.28	4.16	1.46	1.66	0.42	5.09	1.78	2.04	0.51	6.26	2.19	2.50	0.63	8.00	2.80	3.20	0.80
1325	0.95	7.14	2.50	2.86	0.71	2.77	0.97	1.11	0.28	4.17	1.46	1.67	0.42	5.10	1.79	2.04	0.51	6.27	2.20	2.51	0.63	8.02	2.81	3.21	0.80
1330	0.95	7.16	2.51	2.86	0.72	2.77	0.97	1.11	0.28	4.18	1.46	1.67	0.42	5.11	1.79	2.05	0.51	6.29	2.20	2.52	0.63	8.04	2.81	3.21	0.80
1335	0.96	7.18	2.51	2.87	0.72	2.78	0.97	1.11	0.28	4.19	1.47	1.68	0.42	5.13	1.79	2.05	0.51	6.30	2.21	2.52	0.63	8.06	2.82	3.22	0.81
1340	0.96	7.20	2.52	2.88	0.72	2.79	0.97	1.11	0.28	4.20	1.47	1.68	0.42	5.14	1.80	2.06	0.51	6.32	2.21	2.53	0.63	8.07	2.83	3.23	0.81
1345	0.96	7.21	2.52	2.89	0.72	2.79	0.98	1.12	0.28	4.21	1.47	1.69	0.42	5.15	1.80	2.06	0.52	6.33	2.22	2.53	0.63	8.09	2.83	3.24	0.81
1350	0.96	7.23	2.53	2.89	0.72	2.80	0.98	1.12	0.28	4.22	1.48	1.69	0.42	5.16	1.81	2.06	0.52	6.35	2.22	2.54	0.63	8.11	2.84	3.24	0.81
1355	0.97	7.25	2.54	2.90	0.72	2.80	0.98	1.12	0.28	4.23	1.48	1.69	0.42	5.17	1.81	2.07	0.52	6.36	2.23	2.54	0.64	8.13	2.85	3.25	0.81
1360	0.97	7.26	2.54	2.90	0.73	2.81	0.98	1.12	0.28	4.24	1.48	1.70	0.42	5.19	1.81	2.07	0.52	6.38	2.23	2.55	0.64	8.15	2.85	3.26	0.81
1365	0.97	7.28	2.55	2.91	0.73	2.82	0.99	1.13	0.28	4.25	1.49	1.70	0.43	5.20	1.82	2.08	0.52	6.39	2.24	2.56	0.64	8.17	2.86	3.27	0.82
1370	0.97	7.29	2.55	2.92	0.73	2.82	0.99	1.13	0.28	4.26	1.49	1.70	0.43	5.21	1.82	2.08	0.52	6.40	2.24	2.56	0.64	8.18	2.86	3.27	0.82
1375	0.97	7.31	2.56	2.92	0.73	2.83	0.99	1.13	0.28	4.27	1.49	1.71	0.43	5.22	1.83	2.09	0.52	6.42	2.25	2.57	0.64	8.20	2.87	3.28	0.82
1380	0.98	7.33	2.56	2.93	0.73	2.83	0.99	1.13	0.28	4.28	1.50	1.71	0.43	5.23	1.83	2.09	0.52	6.43	2.25	2.57	0.64	8.22	2.88	3.29	0.82
1385	0.98	7.34	2.57	2.94	0.73	2.84	0.99	1.14	0.28	4.29	1.50	1.71	0.43	5.24	1.83	2.10	0.52	6.45	2.26	2.58	0.64	8.24	2.88	3.29	0.82
1390	0.98	7.36	2.57	2.94	0.74	2.85	1.00	1.14	0.28	4.30	1.50	1.72	0.43	5.25	1.84	2.10	0.53	6.46	2.26	2.58	0.65	8.25	2.89	3.30	0.83
1395	0.98	7.37	2.58	2.95	0.74	2.85	1.00	1.14	0.29	4.30	1.51	1.72	0.43	5.26	1.84	2.11	0.53	6.47	2.27	2.59	0.65	8.27	2.89	3.31	0.83
1400	0.98	7.39	2.58	2.95	0.74	2.86	1.00	1.14	0.29	4.31	1.51	1.73	0.43	5.27	1.85	2.11	0.53	6.48	2.27	2.59	0.65	8.29	2.90	3.31	0.83
1405	0.99	7.40	2.59	2.96	0.74	2.86	1.00	1.15	0.29	4.32	1.51	1.73	0.43	5.28	1.85	2.11	0.53	6.50	2.27	2.60	0.65	8.30	2.91	3.32	0.83
1410	0.99	7.42	2.60	2.97	0.74	2.87	1.00	1.15	0.29	4.33	1.52	1.73	0.43	5.29	1.85	2.12	0.53	6.51	2.28	2.60	0.65	8.32	2.91	3.33	0.83
1415	0.99	7.43	2.60	2.97	0.74	2.88	1.01	1.15	0.29	4.34	1.52	1.74	0.43	5.30	1.86	2.12	0.53	6.52	2.28	2.61	0.65	8.34	2.92	3.33	0.83
1420	0.99	7.44	2.61	2.98	0.74	2.88	1.01	1.15	0.29	4.35	1.52	1.74	0.43	5.31	1.86	2.13	0.53	6.54	2.29	2.61	0.65	8.35	2.92	3.34	0.84
1425	0.99	7.46	2.61	2.98	0.75	2.89	1.01	1.15	0.29	4.36	1.52	1.74	0.44	5.33	1.86	2.13	0.53	6.55	2.29	2.62	0.65	8.37	2.93	3.35	0.84
1430	1.00	7.47	2.62	2.99	0.75	2.89	1.01	1.16	0.29	4.36	1.53	1.75	0.44	5.34	1.87	2.13	0.53	6.56	2.30	2.62	0.66	8.38	2.93	3.35	0.84
1435	1.00	7.49	2.62	2.99	0.75	2.90	1.01	1.16	0.29	4.37	1.53	1.75	0.44	5.35	1.87	2.14	0.53	6.57	2.30	2.63	0.66	8.40	2.94	3.36	0.84
1440	1.00	7.50	2.63	3.00	0.75	2.90	1.02	1.16	0.29	4.38	1.53	1.75	0.44	5.36	1.87	2.14	0.54	6.59	2.30	2.63	0.66	8.42	2.95	3.37	0.84

SUBAREA A4 HYETOPRAPHS
- Per 2006 Los Angeles County Hydrology Manual Appendix A

24 HR ISOHYETS,IN					
50 YR	2 YR	5 YR	10 YR	25 YR	100 YR
7.4	2.9	4.3	5.3	6.5	8.3



UNIT HYETOGRAPH		50 YR - 24 HR					2 YR - 24 HR					5 YR - 24 HR					10 YR - 24 HR					25 YR - 24 HR					100 YR - 24 HR				
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth					
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY						
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
30	0.01	0.08	0.03	0.03	0.01	0.03	0.01	0.01	0.00	0.05	0.02	0.02	0.00	0.06	0.02	0.02	0.01	0.07	0.03	0.03	0.01	0.09	0.03	0.04	0.01						
60	0.02	0.17	0.06	0.07	0.02	0.06	0.02	0.03	0.01	0.10	0.03	0.04	0.01	0.12	0.04	0.05	0.01	0.15	0.05	0.06	0.01	0.19	0.06	0.07	0.02						
90	0.03	0.25	0.09	0.10	0.02	0.10	0.03	0.04	0.01	0.15	0.05	0.06	0.01	0.18	0.06	0.07	0.02	0.22	0.08	0.09	0.02	0.28	0.10	0.11	0.03						
120	0.05	0.34	0.12	0.13	0.03	0.13	0.05	0.05	0.01	0.20	0.07	0.08	0.02	0.24	0.08	0.10	0.02	0.29	0.10	0.12	0.03	0.38	0.13	0.15	0.04						
150	0.06	0.42	0.15	0.17	0.04	0.16	0.06	0.07	0.02	0.25	0.09	0.10	0.02	0.30	0.11	0.12	0.03	0.37	0.13	0.15	0.04	0.47	0.17	0.19	0.05						
180	0.07	0.51	0.18	0.20	0.05	0.20	0.07	0.08	0.02	0.30	0.10	0.12	0.03	0.36	0.13	0.15	0.04	0.45	0.16	0.18	0.04	0.57	0.20	0.23	0.06						
210	0.08	0.60	0.21	0.24	0.06	0.23	0.08	0.09	0.02	0.35	0.12	0.14	0.03	0.43	0.15	0.17	0.04	0.53	0.18	0.21	0.05	0.67	0.24	0.27	0.07						
240	0.09	0.69	0.24	0.28	0.07	0.27	0.09	0.11	0.03	0.40	0.14	0.16	0.04	0.49	0.17	0.20	0.05	0.61	0.21	0.24	0.06	0.77	0.27	0.31	0.08						
270	0.11	0.78	0.27	0.31	0.08	0.30	0.11	0.12	0.03	0.46	0.16	0.18	0.05	0.56	0.20	0.22	0.06	0.69	0.24	0.27	0.07	0.88	0.31	0.35	0.09						
300	0.12	0.87	0.31	0.35	0.09	0.34	0.12	0.14	0.03	0.51	0.18	0.20	0.05	0.62	0.22	0.25	0.06	0.77	0.27	0.31	0.08	0.98	0.34	0.39	0.10						
330	0.13	0.97	0.34	0.39	0.10	0.38	0.13	0.15	0.04	0.57	0.20	0.23	0.06	0.69	0.24	0.28	0.07	0.85	0.30	0.34	0.09	1.09	0.38	0.44	0.11						
360	0.14	1.07	0.37	0.43	0.11	0.41	0.14	0.17	0.04	0.62	0.22	0.25	0.06	0.76	0.27	0.30	0.08	0.94	0.33	0.37	0.09	1.20	0.42	0.48	0.12						
390	0.16	1.16	0.41	0.47	0.12	0.45	0.16	0.18	0.05	0.68	0.24	0.27	0.07	0.83	0.29	0.33	0.08	1.02	0.36	0.41	0.10	1.31	0.46	0.52	0.13						
420	0.17	1.26	0.44	0.51	0.13	0.49	0.17	0.20	0.05	0.74	0.26	0.30	0.07	0.90	0.32	0.36	0.09	1.11	0.39	0.44	0.11	1.42	0.50	0.57	0.14						
450	0.18	1.37	0.48	0.55	0.14	0.53	0.19	0.21	0.05	0.80	0.28	0.32	0.08	0.98	0.34	0.39	0.10	1.20	0.42	0.48	0.12	1.53	0.54	0.61	0.15						

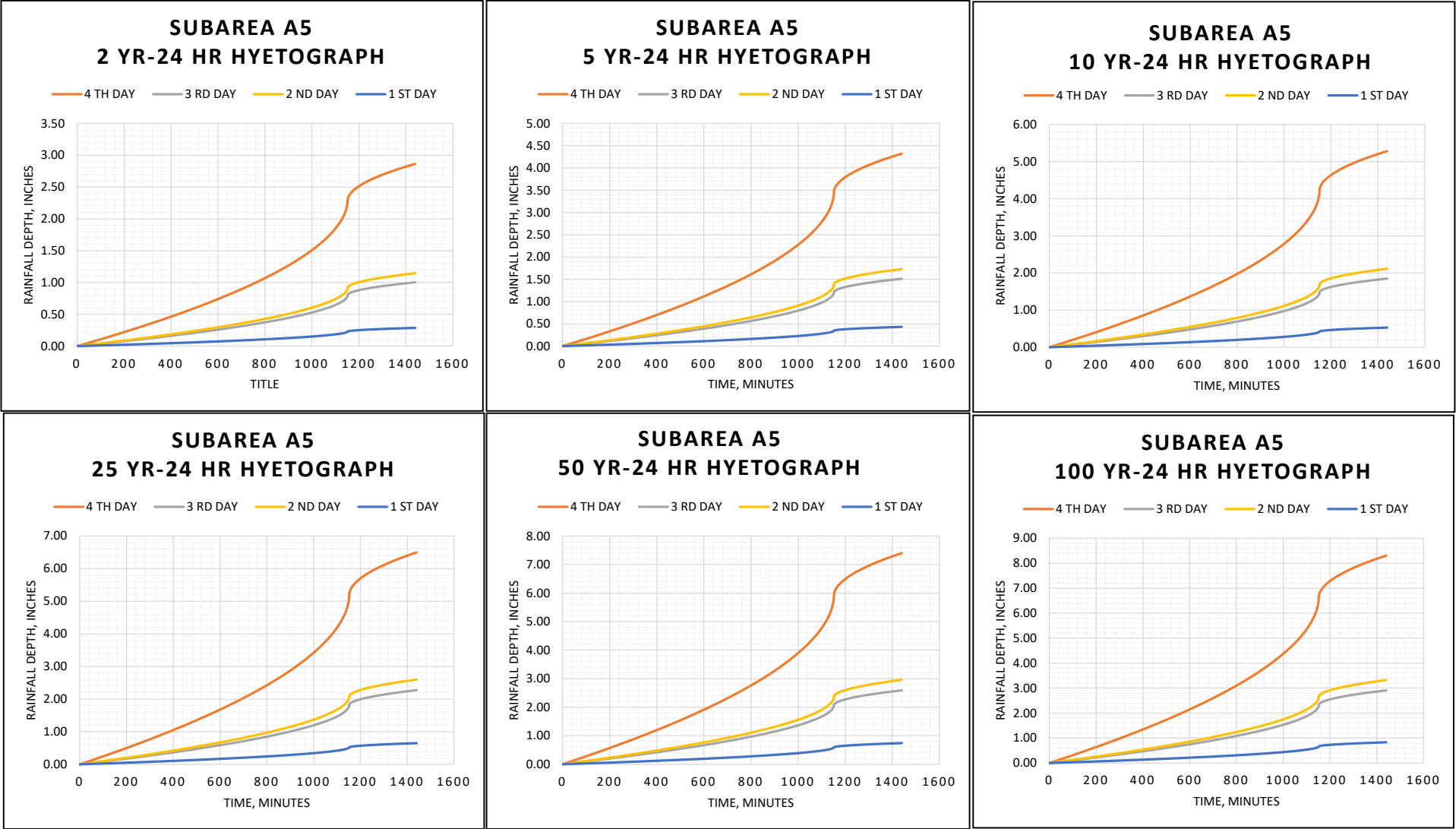
UNIT HYETOGRAPH		50 YR - 24 HR					2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	
480	0.20		1.47	0.51	0.59	0.15	0.57	0.20	0.23	0.06	0.86	0.30	0.34	0.09	1.05	0.37	0.42	0.11	1.29	0.45	0.52	0.13	1.65	0.58	0.66	0.17
510	0.21		1.58	0.55	0.63	0.16	0.61	0.21	0.24	0.06	0.92	0.32	0.37	0.09	1.13	0.39	0.45	0.11	1.38	0.48	0.55	0.14	1.77	0.62	0.71	0.18
540	0.23		1.69	0.59	0.67	0.17	0.65	0.23	0.26	0.07	0.98	0.34	0.39	0.10	1.20	0.42	0.48	0.12	1.48	0.52	0.59	0.15	1.89	0.66	0.76	0.19
570	0.24		1.80	0.63	0.72	0.18	0.70	0.24	0.28	0.07	1.05	0.37	0.42	0.10	1.28	0.45	0.51	0.13	1.58	0.55	0.63	0.16	2.02	0.71	0.81	0.20
600	0.26		1.91	0.67	0.76	0.19	0.74	0.26	0.30	0.07	1.12	0.39	0.45	0.11	1.36	0.48	0.55	0.14	1.68	0.59	0.67	0.17	2.14	0.75	0.86	0.21
630	0.27		2.03	0.71	0.81	0.20	0.79	0.27	0.31	0.08	1.18	0.41	0.47	0.12	1.45	0.51	0.58	0.14	1.78	0.62	0.71	0.18	2.28	0.80	0.91	0.23
660	0.29		2.15	0.75	0.86	0.21	0.83	0.29	0.33	0.08	1.25	0.44	0.50	0.13	1.53	0.54	0.61	0.15	1.89	0.66	0.75	0.19	2.41	0.84	0.96	0.24
690	0.31		2.27	0.80	0.91	0.23	0.88	0.31	0.35	0.09	1.33	0.46	0.53	0.13	1.62	0.57	0.65	0.16	2.00	0.70	0.80	0.20	2.55	0.89	1.02	0.25
720	0.32		2.40	0.84	0.96	0.24	0.93	0.33	0.37	0.09	1.40	0.49	0.56	0.14	1.71	0.60	0.69	0.17	2.11	0.74	0.84	0.21	2.69	0.94	1.08	0.27
750	0.34		2.53	0.89	1.01	0.25	0.98	0.34	0.39	0.10	1.48	0.52	0.59	0.15	1.81	0.63	0.72	0.18	2.22	0.78	0.89	0.22	2.84	0.99	1.14	0.28
780	0.36		2.67	0.93	1.07	0.27	1.03	0.36	0.41	0.10	1.56	0.55	0.62	0.16	1.91	0.67	0.76	0.19	2.34	0.82	0.94	0.23	2.99	1.05	1.20	0.30
810	0.38		2.81	0.98	1.12	0.28	1.09	0.38	0.43	0.11	1.64	0.57	0.66	0.16	2.01	0.70	0.80	0.20	2.47	0.86	0.99	0.25	3.15	1.10	1.26	0.32
840	0.40		2.96	1.04	1.18	0.30	1.14	0.40	0.46	0.11	1.73	0.60	0.69	0.17	2.11	0.74	0.84	0.21	2.60	0.91	1.04	0.26	3.32	1.16	1.33	0.33
870	0.42		3.11	1.09	1.24	0.31	1.20	0.42	0.48	0.12	1.82	0.64	0.73	0.18	2.22	0.78	0.89	0.22	2.73	0.96	1.09	0.27	3.49	1.22	1.40	0.35
900	0.44		3.27	1.15	1.31	0.33	1.27	0.44	0.51	0.13	1.91	0.67	0.76	0.19	2.34	0.82	0.94	0.23	2.88	1.01	1.15	0.29	3.67	1.29	1.47	0.37
930	0.47		3.45	1.21	1.38	0.34	1.33	0.47	0.53	0.13	2.01	0.70	0.81	0.20	2.46	0.86	0.98	0.25	3.03	1.06	1.21	0.30	3.87	1.35	1.55	0.39
960	0.49		3.63	1.27	1.45	0.36	1.40	0.49	0.56	0.14	2.12	0.74	0.85	0.21	2.59	0.91	1.04	0.26	3.19	1.12	1.27	0.32	4.07	1.43	1.63	0.41
970	0.50		3.69	1.29	1.48	0.37	1.43	0.50	0.57	0.14	2.16	0.75	0.86	0.22	2.64	0.92	1.05	0.26	3.24	1.14	1.30	0.32	4.14	1.45	1.66	0.41
980	0.51		3.76	1.32	1.50	0.38	1.45	0.51	0.58	0.15	2.20	0.77	0.88	0.22	2.68	0.94	1.07	0.27	3.30	1.16	1.32	0.33	4.22	1.48	1.69	0.42
990	0.52		3.83	1.34	1.53	0.38	1.48	0.52	0.59	0.15	2.23	0.78	0.89	0.22	2.73	0.96	1.09	0.27	3.36	1.18	1.34	0.34	4.29	1.50	1.72	0.43
1000	0.53		3.90	1.36	1.56	0.39	1.51	0.53	0.60	0.15	2.28	0.80	0.91	0.23	2.78	0.97	1.11	0.28	3.42	1.20	1.37	0.34	4.37	1.53	1.75	0.44
1010	0.54		3.97	1.39	1.59	0.40	1.54	0.54	0.61	0.15	2.32	0.81	0.93	0.23	2.83	0.99	1.13	0.28	3.48	1.22	1.39	0.35	4.45	1.56	1.78	0.45
1020	0.55		4.04	1.41	1.62	0.40	1.56	0.55	0.63	0.16	2.36	0.83	0.94	0.24	2.89	1.01	1.15	0.29	3.55	1.24	1.42	0.35	4.54	1.59	1.81	0.45
1030	0.56		4.12	1.44	1.65	0.41	1.59	0.56	0.64	0.16	2.41	0.84	0.96	0.24	2.94	1.03	1.18	0.29	3.62	1.27	1.45	0.36	4.62	1.62	1.85	0.46
1040	0.57		4.20	1.47	1.68	0.42	1.62	0.57	0.65	0.16	2.45	0.86	0.98	0.25	3.00	1.05	1.20	0.30	3.69	1.29	1.47	0.37	4.71	1.65	1.88	0.47
1050	0.58		4.28	1.50	1.71	0.43	1.66	0.58	0.66	0.17	2.50	0.88	1.00	0.25	3.06	1.07	1.22	0.31	3.76	1.32	1.50	0.38	4.80	1.68	1.92	0.48
1060	0.59		4.37	1.53	1.75	0.44	1.69	0.59	0.68	0.17	2.55	0.89	1.02	0.26	3.12	1.09	1.25	0.31	3.84	1.34	1.53	0.38	4.90	1.72	1.96	0.49
1070	0.60		4.46	1.56	1.78	0.45	1.73	0.60	0.69	0.17	2.61	0.91	1.04	0.26	3.19	1.11	1.27	0.32	3.92	1.37	1.57	0.39	5.01	1.75	2.00	0.50
1080	0.62		4.56	1.60	1.82	0.46	1.76	0.62	0.71	0.18	2.66	0.93	1.06	0.27	3.25	1.14	1.30	0.33	4.00	1.40	1.60	0.40	5.11	1.79	2.05	0.51
1090	0.63		4.66	1.63	1.86	0.47	1.80	0.63	0.72	0.18	2.72	0.95	1.09	0.27	3.33	1.17	1.33	0.33	4.09	1.43	1.64	0.41	5.23	1.83	2.09	0.52
1100	0.65		4.77	1.67	1.91	0.48	1.85	0.65	0.74	0.18	2.79	0.98	1.12	0.28	3.41	1.19	1.36	0.34	4.19	1.47	1.68	0.42	5.36	1.87	2.14	0.54
1110	0.66		4.90	1.71	1.96	0.49	1.89	0.66	0.76	0.19	2.86	1.00	1.14	0.29	3.50	1.22	1.40	0.35	4.30	1.50	1.72	0.43	5.49	1.92	2.20	0.55
1115	0.67		4.96	1.74	1.99																					

UNIT HYEOTOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
1170	0.85	6.26	2.19	2.50	0.63	2.42	0.85	0.97	0.24	3.66	1.28	1.46	0.37	4.47	1.56	1.79	0.45	5.50	1.92	2.20	0.55	7.02	2.46	2.81	0.70
1171	0.85	6.27	2.19	2.51	0.63	2.43	0.85	0.97	0.24	3.66	1.28	1.46	0.37	4.48	1.57	1.79	0.45	5.51	1.93	2.20	0.55	7.04	2.46	2.81	0.70
1172	0.85	6.28	2.20	2.51	0.63	2.43	0.85	0.97	0.24	3.67	1.28	1.47	0.37	4.48	1.57	1.79	0.45	5.51	1.93	2.21	0.55	7.05	2.47	2.82	0.70
1173	0.85	6.29	2.20	2.52	0.63	2.43	0.85	0.97	0.24	3.67	1.29	1.47	0.37	4.49	1.57	1.80	0.45	5.52	1.93	2.21	0.55	7.06	2.47	2.82	0.71
1174	0.85	6.30	2.20	2.52	0.63	2.44	0.85	0.98	0.24	3.68	1.29	1.47	0.37	4.50	1.57	1.80	0.45	5.53	1.94	2.21	0.55	7.07	2.47	2.83	0.71
1175	0.85	6.31	2.21	2.52	0.63	2.44	0.85	0.98	0.24	3.68	1.29	1.47	0.37	4.50	1.58	1.80	0.45	5.54	1.94	2.22	0.55	7.08	2.48	2.83	0.71
1176	0.85	6.32	2.21	2.53	0.63	2.44	0.86	0.98	0.24	3.69	1.29	1.48	0.37	4.51	1.58	1.80	0.45	5.55	1.94	2.22	0.55	7.09	2.48	2.83	0.71
1177	0.85	6.33	2.21	2.53	0.63	2.45	0.86	0.98	0.24	3.69	1.29	1.48	0.37	4.52	1.58	1.81	0.45	5.55	1.94	2.22	0.56	7.10	2.48	2.84	0.71
1178	0.86	6.33	2.22	2.53	0.63	2.45	0.86	0.98	0.25	3.70	1.29	1.48	0.37	4.52	1.58	1.81	0.45	5.56	1.95	2.22	0.56	7.11	2.49	2.84	0.71
1179	0.86	6.34	2.22	2.54	0.63	2.45	0.86	0.98	0.25	3.70	1.30	1.48	0.37	4.53	1.58	1.81	0.45	5.57	1.95	2.23	0.56	7.12	2.49	2.85	0.71
1180																									

UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
1233	0.90	6.68	2.34	2.67	0.67	2.58	0.90	1.03	0.26	3.90	1.36	1.56	0.39	4.77	1.67	1.91	0.48	5.86	2.05	2.34	0.59	7.49	2.62	3.00	0.75
1234	0.90	6.68	2.34	2.67	0.67	2.59	0.90	1.03	0.26	3.90	1.37	1.56	0.39	4.77	1.67	1.91	0.48	5.87	2.05	2.35	0.59	7.50	2.62	3.00	0.75
1235	0.90	6.69	2.34	2.67	0.67	2.59	0.91	1.03	0.26	3.90	1.37	1.56	0.39	4.77	1.67	1.91	0.48	5.87	2.05	2.35	0.59	7.50	2.63	3.00	0.75
1240	0.91	6.71	2.35	2.68	0.67	2.60	0.91	1.04	0.26	3.92	1.37	1.57	0.39	4.79	1.68	1.92	0.48	5.89	2.06	2.36	0.59	7.53	2.63	3.01	0.75
1245	0.91	6.73	2.36	2.69	0.67	2.61	0.91	1.04	0.26	3.93	1.38	1.57	0.39	4.81	1.68	1.92	0.48	5.91	2.07	2.36	0.59	7.55	2.64	3.02	0.76
1250	0.91	6.76	2.36	2.70	0.68	2.61	0.92	1.05	0.26	3.95	1.38	1.58	0.39	4.82	1.69	1.93	0.48	5.93	2.08	2.37	0.59	7.58	2.65	3.03	0.76
1255	0.92	6.78	2.37	2.71	0.68	2.62	0.92	1.05	0.26	3.96	1.39	1.58	0.40	4.84	1.69	1.94	0.48	5.95	2.08	2.38	0.60	7.61	2.66	3.04	0.76
1260	0.92	6.80	2.38	2.72	0.68	2.63	0.92	1.05	0.26	3.97	1.39	1.59	0.40	4.86	1.70	1.94	0.49	5.97	2.09	2.39	0.60	7.63	2.67	3.05	0.76
1265	0.92	6.82	2.39	2.73	0.68	2.64	0.92	1.06	0.26	3.98	1.39	1.59	0.40	4.87	1.70	1.95	0.49	5.99	2.10	2.40	0.60	7.65	2.68	3.06	0.77
1270	0.92	6.84	2.39	2.74	0.68	2.65	0.93	1.06	0.26	4.00	1.40	1.60	0.40	4.89	1.71	1.95	0.49	6.01	2.10	2.40	0.60	7.68	2.69	3.07	0.77
1275	0.93	6.86	2.40	2.75	0.69	2.66	0.93	1.06	0.27	4.01	1.40	1.60	0.40	4.90	1.72	1.96	0.49	6.03	2.11	2.41	0.60	7.70	2.70	3.08	0.77
1280	0.93	6.88	2.41	2.75	0.69	2.66	0.93	1.07	0.27	4.02	1.41	1.61	0.40	4.91	1.72	1.97	0.49	6.04	2.12	2.42	0.60	7.72	2.70	3.09	0.77
1285	0.93	6.90	2.42	2.76	0.69	2.67	0.93	1.07	0.27	4.03	1.41	1.61	0.40	4.93	1.72	1.97	0.49	6.06	2.12	2.42	0.61	7.74	2.71	3.10	0.77
1290	0.94	6.92	2.42	2.77	0.69	2.68	0.94	1.07	0.27	4.04	1.41	1.62	0.40	4.94	1.73	1.98	0.49	6.08	2.13	2.43	0.61	7.77	2.72	3.11	0.78
1295	0.94	6.94	2.43	2.78	0.69	2.69	0.94	1.07	0.27	4.05	1.42	1.62	0.41	4.96	1.73	1.98	0.50	6.09	2.13	2.44	0.61	7.79	2.73	3.12	0.78
1300	0.94	6.96	2.44	2.78	0.70	2.69	0.94	1.08	0.27	4.06	1.42	1.63	0.41	4.97	1.74	1.99	0.50	6.11	2.14	2.44	0.61	7.81	2.73	3.12	0.78
1305	0.94	6.98	2.44	2.79	0.70	2.70	0.95	1.08	0.27	4.08	1.43	1.63	0.41	4.98	1.74	1.99	0.50	6.13	2.14	2.45	0.61	7.83	2.74	3.13	0.78
1310	0.95	7.00	2.45	2.80	0.70	2.71	0.95	1.08	0.27	4.09	1.43	1.63	0.41	5.00	1.75	2.00	0.50	6.14	2.15	2.46	0.61	7.85	2.75	3.14	0.79
1315	0.95	7.01	2.46	2.81	0.70	2.71	0.95	1.09	0.27	4.10	1.43	1.64	0.41	5.01	1.75	2.00	0.50	6.16	2.16	2.46	0.62	7.87	2.75	3.15	0.79
1320	0.95	7.03	2.46	2.81	0.70	2.72	0.95	1.09	0.27	4.11	1.44	1.64	0.41	5.02	1.76	2.01	0.50	6.17	2.16	2.47	0.62	7.89	2.76	3.16	0.79
1325	0.95	7.05	2.47	2.82	0.70	2.73	0.95	1.09	0.27	4.12	1.44	1.65	0.41	5.03	1.76	2.01	0.50	6.19	2.17	2.48	0.62	7.91	2.77	3.16	0.79
1330	0.95	7.07	2.47	2.83	0.71	2.73	0.96	1.09	0.27	4.13	1.44	1.65	0.41	5.05	1.77	2.02	0.50	6.20	2.17	2.48	0.62	7.93	2.78	3.17	0.79
1335	0.96	7.08	2.48	2.83	0.71	2.74	0.96	1.10	0.27	4.14	1.45	1.65	0.41	5.06	1.77	2.02	0.51	6.22	2.18	2.49	0.62	7.95	2.78	3.18	0.79
1340	0.96	7.10	2.49	2.84	0.71	2.75	0.96	1.10	0.27	4.15	1.45	1.66	0.41	5.07	1.77	2.03	0.51	6.23	2.18	2.49	0.62	7.97	2.79	3.19	0.80
1345	0.96	7.12	2.49	2.85	0.71	2.75	0.96	1.10	0.28	4.16	1.45	1.66	0.42	5.08	1.78	2.03	0.51	6.25	2.19	2.50	0.62	7.99	2.79	3.19	0.80
1350	0.96	7.13	2.50	2.85	0.71	2.76	0.97	1.10	0.28	4.17	1.46	1.67	0.42	5.09	1.78	2.04	0.51	6.26	2.19	2.51	0.63	8.00	2.80	3.20	0.80
1355	0.97	7.15	2.50	2.86	0.71	2.77	0.97	1.11	0.28	4.18	1.46	1.67	0.42	5.10	1.79	2.04	0.51	6.28	2.20	2.51	0.63	8.02	2.81	3.21	0.80
1360	0.97	7.17	2.51	2.87	0.72	2.77	0.97	1.11	0.28	4.18	1.46	1.67	0.42	5.12	1.79	2.05	0.51	6.29	2.20	2.52	0.63	8.04	2.81	3.22	0.80
1365	0.97	7.18	2.51	2.87	0.72	2.78	0.97	1.11	0.28	4.19	1.47	1.68	0.42	5.13	1.79	2.05	0.51	6.31	2.21	2.52	0.63	8.06	2.82	3.22	0.81
1370	0.97	7.20	2.52	2.88	0.72	2.79	0.97	1.11	0.28	4.20	1.47	1.68	0.42	5.14	1.80	2.06	0.51	6.32	2.21	2.53	0.63	8.07	2.83	3.23	0.81
1375	0.97	7.21	2.52	2.88	0.72	2.79	0.98	1.12	0.28	4.21	1.47	1.68	0.42	5.15	1.80	2.06	0.51	6.33	2.22	2.53	0.63	8.09	2.83	3.24	0.81
1380	0.98	7.23	2.53	2.89	0.72	2.80	0.98	1.12	0.28	4.22	1.48	1.69	0.42	5.16	1.81	2.06	0.52	6.35	2.22	2.54	0.63	8.11	2.84	3.24	0.81
1385	0.98	7.24	2.53	2.90	0.72	2.80	0.98	1.12	0.28	4.23	1.48	1.69	0.42	5.17	1.81	2.07	0.52	6.36	2.23	2.54	0.64	8.13	2.84	3.25	0.81
1390	0.98	7.26	2.54	2.90	0.73	2.81	0.98	1.12	0.28	4.24	1.48	1.70	0.42	5.18	1.81	2.07	0.52	6.37	2.23	2.55	0.64	8.14	2.85	3.26	0.81
1395	0.98	7.27	2.55	2.91	0.73	2.81	0.99	1.13	0.28	4.25	1.49	1.70	0.42	5.19	1.82	2.08	0.52	6.39	2.23	2.55	0.64	8.16	2.86	3.26	0.82
1400	0.98	7.29	2.55	2.91	0.73	2.82	0.99	1.13	0.28	4.26	1.49	1.70	0.43	5.20	1.82	2.08	0.52	6.40	2.24	2.56	0.64	8.18	2.86	3.27	0.82
1405	0.99	7.30	2.56	2.92	0.73	2.83	0.99	1.13	0.28	4.26	1.49	1.71	0.43	5.21	1.82	2.09	0.52	6.41	2.24	2.56	0.64	8.19	2.87	3.28	0.82
1410	0.99	7.32	2.56	2.93	0.73	2.83	0.99	1.13	0.28	4.27	1.50	1.71	0.43	5.22	1.83	2.09	0.52	6.42	2.25	2.57	0.64	8.21	2.87	3.28	0.82
1415	0.99	7.33	2.57	2.93	0.73	2.84	0.99	1.13	0.28	4.28	1.50	1.71	0.43	5.23	1.83	2.09	0.52	6.44	2.25	2.57	0.64	8.22	2.88	3.29	0.82
1420	0.99	7.34	2.57	2.94	0.73	2.84	0.99	1.14	0.28	4.29	1.50	1.72	0.43	5.24	1.84	2.10	0.52	6.45	2.26	2.58	0.64	8.24	2.88	3.30	0.82
1425	0.99	7.36	2.58	2.94	0.74	2.85	1.00	1.14	0.28	4.30	1.50	1.72	0.43	5.25	1.84	2.10	0.53	6.46	2.26	2.58	0.65	8.26	2.89	3.30	0.83
1430	1.00	7.37	2.58	2.95	0.74	2.85	1.00	1.14	0.29	4.31	1.51	1.72	0.43	5.26	1.84	2.11	0.53	6.47	2.27	2.59	0.65	8.27	2.90	3.31	0.83
1435	1.00	7.39	2.59	2.95	0.74	2.86	1.00	1.14	0.29	4.31	1.51	1.73	0.43	5.27	1.85	2.11	0.53	6.49	2.27	2.59	0.65	8.29	2.90	3.31	0.83
1440	1.00	7.40	2.59	2.96	0.74	2.86	1.00	1.15	0.29	4.32	1.51	1.73	0.43	5.28	1.85	2.11	0.53	6.50	2.27	2.60	0.65	8.30	2.91	3.32	0.83

SUBAREA A5 HYETOPRAPHS
- Per 2006 Los Angeles County Hydrology Manual Appendix A

24 HR ISOHYETS,IN					
50 YR	2 YR	5 YR	10 YR	25 YR	100 YR
7.4	2.9	4.3	5.3	6.5	8.3



UNIT HYETOGRAPH		50 YR - 24 HR					2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
30	0.01	0.08	0.03	0.03	0.01	0.03	0.01	0.01	0.00	0.05	0.02	0.02	0.00	0.06	0.02	0.02	0.01	0.07	0.03	0.03	0.01	0.09	0.03	0.04	0.01	
60	0.02	0.17	0.06	0.07	0.02	0.06	0.02	0.03	0.01	0.10	0.03	0.04	0.01	0.12	0.04	0.05	0.01	0.15	0.05	0.06	0.01	0.19	0.06	0.07	0.02	
90	0.03	0.25	0.09	0.10	0.02	0.10	0.03	0.04	0.01	0.15	0.05	0.06	0.01	0.18	0.06	0.07	0.02	0.22	0.08	0.09	0.02	0.28	0.10	0.11	0.03	
120	0.05	0.34	0.12	0.13	0.03	0.13	0.05	0.05	0.01	0.20	0.07	0.08	0.02	0.24	0.08	0.10	0.02	0.29	0.10	0.12	0.03	0.38	0.13	0.15	0.04	
150	0.06	0.42	0.15	0.17	0.04	0.16	0.06	0.07	0.02	0.25	0.09	0.10	0.02	0.30	0.11	0.12	0.03	0.37	0.13	0.15	0.04	0.47	0.17	0.19	0.05	
180	0.07	0.51	0.18	0.20	0.05	0.20	0.07	0.08	0.02	0.30	0.10	0.12	0.03	0.36	0.13	0.15	0.04	0.45	0.16	0.18	0.04	0.57	0.20	0.23	0.06	
210	0.08	0.60	0.21	0.24	0.06	0.23	0.08	0.09	0.02	0.35	0.12	0.14	0.03	0.43	0.15	0.17	0.04	0.53	0.18	0.21	0.05	0.67	0.24	0.27	0.07	
240	0.09	0.69	0.24	0.28	0.07	0.27	0.09	0.11	0.03	0.40	0.14	0.16	0.04	0.49	0.17	0.20	0.05	0.61	0.21	0.24	0.06	0.77	0.27	0.31	0.08	
270	0.11	0.78	0.27	0.31	0.08	0.30	0.11	0.12	0.03	0.46	0.16	0.18	0.05	0.56	0.20	0.22	0.06	0.69	0.24	0.27	0.07	0.88	0.31	0.35	0.09	
300	0.12	0.87	0.31	0.35	0.09	0.34	0.12	0.14	0.03	0.51	0.18	0.20	0.05	0.62	0.22	0.25	0.06	0.77	0.27	0.31	0.08	0.98	0.34	0.39	0.10	
330	0.13	0.97	0.34	0.39	0.10	0.38	0.13	0.15	0.04	0.57	0.20	0.23	0.06	0.69	0.24	0.28	0.07	0.85	0.30	0.34	0.09	1.09	0.38	0.44	0.11	
360	0.14	1.07	0.37	0.43	0.11	0.41	0.14	0.17	0.04	0.62	0.22	0.25	0.06	0.76	0.27	0.30	0.08	0.94	0.33	0.37	0.09	1.20	0.42	0.48	0.12	

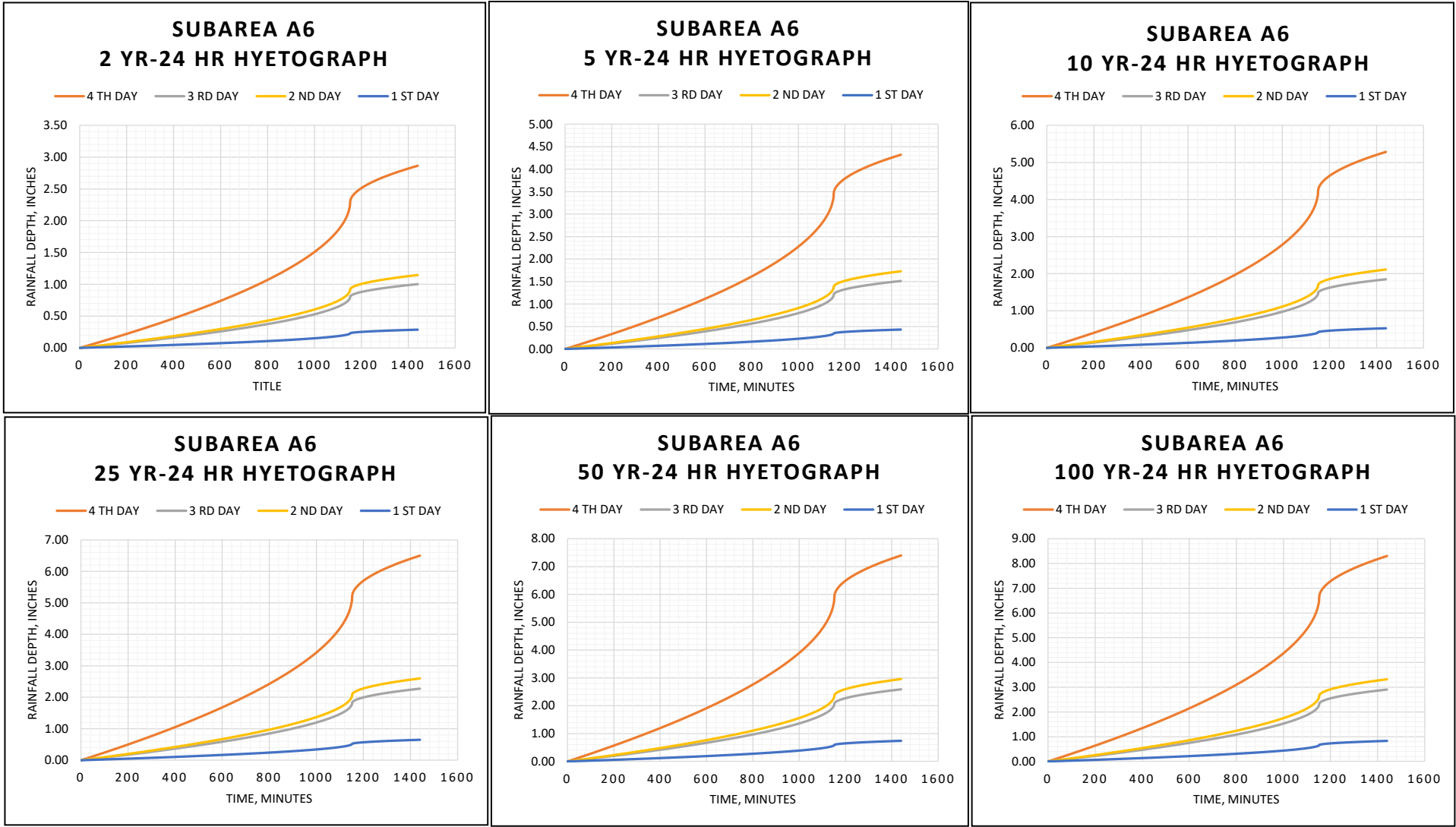
UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
390	0.16	1.16	0.41	0.47	0.12	0.45	0.16	0.18	0.05	0.68	0.24	0.27	0.07	0.83	0.29	0.33	0.08	1.02	0.36	0.41	0.10	1.31	0.46	0.52	0.13
420	0.17	1.26	0.44	0.51	0.13	0.49	0.17	0.20	0.05	0.74	0.26	0.30	0.07	0.90	0.32	0.36	0.09	1.11	0.39	0.44	0.11	1.42	0.50	0.57	0.14
450	0.18	1.37	0.48	0.55	0.14	0.53	0.19	0.21	0.05	0.80	0.28	0.32	0.08	0.98	0.34	0.39	0.10	1.20	0.42	0.48	0.12	1.53	0.54	0.61	0.15
480	0.20	1.47	0.51	0.59	0.15	0.57	0.20	0.23	0.06	0.86	0.30	0.34	0.09	1.05	0.37	0.42	0.11	1.29	0.45	0.52	0.13	1.65	0.58	0.66	0.17
510	0.21	1.58	0.55	0.63	0.16	0.61	0.21	0.24	0.06	0.92	0.32	0.37	0.09	1.13	0.39	0.45	0.11	1.38	0.48	0.55	0.14	1.77	0.62	0.71	0.18
540	0.23	1.69	0.59	0.67	0.17	0.65	0.23	0.26	0.07	0.98	0.34	0.39	0.10	1.20	0.42	0.48	0.12	1.48	0.52	0.59	0.15	1.89	0.66	0.76	0.19
570	0.24	1.80	0.63	0.72	0.18	0.70	0.24	0.28	0.07	1.05	0.37	0.42	0.10	1.28	0.45	0.51	0.13	1.58	0.55	0.63	0.16	2.02	0.71	0.81	0.20
600	0.26	1.91	0.67	0.76	0.19	0.74	0.26	0.30	0.07	1.12	0.39	0.45	0.11	1.36	0.48	0.55	0.14	1.68	0.59	0.67	0.17	2.14	0.75	0.86	0.21
630	0.27	2.03	0.71	0.81	0.20	0.79	0.27	0.31	0.08	1.18	0.41	0.47	0.12	1.45	0.51	0.58	0.14	1.78	0.62	0.71	0.18	2.28	0.80	0.91	0.23
660	0.29	2.15	0.75	0.86	0.21	0.83	0.29	0.33	0.08	1.25	0.44	0.50	0.13	1.53	0.54	0.61	0.15	1.89	0.66	0.75	0.19	2.41	0.84	0.96	0.24
690	0.31	2.27	0.80	0.91	0.23	0.88	0.31	0.35	0.09	1.33	0.46	0.53	0.13	1.62	0.57	0.65	0.16	2.00	0.70	0.80	0.20	2.55	0.89	1.02	0.25
720	0.32	2.40	0.84	0.96	0.24	0.93	0.33	0.37	0.09	1.40	0.49	0.56	0.14	1.71	0.60	0.69	0.17	2.11	0.74	0.84	0.21	2.69	0.94	1.08	0.27
750	0.34	2.53	0.89	1.01	0.25	0.98	0.34	0.39	0.10	1.48	0.52	0.59	0.15	1.81	0.63	0.72	0.18	2.22	0.78	0.89	0.22	2.84	0.99	1.14	0.28
780	0.36	2.67	0.93	1.07	0.27	1.03	0.36	0.41	0.10	1.56	0.55	0.62	0.16	1.91	0.67	0.76	0.19	2.34	0.82	0.94	0.23	2.99	1.05	1.20	0.30
810	0.38	2.81	0.98	1.12	0.28	1.09	0.38	0.43	0.11	1.64	0.57	0.66	0.16	2.01	0.70	0.80	0.20	2.47	0.86	0.99	0.25	3.15	1.10	1.26	0.32
840	0.40	2.96	1.04	1.18	0.30	1.14	0.40	0.46	0.11	1.73	0.60	0.69	0.17	2.11	0.74	0.84	0.21	2.60	0.91	1.04	0.26	3.32	1.16	1.33	0.33
870	0.42	3.11	1.09	1.24	0.31	1.20	0.42	0.48	0.12	1.82	0.64	0.73	0.18	2.22	0.78	0.89	0.22	2.73	0.96	1.09	0.27	3.49	1.22	1.40	0.35
900	0.44	3.27	1.15	1.31	0.33	1.27	0.44	0.51	0.13	1.91	0.67	0.76	0.19	2.34	0.82	0.94	0.23	2.88	1.01	1.15	0.29	3.67	1.29	1.47	0.37
930	0.47	3.45	1.21	1.38	0.34	1.33	0.47	0.53	0.13	2.01	0.70	0.81	0.20	2.46	0.86	0.98	0.25	3.03	1.06	1.21	0.30	3.87	1.35	1.55	0.39
960	0.49	3.63	1.27	1.45	0.36	1.40	0.49	0.56	0.14	2.12	0.74	0.85	0.21	2.59	0.91	1.04	0.26	3.19	1.12	1.27	0.32	4.07	1.43	1.63	0.41
970	0.50	3.69	1.29	1.48	0.37	1.43	0.50	0.57	0.14	2.16	0.75	0.86	0.22	2.64	0.92	1.05	0.26	3.24	1.14	1.30	0.32	4.14	1.45	1.66	0.41
980	0.51	3.76	1.32	1.50	0.38	1.45	0.51	0.58	0.15	2.20	0.77	0.88	0.22	2.68	0.94	1.07	0.27	3.30	1.16	1.32	0.33	4.22	1.48	1.69	0.42
990	0.52	3.83	1.34	1.53	0.38	1.48	0.52	0.59	0.15	2.23	0.78	0.89	0.22	2.73	0.96	1.09	0.27	3.36	1.18	1.34	0.34	4.29	1.50	1.72	0.43
1000	0.53	3.90	1.36	1.56	0.39	1.51	0.53	0.60	0.15	2.28	0.80	0.91	0.23	2.78	0.97	1.11	0.28	3.42	1.20	1.37	0.34	4.37	1.53	1.75	0.44
1010	0.54	3.97	1.39	1.59	0.40	1.54	0.54	0.61	0.15	2.32	0.81	0.93	0.23	2.83	0.99	1.13	0.28	3.48	1.22	1.39	0.35	4.45	1.56	1.78	0.45
1020	0.55	4.04	1.41	1.62	0.40	1.56	0.55	0.63	0.16	2.36	0.83	0.94	0.24	2.89	1.01	1.15	0.29	3.55	1.24	1.42	0.35	4.54	1.59	1.81	0.45
1030	0.56	4.12	1.44	1.65	0.41	1.59	0.56	0.64	0.16	2.41	0.84	0.96	0.24	2.94	1.03	1.18	0.29	3.62	1.27	1.45	0.36	4.62	1.62	1.85	0.46
1040	0.57	4.20	1.47	1.68	0.42	1.62	0.57	0.65	0.16	2.45	0.86	0.98	0.25	3.00	1.05	1.20	0.30	3.69	1.29	1.47	0.37	4.71	1.65	1.88	0.47
1050	0.58	4.28	1.50	1.71	0.43	1.66	0.58	0.66	0.17	2.50	0.88	1.00	0.25	3.06	1.07	1.22	0.31	3.76	1.32	1.50	0.38	4.80	1.68	1.92	0.48
1060	0.59	4.37	1.53	1.75	0.44	1.69	0.59	0.68	0.17	2.55	0.89	1.02	0.26	3.12	1.09	1.25	0.31	3.84	1.34	1.53	0.38	4.90	1.72	1.96	0.49
1070	0.60	4.46	1.56	1.78	0.45	1.73	0.60	0.69	0.17	2.61	0.91	1.04	0.26	3.19	1.11	1.27	0.32	3.92	1.37	1.57	0.39	5.01	1.75	2.00	0.50
1080	0.62	4.56	1.60	1.82	0.46	1.76	0.62	0.71	0.18	2.66	0.93	1.06	0.27	3.25	1.14	1.30	0.33	4.00	1.40	1.60	0.40	5.11	1.79	2.05	0.51
1090	0.63	4.66	1.63	1.86	0.47	1.80	0.63	0.72	0.18	2.72	0.95	1.09	0.27	3.33	1.17	1.33	0.33	4.09	1.43	1.6					

UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
1164	0.84	6.19	2.17	2.48	0.62	2.40	0.84	0.96	0.24	3.62	1.27	1.45	0.36	4.42	1.55	1.77	0.44	5.44	1.90	2.18	0.54	6.95	2.43	2.78	0.70
1165	0.84	6.21	2.17	2.48	0.62	2.40	0.84	0.96	0.24	3.62	1.27	1.45	0.36	4.43	1.55	1.77	0.44	5.45	1.91	2.18	0.54	6.96	2.44	2.79	0.70
1166	0.84	6.22	2.18	2.49	0.62	2.41	0.84	0.96	0.24	3.63	1.27	1.45	0.36	4.44	1.55	1.78	0.44	5.46	1.91	2.18	0.55	6.98	2.44	2.79	0.70
1167	0.84	6.23	2.18	2.49	0.62	2.41	0.84	0.96	0.24	3.64	1.27	1.46	0.36	4.45	1.56	1.78	0.44	5.47	1.91	2.19	0.55	6.99	2.45	2.80	0.70
1168	0.84	6.24	2.18	2.50	0.62	2.41	0.85	0.97	0.24	3.64	1.28	1.46	0.36	4.46	1.56	1.78	0.45	5.48	1.92	2.19	0.55	7.00	2.45	2.80	0.70
1169	0.84	6.25	2.19	2.50	0.63	2.42	0.85	0.97	0.24	3.65	1.28	1.46	0.37	4.46	1.56	1.79	0.45	5.49	1.92	2.20	0.55	7.01	2.45	2.81	0.70
1170	0.85	6.26	2.19	2.50	0.63	2.42	0.85	0.97	0.24	3.66	1.28	1.46	0.37	4.47	1.56	1.79	0.45	5.50	1.92	2.20	0.55	7.02	2.46	2.81	0.70
1171	0.85	6.27	2.19	2.51	0.63	2.43	0.85	0.97	0.24	3.66	1.28	1.46	0.37	4.48	1.57	1.79	0.45	5.51	1.93	2.20	0.55	7.04	2.46	2.81	0.70
1172	0.85	6.28	2.20	2.51	0.63	2.43	0.85	0.97	0.24	3.67	1.28	1.47	0.37	4.48	1.57	1.79	0.45	5.51	1.93	2.21	0.55	7.05	2.47	2.82	0.70
1173	0.85	6.29	2.20	2.52	0.63	2.43	0.85	0.97	0.24	3.67	1.29	1.47	0.37	4.49	1.57	1.80	0.45	5.52	1.93	2.21	0.55	7.06	2.47	2.82	0.71
1174	0.85	6.30	2.20	2.52	0.63	2.44	0.85	0.98	0.24	3.68	1.29	1.47	0.37	4.50	1.57	1.80	0.45	5.53	1.94	2.21	0.55	7.07	2.47	2.83	0.71
1175	0.85	6.31	2.21	2.52	0.63	2.44	0.85	0.98	0.24	3.68	1.29	1.47	0.37	4.50	1.58	1.80	0.45	5.54	1.94	2.22	0.55	7.08	2.48	2.83	0.71
1176	0.85	6.32	2.21	2.53	0.63	2.44	0.86	0.98	0.24	3.69	1.29	1.48	0.37	4.51	1.58	1.80	0.45	5.55	1.94	2.22	0.55	7.09	2.48	2.83	0.71
1177	0.85	6.33	2.21	2.53	0.63	2.45	0.86	0.98	0.24	3.69	1.29	1.48	0.37	4.52	1.58	1.81	0.45	5.55	1.94	2.22	0.56	7.10	2.48	2.84	0.71
1178	0.86	6.33	2.22	2.53	0.63	2.45	0.86	0.98	0.25	3.70	1.29	1.48	0.37	4.52	1.58	1.81	0.45	5.56	1.95	2.22	0.56	7.11	2.49	2.84	0.71
1179	0.86	6.34	2.22	2.54	0.63	2.45	0.86	0.98	0.25	3.70	1.30	1.48	0.37	4.53	1.58	1.81	0.45	5.57	1.95	2.23	0.56	7.12	2.49	2.85	0.71
1180	0.86	6.35	2.22	2.54	0.64	2.46	0.86	0.98	0.25	3.71	1.30	1.48	0.37	4.53	1.59	1.81	0.45	5.58	1.95	2.23	0.56	7.13	2.49	2.85	0.71
1181	0.86	6.36	2.23	2.54	0.64	2.46	0.86	0.98	0.25	3.71	1.30	1.49	0.37	4.54	1.59	1.82	0.45	5.58	1.95	2.23	0.56	7.13	2.50	2.85	0.71
1182	0.86	6.37	2.23	2.55	0.64	2.46	0.86	0.99	0.25	3.72	1.30	1.49	0.37	4.55	1.59	1.82	0.45	5.59	1.96	2.24	0.56	7.14	2.50	2.86	0.71
1183	0.86	6.37	2.23	2.55	0.64	2.47	0.86	0.99	0.25	3.72	1.30	1.49	0.37	4.55	1.59	1.82	0.46	5.60	1.96	2.24	0.56	7.15	2.50	2.86	0.72
1184	0.86	6.38	2.23	2.55	0.64	2.47	0.86	0.99	0.25	3.73	1.30	1.49	0.37	4.56	1.59	1.82	0.46	5.60	1.96	2.24	0.56	7.16	2.51	2.86	0.72
1185	0.86	6.39	2.24	2.56	0.64	2.47	0.87	0.99	0.25	3.73	1.31	1.49	0.37	4.56	1.60	1.82	0.46	5.61	1.96	2.24	0.56	7.17	2.51	2.87	0.72
1186	0.86	6.40	2.24	2.56	0.64	2.48	0.87	0.99	0.25	3.74	1.31	1.49	0.37	4.57	1.60	1.83	0.46	5.62	1.97	2.25	0.56	7.18	2.51	2.87	0.72
1187	0.87	6.40	2.24	2.56	0.64	2.48	0.87	0.99	0.25	3.74	1.31	1.50	0.37	4.57	1.60	1.83	0.46	5.62	1.97	2.25	0.56	7.19	2.51	2.87	0.72
1188	0.87	6.41	2.24	2.56	0.64	2.48	0.87	0.99	0.25	3.74	1.31	1.50	0.37	4.58	1.60	1.83	0.46	5.63	1.97	2.25	0.56	7.19	2.52	2.88	0.72
1189	0.87	6.42	2.25	2.57	0.64	2.48	0.87	0.99	0.25	3.75	1.31	1.50	0.37	4.58	1.60	1.83	0.46	5.64	1.97	2.25	0.56	7.20	2.52	2.88	0.72
1190	0.87	6.43	2.25	2.57	0.64	2.49	0.87	0.99	0.25	3.75	1.31	1.50	0.38	4.59	1.61	1.84	0.46	5.64	1.97	2.26	0.56	7.21	2.52	2.88	0.72
1191	0.87	6.43	2.25	2.57	0.64	2.49	0.87	1.00	0.25	3.76	1.31	1.50	0.38	4.59	1.61	1.84	0.46	5.65	1.98	2.26	0.56	7.22	2.53	2.89	0.72
1192	0.87	6.44	2.25	2.58	0.64	2.49	0.87	1.00	0.25	3.76	1.32	1.50	0.38	4.60	1.61	1.84	0.46	5.65	1.98	2.26	0.57	7.23	2.53	2.89	0.72
1193	0.87	6.45	2.26	2.58	0.64	2.49	0.87	1.00	0.25	3.76	1.32	1.51	0.38	4.60	1.61	1.84	0.46	5.66	1.98	2.26	0.57	7.23	2.53	2.89	0.72
1194	0.87	6.45	2.26	2.58	0.65	2.50	0.87	1.00	0.25	3.77	1.32	1.51	0.38	4.61	1.61	1.84	0.46	5.67	1.98	2.27	0.57	7.24	2.53	2.90	0.72
1195	0.87	6.46	2.26	2.58	0.65	2.50	0.88	1.00	0.25	3.77	1.32	1.51	0.38	4.61	1.61	1.85	0.46	5.67	1.99	2.27	0.57	7.25	2.54	2.90	0.72
1196	0.87	6.47	2.26	2.59	0.65	2.50	0.88	1.00	0.25	3.78	1.32	1.51	0.38	4.62	1.62	1.85	0.46	5.68	1.99	2.27	0				

UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
1224	0.90	6.63	2.32	2.65	0.66	2.57	0.90	1.03	0.26	3.87	1.36	1.55	0.39	4.73	1.66	1.89	0.47	5.82	2.04	2.33	0.58	7.44	2.60	2.98	0.74
1225	0.90	6.64	2.32	2.65	0.66	2.57	0.90	1.03	0.26	3.87	1.36	1.55	0.39	4.74	1.66	1.89	0.47	5.83	2.04	2.33	0.58	7.44	2.61	2.98	0.74
1226	0.90	6.64	2.32	2.66	0.66	2.57	0.90	1.03	0.26	3.88	1.36	1.55	0.39	4.74	1.66	1.90	0.47	5.83	2.04	2.33	0.58	7.45	2.61	2.98	0.75
1227	0.90	6.65	2.33	2.66	0.66	2.57	0.90	1.03	0.26	3.88	1.36	1.55	0.39	4.74	1.66	1.90	0.47	5.83	2.04	2.33	0.58	7.46	2.61	2.98	0.75
1228	0.90	6.65	2.33	2.66	0.67	2.57	0.90	1.03	0.26	3.88	1.36	1.55	0.39	4.75	1.66	1.90	0.47	5.84	2.04	2.34	0.58	7.46	2.61	2.98	0.75
1229	0.90	6.66	2.33	2.66	0.67	2.58	0.90	1.03	0.26	3.89	1.36	1.55	0.39	4.75	1.66	1.90	0.48	5.84	2.05	2.34	0.58	7.47	2.61	2.99	0.75
1230	0.90	6.66	2.33	2.66	0.67	2.58	0.90	1.03	0.26	3.89	1.36	1.56	0.39	4.76	1.66	1.90	0.48	5.85	2.05	2.34	0.58	7.47	2.62	2.99	0.75
1231	0.90	6.67	2.33	2.67	0.67	2.58	0.90	1.03	0.26	3.89	1.36	1.56	0.39	4.76	1.67	1.90	0.48	5.85	2.05	2.34	0.59	7.48	2.62	2.99	0.75
1232	0.90	6.67	2.33	2.67	0.67	2.58	0.90	1.03	0.26	3.90	1.36	1.56	0.39	4.76	1.67	1.91	0.48	5.86	2.05	2.34	0.59	7.48	2.62	2.99	0.75
1233	0.90	6.68	2.34	2.67	0.67	2.58	0.90	1.03	0.26	3.90	1.36	1.56	0.39	4.77	1.67	1.91	0.48	5.86	2.05	2.34	0.59	7.49	2.62	3.00	0.75
1234	0.90	6.68	2.34	2.67	0.67	2.59	0.90	1.03	0.26	3.90	1.37	1.56	0.39	4.77	1.67	1.91	0.48	5.87	2.05	2.35	0.59	7.50	2.62	3.00	0.75
1235	0.90	6.69	2.34	2.67	0.67	2.59	0.91	1.03	0.26	3.90	1.37	1.56	0.39	4.77	1.67	1.91	0.48	5.87	2.05	2.35	0.59	7.50	2.63	3.00	0.75
1240	0.91	6.71	2.35	2.68	0.67	2.60	0.91	1.04	0.26	3.92	1.37	1.57	0.39	4.79	1.68	1.92	0.48	5.89	2.06	2.36	0.59	7.53	2.63	3.01	0.75
1245	0.91	6.73	2.36	2.69	0.67	2.61	0.91	1.04	0.26	3.93	1.38	1.57	0.39	4.81	1.68	1.92	0.48	5.91	2.07	2.36	0.59	7.55	2.64	3.02	0.76
1250	0.91	6.76	2.36	2.70	0.68	2.61	0.92	1.05	0.26	3.95	1.38	1.58	0.39	4.82	1.69	1.93	0.48	5.93	2.08	2.37	0.59	7.58	2.65	3.03	0.76
1255	0.92	6.78	2.37	2.71	0.68	2.62	0.92	1.05	0.26	3.96	1.39	1.58	0.40	4.84	1.69	1.94	0.48	5.95	2.08	2.38	0.60	7.61	2.66	3.04	0.76
1260	0.92	6.80	2.38	2.72	0.68	2.63	0.92	1.05	0.26	3.97	1.39	1.59	0.40	4.86	1.70	1.94	0.49	5.97	2.09	2.39	0.60	7.63	2.67	3.05	0.76
1265	0.92	6.82	2.39	2.73	0.68	2.64	0.92	1.06	0.26	3.98	1.39	1.59	0.40	4.87	1.70	1.95	0.49	5.99	2.10	2.40	0.60	7.65	2.68	3.06	0.77
1270	0.92	6.84	2.39	2.74	0.68	2.65	0.93	1.06	0.26	4.00	1.40	1.60	0.40	4.89	1.71	1.95	0.49	6.01	2.10	2.40	0.60	7.68	2.69	3.07	0.77
1275	0.93	6.86	2.40	2.75	0.69	2.66	0.93	1.06	0.27	4.01	1.40	1.60	0.40	4.90	1.72	1.96	0.49	6.03	2.11	2.41	0.60	7.70	2.70	3.08	0.77
1280	0.93	6.88	2.41	2.75	0.69	2.66	0.93	1.07	0.27	4.02	1.41	1.61	0.40	4.91	1.72	1.97	0.49	6.04	2.12	2.42	0.60	7.72	2.70	3.09	0.77
1285	0.93	6.90	2.42	2.76	0.69	2.67	0.93	1.07	0.27	4.03	1.41	1.61	0.40	4.93	1.72	1.97	0.49	6.06	2.12	2.42	0.61	7.74	2.71	3.10	0.77
1290	0.94	6.92	2.42	2.77	0.69	2.68	0.94	1.07	0.27	4.04	1.41	1.62	0.40	4.94	1.73	1.98	0.49	6.08	2.13	2.43	0.61	7.77	2.72	3.11	0.78
1295	0.94	6.94	2.43	2.78	0.69	2.69	0.94	1.07	0.27	4.05	1.42	1.62	0.41	4.96	1.73	1.98	0.50	6.09	2.13	2.44	0.61	7.79	2.73	3.12	0.78
1300	0.94	6.96	2.44	2.78	0.70	2.69	0.94	1.08	0.27	4.06	1.42	1.63	0.41	4.97	1.74	1.99	0.50	6.11	2.14	2.44	0.61	7.81	2.73	3.12	0.78
1305	0.94	6.98	2.44	2.79	0.70	2.70	0.95	1.08	0.27	4.08	1.43	1.63	0.41	4.98	1.74	1.99	0.50	6.13	2.14	2.45	0.61	7.83	2.74	3.13	0.78
1310	0.95	7.00	2.45	2.80	0.70	2.71	0.95	1.08	0.27	4.09	1.43	1.63	0.41	5.00	1.75	2.00	0.50	6.14	2.15	2.46	0.61	7.85	2.75	3.14	0.79
1315	0.95	7.01	2.46	2.81	0.70	2.71	0.95	1.09	0.27	4.10	1.43	1.64	0.41	5.01	1.75	2.00	0.50	6.16	2.16	2.46	0.62	7.87	2.75	3.15	0.79
1320	0.95	7.03	2.46	2.81	0.70	2.72	0.95	1.09	0.27	4.11	1.44	1.64	0.41	5.02	1.76	2.01	0.50	6.17	2.16	2.47	0.62	7.89	2.76	3.16	0.79
1325	0.95	7.05	2.47	2.82	0.70	2.73	0.95	1.09	0.27	4.12	1.44	1.65	0.41	5.03	1.76	2.01	0.50	6.19	2.17	2.48	0.62	7.91	2.77	3.16	0.79
1330	0.95	7.07	2.47	2.83	0.71	2.73	0.96	1.09	0.27	4.13	1.44	1.65	0.41	5.05	1.77	2.02	0.50	6.20	2.17	2.48	0.62	7.93	2.78	3.17	0.79
1335	0.96	7.08	2.48	2.83	0.71	2.74	0.96	1.10	0.27	4.14	1.45	1.65	0.41	5.06	1.77	2.02	0.51	6.22	2.18	2.49	0.62	7.95	2.78	3.18	0.79
1340	0.96	7.10	2.49	2.84	0.71	2.75	0.96	1.10	0.27	4.15	1.45	1.66	0.41	5.07	1.77	2.03	0.51</								

SUBAREA A6 HYETOPGRAPHS
- Per 2006 Los Angeles County Hydrology Manual Appendix A

24 HR ISOHYETS,IN					
50 YR	2 YR	5 YR	10 YR	25 YR	100 YR
7.4	2.9	4.3	5.3	6.5	8.3



UNIT HYETOGRAPH		50 YR - 24 HR					2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
30	0.01	0.08	0.03	0.03	0.01	0.03	0.01	0.01	0.00	0.05	0.02	0.02	0.00	0.06	0.02	0.02	0.01	0.07	0.03	0.03	0.01	0.09	0.03	0.04	0.01	
60	0.02	0.17	0.06	0.07	0.02	0.06	0.02	0.03	0.01	0.10	0.03	0.04	0.01	0.12	0.04	0.05	0.01	0.15	0.05	0.06	0.01	0.19	0.06	0.07	0.02	
90	0.03	0.25	0.09	0.10	0.02	0.10	0.03	0.04	0.01	0.15	0.05	0.06	0.01	0.18	0.06	0.07	0.02	0.22	0.08	0.09	0.02	0.28	0.10	0.11	0.03	
120	0.05	0.34	0.12	0.13	0.03	0.13	0.05	0.05	0.01	0.20	0.07	0.08	0.02	0.24	0.08	0.10	0.02	0.29	0.10	0.12	0.03	0.38	0.13	0.15	0.04	
150	0.06	0.42	0.15	0.17	0.04	0.16	0.06	0.07	0.02	0.25	0.09	0.10	0.02	0.30	0.11	0.12	0.03	0.37	0.13	0.15	0.04	0.47	0.17	0.19	0.05	
180	0.07	0.51	0.18	0.20	0.05	0.20	0.07	0.08	0.02	0.30	0.10	0.12	0.03	0.36	0.13	0.15	0.04	0.45	0.16	0.18	0.04	0.57	0.20	0.23	0.06	
210	0.08	0.60	0.21	0.24	0.06	0.23	0.08	0.09	0.02	0.35	0.12	0.14	0.03	0.43	0.15	0.17	0.04	0.53	0.18	0.21	0.05	0.67	0.24	0.27	0.07	
240	0.09	0.69	0.24	0.28	0.07	0.27	0.09	0.11	0.03	0.40	0.14	0.16	0.04	0.49	0.17	0.20	0.05	0.61	0.21	0.24	0.06	0.77	0.27	0.31	0.08	
270	0.11	0.78	0.27	0.31	0.08	0.30	0.11	0.12	0.03	0.46	0.16	0.18	0.05	0.56	0.20	0.22	0.06	0.69	0.24	0.27	0.07	0.88	0.31	0.35	0.09	
300	0.12	0.87	0.31	0.35	0.09	0.34	0.12	0.14	0.03	0.51	0.18	0.20	0.05	0.62	0.22	0.25	0.06	0.77	0.27	0.31	0.08	0.98	0.34	0.39	0.10	
330	0.13	0.97	0.34	0.39	0.10	0.38	0.13	0.15	0.04	0.57	0.20	0.23	0.06	0.69	0.24	0.28	0.07	0.85	0.30	0.34	0.09	1.09	0.38	0.44	0.11	
360	0.14	1.07	0.37	0.43	0.11	0.41	0.14	0.17	0.04	0.62	0.22	0.25	0.06	0.76	0.27	0.30	0.08	0.94	0.33	0.37	0.09	1.20	0.42	0.48	0.12	

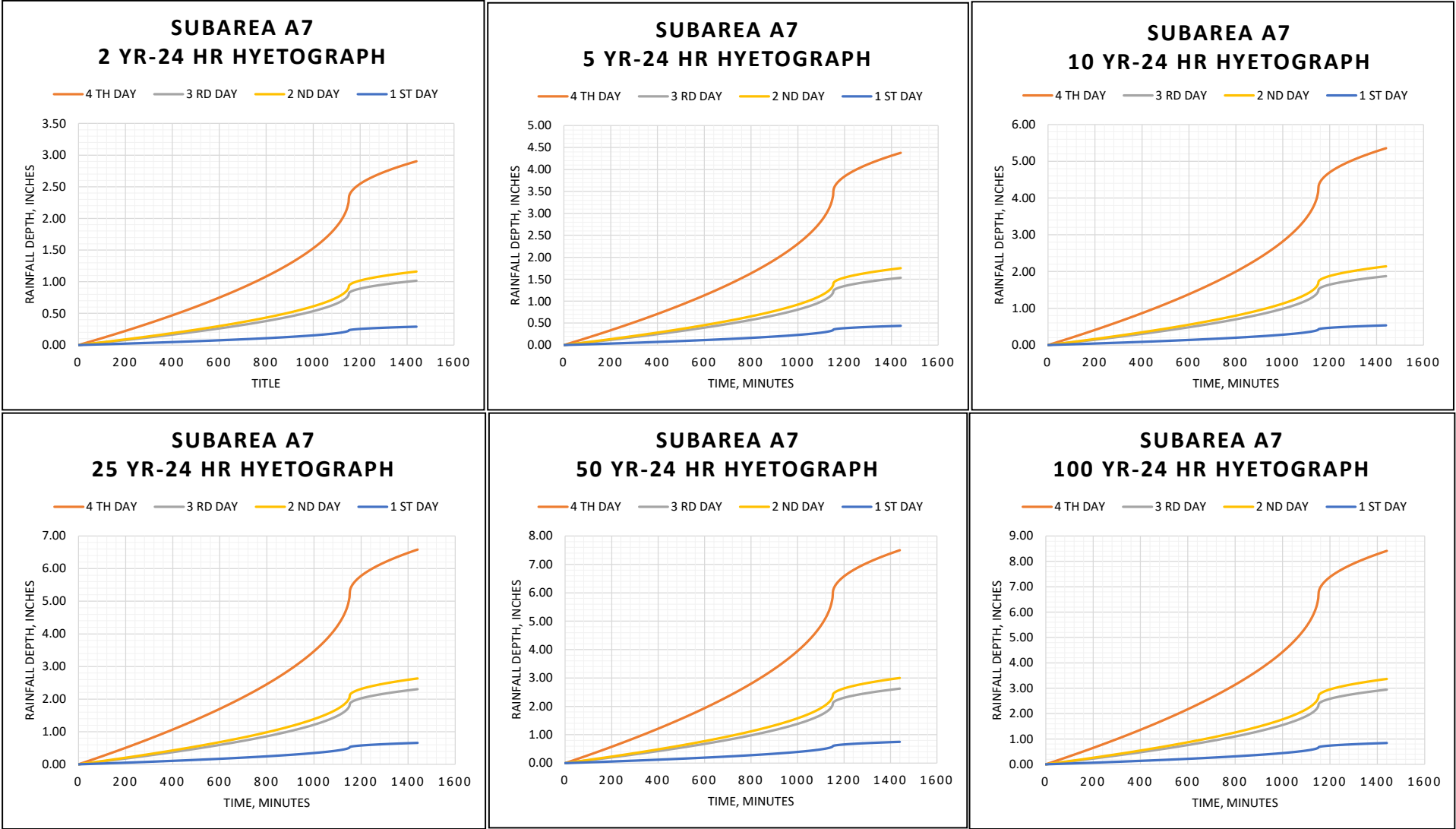
UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
390	0.16	1.16	0.41	0.47	0.12	0.45	0.16	0.18	0.05	0.68	0.24	0.27	0.07	0.83	0.29	0.33	0.08	1.02	0.36	0.41	0.10	1.31	0.46	0.52	0.13
420	0.17	1.26	0.44	0.51	0.13	0.49	0.17	0.20	0.05	0.74	0.26	0.30	0.07	0.90	0.32	0.36	0.09	1.11	0.39	0.44	0.11	1.42	0.50	0.57	0.14
450	0.18	1.37	0.48	0.55	0.14	0.53	0.19	0.21	0.05	0.80	0.28	0.32	0.08	0.98	0.34	0.39	0.10	1.20	0.42	0.48	0.12	1.53	0.54	0.61	0.15
480	0.20	1.47	0.51	0.59	0.15	0.57	0.20	0.23	0.06	0.86	0.30	0.34	0.09	1.05	0.37	0.42	0.11	1.29	0.45	0.52	0.13	1.65	0.58	0.66	0.17
510	0.21	1.58	0.55	0.63	0.16	0.61	0.21	0.24	0.06	0.92	0.32	0.37	0.09	1.13	0.39	0.45	0.11	1.38	0.48	0.55	0.14	1.77	0.62	0.71	0.18
540	0.23	1.69	0.59	0.67	0.17	0.65	0.23	0.26	0.07	0.98	0.34	0.39	0.10	1.20	0.42	0.48	0.12	1.48	0.52	0.59	0.15	1.89	0.66	0.76	0.19
570	0.24	1.80	0.63	0.72	0.18	0.70	0.24	0.28	0.07	1.05	0.37	0.42	0.10	1.28	0.45	0.51	0.13	1.58	0.55	0.63	0.16	2.02	0.71	0.81	0.20
600	0.26	1.91	0.67	0.76	0.19	0.74	0.26	0.30	0.07	1.12	0.39	0.45	0.11	1.36	0.48	0.55	0.14	1.68	0.59	0.67	0.17	2.14	0.75	0.86	0.21
630	0.27	2.03	0.71	0.81	0.20	0.79	0.27	0.31	0.08	1.18	0.41	0.47	0.12	1.45	0.51	0.58	0.14	1.78	0.62	0.71	0.18	2.28	0.80	0.91	0.23
660	0.29	2.15	0.75	0.86	0.21	0.83	0.29	0.33	0.08	1.25	0.44	0.50	0.13	1.53	0.54	0.61	0.15	1.89	0.66	0.75	0.19	2.41	0.84	0.96	0.24
690	0.31	2.27	0.80	0.91	0.23	0.88	0.31	0.35	0.09	1.33	0.46	0.53	0.13	1.62	0.57	0.65	0.16	2.00	0.70	0.80	0.20	2.55	0.89	1.02	0.25
720	0.32	2.40	0.84	0.96	0.24	0.93	0.33	0.37	0.09	1.40	0.49	0.56	0.14	1.71	0.60	0.69	0.17	2.11	0.74	0.84	0.21	2.69	0.94	1.08	0.27
750	0.34	2.53	0.89	1.01	0.25	0.98	0.34	0.39	0.10	1.48	0.52	0.59	0.15	1.81	0.63	0.72	0.18	2.22	0.78	0.89	0.22	2.84	0.99	1.14	0.28
780	0.36	2.67	0.93	1.07	0.27	1.03	0.36	0.41	0.10	1.56	0.55	0.62	0.16	1.91	0.67	0.76	0.19	2.34	0.82	0.94	0.23	2.99	1.05	1.20	0.30
810	0.38	2.81	0.98	1.12	0.28	1.09	0.38	0.43	0.11	1.64	0.57	0.66	0.16	2.01	0.70	0.80	0.20	2.47	0.86	0.99	0.25	3.15	1.10	1.26	0.32
840	0.40	2.96	1.04	1.18	0.30	1.14	0.40	0.46	0.11	1.73	0.60	0.69	0.17	2.11	0.74	0.84	0.21	2.60	0.91	1.04	0.26	3.32	1.16	1.33	0.33
870	0.42	3.11	1.09	1.24	0.31	1.20	0.42	0.48	0.12	1.82	0.64	0.73	0.18	2.22	0.78	0.89	0.22	2.73	0.96	1.09	0.27	3.49	1.22	1.40	0.35
900	0.44	3.27	1.15	1.31	0.33	1.27	0.44	0.51	0.13	1.91	0.67	0.76	0.19	2.34	0.82	0.94	0.23	2.88	1.01	1.15	0.29	3.67	1.29	1.47	0.37
930	0.47	3.45	1.21	1.38	0.34	1.33	0.47	0.53	0.13	2.01	0.70	0.81	0.20	2.46	0.86	0.98	0.25	3.03	1.06	1.21	0.30	3.87	1.35	1.55	0.39
960	0.49	3.63	1.27	1.45	0.36	1.40	0.49	0.56	0.14	2.12	0.74	0.85	0.21	2.59	0.91	1.04	0.26	3.19	1.12	1.27	0.32	4.07	1.43	1.63	0.41
970	0.50	3.69	1.29	1.48	0.37	1.43	0.50	0.57	0.14	2.16	0.75	0.86	0.22	2.64	0.92	1.05	0.26	3.24	1.14	1.30	0.32	4.14	1.45	1.66	0.41
980	0.51	3.76	1.32	1.50	0.38	1.45	0.51	0.58	0.15	2.20	0.77	0.88	0.22	2.68	0.94	1.07	0.27	3.30	1.16	1.32	0.33	4.22	1.48	1.69	0.42
990	0.52	3.83	1.34	1.53	0.38	1.48	0.52	0.59	0.15	2.23	0.78	0.89	0.22	2.73	0.96	1.09	0.27	3.36	1.18	1.34	0.34	4.29	1.50	1.72	0.43
1000	0.53	3.90	1.36	1.56	0.39	1.51	0.53	0.60	0.15	2.28	0.80	0.91	0.23	2.78	0.97	1.11	0.28	3.42	1.20	1.37	0.34	4.37	1.53	1.75	0.44
1010	0.54	3.97	1.39	1.59	0.40	1.54	0.54	0.61	0.15	2.32	0.81	0.93	0.23	2.83	0.99	1.13	0.28	3.48	1.22	1.39	0.35	4.45	1.56	1.78	0.45
1020	0.55	4.04	1.41	1.62	0.40	1.56	0.55	0.63	0.16	2.36	0.83	0.94	0.24	2.89	1.01	1.15	0.29	3.55	1.24	1.42	0.35	4.54	1.59	1.81	0.45
1030	0.56	4.12	1.44	1.65	0.41	1.59	0.56	0.64	0.16	2.41	0.84	0.96	0.24	2.94	1.03	1.18	0.29	3.62	1.27	1.45	0.36	4.62	1.62	1.85	0.46
1040	0.57	4.20	1.47	1.68	0.42	1.62	0.57	0.65	0.16	2.45	0.86	0.98	0.25	3.00	1.05	1.20	0.30	3.69	1.29	1.47	0.37	4.71	1.65	1.88	0.47
1050	0.58	4.28	1.50	1.71	0.43	1.66	0.58	0.66	0.17	2.50	0.88	1.00	0.25	3.06	1.07	1.22	0.31	3.76	1.32	1.50	0.38	4.80	1.68	1.92	0.48
1060	0.59	4.37	1.53	1.75	0.44	1.69	0.59	0.68	0.17	2.55	0.89	1.02	0.26	3.12	1.09	1.25	0.31	3.84	1.34	1.53	0.38	4.90	1.72	1.96	0.49
1070	0.60	4.46	1.56	1.78	0.45	1.73	0.60	0.69	0.17	2.61	0.91	1.04	0.26	3.19	1.11	1.27	0.32	3.92	1.37	1.57	0.39	5.01	1.75	2.00	0.50
1080	0.62	4.56	1.60	1.82	0.46	1.76	0.62	0.71	0.18	2.66	0.93	1.06	0.27	3.25	1.14	1.30	0.33	4.00	1.40	1.60	0.40	5.11	1.79	2.05	0.51
1090	0.63	4.66	1.63	1.86	0.47	1.80	0.63	0.72	0.18	2.72	0.95	1.09	0.27	3.33	1.17	1.33	0.33	4.09							

UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
1164	0.84	6.19	2.17	2.48	0.62	2.40	0.84	0.96	0.24	3.62	1.27	1.45	0.36	4.42	1.55	1.77	0.44	5.44	1.90	2.18	0.54	6.95	2.43	2.78	0.70
1165	0.84	6.21	2.17	2.48	0.62	2.40	0.84	0.96	0.24	3.62	1.27	1.45	0.36	4.43	1.55	1.77	0.44	5.45	1.91	2.18	0.54	6.96	2.44	2.79	0.70
1166	0.84	6.22	2.18	2.49	0.62	2.41	0.84	0.96	0.24	3.63	1.27	1.45	0.36	4.44	1.55	1.78	0.44	5.46	1.91	2.18	0.55	6.98	2.44	2.79	0.70
1167	0.84	6.23	2.18	2.49	0.62	2.41	0.84	0.96	0.24	3.64	1.27	1.46	0.36	4.45	1.56	1.78	0.44	5.47	1.91	2.19	0.55	6.99	2.45	2.80	0.70
1168	0.84	6.24	2.18	2.50	0.62	2.41	0.85	0.97	0.24	3.64	1.28	1.46	0.36	4.46	1.56	1.78	0.45	5.48	1.92	2.19	0.55	7.00	2.45	2.80	0.70
1169	0.84	6.25	2.19	2.50	0.63	2.42	0.85	0.97	0.24	3.65	1.28	1.46	0.37	4.46	1.56	1.79	0.45	5.49	1.92	2.20	0.55	7.01	2.45	2.81	0.70
1170	0.85	6.26	2.19	2.50	0.63	2.42	0.85	0.97	0.24	3.66	1.28	1.46	0.37	4.47	1.56	1.79	0.45	5.50	1.92	2.20	0.55	7.02	2.46	2.81	0.70
1171	0.85	6.27	2.19	2.51	0.63	2.43	0.85	0.97	0.24	3.66	1.28	1.46	0.37	4.48	1.57	1.79	0.45	5.51	1.93	2.20	0.55	7.04	2.46	2.81	0.70
1172	0.85	6.28	2.20	2.51	0.63	2.43	0.85	0.97	0.24	3.67	1.28	1.47	0.37	4.48	1.57	1.79	0.45	5.51	1.93	2.21	0.55	7.05	2.47	2.82	0.70
1173	0.85	6.29	2.20	2.52	0.63	2.43	0.85	0.97	0.24	3.67	1.29	1.47	0.37	4.49	1.57	1.80	0.45	5.52	1.93	2.21	0.55	7.06	2.47	2.82	0.71
1174	0.85	6.30	2.20	2.52	0.63	2.44	0.85	0.98	0.24	3.68	1.29	1.47	0.37	4.50	1.57	1.80	0.45	5.53	1.94	2.21	0.55	7.07	2.47	2.83	0.71
1175	0.85	6.31	2.21	2.52	0.63	2.44	0.85	0.98	0.24	3.68	1.29	1.47	0.37	4.50	1.58	1.80	0.45	5.54	1.94	2.22	0.55	7.08	2.48	2.83	0.71
1176	0.85	6.32	2.21	2.53	0.63	2.44	0.86	0.98	0.24	3.69	1.29	1.48	0.37	4.51	1.58	1.80	0.45	5.55	1.94	2.22	0.55	7.09	2.48	2.83	0.71
1177	0.85	6.33	2.21	2.53	0.63	2.45	0.86	0.98	0.24	3.69	1.29	1.48	0.37	4.52	1.58	1.81	0.45	5.55	1.94	2.22	0.56	7.10	2.48	2.84	0.71
1178	0.86	6.33	2.22	2.53	0.63	2.45	0.86	0.98	0.25	3.70	1.29	1.48	0.37	4.52	1.58	1.81	0.45	5.56	1.95	2.22	0.56	7.11	2.49	2.84	0.71
1179	0.86	6.34	2.22	2.54	0.63	2.45	0.86	0.98	0.25	3.70	1.30	1.48	0.37	4.53	1.58	1.81	0.45	5.57	1.95	2.23	0.56	7.12	2.49	2.85	0.71
1180	0.86	6.35	2.22	2.54	0.64	2.46	0.86	0.98	0.25	3.71	1.30	1.48	0.37	4.53	1.59	1.81	0.45	5.58	1.95	2.23	0.56	7.13	2.49	2.85	0.71
1181	0.86	6.36	2.23	2.54	0.64	2.46	0.86	0.98	0.25	3.71	1.30	1.49	0.37	4.54	1.59	1.82	0.45	5.58	1.95	2.23	0.56	7.13	2.50	2.85	0.71
1182	0.86	6.37	2.23	2.55	0.64	2.46	0.86	0.99	0.25	3.72	1.30	1.49	0.37	4.55	1.59	1.82	0.45	5.59	1.96	2.24	0.56	7.14	2.50	2.86	0.71
1183	0.86	6.37	2.23	2.55	0.64	2.47	0.86	0.99	0.25	3.72	1.30	1.49	0.37	4.55	1.59	1.82	0.46	5.60	1.96	2.24	0.56	7.15	2.50	2.86	0.72
1184	0.86	6.38	2.23	2.55	0.64	2.47	0.86	0.99	0.25	3.73	1.30	1.49	0.37	4.56	1.59	1.82	0.46	5.60	1.96	2.24	0.56	7.16	2.51	2.86	0.72
1185	0.86	6.39	2.24	2.56	0.64	2.47	0.87	0.99	0.25	3.73	1.31	1.49	0.37	4.56	1.60	1.82	0.46	5.61	1.96	2.24	0.56	7.17	2.51	2.87	0.72
1186	0.86	6.40	2.24	2.56	0.64	2.48	0.87	0.99	0.25	3.74	1.31	1.49	0.37	4.57	1.60	1.83	0.46	5.62	1.97	2.25	0.56	7.18	2.51	2.87	0.72
1187	0.87	6.40	2.24	2.56	0.64	2.48	0.87	0.99	0.25	3.74	1.31	1.50	0.37	4.57	1.60	1.83	0.46	5.62	1.97	2.25	0.56	7.19	2.51	2.87	0.72
1188	0.87	6.41	2.24	2.56	0.64	2.48	0.87	0.99	0.25	3.74	1.31	1.50	0.37	4.58	1.60	1.83	0.46	5.63	1.97	2.25	0.56	7.19	2.52	2.88	0.72
1189	0.87	6.42	2.25	2.57	0.64	2.48	0.87	0.99	0.25	3.75	1.31	1.50	0.37	4.58	1.60	1.83	0.46	5.64	1.97	2.25	0.56	7.20	2.52	2.88	0.72
1190	0.87	6.43	2.25	2.57	0.64	2.49	0.87	0.99	0.25	3.75	1.31	1.50	0.38	4.59	1.61	1.84	0.46	5.64	1.97	2.26	0.56	7.21	2.52	2.88	0.72
1191	0.87	6.43	2.25	2.57	0.64	2.49	0.87	1.00	0.25	3.76	1.31	1.50	0.38	4.59	1.61	1.84	0.46	5.65	1.98	2.26	0.56	7.22	2.53	2.89	0.72
1192	0.87	6.44	2.25	2.58	0.64	2.49	0.87	1.00	0.25	3.76	1.32	1.50	0.38	4.60	1.61	1.84	0.46	5.65	1.98	2.26	0.57	7.23	2.53	2.89	0.72
1193	0.87	6.45	2.26	2.58	0.64	2.49	0.87	1.00	0.25	3.76	1.32	1.51	0.38	4.60	1.61	1.84	0.46	5.66	1.98	2.26	0.57	7.23	2.53	2.89	0.72
1194	0.87	6.45	2.26	2.58	0.65	2.50	0.87	1.00	0.25	3.77	1.32	1.51	0.38	4.61	1.61	1.84	0.46	5.67	1.98	2.27	0.57	7.24	2.53	2.90	0.72
1195	0.87	6.46	2.26	2.58	0.65	2.50	0.88	1.00	0.25	3.77	1.32	1.51	0.38	4.61	1.61	1.85	0.46	5.67	1.99	2.27	0.57	7.25	2.54	2.90	0.72
1196	0.87	6.47	2.26	2.59	0.65	2.50	0.88	1.00	0.25	3.78	1.32	1.51	0.38	4.62	1.62	1									

UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
1224	0.90	6.63	2.32	2.65	0.66	2.57	0.90	1.03	0.26	3.87	1.36	1.55	0.39	4.73	1.66	1.89	0.47	5.82	2.04	2.33	0.58	7.44	2.60	2.98	0.74
1225	0.90	6.64	2.32	2.65	0.66	2.57	0.90	1.03	0.26	3.87	1.36	1.55	0.39	4.74	1.66	1.89	0.47	5.83	2.04	2.33	0.58	7.44	2.61	2.98	0.74
1226	0.90	6.64	2.32	2.66	0.66	2.57	0.90	1.03	0.26	3.88	1.36	1.55	0.39	4.74	1.66	1.90	0.47	5.83	2.04	2.33	0.58	7.45	2.61	2.98	0.75
1227	0.90	6.65	2.33	2.66	0.66	2.57	0.90	1.03	0.26	3.88	1.36	1.55	0.39	4.74	1.66	1.90	0.47	5.83	2.04	2.33	0.58	7.46	2.61	2.98	0.75
1228	0.90	6.65	2.33	2.66	0.67	2.57	0.90	1.03	0.26	3.88	1.36	1.55	0.39	4.75	1.66	1.90	0.47	5.84	2.04	2.34	0.58	7.46	2.61	2.98	0.75
1229	0.90	6.66	2.33	2.66	0.67	2.58	0.90	1.03	0.26	3.89	1.36	1.55	0.39	4.75	1.66	1.90	0.48	5.84	2.05	2.34	0.58	7.47	2.61	2.99	0.75
1230	0.90	6.66	2.33	2.66	0.67	2.58	0.90	1.03	0.26	3.89	1.36	1.56	0.39	4.76	1.66	1.90	0.48	5.85	2.05	2.34	0.58	7.47	2.62	2.99	0.75
1231	0.90	6.67	2.33	2.67	0.67	2.58	0.90	1.03	0.26	3.89	1.36	1.56	0.39	4.76	1.67	1.90	0.48	5.85	2.05	2.34	0.59	7.48	2.62	2.99	0.75
1232	0.90	6.67	2.33	2.67	0.67	2.58	0.90	1.03	0.26	3.90	1.36	1.56	0.39	4.76	1.67	1.91	0.48	5.86	2.05	2.34	0.59	7.48	2.62	2.99	0.75
1233	0.90	6.68	2.34	2.67	0.67	2.58	0.90	1.03	0.26	3.90	1.36	1.56	0.39	4.77	1.67	1.91	0.48	5.86	2.05	2.34	0.59	7.49	2.62	3.00	0.75
1234	0.90	6.68	2.34	2.67	0.67	2.59	0.90	1.03	0.26	3.90	1.37	1.56	0.39	4.77	1.67	1.91	0.48	5.87	2.05	2.35	0.59	7.50	2.62	3.00	0.75
1235	0.90	6.69	2.34	2.67	0.67	2.59	0.91	1.03	0.26	3.90	1.37	1.56	0.39	4.77	1.67	1.91	0.48	5.87	2.05	2.35	0.59	7.50	2.63	3.00	0.75
1240	0.91	6.71	2.35	2.68	0.67	2.60	0.91	1.04	0.26	3.92	1.37	1.57	0.39	4.79	1.68	1.92	0.48	5.89	2.06	2.36	0.59	7.53	2.63	3.01	0.75
1245	0.91	6.73	2.36	2.69	0.67	2.61	0.91	1.04	0.26	3.93	1.38	1.57	0.39	4.81	1.68	1.92	0.48	5.91	2.07	2.36	0.59	7.55	2.64	3.02	0.76
1250	0.91	6.76	2.36	2.70	0.68	2.61	0.92	1.05	0.26	3.95	1.38	1.58	0.39	4.82	1.69	1.93	0.48	5.93	2.08	2.37	0.59	7.58	2.65	3.03	0.76
1255	0.92	6.78	2.37	2.71	0.68	2.62	0.92	1.05	0.26	3.96	1.39	1.58	0.40	4.84	1.69	1.94	0.48	5.95	2.08	2.38	0.60	7.61	2.66	3.04	0.76
1260	0.92	6.80	2.38	2.72	0.68	2.63	0.92	1.05	0.26	3.97	1.39	1.59	0.40	4.86	1.70	1.94	0.49	5.97	2.09	2.39	0.60	7.63	2.67	3.05	0.76
1265	0.92	6.82	2.39	2.73	0.68	2.64	0.92	1.06	0.26	3.98	1.39	1.59	0.40	4.87	1.70	1.95	0.49	5.99	2.10	2.40	0.60	7.65	2.68	3.06	0.77
1270	0.92	6.84	2.39	2.74	0.68	2.65	0.93	1.06	0.26	4.00	1.40	1.60	0.40	4.89	1.71	1.95	0.49	6.01	2.10	2.40	0.60	7.68	2.69	3.07	0.77
1275	0.93	6.86	2.40	2.75	0.69	2.66	0.93	1.06	0.27	4.01	1.40	1.60	0.40	4.90	1.72	1.96	0.49	6.03	2.11	2.41	0.60	7.70	2.70	3.08	0.77
1280	0.93	6.88	2.41	2.75	0.69	2.66	0.93	1.07	0.27	4.02	1.41	1.61	0.40	4.91	1.72	1.97	0.49	6.04	2.12	2.42	0.60	7.72	2.70	3.09	0.77
1285	0.93	6.90	2.42	2.76	0.69	2.67	0.93	1.07	0.27	4.03	1.41	1.61	0.40	4.93	1.72	1.97	0.49	6.06	2.12	2.42	0.61	7.74	2.71	3.10	0.77
1290	0.94	6.92	2.42	2.77	0.69	2.68	0.94	1.07	0.27	4.04	1.41	1.62	0.40	4.94	1.73	1.98	0.49	6.08	2.13	2.43	0.61	7.77	2.72	3.11	0.78
1295	0.94	6.94	2.43	2.78	0.69	2.69	0.94	1.07	0.27	4.05	1.42	1.62	0.41	4.96	1.73	1.98	0.50	6.09	2.13	2.44	0.61	7.79	2.73	3.12	0.78
1300	0.94	6.96	2.44	2.78	0.70	2.69	0.94	1.08	0.27	4.06	1.42	1.63	0.41	4.97	1.74	1.99	0.50	6.11	2.14	2.44	0.61	7.81	2.73	3.12	0.78
1305	0.94	6.98	2.44	2.79	0.70	2.70	0.95	1.08	0.27	4.08	1.43	1.63	0.41	4.98	1.74	1.99	0.50	6.13	2.14	2.45	0.61	7.83	2.74	3.13	0.78
1310	0.95	7.00	2.45	2.80	0.70	2.71	0.95	1.08	0.27	4.09	1.43	1.63	0.41	5.00	1.75	2.00	0.50	6.14	2.15	2.46	0.61	7.85	2.75	3.14	0.79
1315	0.95	7.01	2.46	2.81	0.70	2.71	0.95	1.09	0.27	4.10	1.43	1.64	0.41	5.01	1.75	2.00	0.50	6.16	2.16	2.46	0.62	7.87	2.75	3.15	0.79
1320	0.95	7.03	2.46	2.81	0.70	2.72	0.95	1.09	0.27	4.11	1.44	1.64	0.41	5.02	1.76	2.01	0.50	6.17	2.16	2.47	0.62	7.89	2.76	3.16	0.79
1325	0.95	7.05	2.47	2.82	0.70	2.73	0.95	1.09	0.27	4.12	1.44	1.65	0.41	5.03	1.76	2.01	0.50	6.19	2.17	2.48	0.62	7.91	2.77	3.16	0.79
1330	0.95	7.07	2.47	2.83	0.71	2.73	0.96	1.09	0.27	4.13	1.44	1.65	0.41	5.05	1.77	2.02	0.50	6.20	2.17	2.48	0.62	7.93	2.78	3.17	0.79
1335	0.96	7.08	2.48	2.83	0.71	2.74	0.96	1.10	0.27	4.14	1.45	1.65	0.41	5.06	1.77	2.02	0.51	6.22	2.18	2.49	0.62	7.95	2.78	3.18	0.79
1340	0.96	7.10	2.49	2.84	0.71	2.75	0.96	1.10	0.27	4.15	1.45	1.66	0.41	5.07	1.77	2.03									

SUBAREA A7 HYETOPGRAPHS
- Per 2006 Los Angeles County Hydrology Manual Appendix A

24 HR ISOHYETS,IN					
50 YR	2 YR	5 YR	10 YR	25 YR	100 YR
7.5	2.9	4.4	5.4	6.6	8.4



UNIT HYETOGRAPH		50 YR - 24 HR					2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
30	0.01	0.08	0.03	0.03	0.01	0.03	0.01	0.01	0.00	0.05	0.02	0.02	0.00	0.06	0.02	0.02	0.01	0.07	0.03	0.03	0.01	0.09	0.03	0.04	0.01	
60	0.02	0.17	0.06	0.07	0.02	0.06	0.02	0.03	0.01	0.10	0.03	0.04	0.01	0.12	0.04	0.05	0.01	0.15	0.05	0.06	0.01	0.19	0.07	0.08	0.02	
90	0.03	0.25	0.09	0.10	0.03	0.10	0.03	0.04	0.01	0.15	0.05	0.06	0.01	0.18	0.06	0.07	0.02	0.22	0.08	0.09	0.02	0.28	0.10	0.11	0.03	
120	0.05	0.34	0.12	0.14	0.03	0.13	0.05	0.05	0.01	0.20	0.07	0.08	0.02	0.24	0.08	0.10	0.02	0.30	0.10	0.12	0.03	0.38	0.13	0.15	0.04	
150	0.06	0.43	0.15	0.17	0.04	0.17	0.06	0.07	0.02	0.25	0.09	0.10	0.02	0.31	0.11	0.12	0.03	0.38	0.13	0.15	0.04	0.48	0.17	0.19	0.05	
180	0.07	0.52	0.18	0.21	0.05	0.20	0.07	0.08	0.02	0.30	0.11	0.12	0.03	0.37	0.13	0.15	0.04	0.45	0.16	0.18	0.05	0.58	0.20	0.23	0.06	
210	0.08	0.61	0.21	0.24	0.06	0.23	0.08	0.09	0.02	0.35	0.12	0.14	0.04	0.43	0.15	0.17	0.04	0.53	0.19	0.21	0.05	0.68	0.24	0.27	0.07	
240	0.09	0.70	0.24	0.28	0.07	0.27	0.09	0.11	0.03	0.41	0.14	0.16	0.04	0.50	0.17	0.20	0.05	0.61	0.21	0.25	0.06	0.78	0.27	0.31	0.08	
270	0.11	0.79	0.28	0.32	0.08	0.31	0.11	0.12	0.03	0.46	0.16	0.18	0.05	0.57	0.20	0.23	0.06	0.70	0.24	0.28	0.07	0.89	0.31	0.36	0.09	
300	0.12	0.89	0.31	0.35	0.09	0.34	0.12	0.14	0.03	0.52	0.18	0.21	0.05	0.63	0.22	0.25	0.06	0.78	0.27	0.31	0.08	0.99	0.35	0.40	0.10	
330	0.13	0.98	0.34	0.39	0.10	0.38	0.13	0.15	0.04	0.57	0.20	0.23	0.06	0.70	0.25	0.28	0.07	0.86	0.30	0.35	0.09	1.10	0.39	0.44	0.11	
360	0.14	1.08	0.38	0.43	0.11	0.42	0.15	0.17	0.04	0.63	0.22	0.25	0.06	0.77	0.27	0.31	0.08	0.95	0.33	0.38	0.09	1.21	0.42	0.49	0.12	

UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
390	0.16	1.18	0.41	0.47	0.12	0.46	0.16	0.18	0.05	0.69	0.24	0.28	0.07	0.84	0.29	0.34	0.08	1.04	0.36	0.41	0.10	1.32	0.46	0.53	0.13
420	0.17	1.28	0.45	0.51	0.13	0.50	0.17	0.20	0.05	0.75	0.26	0.30	0.07	0.92	0.32	0.37	0.09	1.13	0.39	0.45	0.11	1.44	0.50	0.58	0.14
450	0.18	1.39	0.48	0.55	0.14	0.54	0.19	0.21	0.05	0.81	0.28	0.32	0.08	0.99	0.35	0.40	0.10	1.22	0.43	0.49	0.12	1.55	0.54	0.62	0.16
480	0.20	1.49	0.52	0.60	0.15	0.58	0.20	0.23	0.06	0.87	0.30	0.35	0.09	1.06	0.37	0.43	0.11	1.31	0.46	0.52	0.13	1.67	0.59	0.67	0.17
510	0.21	1.60	0.56	0.64	0.16	0.62	0.22	0.25	0.06	0.93	0.33	0.37	0.09	1.14	0.40	0.46	0.11	1.40	0.49	0.56	0.14	1.79	0.63	0.72	0.18
540	0.23	1.71	0.60	0.68	0.17	0.66	0.23	0.26	0.07	1.00	0.35	0.40	0.10	1.22	0.43	0.49	0.12	1.50	0.53	0.60	0.15	1.92	0.67	0.77	0.19
570	0.24	1.82	0.64	0.73	0.18	0.71	0.25	0.28	0.07	1.06	0.37	0.43	0.11	1.30	0.46	0.52	0.13	1.60	0.56	0.64	0.16	2.04	0.72	0.82	0.20
600	0.26	1.94	0.68	0.77	0.19	0.75	0.26	0.30	0.07	1.13	0.40	0.45	0.11	1.38	0.48	0.55	0.14	1.70	0.60	0.68	0.17	2.17	0.76	0.87	0.22
630	0.27	2.06	0.72	0.82	0.21	0.80	0.28	0.32	0.08	1.20	0.42	0.48	0.12	1.47	0.51	0.59	0.15	1.81	0.63	0.72	0.18	2.31	0.81	0.92	0.23
660	0.29	2.18	0.76	0.87	0.22	0.84	0.29	0.34	0.08	1.27	0.45	0.51	0.13	1.55	0.54	0.62	0.16	1.91	0.67	0.76	0.19	2.44	0.86	0.98	0.24
690	0.31	2.30	0.81	0.92	0.23	0.89	0.31	0.36	0.09	1.34	0.47	0.54	0.13	1.64	0.58	0.66	0.16	2.02	0.71	0.81	0.20	2.58	0.90	1.03	0.26
720	0.32	2.43	0.85	0.97	0.24	0.94	0.33	0.38	0.09	1.42	0.50	0.57	0.14	1.74	0.61	0.69	0.17	2.14	0.75	0.85	0.21	2.73	0.96	1.09	0.27
750	0.34	2.57	0.90	1.03	0.26	0.99	0.35	0.40	0.10	1.50	0.52	0.60	0.15	1.83	0.64	0.73	0.18	2.25	0.79	0.90	0.23	2.88	1.01	1.15	0.29
780	0.36	2.70	0.95	1.08	0.27	1.05	0.37	0.42	0.10	1.58	0.55	0.63	0.16	1.93	0.68	0.77	0.19	2.37	0.83	0.95	0.24	3.03	1.06	1.21	0.30
810	0.38	2.85	1.00	1.14	0.28	1.10	0.39	0.44	0.11	1.66	0.58	0.67	0.17	2.03	0.71	0.81	0.20	2.50	0.88	1.00	0.25	3.20	1.12	1.28	0.32
840	0.40	3.00	1.05	1.20	0.30	1.16	0.41	0.46	0.12	1.75	0.61	0.70	0.18	2.14	0.75	0.86	0.21	2.63	0.92	1.05	0.26	3.36	1.18	1.35	0.34
870	0.42	3.15	1.10	1.26	0.32	1.22	0.43	0.49	0.12	1.84	0.64	0.74	0.18	2.25	0.79	0.90	0.23	2.77	0.97	1.11	0.28	3.54	1.24	1.42	0.35
900	0.44	3.32	1.16	1.33	0.33	1.28	0.45	0.51	0.13	1.94	0.68	0.78	0.19	2.37	0.83	0.95	0.24	2.91	1.02	1.17	0.29	3.72	1.30	1.49	0.37
930	0.47	3.49	1.22	1.40	0.35	1.35	0.47	0.54	0.14	2.04	0.71	0.82	0.20	2.49	0.87	1.00	0.25	3.07	1.07	1.23	0.31	3.92	1.37	1.57	0.39
960	0.49	3.68	1.29	1.47	0.37	1.42	0.50	0.57	0.14	2.15	0.75	0.86	0.21	2.63	0.92	1.05	0.26	3.23	1.13	1.29	0.32	4.13	1.44	1.65	0.41
970	0.50	3.74	1.31	1.50	0.37	1.45	0.51	0.58	0.14	2.19	0.77	0.87	0.22	2.67	0.94	1.07	0.27	3.29	1.15	1.31	0.33	4.20	1.47	1.68	0.42
980	0.51	3.81	1.33	1.52	0.38	1.47	0.52	0.59	0.15	2.23	0.78	0.89	0.22	2.72	0.95	1.09	0.27	3.35	1.17	1.34	0.33	4.28	1.50	1.71	0.43
990	0.52	3.88	1.36	1.55	0.39	1.50	0.53	0.60	0.15	2.27	0.79	0.91	0.23	2.77	0.97	1.11	0.28	3.41	1.19	1.36	0.34	4.35	1.52	1.74	0.44
1000	0.53	3.95	1.38	1.58	0.39	1.53	0.53	0.61	0.15	2.31	0.81	0.92	0.23	2.82	0.99	1.13	0.28	3.47	1.21	1.39	0.35	4.43	1.55	1.77	0.44
1010	0.54	4.02	1.41	1.61	0.40	1.56	0.54	0.62	0.16	2.35	0.82	0.94	0.23	2.87	1.01	1.15	0.29	3.53	1.24	1.41	0.35	4.51	1.58	1.80	0.45
1020	0.55	4.10	1.43	1.64	0.41	1.59	0.55	0.63	0.16	2.39	0.84	0.96	0.24	2.93	1.02	1.17	0.29	3.60	1.26	1.44	0.36	4.60	1.61	1.84	0.46
1030	0.56	4.17	1.46	1.67	0.42	1.62	0.57	0.65	0.16	2.44	0.85	0.98	0.24	2.98	1.04	1.									

UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
1164	0.84	6.28	2.20	2.51	0.63	2.43	0.85	0.97	0.24	3.67	1.28	1.47	0.37	4.48	1.57	1.79	0.45	5.51	1.93	2.20	0.55	7.04	2.47	2.82	0.70
1165	0.84	6.29	2.20	2.52	0.63	2.43	0.85	0.97	0.24	3.67	1.29	1.47	0.37	4.49	1.57	1.80	0.45	5.52	1.93	2.21	0.55	7.06	2.47	2.82	0.71
1166	0.84	6.30	2.21	2.52	0.63	2.44	0.85	0.98	0.24	3.68	1.29	1.47	0.37	4.50	1.57	1.80	0.45	5.53	1.94	2.21	0.55	7.07	2.47	2.83	0.71
1167	0.84	6.31	2.21	2.53	0.63	2.44	0.86	0.98	0.24	3.69	1.29	1.47	0.37	4.51	1.58	1.80	0.45	5.54	1.94	2.22	0.55	7.08	2.48	2.83	0.71
1168	0.84	6.32	2.21	2.53	0.63	2.45	0.86	0.98	0.24	3.69	1.29	1.48	0.37	4.52	1.58	1.81	0.45	5.55	1.94	2.22	0.56	7.10	2.48	2.84	0.71
1169	0.84	6.33	2.22	2.53	0.63	2.45	0.86	0.98	0.25	3.70	1.29	1.48	0.37	4.52	1.58	1.81	0.45	5.56	1.95	2.22	0.56	7.11	2.49	2.84	0.71
1170	0.85	6.35	2.22	2.54	0.63	2.46	0.86	0.98	0.25	3.71	1.30	1.48	0.37	4.53	1.59	1.81	0.45	5.57	1.95	2.23	0.56	7.12	2.49	2.85	0.71
1171	0.85	6.36	2.22	2.54	0.64	2.46	0.86	0.98	0.25	3.71	1.30	1.48	0.37	4.54	1.59	1.82	0.45	5.58	1.95	2.23	0.56	7.13	2.50	2.85	0.71
1172	0.85	6.36	2.23	2.55	0.64	2.46	0.86	0.99	0.25	3.72	1.30	1.49	0.37	4.54	1.59	1.82	0.45	5.59	1.96	2.24	0.56	7.14	2.50	2.86	0.71
1173	0.85	6.37	2.23	2.55	0.64	2.47	0.86	0.99	0.25	3.72	1.30	1.49	0.37	4.55	1.59	1.82	0.46	5.60	1.96	2.24	0.56	7.15	2.50	2.86	0.72
1174	0.85	6.38	2.23	2.55	0.64	2.47	0.86	0.99	0.25	3.73	1.30	1.49	0.37	4.56	1.60	1.82	0.46	5.60	1.96	2.24	0.56	7.16	2.51	2.87	0.72
1175	0.85	6.39	2.24	2.56	0.64	2.47	0.87	0.99	0.25	3.73	1.31	1.49	0.37	4.56	1.60	1.83	0.46	5.61	1.96	2.25	0.56	7.17	2.51	2.87	0.72
1176	0.85	6.40	2.24	2.56	0.64	2.48	0.87	0.99	0.25	3.74	1.31	1.50	0.37	4.57	1.60	1.83	0.46	5.62	1.97	2.25	0.56	7.18	2.51	2.87	0.72
1177	0.85	6.41	2.24	2.56	0.64	2.48	0.87	0.99	0.25	3.74	1.31	1.50	0.37	4.58	1.60	1.83	0.46	5.63	1.97	2.25	0.56	7.19	2.52	2.88	0.72
1178	0.86	6.42	2.25	2.57	0.64	2.48	0.87	0.99	0.25	3.75	1.31	1.50	0.37	4.58	1.60	1.83	0.46	5.64	1.97	2.25	0.56	7.20	2.52	2.88	0.72
1179	0.86	6.43	2.25	2.57	0.64	2.49	0.87	1.00	0.25	3.75	1.31	1.50	0.38	4.59	1.61	1.84	0.46	5.64	1.98	2.26	0.56	7.21	2.52	2.88	0.72
1180	0.86	6.44	2.25	2.57	0.64	2.49	0.87	1.00	0.25	3.76	1.32	1.50	0.38	4.60	1.61	1.84	0.46	5.65	1.98	2.26	0.57	7.22	2.53	2.89	0.72
1181	0.86	6.44	2.26	2.58	0.64	2.49	0.87	1.00	0.25	3.76	1.32	1.51	0.38	4.60	1.61	1.84	0.46	5.66	1.98	2.26	0.57	7.23	2.53	2.89	0.72
1182	0.86	6.45	2.26	2.58	0.65	2.50	0.87	1.00	0.25	3.77	1.32	1.51	0.38	4.61	1.61	1.84	0.46	5.67	1.98	2.27	0.57	7.24	2.53	2.90	0.72
1183	0.86	6.46	2.26	2.58	0.65	2.50	0.88	1.00	0.25	3.77	1.32	1.51	0.38	4.61	1.61	1.85	0.46	5.67	1.99	2.27	0.57	7.25	2.54	2.90	0.72
1184	0.86	6.47	2.26	2.59	0.65	2.50	0.88	1.00	0.25	3.78	1.32	1.51	0.38	4.62	1.62	1.85	0.46	5.68	1.99	2.27	0.57	7.26	2.54	2.90	0.73
1185	0.86	6.48	2.27	2.59	0.65	2.51	0.88	1.00	0.25	3.78	1.32	1.51	0.38	4.62	1.62	1.85	0.46	5.69	1.99	2.27	0.57	7.27	2.54	2.91	0.73
1186	0.86	6.48	2.27	2.59	0.65	2.51	0.88	1.00	0.25	3.79	1.33	1.51	0.38	4.63	1.62	1.85	0.46	5.69	1.99	2.28	0.57	7.27	2.55	2.91	0.73
1187	0.87	6.49	2.27	2.60	0.65	2.51	0.88	1.00	0.25	3.79	1.33	1.52	0.38	4.63	1.62	1.85	0.46	5.70	1.99	2.28	0.57	7.28	2.55	2.91	0.73
1188	0.87	6.50	2.27	2.60	0.65	2.51	0.88	1.01	0.25	3.79	1.33	1.52	0.38	4.64	1.62	1.86	0.46	5.71	2.00	2.28	0.57	7.29	2.55	2.92	0.73
1189	0.87	6.51	2.28	2.60	0.65	2.52	0.88	1.01	0.25	3.80	1.33	1.52	0.38	4.64	1.63	1.86	0.46	5.71	2.00	2.28	0.57	7.30	2.55	2.92	0.73
1190	0.87	6.51	2.28	2.61	0.65	2.52	0.88	1.01	0.25	3.80	1.33	1.52	0.38	4.65	1.63	1.86	0.47	5.72	2.00	2.29	0.57	7.31	2.56	2.92	0.73
1191	0.87	6.52	2.28	2.61	0.65	2.52	0.88	1.01	0.25	3.81	1.33	1.52	0.38	4.66	1.63	1.86	0.47	5.72	2.00	2.29	0.57	7.32	2.56	2.93	0.73
1192	0.87	6.53	2.28	2.61	0.65	2.53	0.88	1.01	0.25	3.81	1.33	1.52	0.38	4.66	1.63	1.86	0.47	5.73	2.01	2.29	0.57	7.32	2.56	2.93	0.73
1193	0.87	6.53	2.29	2.61	0.65	2.53	0.89	1.01	0.25	3.82	1.34	1.53	0.38	4.67	1.63	1.87	0.47	5.74	2.01	2.29	0.57	7.33	2.57	2.93	0.73
1194	0.87	6.54	2.29	2.62	0.65	2.53	0.89	1.01	0.25	3.82	1.34	1.53	0.38	4.67	1.63	1.87	0.47	5.74	2.01	2.30	0.57	7.34	2.57	2.94	0.73
1195	0.87	6.55	2.29	2.62	0.65	2.53	0.89	1.01	0.25	3.82	1.34	1.53	0.38	4.67	1.64	1.87	0.47	5.75	2.01	2.30	0.57	7.35	2.57	2.94	0.73
1196	0.87	6.55	2.29	2.62	0.66	2.54	0.89	1.01	0.25	3.83	1.34	1.53	0.38	4.68	1.64	1.87	0.47	5.75	2.01						

UNIT HYETOGRAPH		50 YR - 24 HR				2 YR - 24 HR				5 YR - 24 HR				10 YR - 24 HR				25 YR - 24 HR				100 YR - 24 HR			
	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
Time	1 INCH	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY	4 TH DAY	3 RD DAY	2 ND DAY	1 ST DAY
1224	0.90	6.72	2.35	2.69	0.67	2.60	0.91	1.04	0.26	3.92	1.37	1.57	0.39	4.80	1.68	1.92	0.48	5.90	2.06	2.36	0.59	7.54	2.64	3.02	0.75
1225	0.90	6.72	2.35	2.69	0.67	2.60	0.91	1.04	0.26	3.93	1.37	1.57	0.39	4.80	1.68	1.92	0.48	5.90	2.07	2.36	0.59	7.55	2.64	3.02	0.75
1226	0.90	6.73	2.36	2.69	0.67	2.60	0.91	1.04	0.26	3.93	1.38	1.57	0.39	4.81	1.68	1.92	0.48	5.91	2.07	2.36	0.59	7.55	2.64	3.02	0.76
1227	0.90	6.74	2.36	2.69	0.67	2.61	0.91	1.04	0.26	3.93	1.38	1.57	0.39	4.81	1.68	1.92	0.48	5.91	2.07	2.37	0.59	7.56	2.64	3.02	0.76
1228	0.90	6.74	2.36	2.70	0.67	2.61	0.91	1.04	0.26	3.94	1.38	1.57	0.39	4.81	1.68	1.93	0.48	5.92	2.07	2.37	0.59	7.56	2.65	3.03	0.76
1229	0.90	6.75	2.36	2.70	0.67	2.61	0.91	1.04	0.26	3.94	1.38	1.58	0.39	4.82	1.69	1.93	0.48	5.92	2.07	2.37	0.59	7.57	2.65	3.03	0.76
1230	0.90	6.75	2.36	2.70	0.68	2.61	0.91	1.04	0.26	3.94	1.38	1.58	0.39	4.82	1.69	1.93	0.48	5.93	2.07	2.37	0.59	7.57	2.65	3.03	0.76
1231	0.90	6.76	2.36	2.70	0.68	2.61	0.92	1.05	0.26	3.95	1.38	1.58	0.39	4.82	1.69	1.93	0.48	5.93	2.08	2.37	0.59	7.58	2.65	3.03	0.76
1232	0.90	6.76	2.37	2.70	0.68	2.62	0.92	1.05	0.26	3.95	1.38	1.58	0.39	4.83	1.69	1.93	0.48	5.94	2.08	2.37	0.59	7.59	2.65	3.03	0.76
1233	0.90	6.77	2.37	2.71	0.68	2.62	0.92	1.05	0.26	3.95	1.38	1.58	0.40	4.83	1.69	1.93	0.48	5.94	2.08	2.38	0.59	7.59	2.66	3.04	0.76
1234	0.90	6.77	2.37	2.71	0.68	2.62	0.92	1.05	0.26	3.95	1.38	1.58	0.40	4.83	1.69	1.93	0.48	5.94	2.08	2.38	0.59	7.60	2.66	3.04	0.76
1235	0.90	6.78	2.37	2.71	0.68	2.62	0.92	1.05	0.26	3.96	1.38	1.58	0.40	4.84	1.69	1.94	0.48	5.95	2.08	2.38	0.59	7.60	2.66	3.04	0.76
1240	0.91	6.80	2.38	2.72	0.68	2.63	0.92	1.05	0.26	3.97	1.39	1.59	0.40	4.86	1.70	1.94	0.49	5.97	2.09	2.39	0.60	7.63	2.67	3.05	0.76
1245	0.91	6.82	2.39	2.73	0.68	2.64	0.92	1.06	0.26	3.99	1.39	1.59	0.40	4.87	1.71	1.95	0.49	5.99	2.10	2.40	0.60	7.66	2.68	3.06	0.77
1250	0.91	6.85	2.40	2.74	0.68	2.65	0.93	1.06	0.26	4.00	1.40	1.60	0.40	4.89	1.71	1.96	0.49	6.01	2.10	2.40	0.60	7.68	2.69	3.07	0.77
1255	0.92	6.87	2.40	2.75	0.69	2.66	0.93	1.06	0.27	4.01	1.40	1.60	0.40	4.91	1.72	1.96	0.49	6.03	2.11	2.41	0.60	7.71	2.70	3.08	0.77
1260	0.92	6.89	2.41	2.76	0.69	2.67	0.93	1.07	0.27	4.02	1.41	1.61	0.40	4.92	1.72	1.97	0.49	6.05	2.12	2.42	0.61	7.73	2.71	3.09	0.77
1265	0.92	6.91	2.42	2.77	0.69	2.68	0.94	1.07	0.27	4.04	1.41	1.62	0.40	4.94	1.73	1.97	0.49	6.07	2.12	2.43	0.61	7.76	2.71	3.10	0.78
1270	0.92	6.93	2.43	2.77	0.69	2.68	0.94	1.07	0.27	4.05	1.42	1.62	0.40	4.95	1.73	1.98	0.50	6.09	2.13	2.44	0.61	7.78	2.72	3.11	0.78
1275	0.93	6.96	2.43	2.78	0.70	2.69	0.94	1.08	0.27	4.06	1.42	1.62	0.41	4.97	1.74	1.99	0.50	6.11	2.14	2.44	0.61	7.80	2.73	3.12	0.78
1280	0.93	6.98	2.44	2.79	0.70	2.70	0.94	1.08	0.27	4.07	1.43	1.63	0.41	4.98	1.74	1.99	0.50	6.12	2.14	2.45	0.61	7.83	2.74	3.13	0.78
1285	0.93	7.00	2.45	2.80	0.70	2.71	0.95	1.08	0.27	4.09	1.43	1.63	0.41	5.00	1.75	2.00	0.50	6.14	2.15	2.46	0.61	7.85	2.75	3.14	0.78
1290	0.94	7.02	2.46	2.81	0.70	2.72	0.95	1.09	0.27	4.10	1.43	1.64	0.41	5.01	1.75	2.00	0.50	6.16	2.16	2.46	0.62	7.87	2.76	3.15	0.79
1295	0.94	7.04	2.46	2.81	0.70	2.72	0.95	1.09	0.27	4.11	1.44	1.64	0.41	5.02	1.76	2.01	0.50	6.18	2.16	2.47	0.62	7.89	2.76	3.16	0.79
1300	0.94	7.05	2.47	2.82	0.71	2.73	0.96	1.09	0.27	4.12	1.44	1.65	0.41	5.04	1.76	2.01	0.50	6.19	2.17	2.48	0.62	7.91	2.77	3.17	0.79
1305	0.94	7.07	2.48	2.83	0.71	2.74	0.96	1.09	0.27	4.13	1.45	1.65	0.41	5.05	1.77	2.02	0.50	6.21	2.17	2.48	0.62	7.94	2.78	3.17	0.79
1310	0.95	7.09	2.48	2.84	0.71	2.74	0.96	1.10	0.27	4.14	1.45	1.66	0.41	5.06	1.77	2.03	0.51	6.23	2.18	2.49	0.62	7.96	2.78	3.18	0.80
1315	0.95	7.11	2.49	2.84	0.71	2.75	0.96	1.10	0.28	4.15	1.45	1.66	0.42	5.08	1.78	2.03	0.51	6.24	2.18	2.50	0.62	7.98	2.79	3.19	0.80
1320	0.95	7.13	2.49	2.85	0.71	2.76	0.97	1.10	0.28	4.16	1.46	1.66	0.42	5.09	1.78	2.04	0.51	6.26	2.19	2.50	0.63	8.00	2.80	3.20	0.80
1325	0.95	7.14	2.50	2.86	0.71	2.77	0.97	1.11	0.28	4.17	1.46	1.67	0.42	5.10	1.79	2.04	0.51	6.27	2.20	2.51	0.63	8.02	2.81	3.21	0.80
1330	0.95	7.16	2.51	2.86	0.72	2.77	0.97	1.11	0.28	4.18	1.46	1.67	0.42	5.11	1.79	2.05	0.51	6.29	2.20	2.52	0.63	8.04	2.81	3.21	0.80
1335	0.96	7.18	2.51	2.87	0.72	2.78	0.97	1.11	0.28	4.19	1.47	1.68	0.42	5.13	1.79	2.05	0.51	6.30	2.21	2.52	0.63	8.06	2.82	3.22	0.81
1340	0.96	7.20	2.52	2.88	0.72	2.79	0.97	1.11	0.28	4.20	1.47	1.68	0.42	5.14	1.80	2.06	0.51								

WVF1 STA 1407+45.fm8 Report

Label	Solve For	Friction Method	Roughness Coefficient	Channel Slope (ft/ft)	Water Surface Elevation (ft)	Elevation Range	Discharge (ft ³ /s)	Flow Area (ft ²)	Wetted Perimeter (ft)	Hydraulic Radius (ft)	Top Width (ft)
STA 0+10	Normal Depth	Manning Formula	0.080	0.02764	1015.92	1012.69 to 1018.04 ft	138.00	34.92	24.12	1.45	22.83
STA 0+20	Normal Depth	Manning Formula	0.080	0.02764	1015.21	1012.02 to 1017.95 ft	138.00	34.00	22.56	1.51	20.98
STA 0+30	Normal Depth	Manning Formula	0.080	0.02764	1014.96	1010.94 to 1015.76 ft	138.00	35.59	25.29	1.41	21.62
STA 0+40	Normal Depth	Manning Formula	0.080	0.10784	1011.34	1008.69 to 1014.08 ft	138.00	17.34	11.64	1.49	9.33
STA 0+50	Normal Depth	Manning Formula	0.080	0.10784	1009.61	1007.82 to 1013.02 ft	138.00	20.60	17.89	1.15	17.02
STA 0+60	Normal Depth	Manning Formula	0.080	0.10784	1008.42	1006.19 to 1010.07 ft	138.00	19.08	14.79	1.29	13.92
STA 0+68	Normal Depth	Manning Formula	0.080	0.10784	1007.12	1005.79 to 1008.26 ft	138.00	22.46	22.21	1.01	21.72

Normal Depth (ft)	Critical Depth (ft)	Critical Slope (ft/ft)	Velocity (ft/s)	Velocity Head (ft)	Specific Energy (ft)	Froude Number	Flow Type	Notes	Messages
3.23	2.60	0.09448	3.95	0.24	3.47	0.56	Subcritical		
3.19	2.52	0.09441	4.06	0.26	3.44	0.56	Subcritical		
4.02	3.13	0.10577	3.88	0.23	4.26	0.53	Subcritical		
2.65	2.69	0.10167	7.96	0.98	3.63	1.03	Supercritical		
1.79	1.85	0.09251	6.70	0.70	2.49	1.07	Supercritical		
2.23	2.32	0.08998	7.23	0.81	3.04	1.09	Supercritical		
1.33	1.38	0.09403	6.15	0.59	1.92	1.07	Supercritical		

METROPOLITAN WATER DISTRICT

5/30/2018 3:51:27 PM

Bentley Systems, Inc. Haestad Methods Solution Center
 27 Siemens Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666

Bentley FlowMaster V8i (SELECTseries 1) [08.11.01.03]

Page 1 of 1

Worksheet for STA 0+10

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02764	ft/ft
Discharge	138.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+18	1016.37
0+01	1012.69
0+02	1013.94
0+06	1015.59
0+10	1017.44
0+15	1018.04

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+18, 1016.37)	(0+15, 1018.04)	0.080

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	3.23	ft
Elevation Range	1012.69 to 1018.04 ft	
Flow Area	34.92	ft ²
Wetted Perimeter	24.12	ft
Hydraulic Radius	1.45	ft
Top Width	22.83	ft
Normal Depth	3.23	ft

METROPOLITAN WATER DISTRICT

Worksheet for STA 0+10

Results

Critical Depth	2.60	ft
Critical Slope	0.09448	ft/ft
Velocity	3.95	ft/s
Velocity Head	0.24	ft
Specific Energy	3.47	ft
Froude Number	0.56	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.23	ft
Critical Depth	2.60	ft
Channel Slope	0.02764	ft/ft
Critical Slope	0.09448	ft/ft

METROPOLITAN WATER DISTRICT

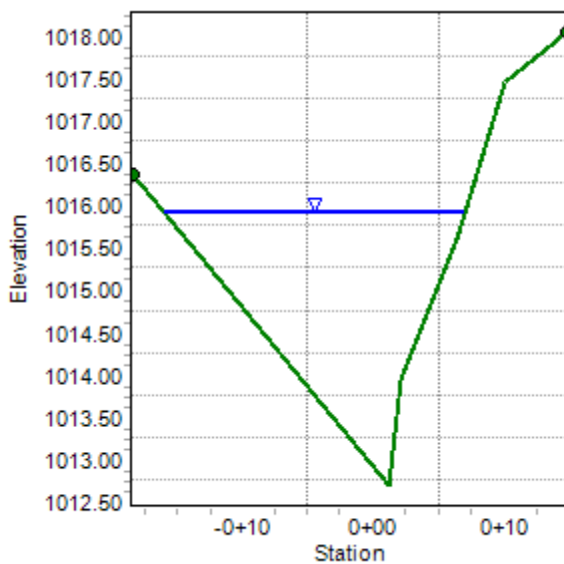
Cross Section for STA 0+10

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02764	ft/ft
Normal Depth	3.23	ft
Discharge	138.00	ft ³ /s

Cross Section Image

METROPOLITAN WATER DISTRICT

Worksheet for STA 0+20

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02764	ft/ft
Discharge	138.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+25	1017.29
-0+04	1013.54
0+04	1012.02
0+06	1013.33
0+09	1016.34
0+22	1017.95

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+25, 1017.29)	(0+22, 1017.95)	0.080

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	3.19	ft
Elevation Range	1012.02 to 1017.95 ft	
Flow Area	34.00	ft ²
Wetted Perimeter	22.56	ft
Hydraulic Radius	1.51	ft
Top Width	20.98	ft
Normal Depth	3.19	ft

METROPOLITAN WATER DISTRICT

Worksheet for STA 0+20

Results

Critical Depth	2.52	ft
Critical Slope	0.09441	ft/ft
Velocity	4.06	ft/s
Velocity Head	0.26	ft
Specific Energy	3.44	ft
Froude Number	0.56	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.19	ft
Critical Depth	2.52	ft
Channel Slope	0.02764	ft/ft
Critical Slope	0.09441	ft/ft

METROPOLITAN WATER DISTRICT

Cross Section for STA 0+20

Project Description

Friction Method

Manning Formula

Solve For

Normal Depth

Input Data

Channel Slope

0.02764 ft/ft

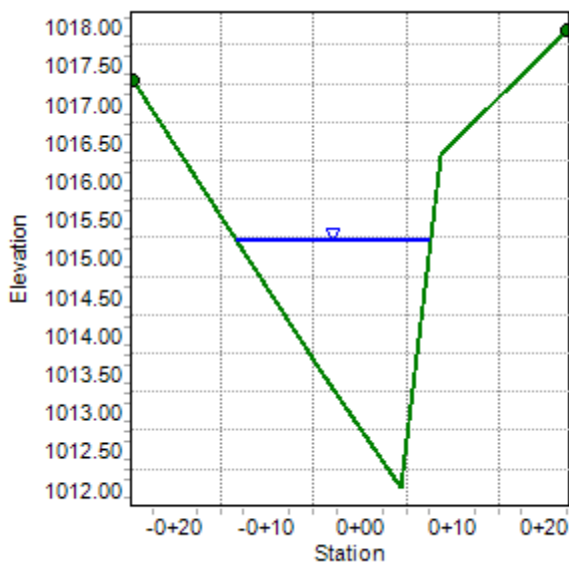
Normal Depth

3.19 ft

Discharge

138.00 ft³/s

Cross Section Image



METROPOLITAN WATER DISTRICT

Bentley Systems, Inc. Haestad Methods Software Bentley Master V8i (SELECTseries 1) [08.11.01.03]
5/30/2018 3:56:33 PM 27 Siemons Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666 Page 1 of 1

Worksheet for STA 0+30

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02764	ft/ft
Discharge	138.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+27	1015.76
-0+13	1014.87
-0+09	1014.52
-0+06	1013.92
-0+02	1013.07
0+03	1011.99
0+05	1010.94
0+06	1011.15
0+07	1015.16
0+10	1015.45

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+27, 1015.76)	(0+10, 1015.45)	0.080

Options

Current Roughness weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	4.02	ft
Elevation Range	1010.94 to 1015.76 ft	
Flow Area	35.59	ft ²

METROPOLITAN WATER DISTRICT

Worksheet for STA 0+30

Results

Wetted Perimeter	25.29	ft
Hydraulic Radius	1.41	ft
Top Width	21.62	ft
Normal Depth	4.02	ft
Critical Depth	3.13	ft
Critical Slope	0.10577	ft/ft
Velocity	3.88	ft/s
Velocity Head	0.23	ft
Specific Energy	4.26	ft
Froude Number	0.53	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.02	ft
Critical Depth	3.13	ft
Channel Slope	0.02764	ft/ft
Critical Slope	0.10577	ft/ft

METROPOLITAN WATER DISTRICT

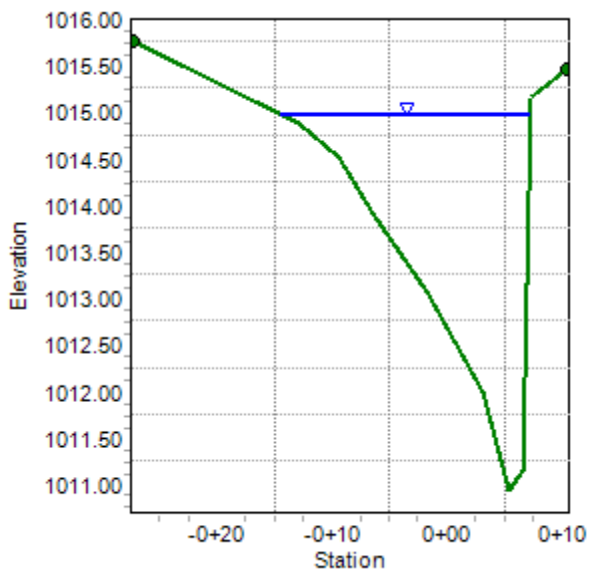
Cross Section for STA 0+30

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02764	ft/ft
Normal Depth	4.02	ft
Discharge	138.00	ft ³ /s

Cross Section Image

METROPOLITAN WATER DISTRICT

5/30/2018 3:57:22 PM 27 Siemons Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666 Bentley Systems, Inc. Haestad Methods Solution Center Bentley FlowMaster V8i (SELECTseries 1) [08.11.01.03] Page 1 of 1

Worksheet for STA 0+40

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.10784	ft/ft
Discharge	138.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+11	1013.03
-0+05	1012.41
-0+02	1008.69
0+00	1008.97
0+04	1009.44
0+08	1014.08

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+11, 1013.03)	(0+08, 1014.08)	0.080

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	2.65	ft
Elevation Range	1008.69 to 1014.08 ft	
Flow Area	17.34	ft ²
Wetted Perimeter	11.64	ft
Hydraulic Radius	1.49	ft
Top Width	9.33	ft
Normal Depth	2.65	ft

METROPOLITAN WATER DISTRICT

Worksheet for STA 0+40

Results

Critical Depth	2.69	ft
Critical Slope	0.10167	ft/ft
Velocity	7.96	ft/s
Velocity Head	0.98	ft
Specific Energy	3.63	ft
Froude Number	1.03	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.65	ft
Critical Depth	2.69	ft
Channel Slope	0.10784	ft/ft
Critical Slope	0.10167	ft/ft

METROPOLITAN WATER DISTRICT

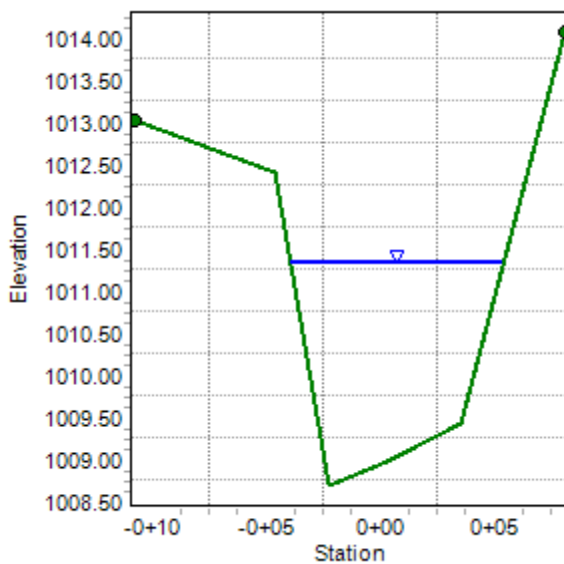
Cross Section for STA 0+40

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.10784	ft/ft
Normal Depth	2.65	ft
Discharge	138.00	ft ³ /s

Cross Section Image

METROPOLITAN WATER DISTRICT

Worksheet for STA 0+50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.10784	ft/ft
Discharge	138.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+13	1010.25
-0+12	1009.06
-0+11	1009.09
-0+08	1008.35
-0+01	1007.88
0+01	1007.82
0+07	1011.32
0+09	1013.02

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+13, 1010.25)	(0+09, 1013.02)	0.080

Options

Current Roughness weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	1.79	ft
Elevation Range	1007.82 to 1013.02 ft	
Flow Area	20.60	ft ²
Wetted Perimeter	17.89	ft
Hydraulic Radius	1.15	ft

METROPOLITAN WATER DISTRICT

Worksheet for STA 0+50

Results

Top Width	17.02	ft
Normal Depth	1.79	ft
Critical Depth	1.85	ft
Critical Slope	0.09251	ft/ft
Velocity	6.70	ft/s
Velocity Head	0.70	ft
Specific Energy	2.49	ft
Froude Number	1.07	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.79	ft
Critical Depth	1.85	ft
Channel Slope	0.10784	ft/ft
Critical Slope	0.09251	ft/ft

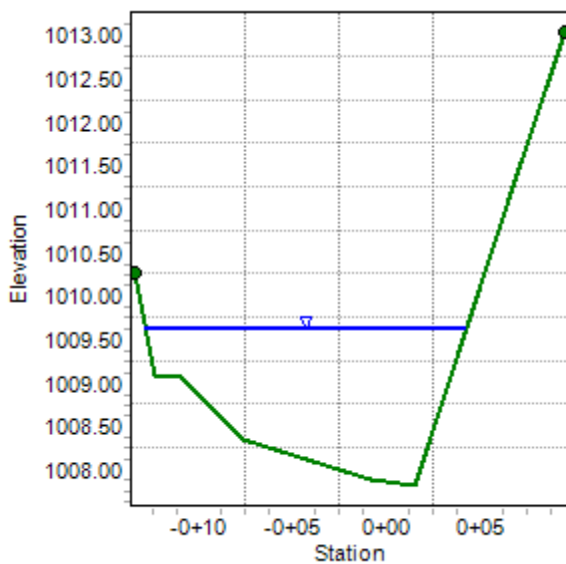
Cross Section for STA 0+50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.10784	ft/ft
Normal Depth	1.79	ft
Discharge	138.00	ft ³ /s

Cross Section Image

METROPOLITAN WATER DISTRICT

Worksheet for STA 0+60

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.10784	ft/ft
Discharge	138.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+09	1010.07
-0+04	1007.74
-0+03	1006.63
-0+02	1006.39
-0+01	1006.19
0+01	1006.33
0+06	1007.63
0+09	1008.97

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+09, 1010.07)	(0+09, 1008.97)	0.080

Options

Current Roughness weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	2.23	ft
Elevation Range	1006.19 to 1010.07 ft	
Flow Area	19.08	ft ²
Wetted Perimeter	14.79	ft
Hydraulic Radius	1.29	ft

METROPOLITAN WATER DISTRICT

Worksheet for STA 0+60

Results

Top Width	13.92	ft
Normal Depth	2.23	ft
Critical Depth	2.32	ft
Critical Slope	0.08998	ft/ft
Velocity	7.23	ft/s
Velocity Head	0.81	ft
Specific Energy	3.04	ft
Froude Number	1.09	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.23	ft
Critical Depth	2.32	ft
Channel Slope	0.10784	ft/ft
Critical Slope	0.08998	ft/ft

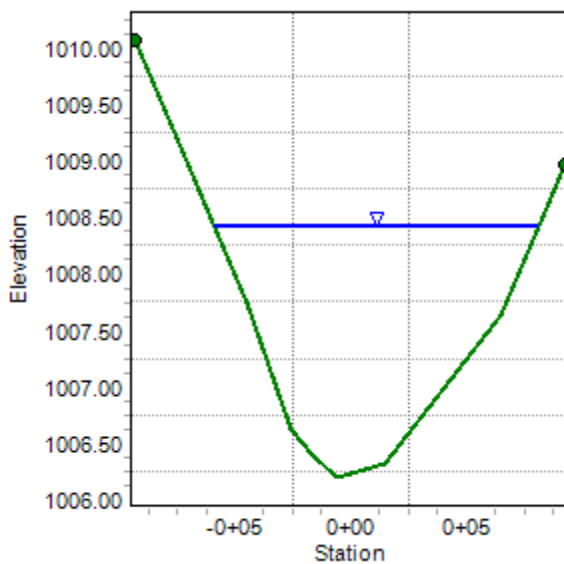
Cross Section for STA 0+60

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.10784	ft/ft
Normal Depth	2.23	ft
Discharge	138.00	ft ³ /s

Cross Section Image

METROPOLITAN WATER DISTRICT

5/30/2018 4:00:14 PM 27 Siemons Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666 Bentley Systems, Inc. Haestad Methods Solution Center Master V8i (SELECTseries 1) [08.11.01.03] Page 1 of 1

Worksheet for STA 0+68

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.10784	ft/ft
Discharge	138.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+11	1008.26
-0+08	1007.21
-0+06	1005.88
0+02	1005.79
0+06	1005.85
0+09	1006.27
0+17	1007.76

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+11, 1008.26)	(0+17, 1007.76)	0.080

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	1.33	ft
Elevation Range	1005.79 to 1008.26 ft	
Flow Area	22.46	ft ²
Wetted Perimeter	22.21	ft
Hydraulic Radius	1.01	ft
Top Width	21.72	ft

METROPOLITAN WATER DISTRICT

Worksheet for STA 0+68

Results

Normal Depth	1.33	ft
Critical Depth	1.38	ft
Critical Slope	0.09403	ft/ft
Velocity	6.15	ft/s
Velocity Head	0.59	ft
Specific Energy	1.92	ft
Froude Number	1.07	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.33	ft
Critical Depth	1.38	ft
Channel Slope	0.10784	ft/ft
Critical Slope	0.09403	ft/ft

METROPOLITAN WATER DISTRICT

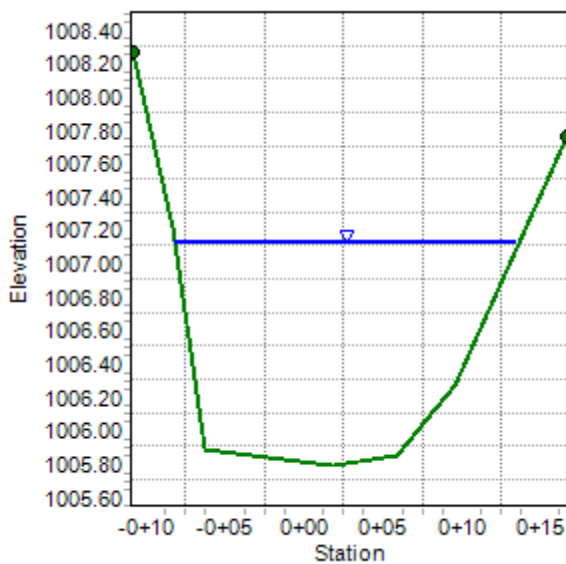
Cross Section for STA 0+68

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.10784	ft/ft
Normal Depth	1.33	ft
Discharge	138.00	ft ³ /s

Cross Section Image

METROPOLITAN WATER DISTRICT

5/30/2018 4:00:56 PM	Bentley Systems, Inc. Haestad Methods Solution Center 27 Siemons Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666	Bentley FlowMaster V8i (SELECTseries 1) [08.11.01.03] Page 1 of 1
----------------------	---	--

WVF1 STA 1416+33.fm8 Report

Label	Solve For	Friction Method	Roughness Coefficient
STA 0+10	Normal Depth	Manning Formula	0.080
STA 0+20	Normal Depth	Manning Formula	0.080
STA 0+30	Normal Depth	Manning Formula	0.080
STA 0+40	Normal Depth	Manning Formula	0.080
STA 0+50	Normal Depth	Manning Formula	0.080
STA 0+60	Normal Depth	Manning Formula	0.080
STA 0+70	Normal Depth	Manning Formula	0.080
STA 0+80	Normal Depth	Manning Formula	0.080
STA 0+90	Normal Depth	Manning Formula	0.080
STA 1+00	Normal Depth	Manning Formula	0.080
STA 1+10	Normal Depth	Manning Formula	0.080
STA 1+18	Normal Depth	Manning Formula	0.080

Channel Slope (ft/ft)	Water Surface Elevation (ft)	Elevation Range	Discharge (ft ³ /s)
0.15151	1093.28	1089.30 to 1104.20 ft	337.00
0.15151	1091.17	1087.20 to 1106.30 ft	337.00
0.15151	1089.49	1086.20 to 1107.00 ft	337.00
0.15151	1086.99	1084.60 to 1106.10 ft	337.00
0.15151	1084.36	1081.50 to 1096.10 ft	337.00
0.32350	1082.16	1079.10 to 1092.00 ft	337.00
0.05333	1082.48	1078.50 to 1097.90 ft	337.00
0.04885	1081.40	1077.10 to 1084.30 ft	337.00
0.30612	1078.74	1075.80 to 1087.70 ft	337.00
0.30612	1076.28	1073.50 to 1086.30 ft	337.00
0.30612	1074.05	1071.30 to 1085.20 ft	337.00
0.30612	1073.78	1070.30 to 1084.60 ft	337.00

METROPOLITAN WATER DISTRICT

Bentley Systems, Inc. Haestad Methods SolBridge Flow Master V8i (SELECTseries 1) [08.11.01.03]

5/31/2018 6:52:35 AM

27 Siemens Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666

Page 1 of 4

WVF1 STA 1416+33.fm8 Report

Flow Area (ft ²)	Wetted Perimeter (ft)	Hydraulic Radius (ft)	Top Width (ft)
31.45	17.43	1.80	15.02
32.63	19.11	1.71	17.07
33.77	20.82	1.62	19.49
34.22	21.53	1.59	20.42
32.25	18.56	1.74	17.26
23.56	14.96	1.57	13.43
48.26	23.23	2.08	21.57
51.88	26.06	1.99	24.19
25.52	17.51	1.46	16.17
25.23	17.02	1.48	15.95
24.67	16.10	1.53	14.97
24.56	15.92	1.54	14.01

Normal Depth (ft)	Critical Depth (ft)	Critical Slope (ft/ft)	Velocity (ft/s)
3.98	4.45	0.08571	10.72
3.97	4.38	0.08437	10.33
3.29	3.72	0.08235	9.98
2.39	2.78	0.08077	9.85
2.86	3.32	0.08030	10.45
3.06	4.09	0.08241	14.30
3.98	3.66	0.08084	6.98
4.30	3.92	0.08291	6.50
2.94	3.82	0.08207	13.21
2.78	3.68	0.08061	13.36
2.75	3.67	0.08040	13.66
3.48	4.43	0.08440	13.72

METROPOLITAN WATER DISTRICT

WVF1 STA 1416+33.fm8 Report

Velocity Head (ft)	Specific Energy (ft)	Froude Number	Flow Type
1.78	5.76	1.31	Supercritical
1.66	5.63	1.32	Supercritical
1.55	4.84	1.34	Supercritical
1.51	3.90	1.34	Supercritical
1.70	4.56	1.35	Supercritical
3.18	6.24	1.90	Supercritical
0.76	4.73	0.82	Subcritical
0.66	4.96	0.78	Subcritical
2.71	5.65	1.85	Supercritical
2.77	5.55	1.87	Supercritical
2.90	5.65	1.88	Supercritical
2.93	6.40	1.83	Supercritical

Notes

Messages

WVF1 STA 1416+33.fm8 Report

METROPOLITAN WATER DISTRICT

Bentley Systems, Inc. Haestad Methods SolBridge Flow Master V8i (SELECTseries 1) [08.11.01.03]

Worksheet for STA 0+10

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.15151	ft/ft
Discharge	337.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+35	1104.20
-0+03	1091.20
-0+03	1090.20
0+00	1089.80
0+02	1089.30
0+08	1094.10
0+13	1098.10
0+21	1104.20

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+35, 1104.20)	(0+21, 1104.20)	0.080

Options

Current Roughness weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	3.98	ft
Elevation Range	1089.30 to 1104.20 ft	
Flow Area	31.45	ft ²
Wetted Perimeter	17.43	ft
Hydraulic Radius	1.80	ft

METROPOLITAN WATER DISTRICT

 Worksheet for STA 0+10

Results

Top Width	15.02	ft
Normal Depth	3.98	ft
Critical Depth	4.45	ft
Critical Slope	0.08571	ft/ft
Velocity	10.72	ft/s
Velocity Head	1.78	ft
Specific Energy	5.76	ft
Froude Number	1.31	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.98	ft
Critical Depth	4.45	ft
Channel Slope	0.15151	ft/ft
Critical Slope	0.08571	ft/ft

 METROPOLITAN WATER DISTRICT

Cross Section for STA 0+10

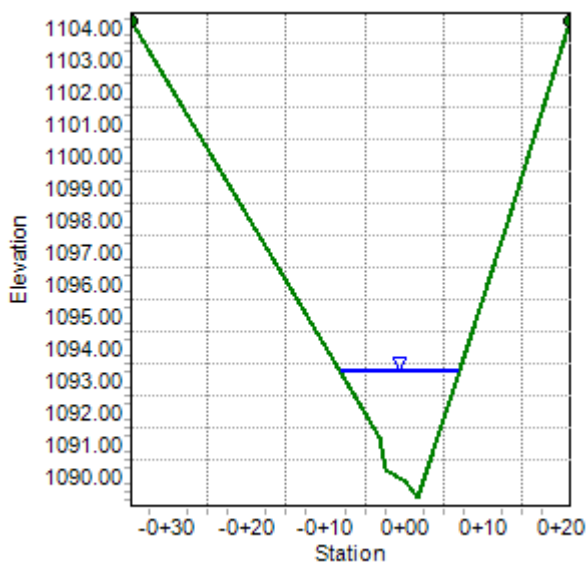
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.15151	ft/ft
Normal Depth	3.98	ft
Discharge	337.00	ft ³ /s

Cross Section Image



METROPOLITAN WATER DISTRICT

Worksheet for STA 0+20

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.15151	ft/ft
Discharge	337.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+43	1106.30
-0+13	1093.80
-0+11	1091.10
-0+10	1091.00
0+00	1087.60
0+01	1087.20
0+09	1093.80
0+19	1099.70
0+27	1105.30

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+43, 1106.30)	(0+27, 1105.30)	0.080

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	3.97	ft
Elevation Range	1087.20 to 1106.30 ft	
Flow Area	32.63	ft ²
Wetted Perimeter	19.11	ft

METROPOLITAN WATER DISTRICT

 Worksheet for STA 0+20

Results

Hydraulic Radius	1.71	ft
Top Width	17.07	ft
Normal Depth	3.97	ft
Critical Depth	4.38	ft
Critical Slope	0.08437	ft/ft
Velocity	10.33	ft/s
Velocity Head	1.66	ft
Specific Energy	5.63	ft
Froude Number	1.32	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.97	ft
Critical Depth	4.38	ft
Channel Slope	0.15151	ft/ft
Critical Slope	0.08437	ft/ft

 METROPOLITAN WATER DISTRICT

Cross Section for STA 0+20

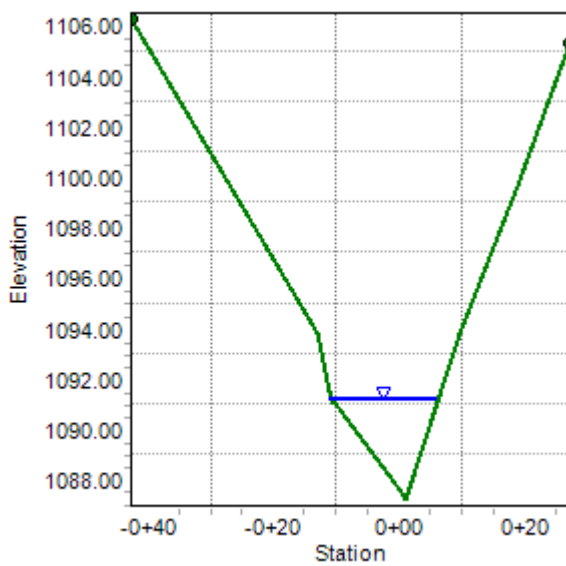
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.15151	ft/ft
Normal Depth	3.97	ft
Discharge	337.00	ft ³ /s

Cross Section Image



METROPOLITAN WATER DISTRICT

Worksheet for STA 0+30

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.15151	ft/ft
Discharge	337.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+29	1099.60
-0+21	1096.00
-0+19	1094.80
-0+17	1093.30
-0+14	1089.70
-0+10	1089.40
0+01	1086.20
0+04	1086.50
0+13	1092.30
0+34	1107.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+29, 1099.60)	(0+34, 1107.00)	0.080

Options

Current Roughness weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	3.29	ft
Elevation Range	1086.20 to 1107.00 ft	
Flow Area	33.77	ft ²

METROPOLITAN WATER DISTRICT

 Worksheet for STA 0+30

Results

Wetted Perimeter	20.82	ft
Hydraulic Radius	1.62	ft
Top Width	19.49	ft
Normal Depth	3.29	ft
Critical Depth	3.72	ft
Critical Slope	0.08235	ft/ft
Velocity	9.98	ft/s
Velocity Head	1.55	ft
Specific Energy	4.84	ft
Froude Number	1.34	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.29	ft
Critical Depth	3.72	ft
Channel Slope	0.15151	ft/ft
Critical Slope	0.08235	ft/ft

 METROPOLITAN WATER DISTRICT

Cross Section for STA 0+30

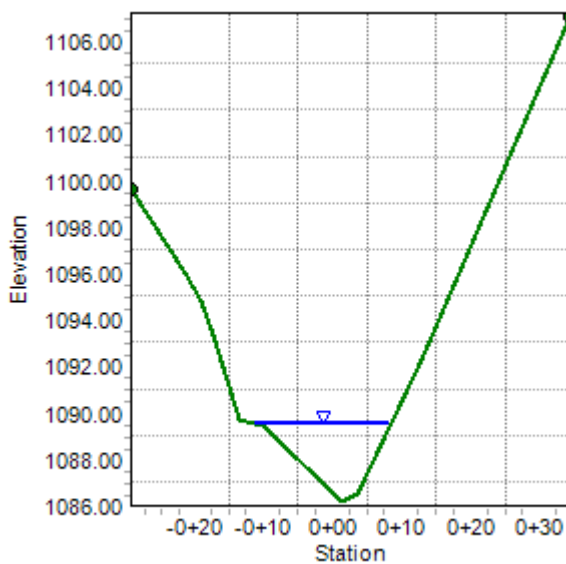
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.15151	ft/ft
Normal Depth	3.29	ft
Discharge	337.00	ft ³ /s

Cross Section Image



METROPOLITAN WATER DISTRICT

Worksheet for STA 0+40

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.15151	ft/ft
Discharge	337.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+42	1104.60
-0+26	1097.00
-0+18	1092.70
-0+11	1086.70
-0+10	1085.70
0+01	1084.70
0+01	1084.60
0+07	1085.30
0+08	1085.70
0+37	1106.10

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+42, 1104.60)	(0+37, 1106.10)	0.080

Options

Current Roughness weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	2.39	ft
Elevation Range	1084.60 to 1106.10 ft	
Flow Area	34.22	ft ²

METROPOLITAN WATER DISTRICT

 Worksheet for STA 0+40

Results

Wetted Perimeter	21.53	ft
Hydraulic Radius	1.59	ft
Top Width	20.42	ft
Normal Depth	2.39	ft
Critical Depth	2.78	ft
Critical Slope	0.08077	ft/ft
Velocity	9.85	ft/s
Velocity Head	1.51	ft
Specific Energy	3.90	ft
Froude Number	1.34	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.39	ft
Critical Depth	2.78	ft
Channel Slope	0.15151	ft/ft
Critical Slope	0.08077	ft/ft

 METROPOLITAN WATER DISTRICT

Cross Section for STA 0+40

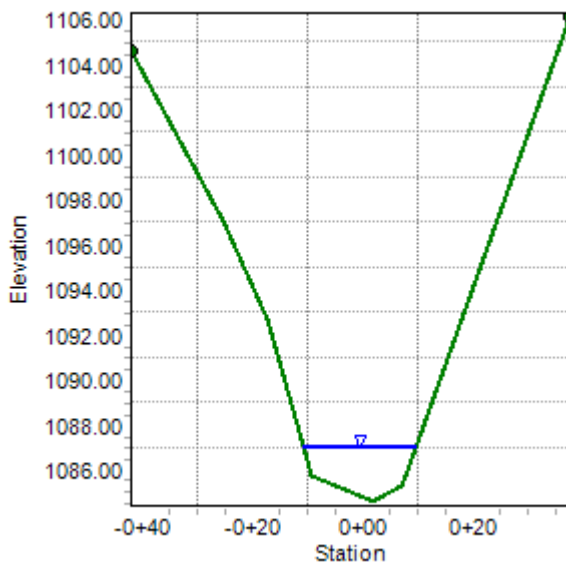
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.15151	ft/ft
Normal Depth	2.39	ft
Discharge	337.00	ft ³ /s

Cross Section Image



METROPOLITAN WATER DISTRICT

Worksheet for STA 0+50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.15151	ft/ft
Discharge	337.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+23	1094.30
-0+16	1090.80
-0+11	1086.30
-0+05	1081.90
0+00	1081.50
0+03	1081.80
0+12	1085.50
0+37	1096.10

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+23, 1094.30)	(0+37, 1096.10)	0.080

Options

Current Roughness weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	2.86	ft
Elevation Range	1081.50 to 1096.10 ft	
Flow Area	32.25	ft ²
Wetted Perimeter	18.56	ft
Hydraulic Radius	1.74	ft

METROPOLITAN WATER DISTRICT

 Worksheet for STA 0+50

Results

Top Width	17.26	ft
Normal Depth	2.86	ft
Critical Depth	3.32	ft
Critical Slope	0.08030	ft/ft
Velocity	10.45	ft/s
Velocity Head	1.70	ft
Specific Energy	4.56	ft
Froude Number	1.35	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.86	ft
Critical Depth	3.32	ft
Channel Slope	0.15151	ft/ft
Critical Slope	0.08030	ft/ft

 METROPOLITAN WATER DISTRICT

Cross Section for STA 0+50

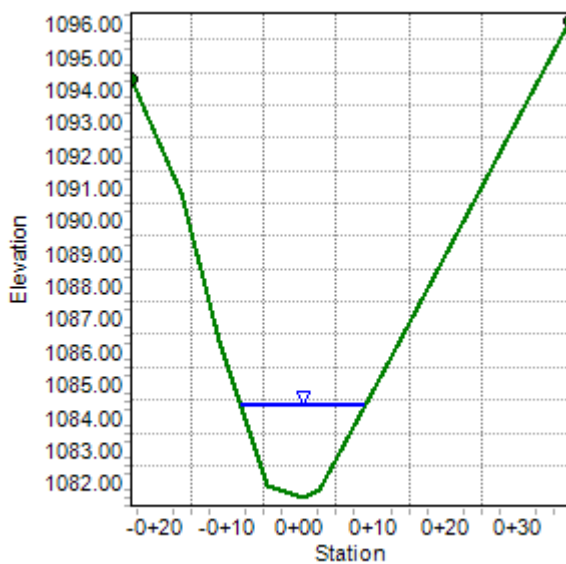
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.15151	ft/ft
Normal Depth	2.86	ft
Discharge	337.00	ft ³ /s

Cross Section Image



METROPOLITAN WATER DISTRICT

Worksheet for STA 0+60

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.32350	ft/ft
Discharge	337.00	ft³/s
Section Definitions		

Station (ft)	Elevation (ft)
-0+20	1092.00
-0+16	1089.20
-0+14	1088.00
-0+01	1079.40
0+02	1079.10
0+12	1083.60
0+16	1085.30
0+17	1086.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+20, 1092.00)	(0+17, 1086.00)	0.080

Options

Current Roughness weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth		3.06	ft
Elevation Range	1079.10 to 1092.00 ft		
Flow Area		23.56	ft²
Wetted Perimeter		14.96	ft
Hydraulic Radius		1.57	ft

METROPOLITAN WATER DISTRICT

 Worksheet for STA 0+60

Results

Top Width	13.43	ft
Normal Depth	3.06	ft
Critical Depth	4.09	ft
Critical Slope	0.08241	ft/ft
Velocity	14.30	ft/s
Velocity Head	3.18	ft
Specific Energy	6.24	ft
Froude Number	1.90	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.06	ft
Critical Depth	4.09	ft
Channel Slope	0.32350	ft/ft
Critical Slope	0.08241	ft/ft

 METROPOLITAN WATER DISTRICT

Cross Section for STA 0+60

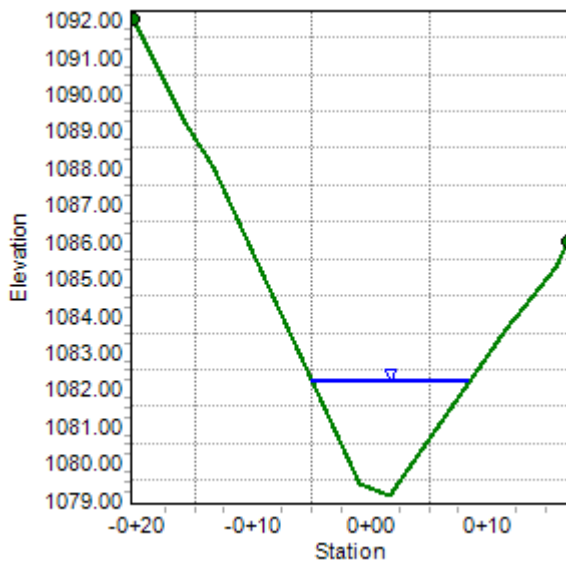
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.32350	ft/ft
Normal Depth	3.06	ft
Discharge	337.00	ft ³ /s

Cross Section Image



METROPOLITAN WATER DISTRICT

Worksheet for STA 0+70

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.05333	ft/ft
Discharge	337.00	ft³/s
Section Definitions		

Station (ft)	Elevation (ft)
-0+17	1087.70
-0+05	1081.30
-0+03	1080.60
0+08	1078.50
0+11	1080.20
0+18	1084.20
0+37	1097.90

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+17, 1087.70)	(0+37, 1097.90)	0.080

Options

Current Roughness weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth		3.98	ft
Elevation Range	1078.50 to 1097.90 ft		
Flow Area		48.26	ft²
Wetted Perimeter		23.23	ft
Hydraulic Radius		2.08	ft
Top Width		21.57	ft

METROPOLITAN WATER DISTRICT

Worksheet for STA 0+70

Results

Normal Depth	3.98	ft
Critical Depth	3.66	ft
Critical Slope	0.08084	ft/ft
Velocity	6.98	ft/s
Velocity Head	0.76	ft
Specific Energy	4.73	ft
Froude Number	0.82	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.98	ft
Critical Depth	3.66	ft
Channel Slope	0.05333	ft/ft
Critical Slope	0.08084	ft/ft

METROPOLITAN WATER DISTRICT

Cross Section for STA 0+70

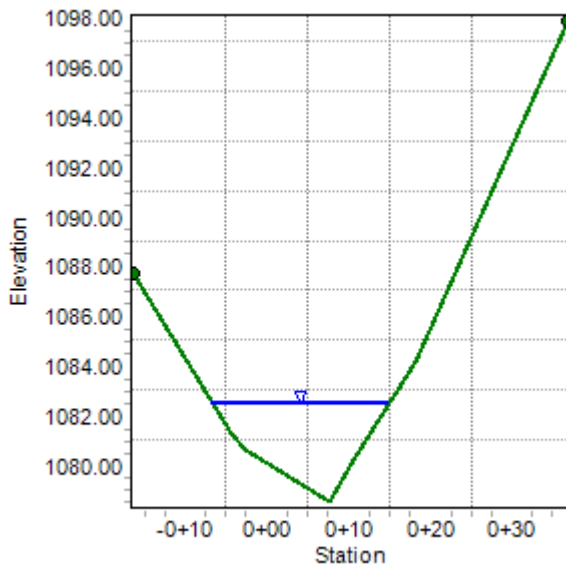
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.05333	ft/ft
Normal Depth	3.98	ft
Discharge	337.00	ft ³ /s

Cross Section Image



METROPOLITAN WATER DISTRICT

Bentley Systems, Inc. Haestad Methods Software Center
5/31/2018 7:00:58 AM 27 Siemons Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666
Bentley ProjectWise Master V8i (SELECTseries 1) [08.11.01.03]
Page 1 of 1

Worksheet for STA 0+80

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.04885	ft/ft
Discharge	337.00	ft³/s
Section Definitions		

Station (ft)	Elevation (ft)
-0+13	1084.30
-0+05	1080.70
0+00	1079.70
0+04	1078.50
0+09	1077.10
0+09	1077.70
0+12	1078.40
0+18	1081.60
0+21	1083.90

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+13, 1084.30)	(0+21, 1083.90)	0.080

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth		4.30	ft
Elevation Range	1077.10 to 1084.30 ft		
Flow Area		51.88	ft²
Wetted Perimeter		26.06	ft

METROPOLITAN WATER DISTRICT

5/31/2018 7:01:20 AM Bentley Systems, Inc. Haestad Methods Software Bentley Master V8i (SELECTseries 1) [08.11.01.03] 27 Siemens Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666 Page 1 of 2

 Worksheet for STA 0+80

Results

Hydraulic Radius	1.99	ft
Top Width	24.19	ft
Normal Depth	4.30	ft
Critical Depth	3.92	ft
Critical Slope	0.08291	ft/ft
Velocity	6.50	ft/s
Velocity Head	0.66	ft
Specific Energy	4.96	ft
Froude Number	0.78	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.30	ft
Critical Depth	3.92	ft
Channel Slope	0.04885	ft/ft
Critical Slope	0.08291	ft/ft

 METROPOLITAN WATER DISTRICT

Cross Section for STA 0+80

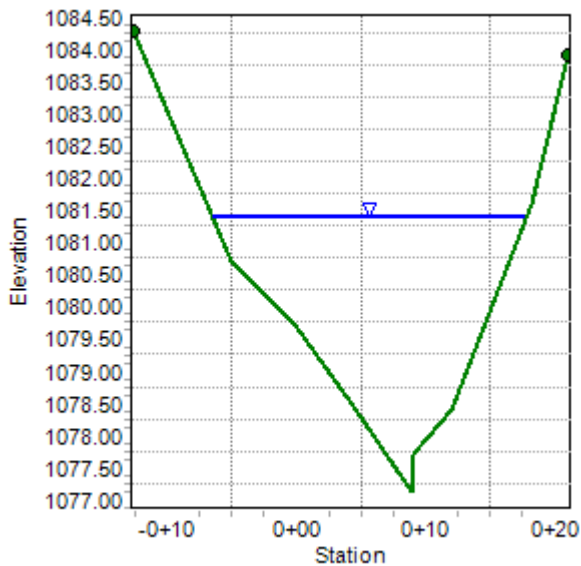
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.04885	ft/ft
Normal Depth	4.30	ft
Discharge	337.00	ft ³ /s

Cross Section Image



METROPOLITAN WATER DISTRICT

Worksheet for STA 0+90

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.30612	ft/ft
Discharge	337.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+14	1082.20
-0+05	1079.40
-0+02	1078.60
0+03	1077.20
0+10	1075.80
0+17	1081.30
0+26	1087.70

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+14, 1082.20)	(0+26, 1087.70)	0.080

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	2.94	ft
Elevation Range	1075.80 to 1087.70	ft
Flow Area	25.52	ft ²
Wetted Perimeter	17.51	ft
Hydraulic Radius	1.46	ft
Top Width	16.17	ft

METROPOLITAN WATER DISTRICT

 Worksheet for STA 0+90

Results

Normal Depth	2.94	ft
Critical Depth	3.82	ft
Critical Slope	0.08207	ft/ft
Velocity	13.21	ft/s
Velocity Head	2.71	ft
Specific Energy	5.65	ft
Froude Number	1.85	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.94	ft
Critical Depth	3.82	ft
Channel Slope	0.30612	ft/ft
Critical Slope	0.08207	ft/ft

 METROPOLITAN WATER DISTRICT

Cross Section for STA 0+90

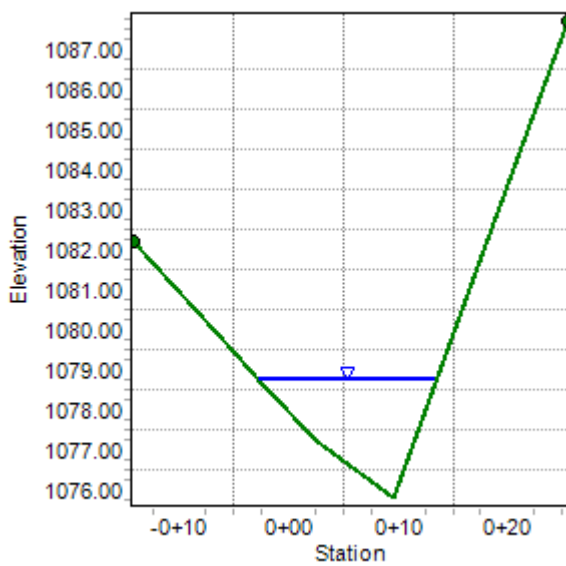
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.30612	ft/ft
Normal Depth	2.94	ft
Discharge	337.00	ft ³ /s

Cross Section Image



METROPOLITAN WATER DISTRICT

Worksheet for STA 1+00

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.30612	ft/ft
Discharge	337.00	ft³/s
Section Definitions		

Station (ft)	Elevation (ft)
-0+15	1080.90
-0+11	1078.70
-0+10	1078.00
0+02	1074.10
0+05	1073.50
0+08	1074.00
0+11	1075.70
0+14	1077.90
0+24	1086.30

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+15, 1080.90)	(0+24, 1086.30)	0.080

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth		2.78	ft
Elevation Range	1073.50 to 1086.30 ft		
Flow Area		25.23	ft²
Wetted Perimeter		17.02	ft

METROPOLITAN WATER DISTRICT

 Worksheet for STA 1+00

Results

Hydraulic Radius	1.48	ft
Top Width	15.95	ft
Normal Depth	2.78	ft
Critical Depth	3.68	ft
Critical Slope	0.08061	ft/ft
Velocity	13.36	ft/s
Velocity Head	2.77	ft
Specific Energy	5.55	ft
Froude Number	1.87	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.78	ft
Critical Depth	3.68	ft
Channel Slope	0.30612	ft/ft
Critical Slope	0.08061	ft/ft

 METROPOLITAN WATER DISTRICT

Cross Section for STA 1+00

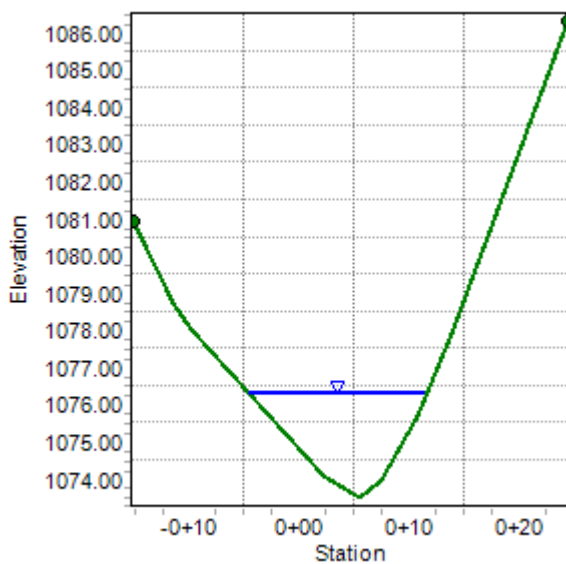
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.30612	ft/ft
Normal Depth	2.78	ft
Discharge	337.00	ft ³ /s

Cross Section Image



METROPOLITAN WATER DISTRICT

Worksheet for STA 1+10

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.30612	ft/ft
Discharge	337.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
-0+23	1085.20
-0+16	1080.50
-0+15	1079.20
-0+14	1078.80
-0+05	1073.10
-0+04	1073.00
0+01	1071.30
0+05	1072.00
0+11	1075.30
0+17	1079.30
0+20	1081.90

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+23, 1085.20)	(0+20, 1081.90)	0.080

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	2.75	ft
Elevation Range	1071.30 to 1085.20 ft	

METROPOLITAN WATER DISTRICT

 Worksheet for STA 1+10

Results

Flow Area	24.67	ft ²
Wetted Perimeter	16.10	ft
Hydraulic Radius	1.53	ft
Top Width	14.97	ft
Normal Depth	2.75	ft
Critical Depth	3.67	ft
Critical Slope	0.08040	ft/ft
Velocity	13.66	ft/s
Velocity Head	2.90	ft
Specific Energy	5.65	ft
Froude Number	1.88	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.75	ft
Critical Depth	3.67	ft
Channel Slope	0.30612	ft/ft
Critical Slope	0.08040	ft/ft

 METROPOLITAN WATER DISTRICT

Cross Section for STA 1+10

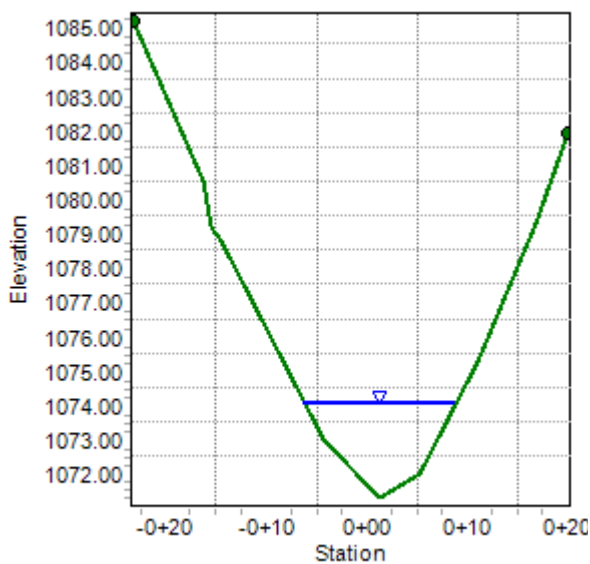
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.30612	ft/ft
Normal Depth	2.75	ft
Discharge	337.00	ft ³ /s

Cross Section Image



METROPOLITAN WATER DISTRICT

Worksheet for STA 1+18

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.30612	ft/ft
Discharge	337.00	ft³/s
Section Definitions		

Station (ft)	Elevation (ft)
-0+23	1084.60
-0+07	1073.70
-0+05	1072.50
0+01	1070.30
0+03	1072.20
0+13	1076.10
0+18	1080.00
0+20	1081.20

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+23, 1084.60)	(0+20, 1081.20)	0.080

Options

Current Roughness weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth		3.48	ft
Elevation Range	1070.30 to 1084.60 ft		
Flow Area		24.56	ft²
Wetted Perimeter		15.92	ft
Hydraulic Radius		1.54	ft

METROPOLITAN WATER DISTRICT

Bentley Systems, Inc. Haestad Methods Software
5/31/2018 7:04:39 AM 27 Siemons Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666 Page 1 of 2

 Worksheet for STA 1+18

Results

Top Width	14.01	ft
Normal Depth	3.48	ft
Critical Depth	4.43	ft
Critical Slope	0.08440	ft/ft
Velocity	13.72	ft/s
Velocity Head	2.93	ft
Specific Energy	6.40	ft
Froude Number	1.83	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.48	ft
Critical Depth	4.43	ft
Channel Slope	0.30612	ft/ft
Critical Slope	0.08440	ft/ft

 METROPOLITAN WATER DISTRICT

Cross Section for STA 1+18

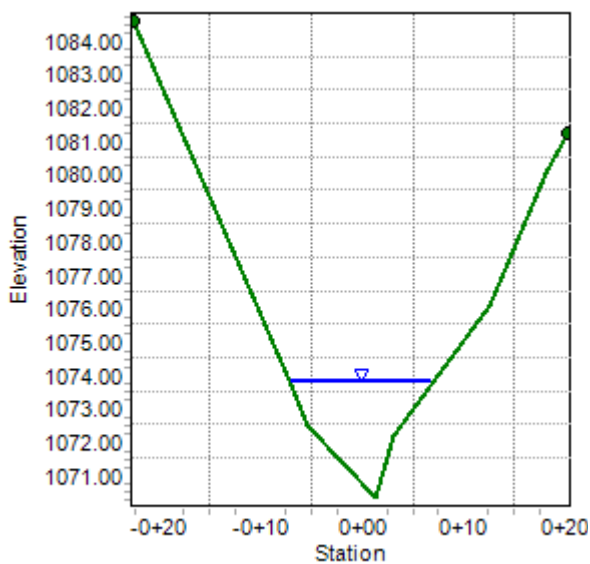
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.30612	ft/ft
Normal Depth	3.48	ft
Discharge	337.00	ft ³ /s

Cross Section Image



METROPOLITAN WATER DISTRICT

5/31/2018 7:05:02 AM 27 Siemons Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666 Bentley Systems, Inc. Haestad Methods Solution Center ~~Bentley~~ MicroStation V8i (SELECTseries 1) [08.11.01.03] Page 1 of 1

Appendix B

Culvert Crossing Calculations

HY-8 Culvert Analysis Report

WVF1 STA 1407+45

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 28 cfs

Design Flow: 138 cfs

Maximum Flow: 162 cfs

Table 1 - Summary of Culvert Flows at Crossing: WVF STA 1407+45

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1013.93	28.00	28.00	0.00	1
1014.21	41.40	41.40	0.00	1
1014.52	54.80	54.80	0.00	1
1014.80	68.20	68.20	0.00	1
1015.06	81.60	81.60	0.00	1
1015.32	95.00	95.00	0.00	1
1015.59	108.40	108.40	0.00	1
1015.87	121.80	121.80	0.00	1
1016.17	135.20	135.20	0.00	1
1016.23	138.00	138.00	0.00	1
1016.85	162.00	162.00	0.00	1
1018.04	199.91	199.91	0.00	Overtopping

Rating Curve Plot for Crossing: WVF STA 1407+45

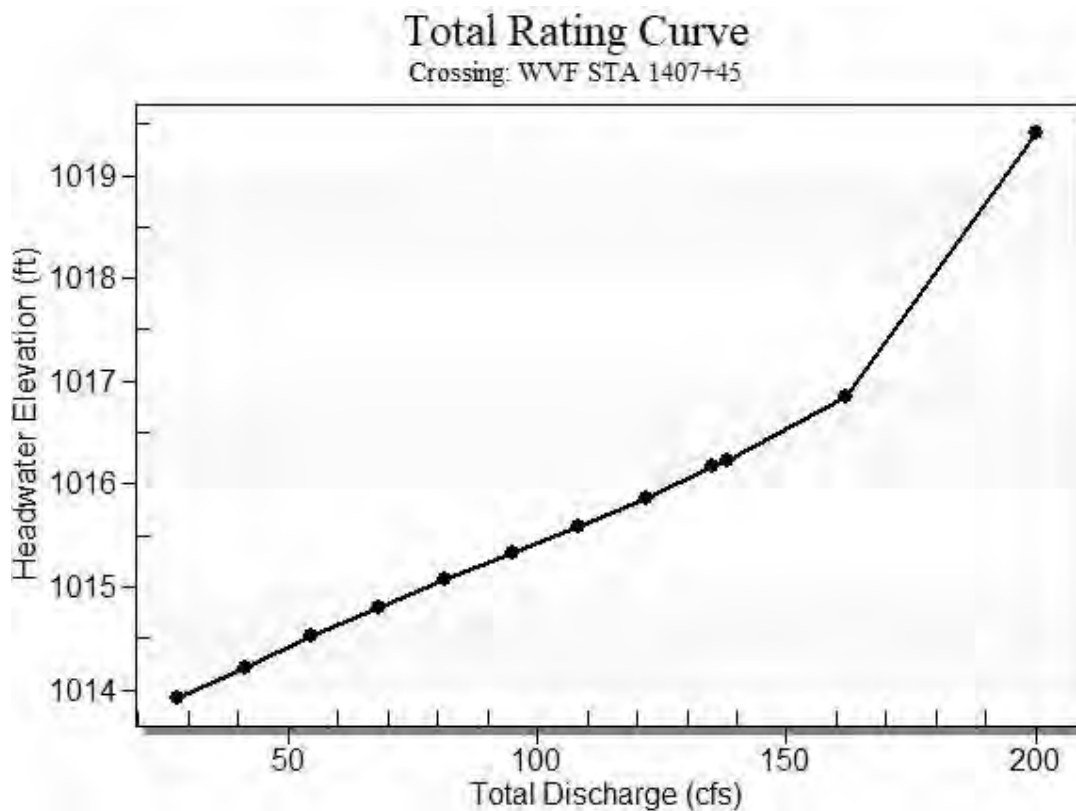


Table 2 - Culvert Summary Table: Culvert 1

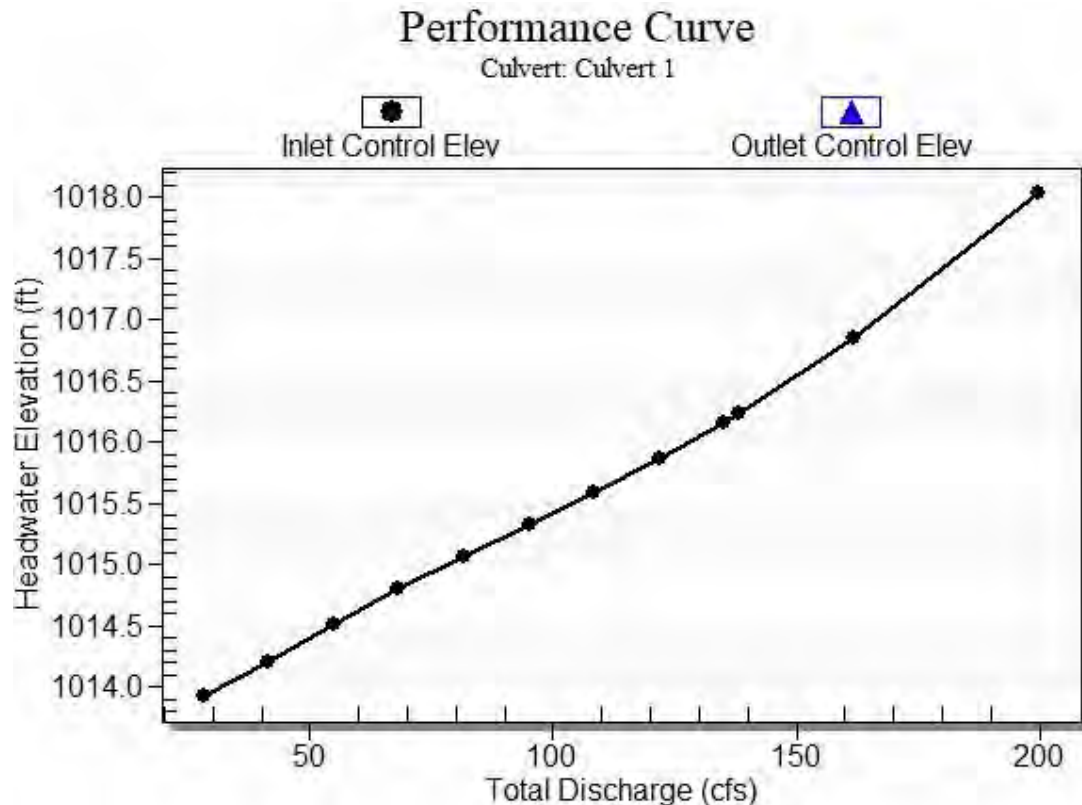
Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
28.00	28.00	1013.93	1.198	0.0*	1-S2n	0.373	0.962	0.373	0.572	17.733	3.601
41.40	41.40	1014.21	1.476	0.0*	1-S2n	0.451	1.180	0.507	0.701	16.936	4.129
54.80	54.80	1014.52	1.785	0.0*	1-S2n	0.517	1.369	0.592	0.814	17.806	4.544
68.20	68.20	1014.80	2.069	0.0*	1-S2n	0.575	1.534	0.671	0.914	18.529	4.890
81.60	81.60	1015.06	2.335	0.0*	1-S2n	0.629	1.683	0.745	1.006	19.135	5.189
95.00	95.00	1015.32	2.594	0.0*	1-S2n	0.679	1.823	0.817	1.091	19.652	5.453
108.40	108.40	1015.59	2.858	0.0*	1-S2n	0.725	1.950	0.886	1.170	19.996	5.690
121.80	121.80	1015.87	3.137	0.0*	5-S2n	0.770	2.073	0.952	1.245	20.329	5.906
135.20	135.20	1016.17	3.436	0.0*	5-S2n	0.812	2.184	1.016	1.317	20.643	6.105
138.00	138.00	1016.23	3.502	0.0*	5-S2n	0.820	2.207	1.029	1.331	20.712	6.144
162.00	162.00	1016.85	4.118	0.0*	5-S2n	0.891	2.384	1.136	1.450	21.248	6.457

* Full Flow Headwater elevation is below inlet invert.

Straight Culvert

Inlet Elevation (invert): 1012.73 ft, Outlet Elevation (invert): 1005.93 ft

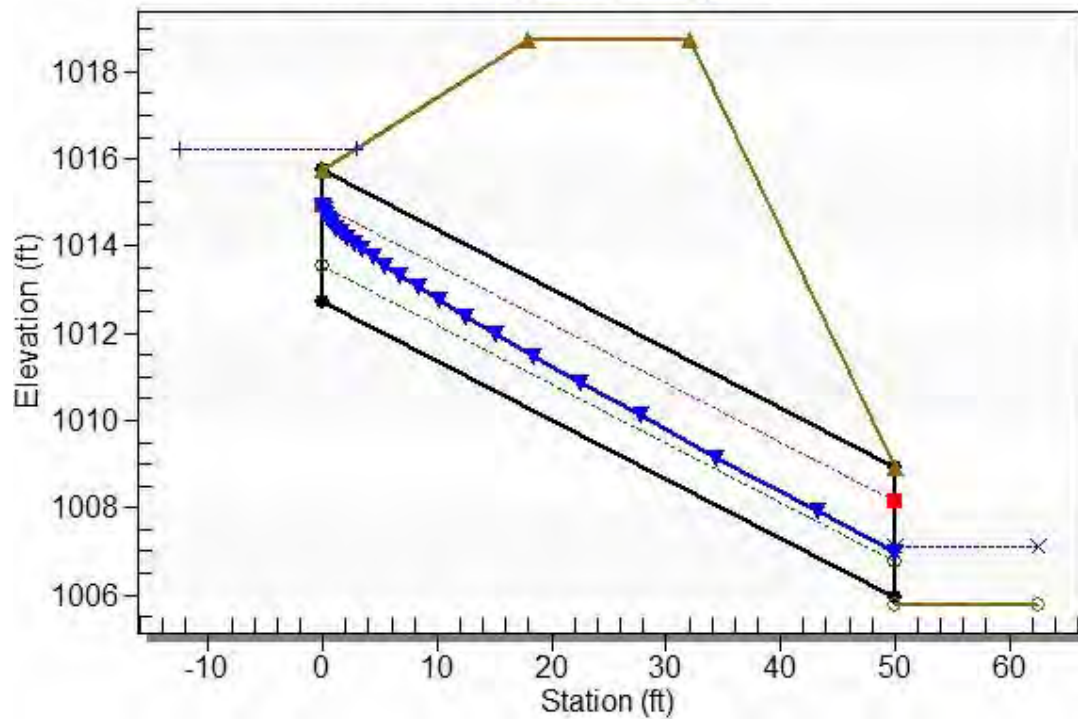
Culvert Length: 50.46 ft, Culvert Slope: 0.1360

Culvert Performance Curve Plot: Culvert 1

Water Surface Profile Plot for Culvert: Culvert 1

Crossing - WVF STA 1407+45, Design Discharge - 138.0 cfs

Culvert - Culvert 1, Culvert Discharge - 138.0 cfs

**Site Data - Culvert 1**

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1012.73 ft

Outlet Station: 50.00 ft

Outlet Elevation: 1005.93 ft

Number of Barrels: 3

Culvert Data Summary - Culvert 1

Barrel Shape: Circular

Barrel Diameter: 3.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

Table 3 - Downstream Channel Rating Curve (Crossing: WVF STA 1407+45)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
28.00	1006.36	0.57	3.60	3.85	0.94
41.40	1006.49	0.70	4.13	4.72	0.97
54.80	1006.60	0.81	4.54	5.47	0.99
68.20	1006.70	0.91	4.89	6.15	1.01
81.60	1006.80	1.01	5.19	6.76	1.02
95.00	1006.88	1.09	5.45	7.34	1.04
108.40	1006.96	1.17	5.69	7.87	1.05
121.80	1007.04	1.25	5.91	8.38	1.05
135.20	1007.11	1.32	6.10	8.86	1.06
138.00	1007.12	1.33	6.14	8.95	1.06
162.00	1007.24	1.45	6.46	9.75	1.08

Tailwater Channel Data - WVF STA 1407+45

Tailwater Channel Option: Irregular Channel

Channel Slope: 0.1078

User Defined Channel Cross-Section:

Coord No.	Station (ft)	Elevation (ft)	Manning's n
1	-10.77	1008.26	0.0800
2	-8.32	1007.21	0.0800
3	-6.30	1005.88	0.0800
4	1.89	1005.79	0.0800
5	5.94	1005.85	0.0800
6	9.49	1006.27	0.0800
7	16.58	1007.76	0.0800

Roadway Data for Crossing: WVF STA 1407+45

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Irregular Roadway Cross-Section:

Coord No.	Station (ft)	Elevation (ft)
0	0.00	1018.75
1	26.78	1018.20
2	41.40	1018.04
3	126.78	1023.21

Roadway Surface: Paved

Roadway Top Width: 14.00 ft

HY-8 Culvert Analysis Report

WVF1 STA 1416+33

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 72 cfs

Design Flow: 337 cfs

Maximum Flow: 393 cfs

Table 1 - Summary of Culvert Flows at Crossing: WVF1 STA 1416+33

Headwater Elevation (ft)	Total Discharge (cfs)	Box Culvert Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1080.83	72.00	72.00	0.00	1
1081.25	104.10	104.10	0.00	1
1081.67	136.20	136.20	0.00	1
1082.07	168.30	168.30	0.00	1
1082.44	200.40	200.40	0.00	1
1082.81	232.50	232.50	0.00	1
1083.18	264.60	264.60	0.00	1
1083.55	296.70	296.70	0.00	1
1083.94	328.80	328.80	0.00	1
1084.04	337.00	337.00	0.00	1
1084.78	393.00	393.00	0.00	1
1086.08	477.83	477.83	0.00	Overtopping

Rating Curve Plot for Crossing: WVF1 STA 1416+33

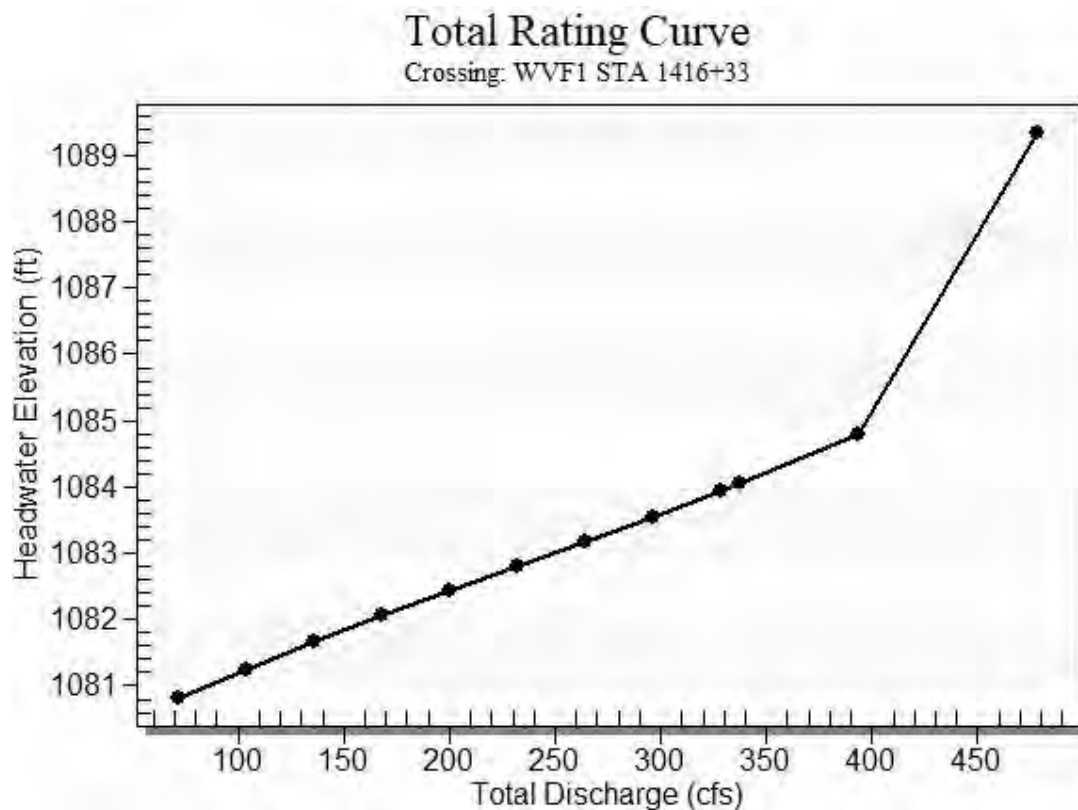


Table 2 - Culvert Summary Table: Box Culvert

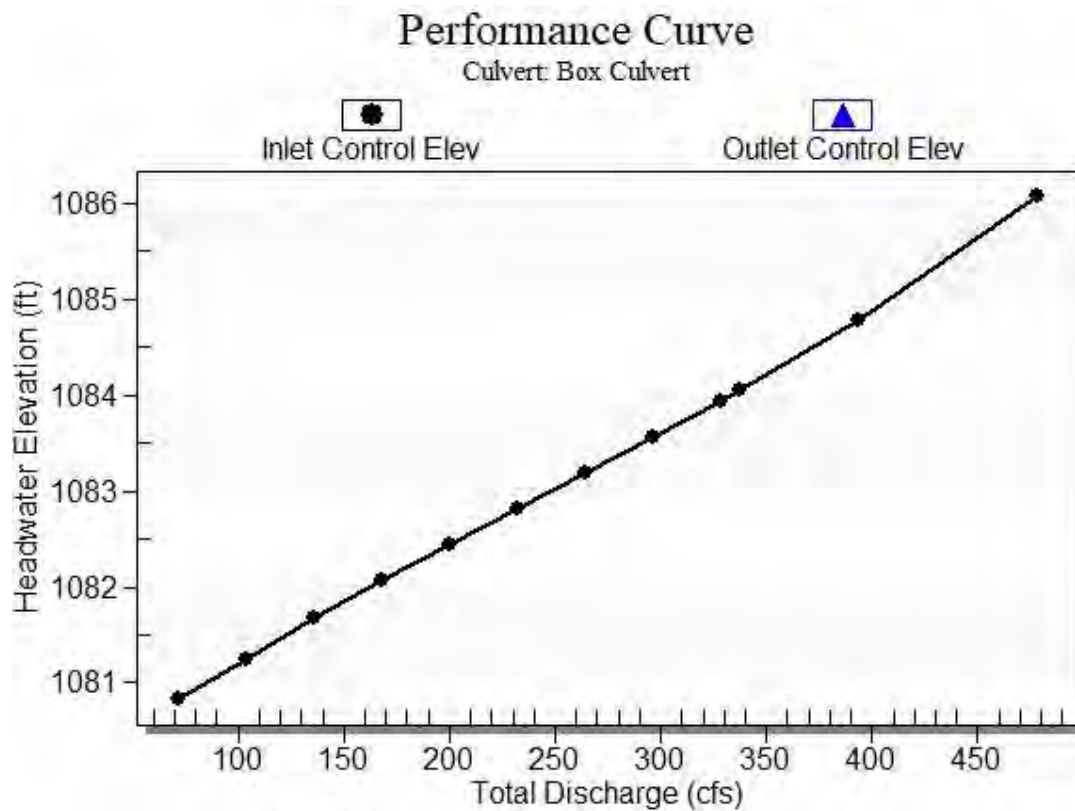
Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
72.00	72.00	1080.83	1.508	0.0*	1-S2n	0.280	1.038	0.313	2.503	19.167	9.717
104.10	104.10	1081.25	1.929	0.0*	1-S2n	0.355	1.327	0.407	2.874	21.341	10.655
136.20	136.20	1081.67	2.349	0.0*	1-S2n	0.423	1.587	0.493	3.178	23.031	11.396
168.30	168.30	1082.07	2.747	0.0*	1-S2n	0.485	1.828	0.585	3.450	23.987	11.946
200.40	200.40	1082.44	3.125	0.0*	1-S2n	0.544	2.054	0.677	3.695	24.674	12.325
232.50	232.50	1082.81	3.493	0.0*	1-S2n	0.601	2.267	0.764	3.902	25.362	12.724
264.60	264.60	1083.18	3.859	0.0*	1-S2n	0.654	2.472	0.854	4.087	25.834	13.093
296.70	296.70	1083.55	4.234	0.0*	5-S2n	0.707	2.668	0.941	4.255	26.286	13.435
328.80	328.80	1083.94	4.622	0.0*	5-S2n	0.757	2.857	1.027	4.410	26.684	13.755
337.00	337.00	1084.04	4.724	0.0*	5-S2n	0.770	2.904	1.048	4.448	26.797	13.834
393.00	393.00	1084.78	5.464	0.0*	5-S2n	0.855	3.218	1.197	4.689	27.356	14.339

* Full Flow Headwater elevation is below inlet invert.

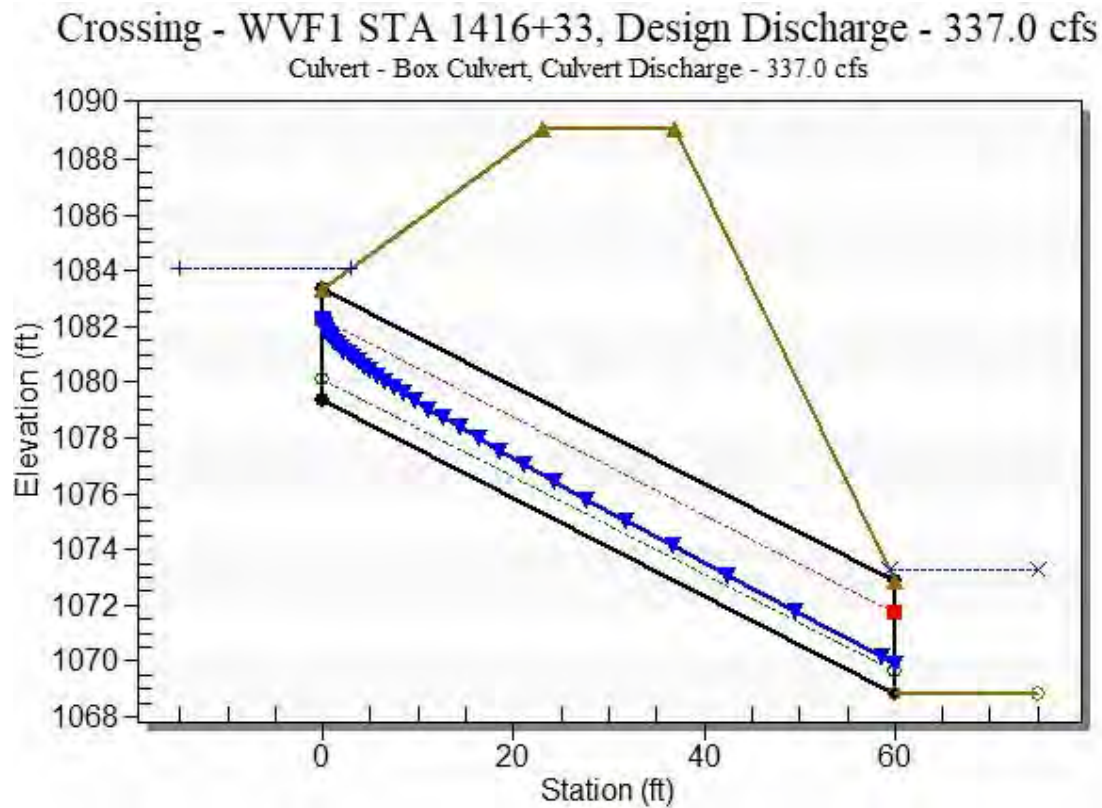
Straight Culvert

Inlet Elevation (invert): 1079.32 ft, Outlet Elevation (invert): 1068.84 ft

Culvert Length: 60.91 ft, Culvert Slope: 0.1747

Culvert Performance Curve Plot: Box Culvert

Water Surface Profile Plot for Culvert: Box Culvert



Site Data - Box Culvert

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1079.32 ft

Outlet Station: 60.00 ft

Outlet Elevation: 1068.84 ft

Number of Barrels: 3

Culvert Data Summary - Box Culvert

Barrel Shape: Concrete Box

Barrel Span: 4.00 ft

Barrel Rise: 4.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge (90°) Headwall

Inlet Depression: None

Table 3 - Downstream Channel Rating Curve (Crossing: WVF1 STA 1416+33)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
72.00	1071.34	2.50	9.72	47.80	1.53
104.10	1071.71	2.87	10.66	54.89	1.57
136.20	1072.02	3.18	11.40	60.71	1.59
168.30	1072.29	3.45	11.95	65.89	1.62
200.40	1072.54	3.70	12.33	70.58	1.65
232.50	1072.74	3.90	12.72	74.53	1.67
264.60	1072.93	4.09	13.09	78.06	1.69
296.70	1073.09	4.25	13.44	81.27	1.70
328.80	1073.25	4.41	13.76	84.23	1.72
337.00	1073.29	4.45	13.83	84.95	1.72
393.00	1073.53	4.69	14.34	89.57	1.75

Tailwater Channel Data - WVF1 STA 1416+33

Tailwater Channel Option: Irregular Channel

Channel Slope: 0.3061

User Defined Channel Cross-Section:

Coord No.	Station (ft)	Elevation (ft)	Manning's n
1	-22.70	1084.60	0.0800
2	-7.00	1073.70	0.0800
3	-5.40	1072.50	0.0800
4	1.30	1068.84	0.0800
5	3.10	1072.20	0.0800
6	12.50	1076.10	0.0800
7	18.10	1080.00	0.0000

Roadway Data for Crossing: WVF1 STA 1416+33

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Irregular Roadway Cross-Section:

Coord No.	Station (ft)	Elevation (ft)
0	171.40	1089.11
1	199.81	1086.08
2	221.40	1087.83

Roadway Surface: Paved

Roadway Top Width: 14.00 ft

Appendix C

Preliminary Design Drawings

APPENDIX J
PROJECT NOISE CALCULATIONS

Construction Generated Noise		
Building Type		Distance (ft)
Construction Noise at 50 Feet (dBA Leq)		50
Construction Phase	Minimum Required Equipment in Use¹	
Ground Clearing/Demolition	84	
Excavation	78	
Foundation Construction	88	
Building Construction	78	
Finishing and Site Cleanup	84	
Church to the North		
Maximum Construction Noise (dBA Leq)		3,581
Construction Phase	Minimum Required Equipment in Use¹	
Ground Clearing/Demolition	47	
Excavation	41	
Foundation Construction	51	
Building Construction	41	
Finishing and Site Cleanup	47	
Average Construction Noise (dBA Leq)		3,581
Construction Phase	Minimum Required Equipment in Use¹	
Ground Clearing/Demolition	47	
Excavation	41	
Foundation Construction	51	
Building Construction	41	
Finishing and Site Cleanup	47	
Residents to the West		
Maximum Construction Noise (dBA Leq)		1,982
Construction Phase	Minimum Required Equipment in Use¹	
Ground Clearing/Demolition	52	
Excavation	46	
Foundation Construction	56	
Building Construction	46	
Finishing and Site Cleanup	52	
Average Construction Noise (dBA Leq)		1,982
Construction Phase	Minimum Required Equipment in Use¹	
Ground Clearing/Demolition	52	
Excavation	46	
Foundation Construction	56	
Building Construction	46	
Finishing and Site Cleanup	52	
Park to the South		
Maximum Construction Noise (dBA Leq)		502
Construction Phase	Minimum Required Equipment in Use¹	
Ground Clearing/Demolition	64	
Excavation	58	
Foundation Construction	68	
Building Construction	58	
Finishing and Site Cleanup	64	
Average Construction Noise (dBA Leq)		502
Construction Phase	Minimum Required Equipment in Use¹	
Ground Clearing/Demolition	64	
Excavation	58	
Foundation Construction	68	
Building Construction	58	
Finishing and Site Cleanup	64	

Residents to the East		
Maximum Construction Noise (dBA Leq)		1,415
Construction Phase	Minimum Required Equipment in Use¹	
Ground Clearing/Demolition	55	
Excavation	49	
Foundation Construction	59	
Building Construction	49	
Finishing and Site Cleanup	55	
Average Construction Noise (dBA Leq)		1,415
Construction Phase	Minimum Required Equipment in Use¹	
Ground Clearing/Demolition	55	
Excavation	49	
Foundation Construction	59	
Building Construction	49	
Finishing and Site Cleanup	55	
Source: Bolt, Beranek and Newman, "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances," prepared for the USEPA, December 31, 1971. Based on analysis for Office Building, Hotel, Hospital, School, and Public Works.		

Construction Generated Vibration

Vibration Annoyance Criteria

Church to the North			
Maximum Vibration Levels		Closest Distance (feet):	3,581
	Approximate Velocity	Approximate Velocity	
Equipment	Level at 25 ft, VdB	Level, VdB	
Caisson Drill	87	44	
Large bulldozer	87	44	
Small bulldozer	58	15	
Jackhammer	79	36	
Loaded trucks	86	43	
	Criteria	78	
Average Vibration Level		Average Distance (feet):	3,581
	Approximate Velocity	Approximate Velocity	
Equipment	Level at 25 ft, VdB	Level, VdB	
Caisson Drill	87	44	
Large bulldozer	87	44	
Small bulldozer	58	15	
Jackhammer	79	36	
Loaded trucks	86	43	
	Criteria	78	
Residents to the West			
Maximum Vibration Levels		Closest Distance (feet):	1,982
	Approximate Velocity	Approximate Velocity	
Equipment	Level at 25 ft, VdB	Level, VdB	
Caisson Drill	87	49	
Large bulldozer	87	49	
Small bulldozer	58	20	
Jackhammer	79	41	
Loaded trucks	86	48	
	Criteria	78	
Average Vibration Level		Average Distance (feet):	1,982
	Approximate Velocity	Approximate Velocity	
Equipment	Level at 25 ft, VdB	Level, VdB	
Caisson Drill	87	49	
Large bulldozer	87	49	
Small bulldozer	58	20	
Jackhammer	79	41	
Loaded trucks	86	48	
	Criteria	78	

Construction Generated Vibration

Park to the South			
Maximum Vibration Levels		Closest Distance (feet):	502
	Approximate Velocity	Approximate Velocity	
Equipment	Level at 25 ft, VdB	Level, VdB	
Caisson Drill	87	61	
Large bulldozer	87	61	
Small bulldozer	58	32	
Jackhammer	79	53	
Loaded trucks	86	60	
	Criteria	78	
Average Vibration Level		Average Distance (feet):	502
	Approximate Velocity	Approximate Velocity	
Equipment	Level at 25 ft, VdB	Level, VdB	
Caisson Drill	87	61	
Large bulldozer	87	61	
Small bulldozer	58	32	
Jackhammer	79	53	
Loaded trucks	86	60	
	Criteria	78	
Residents to the East			
Maximum Vibration Levels		Closest Distance (feet):	1,415
	Approximate Velocity	Approximate Velocity	
Equipment	Level at 25 ft, VdB	Level, VdB	
Caisson Drill	87	52	
Large bulldozer	87	52	
Small bulldozer	58	23	
Jackhammer	79	44	
Loaded trucks	86	51	
	Criteria	78	
Average Vibration Level		Average Distance (feet):	1,415
	Approximate Velocity	Approximate Velocity	
Equipment	Level at 25 ft, VdB	Level, VdB	
Caisson Drill	87	52	
Large bulldozer	87	52	
Small bulldozer	58	23	
Jackhammer	79	44	
Loaded trucks	86	51	
	Criteria	78	

Construction Generated Vibration

Structural Damage Criteria

Church to the North		Closest Distance (feet):	3,581
	Approximate RMS a Velocity at 25 ft, inch/second	Approximate RMS Velocity Level, inch/second	
Equipment			
Caisson Drill	0.089	0.000	
Large bulldozer	0.089	0.000	
Small bulldozer	0.003	0.000	
Jackhammer	0.035	0.000	
Loaded trucks	0.076	0.000	
	Criteria	0.200	
Residents to the West		Closest Distance (feet):	1,982
	Approximate RMS a Velocity at 25 ft, inch/second	Approximate RMS Velocity Level, inch/second	
Equipment			
Caisson Drill	0.089	0.000	
Large bulldozer	0.089	0.000	
Small bulldozer	0.003	0.000	
Jackhammer	0.035	0.000	
Loaded trucks	0.076	0.000	
	Criteria	0.200	
Park to the South		Closest Distance (feet):	502
	Approximate RMS a Velocity at 25 ft, inch/second	Approximate RMS Velocity Level, inch/second	
Equipment			
Caisson Drill	0.089	0.001	
Large bulldozer	0.089	0.001	
Small bulldozer	0.003	0.000	
Jackhammer	0.035	0.000	
Loaded trucks	0.076	0.001	
	Criteria	0.200	
Residents to the East		Closest Distance (feet):	1,415
	Approximate RMS a Velocity at 25 ft, inch/second	Approximate RMS Velocity Level, inch/second	
Equipment			
Caisson Drill	0.089	0.000	
Large bulldozer	0.089	0.000	
Small bulldozer	0.003	0.000	
Jackhammer	0.035	0.000	
Loaded trucks	0.076	0.000	
	Criteria	0.200	

Based on distance to nearest structure

¹. Determined based on use of jackhammers or pneumatic hammers that may be used for pavement demolition at a distance of 25 feet

Notes: RMS velocity calculated from vibration level (VdB) using the reference of one microinch/second.

Source: Based on methodology from the United States Department of Transportation Federal Transit Administration, *Transit Noise and Vibration Impact Assessment* (2006).

West Valley Feeder No. 1 Stage 3 Improvements Project

Responses to Comments Received

The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, CA 90012



Report No. 1582

July 2024

This page intentionally left blank.

RESPONSES TO COMMENTS RECEIVED

Responses to Comments

This document includes comments received during the public review period of the Initial Study/Mitigated Negative Declaration (IS/MND) prepared for the West Valley Feeder No. 1 Stage 3 Improvements Project (proposed Project). This document includes a copy of the one comment letter submitted during the public review period for the IS/MND, which was submitted by the California Department of Transportation (Caltrans).

Although not required by the California Environmental Quality Act (CEQA) or the CEQA Guidelines, the Metropolitan Water District of Southern California (Metropolitan) is providing written responses to comments received on the IS/MND for the proposed Project as part of the administrative record and for the Metropolitan Board of Directors (Board) to review when considering adoption of the IS/MND. In accordance with the requirements of CEQA Guidelines Section 15073(e), Metropolitan will provide notification in writing to the commenters 10 days in advance of the Board meeting to adopt the MND for the proposed Project.

The comment letter received during the public review period is included in Table 1-1. The letter has been marked with brackets that delineate comments pertaining to environmental issues and the information and analysis contained in the IS/MND. Responses to comments are provided below.

TABLE 1-1
COMMENT LETTERS RECEIVED

Comment Letter No.	Commenter	Date of Comment
1	Anthony Higgins – California Department of Transportation (Caltrans)	June 21, 2024

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY

GAVIN NEWSOM, Governor

DEPARTMENT OF TRANSPORTATION**DISTRICT 7**

100 S. MAIN STREET, MS 16

LOS ANGELES, CA 90012

PHONE (213) 897-0673

FAX (213) 897-1337

TTY 711

www.dot.ca.gov



*Making Conservation
a California Way of Life*

June 21, 2024

Michelle Morrison
Senior Environmental Specialist
Metropolitan Water District of Southern California
700 N. Alameda Street
Los Angeles, CA 90012

RE: West Valley Feeder No. 1 Stage
3 Improvements Project– Mitigated
Negative Declaration (MND)
SCH #2024060605
GTS #07-LA-2024-04555
Vic. LA Multiple

Dear Michelle Morrison,

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced project. The Project proposes modifications to the West Valley Feeder No. 1 (WVF1) structures at four locations along the pipeline alignment, construction of a new access road, and vehicle turn around areas within Chatsworth Park South. Additionally, the proposed Project includes the construction of an access road, vehicle turnaround areas, and access gates to accommodate a full-size maintenance truck. Operations and maintenance activities at the West Valley Feeder No. 1, including the frequency of staff visits, maintenance, and shutdowns, would be similar to existing conditions once construction activities are completed.

1-1

After reviewing the MND, Caltrans has the following comments:

As stated in the Initial Study, the Contractor shall prepare a traffic control plan to address temporary traffic control for each construction site in public roadways. Any transportation of heavy construction equipment and/or materials that requires the use of oversized transport vehicles on State Highways will need a Caltrans transportation permit. Caltrans advises that the Project limit construction traffic to off-peak periods to minimize the potential impact on State facilities. If construction traffic is expected to cause issues on

1-2

1-3

"Provide a safe and reliable transportation network that serves all people and respects the environment"

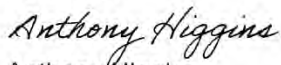
Michelle Morrison
June 21, 2024
Page 2

any State facilities, please submit a construction traffic control plan detailing these issues for Caltrans' review. We look forward to the coordination of our efforts to ensure potential impacts to the highway facilities and traveling public are discussed and addressed before work begins.

1-3 cont.

If you have any questions, please contact project coordinator Frances Duong, at frances.duong@dot.ca.gov and refer to GTS #07-LA-2024-04555.

Sincerely,



Anthony Higgins
Acting LDR Branch Chief

Cc: State Clearinghouse

"Provide a safe and reliable transportation network that serves all people and respects the environment"

Response to Comment Letter 1

COMMENTER: Anthony Higgins, Acting LDR Branch Chief, California Department of Transportation

DATE: June 21, 2024

Response 1-1

The commenter provides an introduction to the comment letter and provides a summary of the proposed Project. This comment is noted.

Response 1-2

The commenter acknowledges that Metropolitan has stated in the Initial Study that a traffic control plan would be prepared to address temporary traffic control on local roadways and states that any transportation of heavy construction equipment or use of oversized transport vehicles on State Highways will require a Caltrans transportation permit

This comment is noted and Metropolitan or its Contractor will obtain a obtain a Traffic Control Plan and/or Caltrans transportation permit, if necessary, should transport of heavy equipment or use of oversized transport vehicles be required on State Highways.

Response 1-3

The commenter advises that the Project limit construction traffic to off-peak periods and if traffic is expected to cause issues on any State facilities, that a construction traffic control plan be submitted for Caltrans' review.

This comment is noted and Metropolitan or its Contractor will attempt to limit construction traffic to off-peak periods, if feasible, and will obtain a Traffic Control Plan, if necessary, as specified on Page 3-42 of the Initial Study-Mitigated Negative Declaration and in Appendix A (Metropolitan Standard Practices).

West Valley Feeder No. 1 Stage 3 Improvements Project

Mitigation Monitoring and Reporting Program

The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, CA 90012



Report No. 1582

July 2024

Mitigation Monitoring and Reporting Program

The Mitigation Monitoring and Reporting Program (MMRP) for the proposed West Valley Feeder No. 1 Stage 3 Improvements Project (proposed Project) has been prepared in accordance with Public Resources Code Section 21081.6 and *State CEQA Guidelines* Section 15074(d). Metropolitan will use this MMRP to track compliance with the required Project mitigation measures.

Metropolitan's Board of Directors will consider the MMRP during the adoption hearing for the Initial Study-Mitigated Negative Declaration (IS-MND). The MMRP will incorporate all mitigation measures adopted for the proposed Project.

This MMRP summarizes mitigation commitments identified in the IS-MND. Table 1 provides the MMRP, which includes all mitigation measures, monitoring process, and monitoring timing. Metropolitan is the agency responsible for ensuring implementation of all mitigation measures. Impacts and mitigation measures are presented in the same order as in the IS-MND. The columns in the table provide the following information:

- **Mitigation Measure:** This column indicates the action(s) that will be taken to reduce the impact to a less-than-significant level.
- **Responsible Party:** This column indicates the party who must ensure each mitigation measure is implemented and that monitoring and reporting activities occur.
- **Timing of Implementation:** This column indicates the general schedule for conducting each monitoring task, either during the design phase, prior to construction, during construction, and/or after construction.
- **Implementation Party:** This column lists the party responsible for implementing the mitigation measure.

Table 1 Mitigation Monitoring and Reporting Program

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party	Comments	Initials/Date
Biological Resources					
BIO-1 Rare Plant Survey					
If more than three years have elapsed since the Project rare plant survey was conducted, Metropolitan shall conduct a rare plant survey to confirm presence or absence of rare plant species. Surveys would be conducted to confirm presence or absence within the proposed Project's disturbance areas previously determined to have the potential to support special status plant species. Surveys will be conducted in accordance with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018) and will occur during the appropriate time of year.	Metropolitan	Implement prior to start of construction	Metropolitan, Qualified biologist		
BIO-2 Wildlife Focused Surveys					
If more than three years have elapsed since the Project focused protocol wildlife surveys for potentially occurring listed species, the least Bell's vireo and California gnatcatcher, Metropolitan shall conduct focused protocol surveys to ensure that the Project avoids impacts to these species. All surveys would be conducted to confirm absence within proposed Project disturbance areas that may support these species. Surveys would be conducted in accordance with the approved CDFW or USFWS protocol guidelines for each species. Additional surveys for the California red-legged frog would be unwarranted based on the determination of lack of potentially suitable habitat within the Project Area following initial focused protocol surveys.	Metropolitan	Implement prior to construction	Metropolitan, Qualified biologist		

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party	Comments	Initials/Date
BIO-3 Special-status Species Avoidance					
<p>Should special-status plants or wildlife be identified during BIO-1 or BIO-2, Metropolitan shall develop and implement appropriate monitoring and avoidance measures. Measures may include but are not limited to:</p> <ul style="list-style-type: none"> ■ Installation of Environmentally Sensitive Area/avoidance fencing. ■ Flagging or fencing of any special-status species burrows or nests by a monitoring biologist to ensure avoidance. ■ Monitoring by a biologist during all initial ground disturbing activities and vegetation removal. Once initial ground disturbing activities and vegetation removal activities have been completed, the biologist shall conduct daily pre-activity clearance surveys, as necessary. ■ If at any time during Project activities a special-status species enters the Project Area or otherwise may be impacted by the Project, all activities at the site where the find occurred shall cease. At that point, a monitoring biologist shall recommend an appropriate course of action to avoid, relocate or otherwise protect the species such that construction may proceed without harming the species. 	Metropolitan	Implement prior to and during construction	Metropolitan, Qualified biologist		
BIO-4 Demarcation of Disturbance Limits					
To avoid impacts on biological resources adjacent to the Project Area, the designated Project disturbance limits shall be visibly marked in the field to ensure that no inadvertent impacts occur outside the approved disturbance limits.	Metropolitan	Implement prior to start of construction	Metropolitan, Qualified biologist		
BIO-5 Special-status Species On and Off-site Compensation					
Compensation for Impacts to Special-Status Species. If the Project Area is determined to be occupied by a special-status species prior to start of construction, and cannot be avoided, direct temporary and/or permanent impacts to suitable habitat for federally or State-listed species within the proposed Project Area	Metropolitan	Implement prior to, during, and post-construction	Metropolitan, Qualified biologist		

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party	Comments	Initials/Date
<p>shall be mitigated through on-site or off-site measures. Mitigation for temporary and permanent impacts to listed species habitat shall consider, and may overlap with, mitigation for impacts to jurisdictional waters and wetlands (BIO-6).</p> <p>Temporary Impacts. Mitigation for direct temporary impacts to suitable habitat for federally or State-listed species shall be implemented through on-site rehabilitation at a 1:1 mitigation ratio. Areas temporarily impacted shall be returned to similar conditions to those that existed prior to grading and/or ground-disturbing activities. Proposed rehabilitation of impact areas may include, at a minimum, a feasible implementation structure, salvage/seeding details, invasive species eradication methods, a monitoring schedule, performance standards of success, estimated costs, and identification of responsible entities.</p> <p>Permanent Impacts. Metropolitan shall fund a mitigation bank or in-lieu fee program to compensate for all permanent loss of suitable habitat for federally or State-listed species, if available, at a 1:1 ratio. Direct impacts to federally listed species' occupied habitat shall be addressed through either the Section 7 or Section 10(a)(1)(B) process under the federal Endangered Species Act (ESA) of 1973, as amended. Direct impacts to state-listed species shall be addressed through the California Fish and Game Code Section 2081(b) incidental take permit process. Metropolitan would comply with any additional measures (e.g. avoidance, conservation, etc.) incorporated into any permits or authorizations issued by the regulatory agencies with jurisdiction over these resources beyond what is being proposed under this CEQA analysis to reduce the impact to less than significant.</p>					

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party	Comments	Initials/Date
BIO-6 Jurisdictional Waters On and Off-site Compensation					
<p>Compensation for Impacts to Jurisdictional Wetlands and Waters, inclusive of jurisdictional riparian habitat. Mitigation for temporary and permanent impacts to jurisdictional wetlands and waters shall consider and overlap with mitigation for impacts to special-status species habitat (BIO-5) where feasible. Metropolitan would comply with any additional measures (e.g. avoidance, conservation, etc.) incorporated into any permits or authorizations issued by the regulatory agencies with jurisdiction over these resources.</p> <p>Temporary Impacts. Mitigation for direct temporary impacts to jurisdictional wetlands and waters resulting from the Project shall be implemented through on-site restoration. Areas temporarily impacted shall be returned to conditions similar to those that existed prior to grading and/or ground-disturbing activities. For impacted vegetated jurisdictional wetlands and waters, the proposed rehabilitation of impact areas may include, at a minimum, a feasible implementation structure, salvage/seeding details, invasive species eradication methods, a monitoring schedule, performance standards of success, estimated costs, and identification of responsible entities.</p> <p>Permanent Impacts. Mitigation for permanent impacts to jurisdictional wetlands and waters resulting from the Project shall be implemented at a minimum 1:1 mitigation ratio through purchase of credits through an agency-approved mitigation bank, in-lieu fee program, or other agreement.</p>	Metropolitan	Implement prior to, during, and post-construction	Metropolitan, Qualified biologist		
Cultural Resources					
CUL-1 Retain Qualified Archaeologist					
Prior to the initiation of construction, a qualified archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards for Archaeology (National Park Service 1983) shall be retained.	Metropolitan	Implement prior to start of construction	Metropolitan		

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party	Comments	Initials/Date
CUL-2 Retain Gabrieleño Band of Mission Indians-Kizh Nation Monitor					
Metropolitan will coordinate with the Gabrieleño Band of Mission Indians-Kizh Nation to retain a Native American monitor with ancestral ties to the Project area (Native American Tribal Monitor), as needed to protect cultural resources.	Metropolitan	Implement prior to start of construction	Metropolitan, Tribal Representative		
CUL-3 Archaeological Monitoring					
The archaeologist and Native American Tribal Monitor shall monitor construction-related ground-disturbing activities associated with valve relocation areas and new access road construction. Monitoring for excavation work associated with valve relocations will be on a spot-check basis (as these areas have been previously disturbed), and full-time for excavation activities associated with the proposed new access road construction. The archaeological monitor and Native American Tribal Monitor shall complete monitoring logs that describe the work and details regarding resources encountered during the ground-disturbing activities.	Metropolitan	Implement during construction	Metropolitan, Qualified Archaeologist, Tribal Monitor		
CUL-4 Archaeological Resource Treatment and Evaluation					
If archaeological resources are identified during Project-related activities, Metropolitan and/or its contractors shall cease all activity within 50 feet of the find until the archaeologist and Native American Tribal Monitor can evaluate the find. If necessary, the evaluation may require preparation of a treatment plan and determination of California Register of Historical Resources eligibility. If the discovery proves to be significant under CEQA and cannot be avoided by the Project, additional work, such as data recovery excavation, reporting, curation, or reburial, may be warranted, thereby reducing the impact to a less than significant level. Any data recovery plans will be developed in consultation with the Gabrieleno Band of Mission Indians-Kizh Nation.	Metropolitan	Implement during construction	Metropolitan, Qualified Archaeologist, Tribal Monitor		

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party	Comments	Initials/Date
Geology and Soils					
GEO-1 Retain Qualified Paleontologist					
Prior to the initiation of construction-related ground disturbing activities, Metropolitan shall retain the services of a qualified paleontologist to monitor excavation activities within the Chatsworth Formation.	Metropolitan	Implement prior to start of construction	Metropolitan		
GEO-2 Prepare Paleontological Resources Mitigation Plan					
The qualified paleontologist shall prepare a Paleontological Resources Mitigation Plan. The mitigation plan will specify the level of monitoring to be implemented, if any, when earthmoving activities are occurring in the Chatsworth Formation. The mitigation plan will also provide criteria for determining when and to what extent monitoring will be reduced if too few or no fossil remains are recovered as a result of monitoring. The mitigation plan will also include procedures for fossil recovery and curation, and identify potential museum repositories.	Metropolitan	Implement prior to start of construction	Metropolitan, Qualified Paleontologist		
GEO-3 Paleontological Resources Recovery					
As soon as practicable and if necessary, the paleontological monitor will recover all larger vertebrate fossil specimens, a representative sample of any invertebrate or plant specimens, and any fine-grained rock or sediment sample that can be recovered easily. If unique paleontological resources are recovered as a result of monitoring, the paleontologist will assist Metropolitan in developing a formal curation agreement with a recognized museum repository. Paleontological monitoring and fossil/sample recovery shall follow the procedures outlined in the Paleontological Resources Mitigation Plan.	Metropolitan	Implement during construction	Metropolitan, Qualified Paleontologist		
GEO-4 Paleontological Curation					
All unique fossil remains recovered from the Project Area as a result of the mitigation program will be treated (prepared, identified, curated, cataloged) in accordance with designated museum repository requirements.	Metropolitan	Implement during construction and post-construction	Metropolitan, Qualified Paleontologist		



Engineering, Operations, & Technology Committee

Adopt Mitigated Negative Declaration for West Valley Feeder No. 1 Stage 3 Improvements Project

Item 7-2

September 9, 2024

Item 7-2

West Valley Feeder No. 1 Stage 3 Improvements MND

Subject

Adopt the Mitigated Negative Declaration for the West Valley Feeder No. 1 Stage 3 Improvements Project and take related CEQA actions

Purpose

Adoption of the CEQA determination will allow for environmental permitting actions and easement acquisition associated with the West Valley Feeder No. 1 Stage 3 Improvements Project

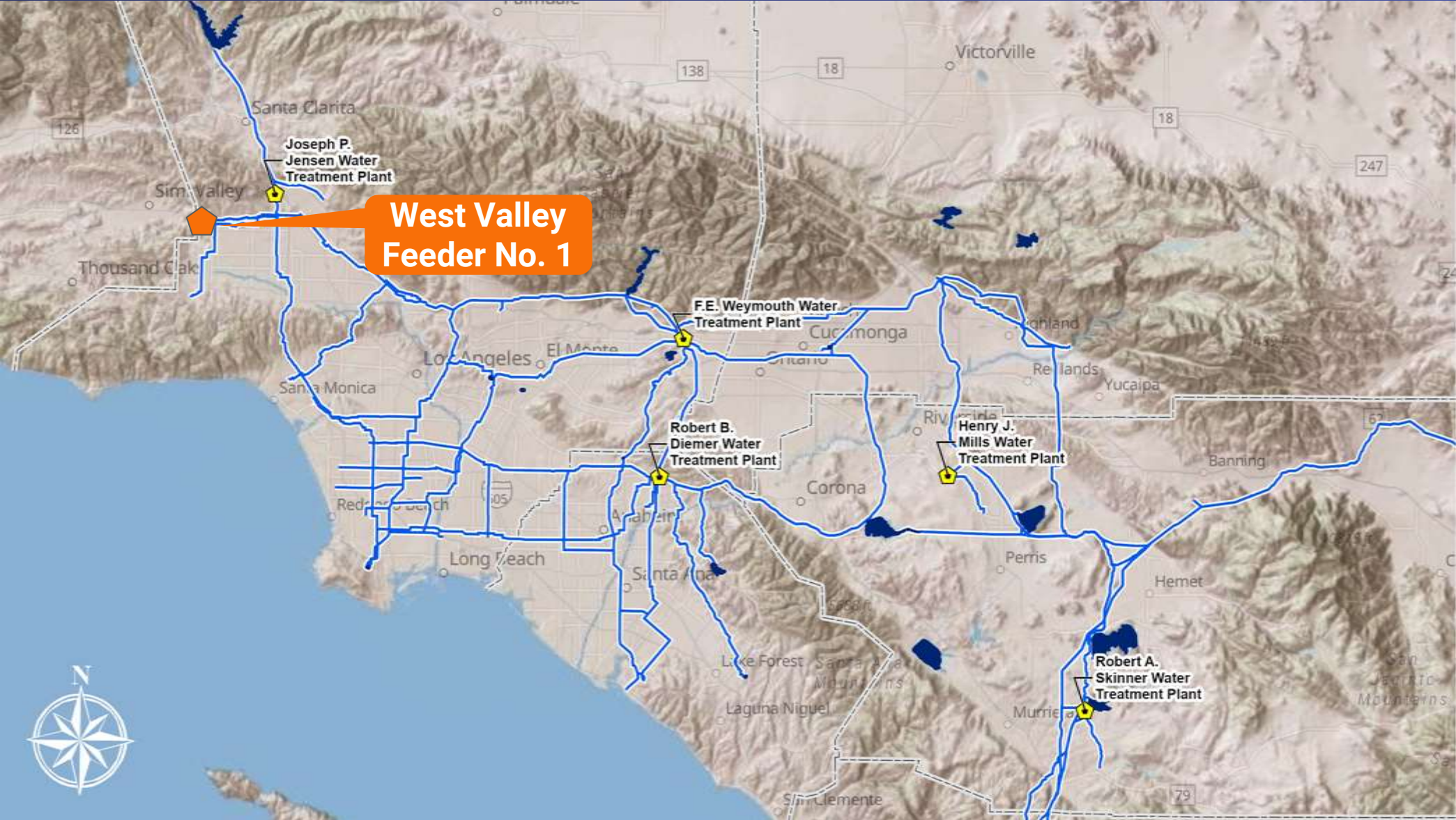
Recommendation and Fiscal Impact

Adopt the Mitigated Negative Declaration (MND) and take related CEQA actions

No Fiscal Impact

Budgeted

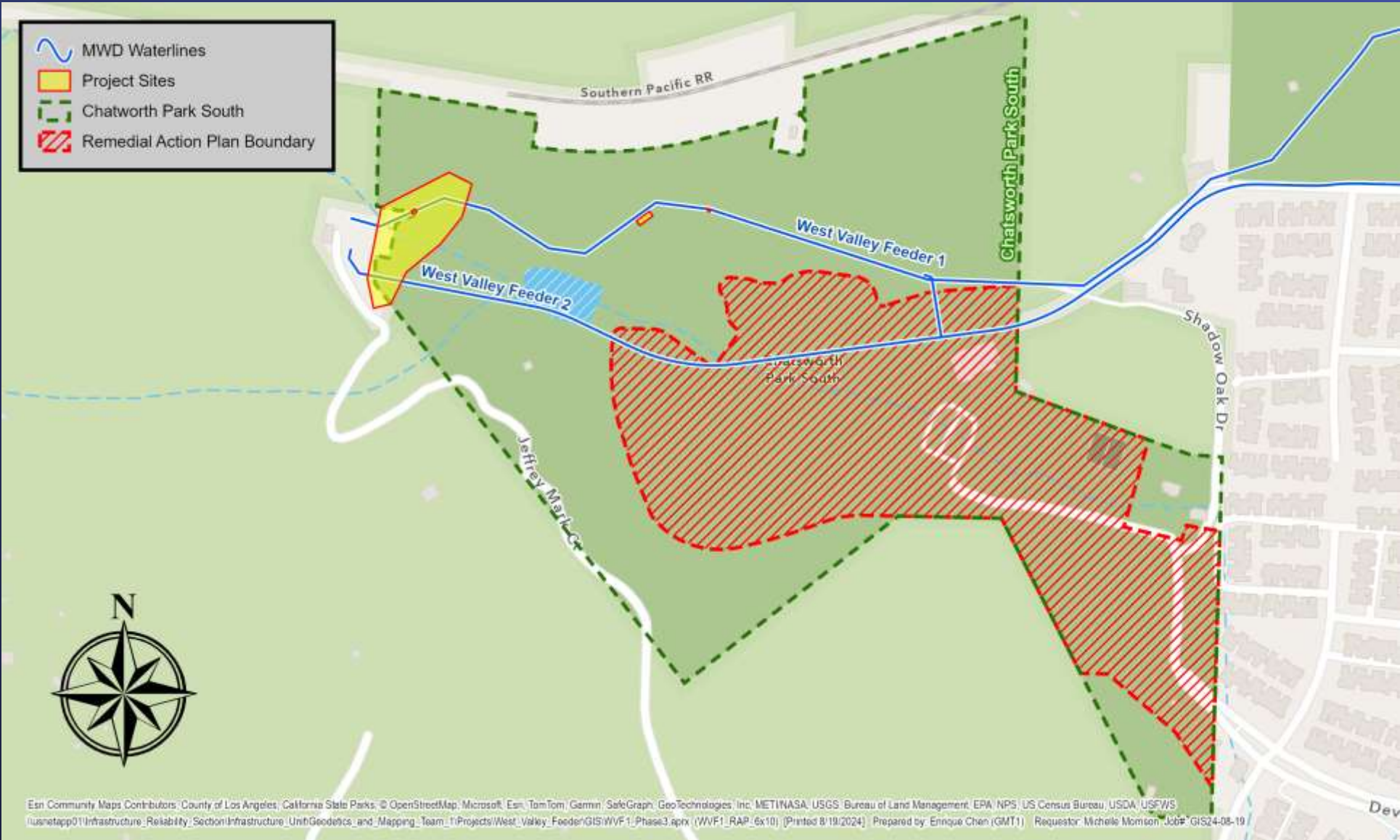
Location Map



Background

- Feeder's blowoff valves, air release/vacuum valves, & sectionalizing valve are deteriorating
- Work was prioritized and divided in three stages
 - Stage 1 – addressed 42 structures; completed in 2006
 - Stage 2 – addressed 14 structures; completed in 2012
 - Stage 3 – addresses three structures
 - Deferred due to lead remediation
 - Site fully remediated by City of LA in 2017
 - Design is ongoing
 - Requires approval of environmental documentation to advertise & award contract

Project Area Map



**West Valley
Feeder No. 1
Stage 3
Improvements
MND**

Project Scope of Work

- Add new vaults at three locations
- Replace existing deteriorated valves
- Install new enclosures for air release/vacuum valves
- Construct new access road
- Install protective bollards at structures



Exposed valve

**West Valley
Feeder No. 1
Stage 3
Improvements
MND**

Adopt Mitigated Negative Declaration

- Three potentially significant impact categories
 - Biological resources
 - Cultural resources
 - Paleontological resources
- All impacts less than significant with mitigation



**Existing Air/Release &
Valve Enclosure**

Board Options

- Option #1
Adopt the Mitigated Negative Declaration for the West Valley Feeder No. 1 Stage 3 Improvements Project and take related CEQA actions.
- Option #2
Do not adopt the Mitigated Negative Declaration at this time.

Staff Recommendation

- Option #1





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

9/10/2024 Board Meeting

7-3

Subject

Award a \$1,285,000 contract to Resource Environmental Incorporated for abatement and roof replacement of houses at four Colorado River Aqueduct Pumping Plant villages; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

Metropolitan maintains employee housing, kitchens, and short-term lodging facilities at the Colorado River Aqueduct (CRA) pumping plant villages. These facilities have exceeded their design life, are showing signs of deterioration, and require replacement. Metropolitan has initiated an improvement program for the CRA pumping plant villages. It is currently in the process of completing a community planning effort to identify a recommended approach for long-term employee housing at the pump plant villages. In the interim, and to ensure the current housing provides clean and safe living conditions at the CRA villages, a Desert Housing and Recreation Interim Action Plan (DHRIAP) was initiated that focuses on making various near-term improvements in the four villages in parallel to the ongoing long-term efforts. As part of the DHRIAP, 14 houses have been identified that require roof replacement and hazardous materials abatement.

This action awards a \$1,285,000 construction contract to Resource Environmental Incorporated for abatement, roof replacement of 14 houses located at four CRA pumping plant villages, and demolition of eight houses that are beyond their expected useful life and have been deemed surplus. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Abstract of Bids, **Attachment 3** for the Subcontractors for Low Bidder, and **Attachment 4** for the Location Map.

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

Staff Recommendation: Option #1

Option #1

Award a \$1,285,000 contract to Resource Environmental Incorporated for abatement and roof replacement on houses at four Colorado River Aqueduct Pumping Plant villages.

Fiscal Impact: Expenditure of \$1,105,000 in capital funds and \$615,000 in operations and maintenance (O&M) funds. All costs will be incurred in the current biennium and have been previously authorized.

Business Analysis: This option will preserve Metropolitan assets and maintain an appropriate standard of living for staff stationed at Metropolitan's desert facilities.

Option #2

Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: This option would forgo an opportunity to preserve Metropolitan assets at the desert facilities.

Alternatives Considered

Alternatives considered for completing roof replacement and housing demolition included deferring the work until the Desert Housing and Recreation Improvement Project is completed. However, deferring this work will not address the immediate repairs that were identified in the District Housing and Recreation Interim Action Plan Improvements.

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 52179, dated November 10, 2020, the Board authorized preparation of conceptual master plan and to conduct property assessments for District housing.

By Minute Item 52381, dated May 11, 2021, the Board authorized two new agreements for environmental documentation and geotechnical services in support of the District Housing and Property Improvements.

By Minute Item 52448, dated July 13, 2021, the Board authorized an increase to an agreement with Roesling Nakamura Terada Architects for preliminary design and architectural services in support of the District Housing and Property Improvements.

By Minute Item 52790, 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 it involves the operation, repair, maintenance, or minor alteration of existing public structures, facilities, or mechanical equipment involving negligible or no expansion of existing or former use and no possibility of significantly impacting the physical environment. In addition, the proposed action is exempt from CEQA because it consists of replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced. (State CEQA Guidelines Sections 15301 and 15302).

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 in Riverside County. The CRA includes five pumping plants that are in remote, isolated areas of the California desert. The aqueduct system was constructed in the late 1930s and was placed into service in 1941. Since the CRA's inception, Metropolitan has provided lodging or housing to employees involved in the construction, operation, and maintenance of the aqueduct system. Due to the remoteness of the pumping plants, the provision of housing ensures that staff can respond to emergency events in a timely manner.

Houses, kitchens, and short-term lodging were initially constructed at the CRA pumping plants in the early 1940s. The expansion of the CRA's capacity in the 1950s led to the construction of additional houses. Metropolitan has performed routine maintenance on each of these facilities since they were built, but following decades of continuous use and exposure to the harsh desert environment, the houses have deteriorated and need replacement.

Replacement of these houses, coupled with the development of multiple enhancement features across Metropolitan's CRA pumping plants villages, will provide for employee retention, create an attraction for future employees, and help create a vibrant, healthy, and sustainable community. In 2023, Metropolitan's Board authorized a community planning effort that focuses on providing the most optimized options suited to achieve long-term retention goals.

In the interim, to ensure the current housing is clean and safe for the residents while the longer-term efforts are underway, a Housing and Recreation Committee was established in September 2022 consisting of representatives from the Office of the General Manager, Facilities Management, Diversity, Equity and Inclusion, and Water System Operations. After meeting with residents and gathering feedback on immediate housing and recreational needs, the committee created DHRIP. This plan focuses on implementing short-term enhancements to improve living conditions at the desert facilities. Improvements include (1) shade structures for parked vehicles and playgrounds; (2) fencing at homes to improve privacy; (3) installation of air conditioning units for garages; (4) stand-alone freezers for houses to store food for the residents and their families; (5) housing improvements such as roof replacement, kitchen, and bathroom remodeling; and (6) housing demolition. To date, the DHRIAP has identified 36 projects, and 60 percent of the projects have been completed. The remaining are anticipated to be completed by May 2025. The total cost of these improvements is estimated to be \$10,000,000.

As part of the ongoing short-term housing improvements, staff identified 14 houses at the four CRA villages that require roof replacement and associated hazardous materials abatement. These houses are located at Gene Pump Plant (4), Iron Mtn. Pump Plant (3), Eagle Mtn. Pump Plant (6), and Hinds Pump Plant (1). In addition, eight houses that are significantly deteriorated and deemed surplus have been identified for demolition. These houses are located at Gene Pump Plant (7) and Iron Mtn. Pump Plant. Demolition of these houses and abatement of hazardous materials will be paid for with budgeted O&M funds. Staff recommends moving forward with the roof replacements, hazardous materials abatement, and demolition of the houses.

CRA Employee Housing Demolition and Roof Replacement – Construction

The scope of the contract includes: (1) roof replacement for 14 houses at four pump plants and associated hazardous materials abatement containing asbestos and lead; (3) abatement and demolition of eight houses at two pump plants and associated concrete slab removal and abandonment of utilities.

A total of \$1,720,000 is required for this work. In addition to the amount of the contract described below, other allocated funds include: \$159,00 for construction management and inspection; \$186,000 for project management, site support, and contract administration; and \$90,000 for the remaining budget. **Attachment 1** provides the allocation of the required funds.

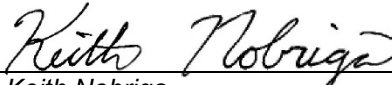
Award of Construction Contract (Resource Environmental Incorporated)

Specification No. 2086 for CRA Employee Housing Roof Replacement and Abatement was advertised on May 3, 2024. As shown in **Attachment 2**, eight bids were received and opened on July 2, 2024. The low bid from Resource Environmental Incorporated in the amount of \$1,285,000 complies with the requirements of the specifications. The other bid ranged between \$1,782,390 to \$3,999,478, while the engineer's estimate for this project was approximately \$2,880,000. For this contract, Metropolitan established a Small Business Enterprise participation level of at least 25 percent of the bid amount. Resource Environmental Incorporated has agreed to meet this level of participation. The subcontractors for this contract are listed in **Attachment 3**.

This action awards a \$1,285,000 contract to Resource Environmental Incorporated for abatement and roof replacement of 14 houses at four Colorado River Aqueduct Pumping Plant villages. As described above, Metropolitan staff will perform construction management and inspection. Engineering Services' performance metric target range for construction management and inspection of projects with construction less than \$3 million is 9 to 15 percent. For this project, the performance metric goal for inspection is 12.4 percent of the total construction cost (\$1,285,000).

Project Milestone

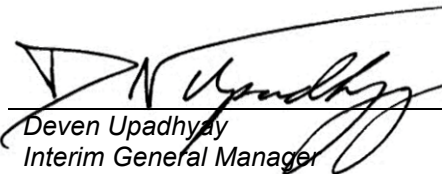
May 2025 – Completion of construction



Keith Nobriga
Group Manager
Integrated Operations, Planning, and
Support Services

8/21/2024

Date



Deven Upadhyay
Interim General Manager

8/23/2024

Date

Attachment 1 – Allocation of Funds**Attachment 2 – Abstract of Bids****Attachment 3 – Subcontractors for Low Bidder****Attachment 4 – Location Map**

Ref# wso12702099

Allocation of Funds for CRA Housing Demolition and Roof Replacement

	Current Board Action (Sept. 2024)
Labor	
Studies & Investigations	\$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	186,000
Submittals Review & Record Drwgs.	4,000
Construction Inspection & Support	155,000
Metropolitan Force Construction	
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Right-of-Way	-
Equipment Use	-
Contracts	-
Resource Environmental Incorporated	1,285,000
Remaining Budget	90,000
Total	\$ 1,720,000

The total amount expended to date for the Desert Housing and Recreation Interim Action Plan is approximately \$4.6 million. The total estimated cost to complete the CRA housing roofing and demolition, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is \$10 million.

The Metropolitan Water District of Southern California

Abstract of Bids Received on July 2, 2024, at 2:00 P.M.

Specifications No. 2064

Colorado River Aqueduct Employee Housing Demolition and Roof Replacement

The work includes abatement, roof replacement of fourteen houses located at four CRA Pumping Plant Villages, and demolition of eight houses that are beyond their expected useful life and have been deemed surplus.

Engineer's estimate: \$2,880,000

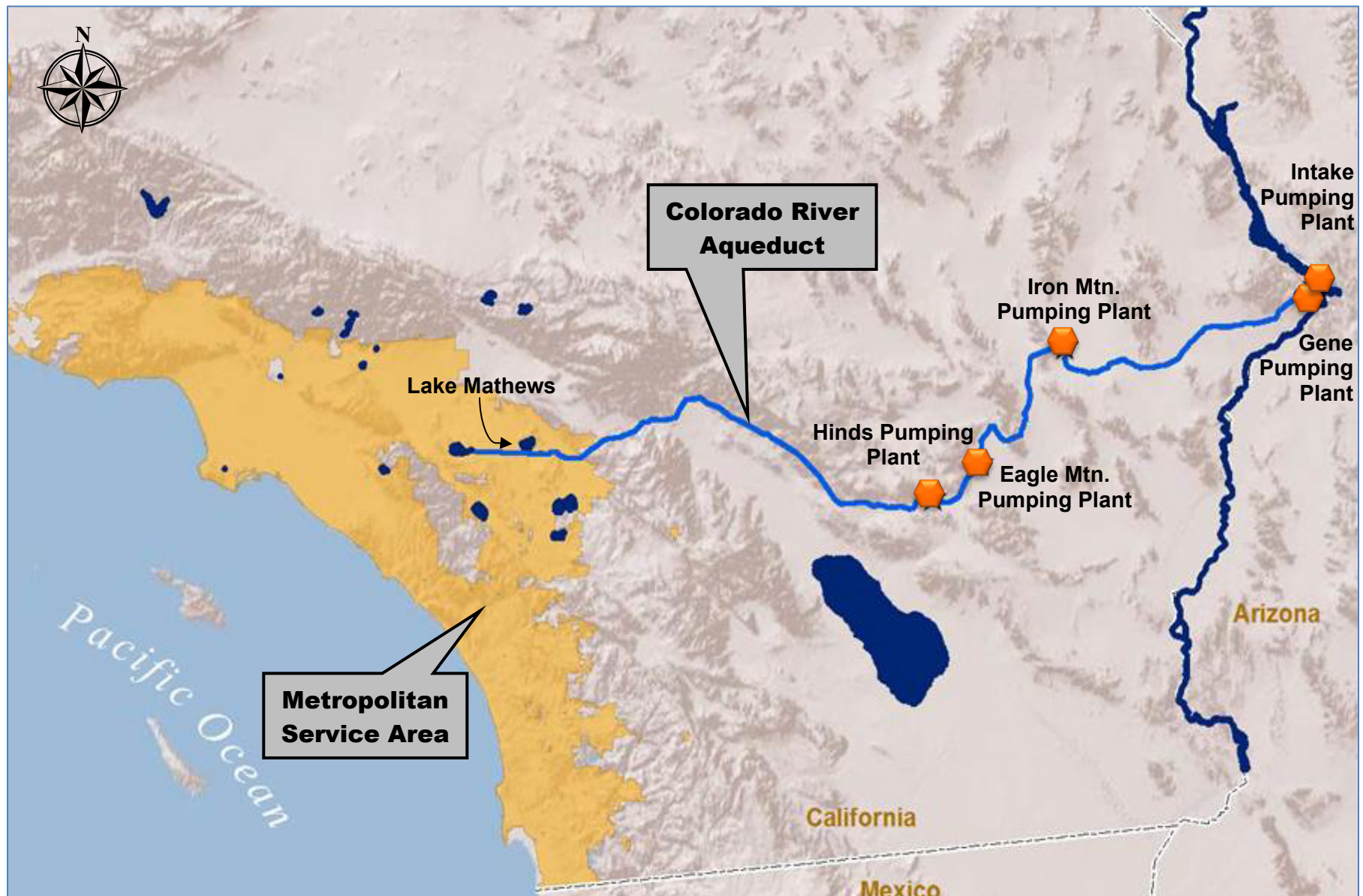
Bidder and Location	Total	SBE \$	SBE %	Met SBE¹
Resource Environmental Incorporated Cerritos, CA	\$1,285,000	\$321,250	25%	Yes
Shipley Construction and Plumbing Yucca Valley, CA	\$1,782,390	-	-	-
Environmental Construction Group Incorporated Signal Hill, CA	\$1,976,400	-	-	-
Wakeco Incorporated Temecula, CA	\$2,196,000	-	-	-
Spectrum Builders and Renovations Incorporated Sacramento, CA	\$2,277,904	-	-	-
AME Builders Incorporated Pomona, CA	\$2,602,500	-	-	-
Knight Commerical Services – CA LLC Addison, TX	\$2,691,458	-	-	-
Rite-Way Roof Corporation Fontana, CA	\$3,999,748	-	-	-

¹ Small Business Enterprise (SBE) participation level established at 25% for this contract.

The Metropolitan Water District of Southern California**Subcontractors for Low Bidder****Specifications No. 2064****CRA Employee Housing Demolition and Roof Replacement****Low bidder: Resource Environmental Incorporated**

Subcontractor	Service Category; Specialty
Billmans Cool Roofing Company Stockton, CA	Roofing

Location Map





Engineering, Operations, & Technology Committee

Colorado River Aqueduct Housing Abatement and Roof Replacement

Item 7-3

September 9, 2024

Item 7-3

Colorado River Aqueduct Housing Abatement and Roof Replacement

Subject

Award a \$1,285,000 contract to Resource Environmental Incorporated for abatement and roof replacement of houses at four Colorado River Aqueduct Pumping Plant villages

Purpose

This action supports the Desert Housing and Recreation Interim Action Plan and includes abatement, roof replacement of 14 houses, and demolition of 8 houses that are beyond their expected useful life

Recommendation and Fiscal Impact

Award a construction contract to perform Colorado River Aqueduct housing improvements

Fiscal Impact of \$1,720,000

Budgeted

Location Map



Background

Colorado River Aqueduct Housing & Facility Improvements



Iron Mtn. Lodge &
Kitchen

Committed to Supporting Desert Staff

- Housing provided due to remoteness & timely response
- Houses aging after decades of use in the harsh desert environment
- Two efforts to improve housing are underway
 - Community Planning
 - Desert Housing & Recreation Interim Action Plan

Community Planning

Long-term

Housing & Facility Solutions

- Identify long-term housing options
- Identify long-term kitchen & lodging facilities
- June 2024 - Community Planning Study submitted to Board
- October 2024 - Concurrence
- November 2024 - Board Action



Desert Housing & Recreation Interim Action Plan

Near-term

Urgent
improvements began
September 2022



Resident Feedback Session

- Recreation Improvements
 - Wellness & Community Center
 - Archery ranges
 - Community garden
- Housing Improvements
 - Refurbishments
 - Carports & shade structures
 - Fencing (future board action)
 - Roofing
 - Demolition of surplus houses
- 22 of 36 projects are complete
- **Today's action:** Roof replacements & demolition of surplus houses

Desert Housing & Recreation Interim Action Plan

Work
Completed

Near-Term
Improvements Began
September 2022



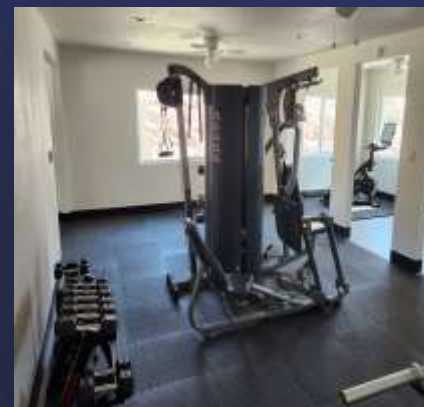
Resurfaced Sports Courts



Archery Range w/Shade Structures



Map Boards



Wellness Center



Carports



Backyard Shade

Desert Housing & Recreation Interim Action Plan

Current Action: Project Scope of Work



Abatement & roof replacement for 14 houses at four residential villages (CIP)



Abatement & demolition of eight houses deemed surplus (O&M)

Colorado River Aqueduct Housing Abatement & Roof Replacement

Scope of Work

- Contractor
 - Environmental Abatement & Clearance
 - Roof Replacement
 - Demolition Services
- Metropolitan
 - Resident Notification
 - Submittal Review
 - Construction Management
 - Secure Utilities
 - Remove Foundations

Bid Results

Specifications No. 2086

Bids Received	July 2, 2024
No. of Bidders	8
Lowest Responsible Bidder	Environmental Resource Incorporated
Low Bid	\$1,285,000
Other Bids	\$1.7M to \$3.9M
Engineer's Estimate	\$2.8M
SBE Participation	100%

*SBE (Small Business Enterprise) participation level set at 25%

Allocation of Funds

Colorado River Aqueduct Housing Abatement and Roof Replacement

Metropolitan Labor

Owner costs (Proj. Mgmt., Contract Admin., Envir. Support)	\$ 185,000
Construction Inspection & Support	155,000
Submittal Review & Tech Support	4,000

Contracts

Environmental Resource Incorporated	1,285,000
-------------------------------------	-----------

Remaining Budget	90,000
------------------	--------

Total	\$ 1,720,000 *
-------	----------------

* Includes \$615,000 in O&M Funds for demolition of houses

Project Schedule

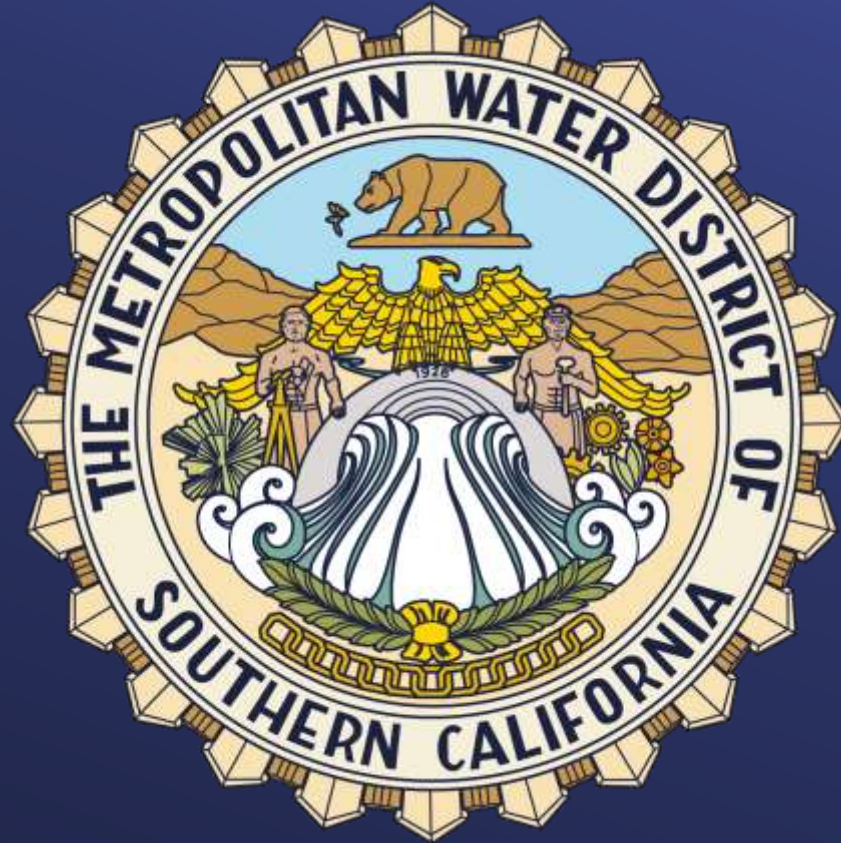
Project	2024	2025
Colorado River Aqueduct Housing Abatement & Roof Replacement		
<div><div></div> Construction</div> <div><div></div> Board Action</div> <div><div></div> Completion</div>		

Board Options

- Option #1
 - Award a \$1,285,000 contract to Resource Environmental Incorporated for abatement & roof replacement of houses at four Colorado River Aqueduct Pumping Plant villages.
- Option #2
 - Do not proceed with the contract at this time.

Staff Recommendation

- Option #1





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

9/10/2024 Board Meeting

8-1

Subject

Authorize a \$40 million increase to an existing agreement with J.F. Shea Construction Inc. to purchase long-lead equipment for the Sepulveda Feeder Pump Stations Project, for a new not-to-exceed amount of \$50.4 million; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (This action is part of a series of projects that are being undertaken to improve the supply reliability for State Water Project-dependent areas.)

Executive Summary

The Sepulveda Feeder Pump Stations Project will result in the construction of two new pump stations, one each located at the existing Venice and Sepulveda Canyon Pressure Control Facilities. The project will allow for water to be pumped northward through the Sepulveda Feeder, thereby enabling greater deliveries of Colorado River Aqueduct (CRA) and Diamond Valley Lake (DVL) water supplies to State Water Project-dependent agencies in Metropolitan's western service area. The project will lessen the impacts of future low State Water Project (SWP) allocations on these agencies. The project utilizes progressive design-build (PDB) delivery to expedite the development of these pump stations.

An advantage of the PDB project delivery process is the ability to make early procurements of long lead-time equipment before the entire design of the facility is completed. In July 2024, Metropolitan's Board authorized the initial procurement of long-lead equipment and electrical power transformers under the Phase 1 PDB agreement with J.F. Shea Construction Inc. (J.F. Shea). The initial design of the pump stations has progressed to a point where the remaining major equipment, including pumps, large valves, switchgear, and motor control centers for the two pump stations have been sized and bids received by the contractor. Procurement of this long-lead-time equipment by the PDB contractor is recommended at this time to ensure the equipment can be installed during a 2026 shutdown and to expedite project completion.

This action authorizes a \$40 million increase to an existing agreement with J.F. Shea to purchase long-lead equipment for a new not-to-exceed amount of \$50.4 million. See **Attachment 1** for the Allocation of Funds and **Attachment 2** for the Location Map.

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

Staff Recommendation: Option #1

Option #1

Authorize a \$40 million increase to an existing design-build services agreement with J.F. Shea Construction Inc. to purchase long-lead equipment for the Sepulveda Feeder Pump Stations Project for a new not-to-exceed amount of \$50.4 million.

Fiscal Impact: Expenditure of \$40 million in capital funds. All costs will be incurred in the current biennium and have been previously authorized.

Business Analysis: The project will expand Metropolitan's ability to serve Diamond Valley Lake and Colorado River water to a portion of the distribution system that normally receives water from the State Water

Project and will provide an alternate route to deliver treated water to the west service area during emergencies or when major feeders are removed from service for rehabilitation.

Option #2

Do not proceed with the procurement at this time.

Fiscal Impact: None

Business Analysis: This option would forego an opportunity for early procurement of long-lead equipment and may impact the project's ability to be ready for a planned shutdown in 2026.

Alternatives Considered

Alternatives for procuring long-lead equipment for the Sepulveda Feeder Pump Stations Project included using traditional procurement by Metropolitan staff in which drawings and specifications would be developed for advertisement and competitive bidding. It was determined that this traditional method would delay the completion of the project by over two years when compared to having the PDB contractor procure equipment directly on a best-value basis. It is recommended that the PDB contractor procure the long-lead equipment identified in this board letter to expedite the project schedule.

Another alternative was to wait until the Guaranteed Maximum Price (GMP) was established and then start procuring equipment. The lead times for some equipment can take up to 20 months, and the GMP will not be finalized until late 2024. With this approach, there is a risk that equipment will not be delivered in time for the planned 2026 start-up and commissioning of the new facilities.

Staff determined that the recommended option to have the PDB contractor purchase long-lead equipment will provide the earliest possible completion for the project.

Applicable Policy

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

Metropolitan Water District Administrative Code Section 8148: Alternative Project Delivery

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

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

By Minute Item 52703, dated February 8, 2022, the Board authorized the West Area Water Supply Reliability Improvements.

By Minute Item 53188, dated March 14, 2023, the Board authorized amendments to the Metropolitan Water District Administrative Code to provide for the implementation of new legislation authorizing the use of alternative project delivery methods.

By Minute Item 53377, dated September 12, 2023, the Board authorized an agreement for Phase 1 design-build services for the Sepulveda Feeder Pump Stations Project.

By Minute Item 53598, dated April 9, 2024, the Board appropriated a total of \$636.6 million for projects identified in the Capital Investment Plan for Fiscal Years 2024/25 and 2025/26.

By Minute Item 53718, dated July 9, 2024, the Board amended the agreement for design-build services for the Sepulveda Feeder Pump Stations Project.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action does not constitute an approval of the project for the purposes of CEQA. Environmental review will be completed prior to any decision by the Board which commits Metropolitan to the project. (State CEQA Guidelines Section 15352.)

CEQA determination for Option #2:

None required

Details and Background

Background

Metropolitan's distribution system was initially constructed in the 1940s to deliver treated CRA supplies throughout its service area. The system was expanded in the 1970s to connect to and distribute SWP water supplies. The distribution system was designed to take advantage of the region's topography and primarily utilizes gravity to move water through the system. While much of the service area benefits from access to both sources of supply and stored water in DVL, certain portions of the system can only receive limited DVL/CRA water due to inherent hydraulic limitations of the gravity-fed system. During multi-year droughts, as California recently experienced, SWP-dependent areas rely on stored SWP supplies, transfers, and exchange deliveries.

The west service area portion of Metropolitan's distribution system typically receives SWP water via the Joseph Jensen Water Treatment Plant (Jensen plant), Sepulveda Feeder, and connecting pipelines. During periods of low deliveries from the West Branch of the SWP, or when the Jensen plant is out of service, the west area can be served by the Weymouth plant through the East Valley Feeder and the Greg Avenue Pump Station. This pumping system is limited to a maximum capacity of approximately 50 cubic feet per second (cfs). Throughout the recent statewide drought that ended in early 2023, the Greg Avenue Pump Station operated nearly full-time at its maximum capacity.

In February 2022, Metropolitan's Board approved planning efforts for the Sepulveda Feeder Pump Stations Project to increase delivery reliability in the west area. This project will enable Metropolitan to convey treated CRA and DVL water from its Central Pool northward along the Sepulveda Feeder to the west service area, supplementing deliveries from the Greg Avenue Pump Station. This concept requires two new pump stations along the Sepulveda Feeder: one each located adjacent to the existing Venice and Sepulveda Canyon Pressure Control Facilities. The project will be implemented in multiple stages. The initial stage of the project includes the construction of two pump stations capable of moving up to 30 cfs northward from the Central Pool to the west service area. However, once operational, the net benefits of the project to the west service area will be approximately 60 cfs of water supply as there will no longer be a need to send "operational water" southward on the Sepulveda Feeder from the Jensen plant during periods of low SWP demands. These operational water flows in the Sepulveda Feeder are currently necessary to maintain water quality during low SWP allocations. Therefore, once the initial phase of this project is complete, the operational flows can be diverted to the west service area.

The pump stations will not only enhance the reliability of water supplies in the west area in times of reduced SWP supplies, but they will increase overall system flexibility by enabling the Jensen exclusive area to receive flows when the Jensen plant is removed from service for maintenance and repairs. During the upcoming rehabilitation of prestressed concrete cylinder pipeline (PCCP) portions of the Sepulveda Feeder, the pump stations will also aid in minimizing delivery impacts to member agencies as the PCCP lining work proceeds.

In September 2023, the Board authorized an agreement with J.F. Shea to begin Phase 1 of the PDB process. The Phase 1 agreement permits J.F. Shea, upon Metropolitan's approval, to commence procurement of required equipment during Phase 1, prior to agreement on the GMP. In July 2024, the Board authorized an amendment to the agreement with J.F. Shea to procure electrical transformers. Design for the remaining major equipment has been finalized, and staff recommends procuring long-lead pumps, large valves, electrical switchgear, and motor control centers at this time in order to expedite the procurement of equipment and streamline the project schedule. Since the not-to-exceed amount in the agreement does not include this equipment, an amendment to increase the existing not-to-exceed agreement amount is necessary. Staff anticipates returning to the Board in late 2024 for an amendment to the agreement to cover Phase 2 work, which includes completion of design and construction.

Sepulveda Feeder Pump Stations – PDB Phase 1 Agreement Amendment (J.F. Shea Construction Inc.)

The amended PDB agreement will enable J.F. Shea to procure four pumps (two for each site), 19 valves varying in size from 54-inch to 24-inch, electrical switchgear, and motor control centers for the two new pump stations at

the Venice and Sepulveda Canyon Pressure Control Structure sites. These long-lead items can take up to 20 months to procure, and staff recommends procurement of this equipment at this time to streamline the overall project schedule. J.F. Shea will lead the procurement effort, utilizing a best-value process to select the vendors. Equipment would be installed with the Phase 2 construction work.

A total of \$40 million is allocated for this work. Allocated funds for this procurement effort include approximately \$13.4 million for the pumps and motors, \$20.4 million for valves, and \$6.2 million for the electrical switchgears and motor control centers. Metropolitan staff will partner with the design-build team on technical issues and conduct fabrication inspections. Adequate funds were previously allocated for staff support through the completion of Phase 1. **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 \$105 million to \$115 million.

Proceeding with early procurement of the long-lead equipment at this time will enable the completion of the pump stations at the Venice and Sepulveda Canyon sites during a planned 2026 shutdown of the Sepulveda Feeder. This action authorizes a \$40 million increase to an existing agreement with J.F. Shea to purchase long-lead equipment for the Sepulveda Feeder Pump Stations Project for a new not-to-exceed amount of \$50.4 million.

Project Milestone

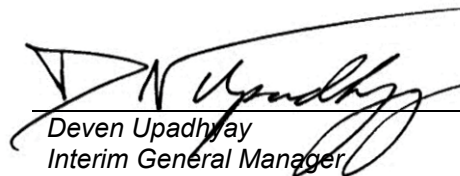
May 2026 – Delivery of equipment



Mai M. Hattar
Interim Manager/Chief Engineer
Engineering Services

8/20/2024

Date



Deven Upadhyay
Interim General Manager

8/26/2024

Date

Attachment 1 – Allocation of Funds

Attachment 2 – Location Map

Ref# es12698256

Allocation of Funds for Sepulveda Feeder Pump Stations

	Current Board Action (Sep. 2024)	
Labor		
Studies & Investigations	\$	-
Final Design		-
Owner Costs (Program mgmt.)		-
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.		40,000,000
Remaining Budget		-
Total	\$	40,000,000

The amount expended to date on the Sepulveda Feeder Pump Stations Project is approximately \$5.5 million. The total estimated cost to complete this project, including the funds allocated for the work described in this action is anticipated to range from \$105 million to \$115 million.





Engineering, Operations, & Technology Committee

Sepulveda Feeder Pump Stations – Long-lead Equipment Procurement

Item 8-1

September 9, 2024

Item 8-1

Sepulveda Feeder Pump Stations – Long-lead Equipment Procurement

Subject

Authorize a \$40 million increase to an existing agreement with J.F. Shea Construction Inc., to purchase long-lead equipment for the Sepulveda Feeder Pump Stations project, for a new not-to-exceed amount of \$50.4 million

Purpose

To improve the supply reliability for State Water Project-dependent areas

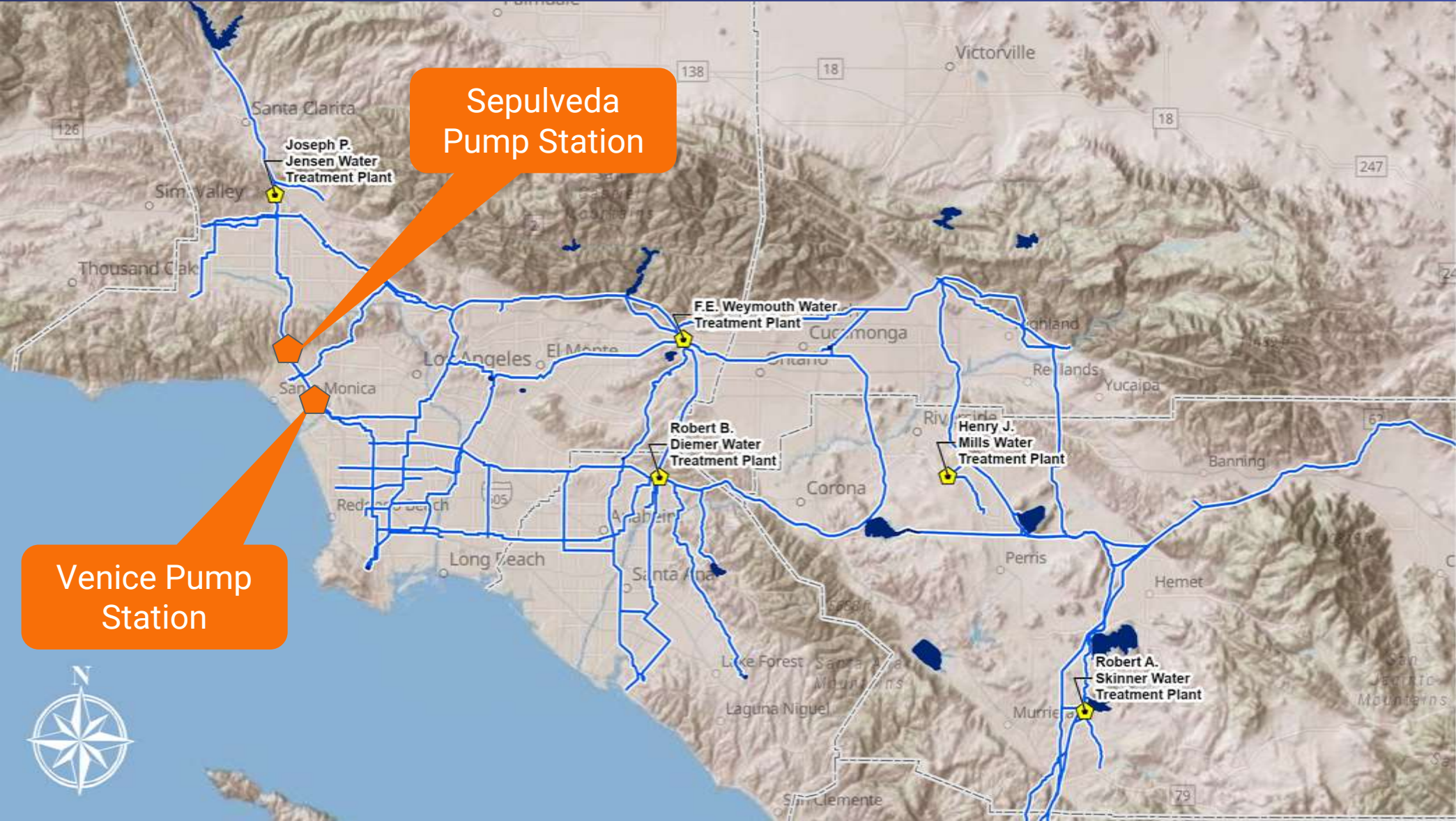
Recommendation and Fiscal Impact

Authorize an increase to an existing Progressive Design Build (PDB) agreement for the Sepulveda Feeder Pump Stations project

Fiscal Impact of \$40 M

Budgeted

Location Map



Sepulveda Feeder Pump Stations Long-lead Equipment Procurement

Background

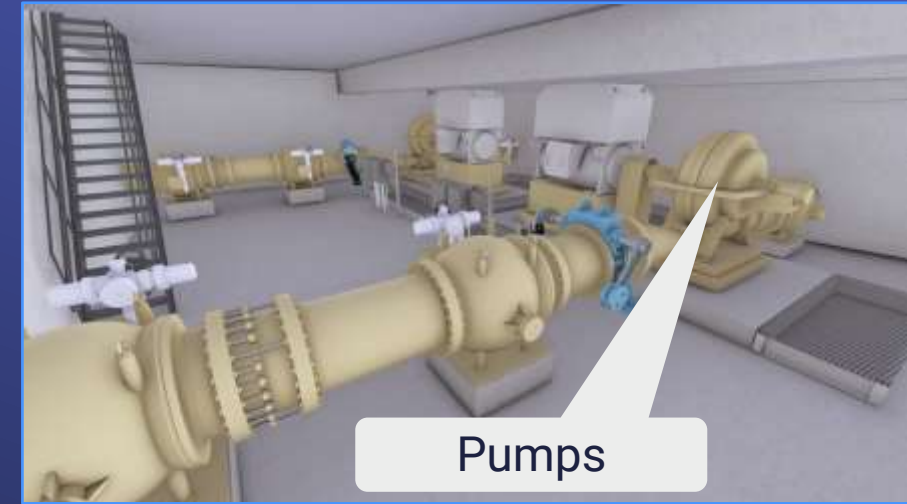
- Addition of pump stations at Sepulveda Canyon & Venice Pressure Control Facilities will allow Metropolitan to reverse normal flow in the Sepulveda Feeder
- Augments treated water deliveries to west service area
- Initial hydraulic capacity of pump stations of 30 cfs
- Enhances reliability of water supplies in the west area as well as increases overall system flexibility



Sepulveda Pump Station Layout Rendering

Project Scope

- Two new pumping plants on the Sepulveda Feeder
- Project components
 - Pumps, motors, & interconnection piping
 - Valve structures
 - Mechanical eqpt. for surge protection
 - Electrical modifications & switchgear
 - Electrical & control buildings



Sepulveda Pump Station Vault Rendering



Venice Pump Station Layout Rendering

Sepulveda Feeder Pump Stations Long-lead Equipment Procurement

Alternatives Considered

- Traditional procurement by Metropolitan staff
 - Competitive bidding would delay completion of project by up to two years
- Wait until guaranteed maximum price (GMP) is established before starting procurement
 - Delays project completion
- Selected Alternative - PDB Contractor purchases long-lead equipment
 - PDB contractor procures equipment directly on a best-value basis
 - Early procurement expedites project schedule

Allocation of Funds

Sepulveda Feeder Pump Stations

Contracts

J.F. Shea Construction Inc.

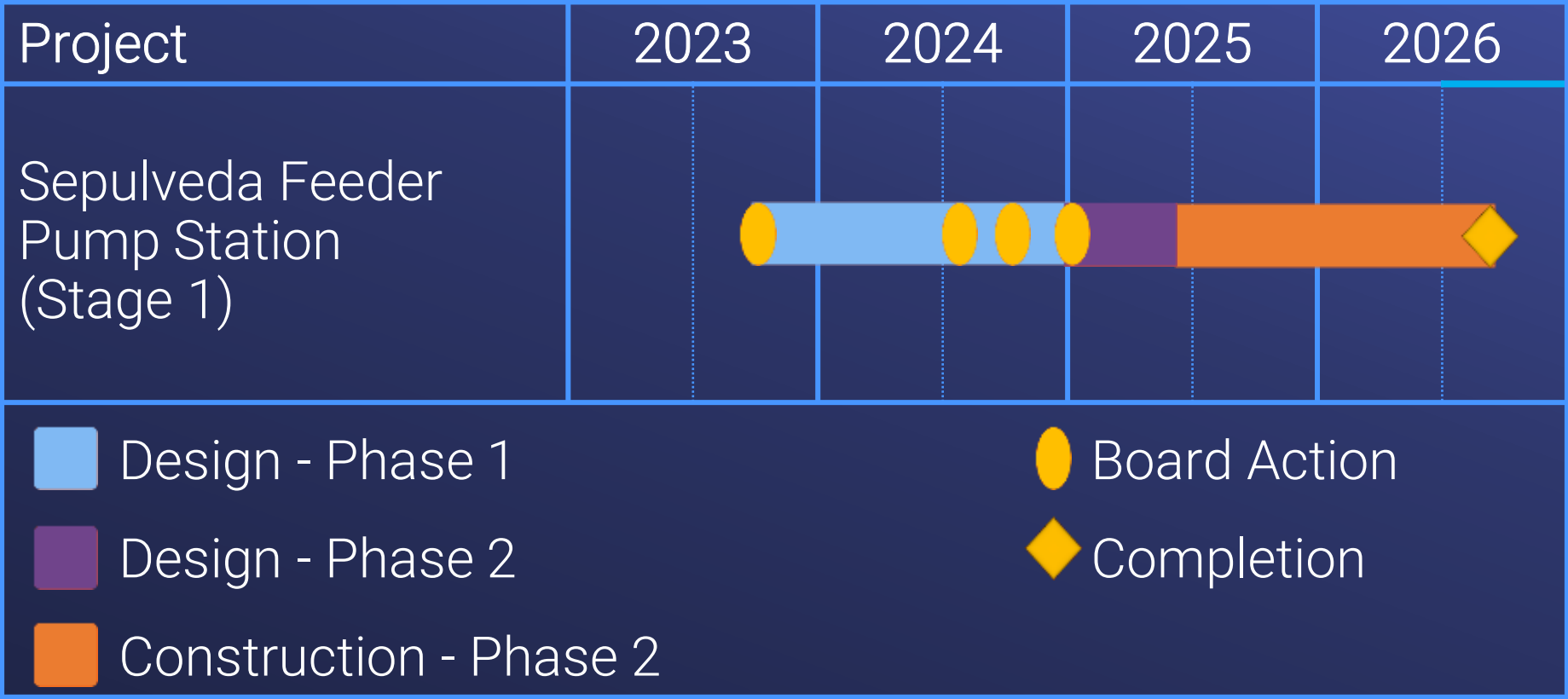
4 Pumps (2600 to 2800 hp)	\$ 13,400,000
---------------------------	---------------

19 Valves (24- to 54-inch-diam.)	20,400,000
----------------------------------	------------

Electrical Switchgear & MCC's	6,200,000
-------------------------------	-----------

Total	\$ 40,000,000
-------	---------------

Project Schedule



Board Options

- Option #1

Authorize a \$40 million increase to an existing design-build services agreement with J.F. Shea Construction Inc. to purchase long-lead equipment for the Sepulveda Feeder Pump Stations project for a new not-to-exceed amount of \$50.4 million.

- Option #2

Do not proceed with the procurement at this time.

Staff Recommendation

- Option #1





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

9/10/2024 Board Meeting

8-2

Subject

Authorize an amended and restated agreement with the Los Angeles County Sanitation District for shared implementation of the advanced water purification facility for Pure Water Southern California; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

In November 2015, Metropolitan's Board authorized an agreement with the County Sanitation District No. 2 of Los Angeles County (Sanitation District) to implement a demonstration project and establish a framework of initial terms and conditions for the joint development of a large-scale regional recycled water supply program. This agreement was amended in November 2020 to include certain provisions related to cost-sharing, in-kind technical studies, and public outreach efforts in support of the environmental planning phase for the Pure Water Southern California Program (PWSC).

Both parties initially envisioned that Metropolitan would have responsibility for most of the treatment facilities related to the large-scale program. The key treatment facilities under Metropolitan's scope of work at that time included the membrane bioreactor (MBR), reverse osmosis (RO), and ultraviolet with advanced oxidation process (UV/AOP). Metropolitan and the Sanitation District have recently collaborated to prepare an amended and restated agreement (Restated Agreement) to document a revised set of shared responsibilities to produce purified water for PWSC and align each agency's participation in the program with its expertise and organizational mission.

Under the revised approach, the Sanitation District would be responsible for the design, construction, and operation of pre-treatment and nitrogen management facilities, including the MBR process. Metropolitan would be primarily responsible for advanced water treatment downstream of the MBR, including RO and UV/AOP. The proposed Restated Agreement also would provide for Sanitation District staff to assist in operating the Grace F. Napolitano Pure Water Southern California Innovation Center (NIC) to obtain experience for full-scale MBR operation. Furthermore, the Restated Agreement would define the sharing of grant funds and each party's obligation to provide matching funds for grants received for PWSC. As a result, Metropolitan's overall program costs would be reduced as the Sanitation District will implement additional treatment facilities when compared to the original arrangement.

The Restated Agreement also would establish sharing of grant funding between the two agencies. Up to \$1 million of the United States of Reclamation (USBR) WaterSMART \$5 million planning grant funds will be allocated to the Sanitation District for preliminary design of the sidestream centrate treatment facility. A portion of the \$80 million state funds Metropolitan received in December 2022 for PWSC planning would be shared with the Sanitation District for planning and design of the pre-treatment facilities. Finally, the Sanitation District would also receive a portion of the USBR Large-Scale Water Recycling Project (LSWRP) grant award to support planning and design activities related to the pre-treatment and nitrogen management facilities following the terms outlined in the Restated Agreement. The Sanitation District would contribute the associated matching funds for its

portion of the cost-share obligation for the LSWRP grant. This also would proportionally reduce Metropolitan's cost-share obligation.

This action authorizes a Restated Agreement with the Sanitation District to establish roles and responsibilities for the development of PWSC, including design of treatment facilities, joint operation of NIC, operator training, and sharing of grant funds.

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

Staff Recommendation: Option #1

Option #1

Authorize an amended and restated agreement with County Sanitation District No. 2 of Los Angeles County for shared implementation of Pure Water Southern California.

Fiscal Impact: The Sanitation District will be responsible for funding the program costs for its portion of the treatment facilities. This would directly offset Metropolitan's program cost and share of matching funds should the Board authorize the amended and restated agreement.

Business Analysis: This option would establish roles and responsibilities for each agency and provide financial support to advance the development of PWSC.

Option #2

Do not authorize an amended and restated agreement with the County Sanitation District No. 2 of Los Angeles County for shared implementation of Pure Water Southern California.

Fiscal Impact: Metropolitan would require additional funds to advance the PWSC.

Business Analysis: This would forego the opportunity to share costs and responsibilities for treatment facilities implementation and leverage PWSC partner contributions to cover a significant portion of the cost-share obligation for the LSWRP grant. As a result, this would delay the development of a new water resource to address drought, climate change, and seismic risk.

Alternatives Considered

Several alternatives were considered for amending the existing agreement with the Sanitation Districts, including the extent of the Sanitation District's role and responsibilities in the development of the treatment facilities, as well as the timing to amend and restate the agreement.

Shared Implementation of the AWPf

The 2015 agreement and 2020 amendment between Metropolitan and the Sanitation District were based on Metropolitan taking the sole responsibility for the development and implementation of the AWPf. The Restated Agreement considers the Sanitation District's expanded role in AWPf implementation to share costs and responsibilities in the implementation of PWSC.

Timing of the Restated Agreement

Staff also considered deferring the Restated Agreement until Metropolitan's Board considers final approval of the PWSC. Board approval of PWSC and certification of the environmental documentation is anticipated in the second quarter of 2026. However, this would increase Metropolitan's planning costs and likely delay the Sanitation District's planning effort for the pre-treatment facilities.

To better align each agency's scope with its expertise and organizational mission, streamline the program schedule, and reduce Metropolitan's costs for the full-scale program, staff recommends amending and restating the existing agreement with the Sanitation District for shared implementation of the AWPf, joint operation of the NIC, and sharing of grant funds and cost-share obligations, while continuing to work with the Sanitation District on long-term commitments for the full implementation of PWSC. A future agreement is envisioned to detail the responsibilities of each agency for the full-scale program.

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 50299, dated November 10, 2015, the Board authorized an agreement with County Sanitation District No. 2 of Los Angeles County for development of a potential regional recycled water supply program and a demonstration project.

By Minute Item 52181, dated November 10, 2020, the Board authorized an amendment to an existing agreement with County Sanitation District No. 2 of Los Angeles County and a new agreement with Southern Nevada Water Authority to support continued evaluation and development of the Regional Recycled Water Program.

By Minute Item 53052, dated December 13, 2022, the Board authorized the General Manager to use \$80 million in funding from the State Water Resources Control Board and to commence activities related to the initiation of the Pure Water Southern California Program.

Summary of Outreach Completed

Metropolitan staff has collaborated with the Sanitation District to identify the respective design and operational responsibilities for the AWPf. Multiple meetings were conducted with the Sanitation District staff to discuss the scope of work, roles and responsibilities, technical parameters, and operational interfaces. As a result, the Sanitation District will assume responsibility for the planning, design, construction, and operation of the MBR and upstream pre-treatment facilities, while Metropolitan will assume primary responsibility for the planning, design, construction, and operation of treatment facilities downstream of the MBR and ancillary facilities. Shared implementation of the AWPf will result in cost-sharing and other mutual benefits to both agencies.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is not defined as a project under CEQA because it will not result in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment. (State CEQA Guidelines Section 15378(a)). In addition, the proposed action is not defined as a project under CEQA because it involves the creation of government funding mechanisms or other government fiscal activities that do not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment. (State CEQA Guidelines Section 15378(b)(4)). Finally, the proposed action does not constitute an approval of the project for the purposes of CEQA. Environmental review will be completed prior to any decision by the Board which commits Metropolitan to the project. (State CEQA Guidelines Section 15352).

CEQA determination for Option #2:

None required

Details and Background

Background

Pure Water Southern California would reuse treated wastewater currently being discharged to the Pacific Ocean from the Sanitation District's A. K. Warren Water Resource Facility (Warren Facility) in the city of Carson. The treated wastewater would be further purified at a new AWPf located at the Warren Facility to produce up to 115 million gallons per day (mgd) of purified water in the first phase and up to 150 mgd at full build-out. Purified water would recharge regional groundwater basins through spreading facilities and injection wells, satisfy non-potable demands currently relying on imported water, and augment existing water supplies at two of

Metropolitan's existing water treatment plants. In addition to the treatment facilities, a new backbone conveyance system would extend from the city of Carson as far north as the city of Azusa and east to the city of La Verne to connect with Metropolitan's existing water treatment and distribution facilities as a form of direct potable reuse (DPR) through raw water augmentation. Staff is also developing options for additional DPR applications, including the potential for future use of treated water augmentation.

In November 2015, Metropolitan's Board authorized an agreement with the Sanitation District to implement a demonstration project and establish the initial terms and conditions for developing a regional recycled water supply program. The demonstration project was defined as having components such as a demonstration plant for testing advanced treatment processes, feasibility studies of the delivery system, and a financing plan for program funding. The terms and conditions for development of the demonstration project included (1) location and capacity of the testing facility; (2) design and construction; (3) ownership and operation; (4) removal of facilities; (5) permitting and authorization; (6) utilities; (7) source water obligation and facilities; (8) distribution and use of purified water; and (9) pursuit of grant and loan funding. The terms and conditions for development of a full-scale program included (1) the design, construction, permitting, and operation of a full-scale AWWP; (2) source water control and obligations; (3) distribution and use of purified water; (4) disposal of treatment residuals; (5) laboratory analyses and data sharing; and (6) pursuit of grant and loan funding.

In November 2020, Metropolitan's Board authorized an amendment to the existing agreement with the Sanitation District to include provisions related to cost-sharing, in-kind technical studies, and public outreach efforts in support of the environmental planning phase for the PWSC. With respect to cost-sharing, the amendment provided for reimbursement for the preparation of environmental documentation (equally split with Metropolitan for approximately \$2 million from the Sanitation District), engineering studies (equally split for Warren Facility-related consultant work for approximately \$2 million from the Sanitation District), and public outreach efforts (equally split with Metropolitan for approximately \$400,000 from the Sanitation District). In total, the Sanitation District agreed to contribute approximately \$4.4 million, which Metropolitan is using to offset the program cost by the same amount directly.

Key Terms – Los Angeles County Sanitation District Agreement Amendment and Restatement

Staff collaborated with the Sanitation District to prepare the Restated Agreement to define the roles and responsibilities of each agency. Changes to the current agreement are proposed primarily to revise the scope of work to increase the Sanitation District's treatment responsibility, provide for sharing of grant funds, and allow joint operation of the NIC, as explained below. The term sheet that provides details on these items is included in **Attachment 1**.

Implementation of PWSC Treatment Facilities - Revised Scopes of Work

Metropolitan and the Sanitation District are interested in shared implementation of the AWWP, whereby the Sanitation District would be responsible for the pre-treatment and nitrogen management components of the AWWP. This aligns each agency's participation with its expertise and mission. The Sanitation District's staff intends to present a proposed plan to its board this fall to authorize funding, management, and contract administration for design of these facilities. The work includes a connection to an existing secondary effluent channel, influent pump station, fine screening, MBR, sidestream centrate treatment, modifications to the Warren Facility's secondary treatment modules, and associated support facilities. Metropolitan would be primarily responsible for funding, management, and contract administration for design of the (1) AWWP components downstream of the proposed MBR facility, including RO, UV/AOP, and post-treatment; (2) chemical feed systems; (3) clearwell and product water pump station; and (4) ancillary facilities. Metropolitan and the Sanitation District would share responsibilities for regulatory permitting, public engagement, program management, and other related work.

Use of Grant Funds

The Amendment also would establish sharing of grant funding between the two agencies. Up to \$1 million of the United States of Reclamation (USBR) WaterSMART planning grant funds will be allocated to the Sanitation District for preliminary design of the sidestream centrate treatment facility. In December 2022, Metropolitan's

Board authorized the acceptance of \$80 million in state funds to initiate PWSC activities, including program management, continuing demonstration testing, AWPf planning, and preliminary design of the first two pipeline reaches. Pursuant to the 2015 agreement with the Sanitation District, state funds allocated for treatment facilities will be shared with the Sanitation District to support planning and design activities for its portion of the treatment facilities.

Metropolitan worked with its congressional representatives to develop a new grant program that was created with the passage of the Bipartisan Infrastructure Law (P.L. 117-58, § 40905), known as the LSWRP. The Bipartisan Infrastructure Law was enacted on November 15, 2021. Metropolitan applied for an LSWRP grant in November 2023. In May 2024, the USBR notified Metropolitan of its intent to award up to \$99,199,096 in federal grant funds to Metropolitan to advance PWSC. Under current plans, the Sanitation District would receive a portion of the grant funds to support planning and design activities for its portion of treatment facilities. USBR requires three times the cost-share match from Metropolitan. The Sanitation District would contribute towards required matching funds to cover a portion of the cost-share in accordance with the terms that will be set forth in the Restated Agreement. PWSC partner contributions from the Sanitation District may also be used to cover a portion of the cost-share obligation for the LSWRP grant.

Operation of the NIC

The Sanitation District is interested in joint operation of the NIC to gain experience for full-scale MBR operation. Metropolitan would initially provide operator training for the Sanitation District's staff. Metropolitan and the Sanitation District would share responsibilities and costs for the operation and maintenance of the NIC.

Next Steps

Staff will also work with the Sanitation District on a future agreement to further define each agency's roles and responsibilities for the full implementation of treatment and support facilities for PWSC, including agency governance, final design responsibilities, construction obligations, system operation, water quality, and other long-term agency commitments. The future agreement would replace the Restated Agreement that is the subject of this action and be brought to the Board for authorization after the terms have been negotiated.

Project Milestone

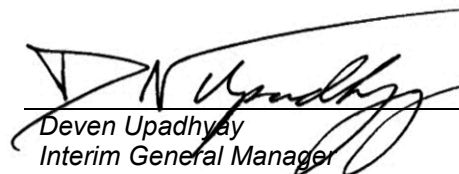
Early 2026 – Request the Board to consider a new agreement with the Sanitation District for the construction and operation of PWSC



Mai M. Hattar
Interim Manager/Chief Engineer
Engineering Services

8/26/2024

Date



Deven Upadhyay
Interim General Manager

9/3/2024

Date

Attachment 1 – Term Sheet for Amendment and Restatement for Agreement with the Los Angeles County Sanitation District

Ref# Es12702746

The Metropolitan Water District of Southern California

DRAFT Terms for Amended and Restated Pure Water Southern California Program (previously Regional Recycled Water Program) Agreement

General Provisions

- Parties
 - County Sanitation District No. 2 of Los Angeles County (Sanitation District)
 - Metropolitan Water District of Southern California (Metropolitan)
- Term
 - Terminates with the existing 2015 Agreement (no change) or when it is superseded by another agreement.
- Purpose
 - This amended and restated agreement (Restated Agreement) is intended to define the partnership and division of work for the treatment and support facilities located within the Warren Facility only.
- Conditions
 - Construction of the treatment facilities are conditioned upon completion and certification of a Final Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act. No construction work described in this Restated Agreement will be awarded or performed prior to certification of the Final EIR.

Design and Construction Responsibilities

- Metropolitan
 - Pay for, manage, and serve as contracting authority for the design and construction of all advanced water treatment (AWT) facilities (i.e., downstream of the proposed membrane bioreactor (MBR)), including reverse osmosis, ultra-violet light/advanced oxidation process (UV/AOP), and all support facilities associated with AWT.
 - Pay for, manage, and serve as contracting authority for the design and construction of all ancillary facilities associated with the AWT, including but not limited to the laboratory, warehouse, parking facilities and electric vehicle charging stations, chemical facilities, and administration, maintenance, and operations buildings.
 - Manage and serve as contracting authority for the workforce training center and public outreach facilities, such as amphitheater, demonstration garden, and visitor center and tour galleries.
- Sanitation District
 - Pay for, manage, and serve as contracting authority for the design and construction of:
 - Sidestream centrate treatment facilities,
 - Pretreatment facilities upstream of AWT facilities including the connection to existing secondary effluent channel, influent pump station, fine screening facilities, MBR, and all ancillary facilities associated with pretreatment facilities (collectively referred to herein as "Pretreatment").
- Metropolitan and the Sanitation District
 - Share equally the cost of design and construction of the workforce training center and public outreach facilities.
 - Share site preparation costs as mutually agreed by both parties.

- Share proportional cost of design and construction of the main electrical power supplies facilities.

Owner's Advisor for PDB Contract of Pretreatment Facilities

- Metropolitan
 - Issue a task order to the Program Management Team of the AECOM Technical Services, Inc. and Brown and Caldwell joint venture (AECOM/BC) under the existing contract authorized by Metropolitan's Board of Directors, to provide the Sanitation District with "Owner's Advisor" services for the proposed Pretreatment facilities, including but not limited to preparation of PDB contract documents, evaluation of PDB proposals, and negotiations with qualified PDB contractors, and supporting Sanitation District staff with management of the PDB contract, through award of the GMP.
 - Submit quarterly invoice for costs incurred under this task to the Sanitation District.
- Sanitation District
 - Develop scope of work for the Program Management Team's task order for the proposed Pretreatment facilities, including defining key personnel and staffing requirements.
 - Lead and manage this task, including carrying out day-to-day activities and approval of work product and invoices from the Program Management Team.
 - Pay 100% of the costs of this task and pay invoices provided by Metropolitan within 30 days of receipt.

Operator Training and Joint Operation of Grace F. Napolitano Pure Water Southern California Innovation Center (NIC)

- Metropolitan
 - Provide initial training for Sanitation District's employees to learn the operations at NIC.
- Metropolitan and the Sanitation District
 - Share responsibility for the operation and maintenance of the NIC as mutually agreed by both Parties.
 - Each party will pay for all costs associated with their staff's work at the NIC. Operational costs currently covered by Metropolitan (e.g., chemicals, utilities) will continue to be paid by Metropolitan. Costs for special projects, maintenance, and repairs will be shared per mutual agreement of both Parties.
 - Personnel from each Party will abide by safety and emergency procedures established for the facilities.

Sharing of Grant Funding

- Metropolitan
 - Share a portion of the \$80 million appropriation by the State of California for tasks related to the Pretreatment and sidestream centrate treatment facilities.
 - Share up to \$1 million of the WaterSmart planning grant awarded by the Bureau of Reclamation (Bureau) to Metropolitan in September 2023 with the Sanitation District for preliminary design of the sidestream centrate treatment facility.
 - Share funds from any Large-Scale Water Recycling Project (LSWRP) grant awarded by the Bureau to Metropolitan with the Sanitation District for design of the Pretreatment and sidestream centrate treatment facilities.

- Metropolitan and the Sanitation District
 - Jointly pursue future grant and loan funding opportunities in support of the overall implementation of the full-scale project.
 - Share any grant and loan funding received based on the percentage of full-scale project facility design and construction costs contributed by each Party in support of the full-scale project.
 - Unless otherwise negotiated, each Party will keep 100% of any grant awarded if the grant was sought by either Party for elements of the full-scale project specific to facilities to be designed and constructed by the Party.



Engineering, Operations, & Technology Committee

Proposed Restated Agreement with County Sanitation District No. 2 of Los Angeles County for Shared Implementation of the Pure Water Southern California Program

Item 8-2

September 9, 2024

Item 8-2

PWSC

Los Angeles County Sanitation District Restated Agreement

Subject

Authorize an amended and restated agreement with the County Sanitation District No. 2 of Los Angeles County for shared implementation of the Pure Water Southern California Program

Purpose

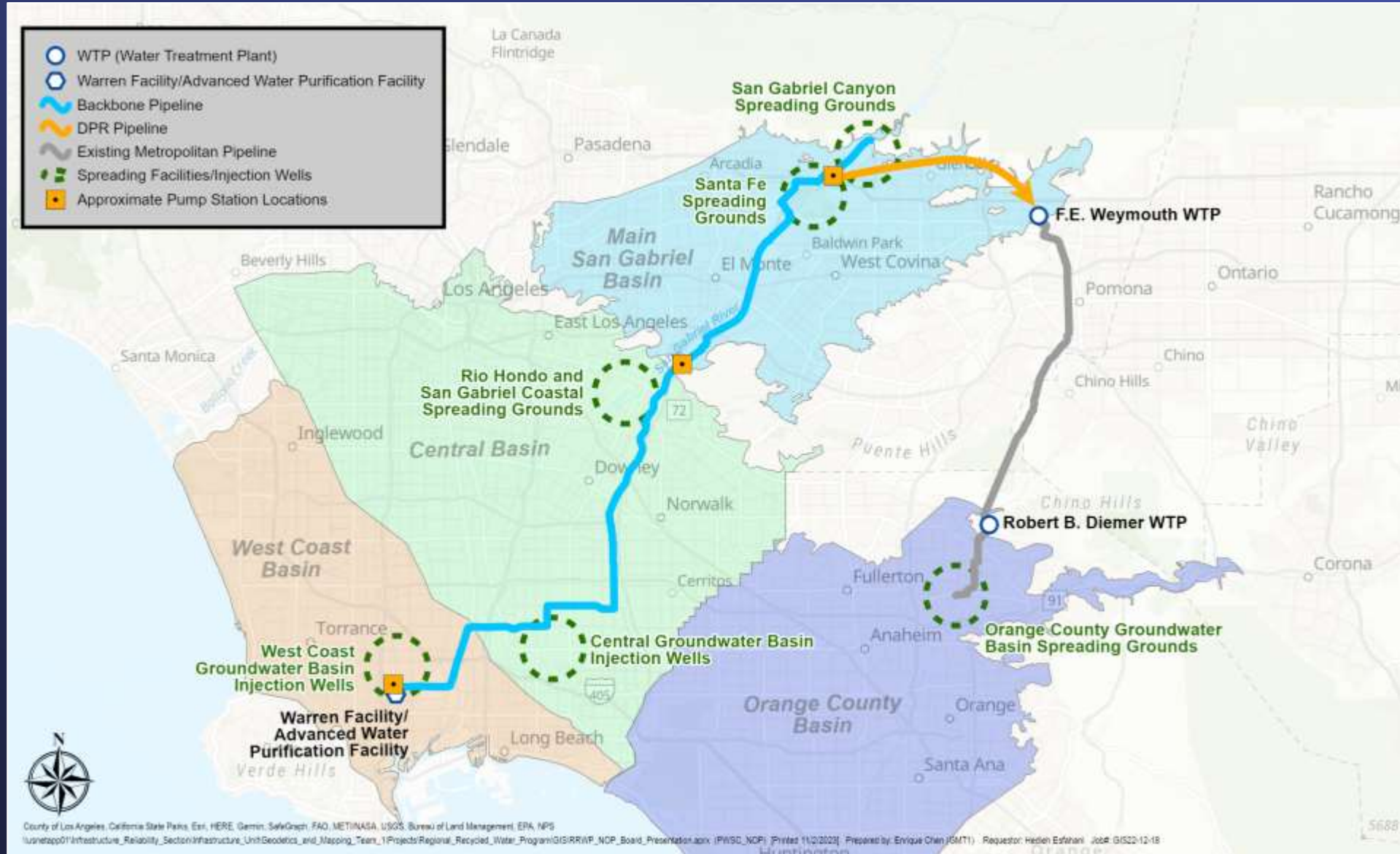
To amend and restate agreement with the Sanitation District for PWSC

Recommendations and Fiscal Impact

Request for board authorization to amend and restate this agreement

No Fiscal Impact

Pure Water Southern California Overview



Project Location



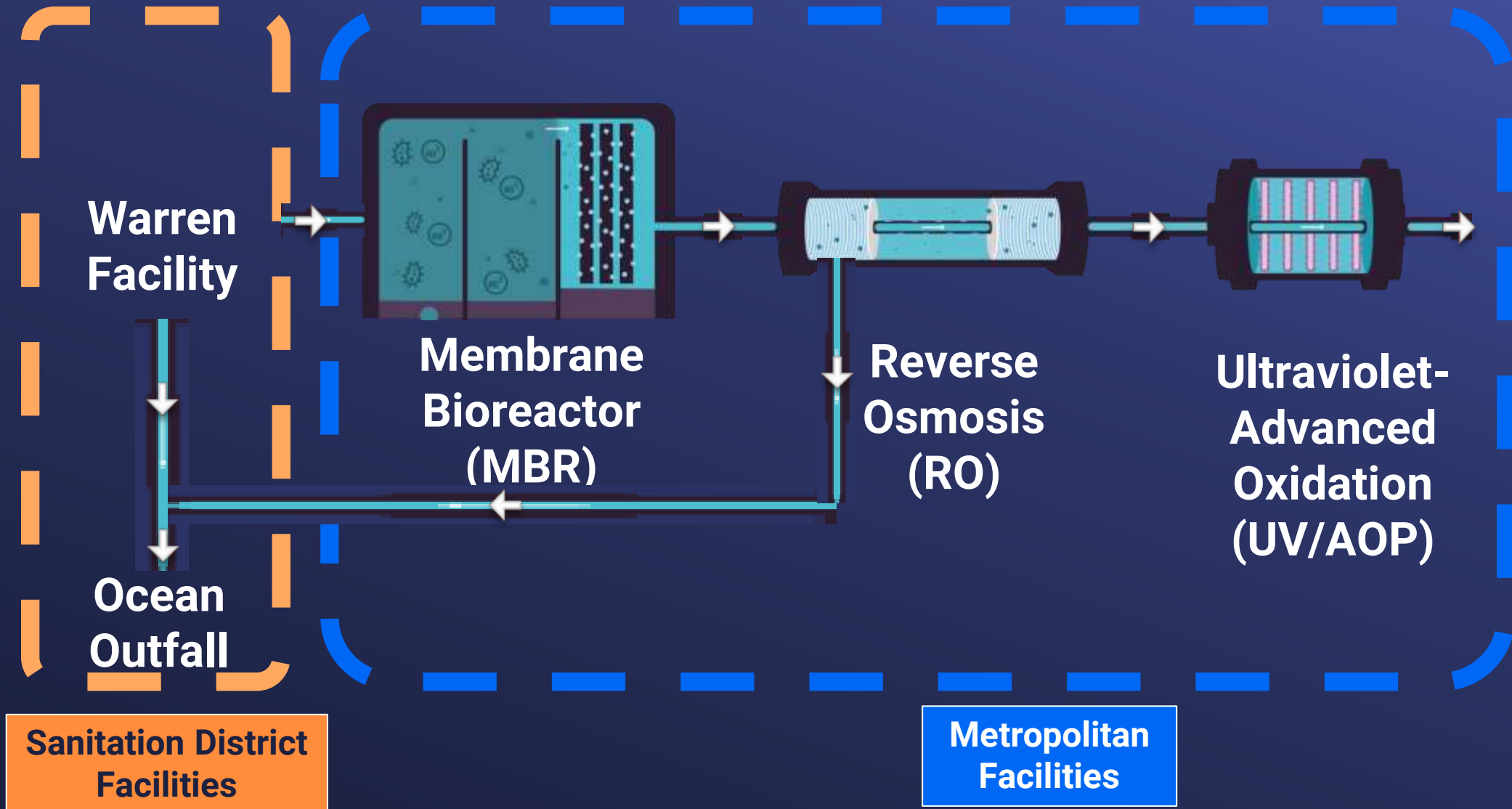
2015 Agreement Key Terms

- Agreement covers feasibility and planning phase
- Demonstration Project/Grace F. Napolitano Innovation Center (NIC)
 - Metropolitan – design, construct & operate
 - Sanitation District – provide site, utilities, supply source & residuals management
- Framework for development of full-scale treatment facilities
 - Metropolitan – fund, design, construct & operate
 - Sanitation District – provide site, utilities, supply source & manage waste streams
 - Land lease – \$5,000 per acre in 2015 dollars, to be adjusted per Consumer Price Index (CPI)

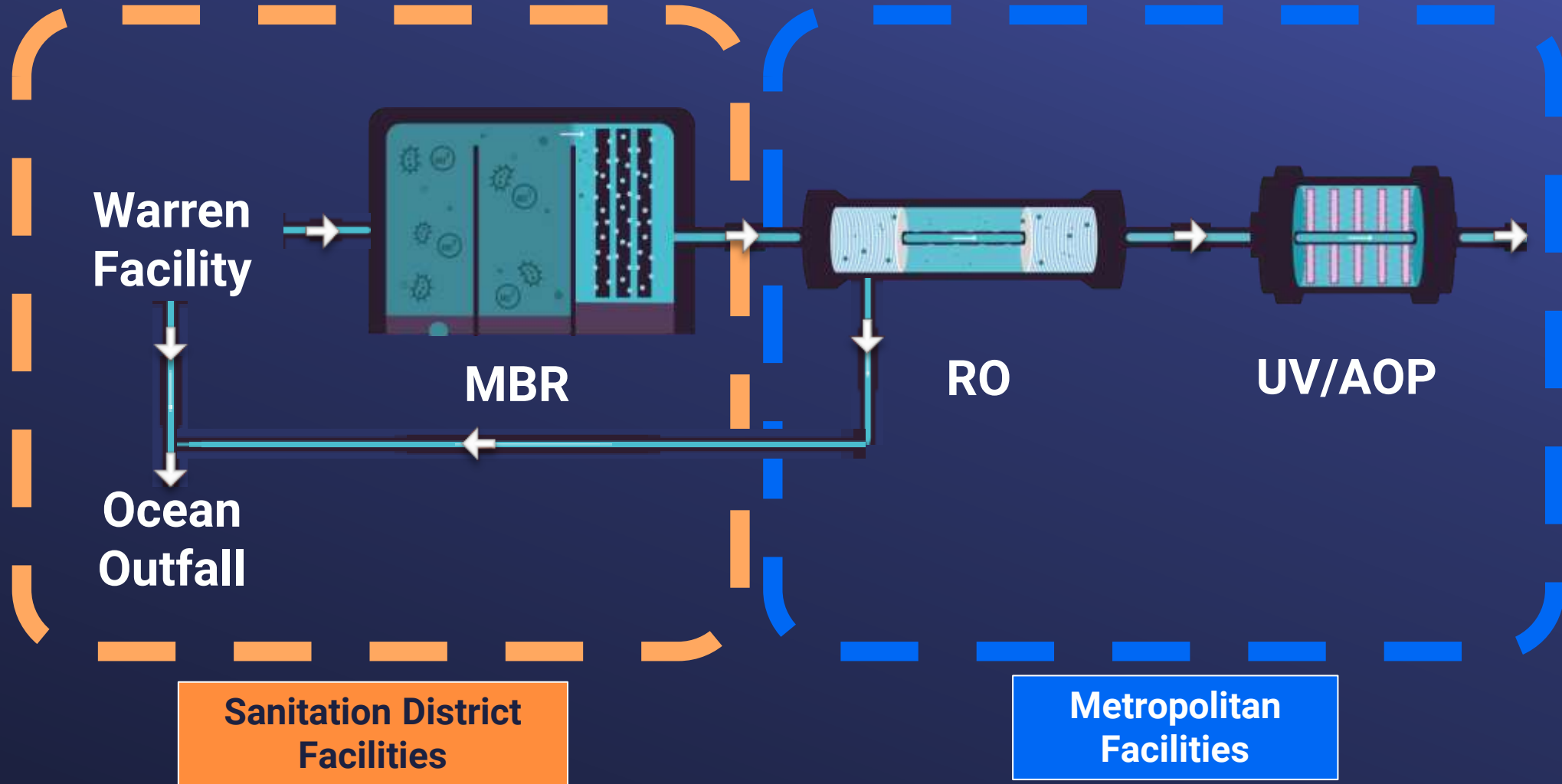
2020 Amendment No. 1 Key Terms

- Environmental Planning Phase
 - Collaboration & shared costs for
 - EIR preparation
 - Public outreach program
 - AWPf conceptual facilities planning

PWSC Treatment Process Responsibilities (Original Concept)



PWSC Treatment Process Responsibilities (Revised Concept)



2024 Restated Agreement Key Terms

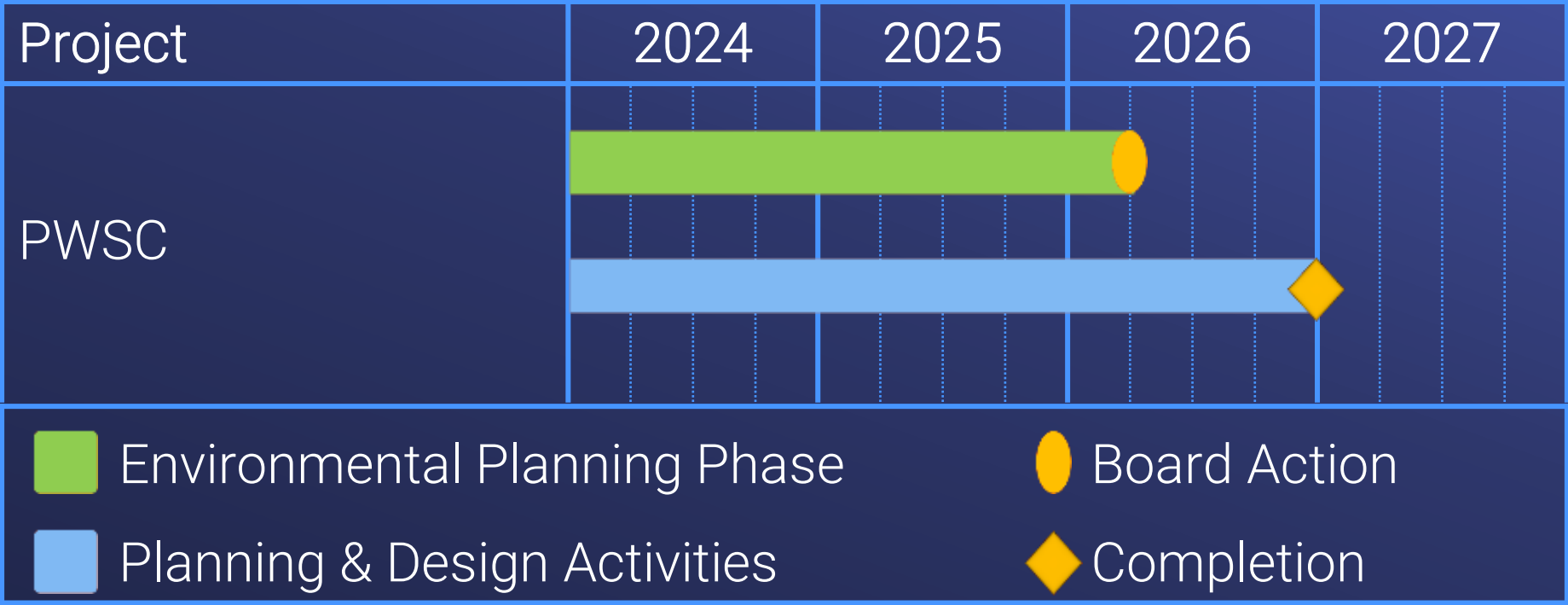
- Full-Scale AWPf
 - Share responsibility for implementation
 - Sanitation District – pre-treatment & MBR
 - Metropolitan – RO, UV/AOP, post-treatment & ancillary facilities
 - Share PDB Owner's Advisor team
- NIC joint operation & maintenance
- State & grant funding
 - Share funds & cost-share obligations proportionally to work performed



Alternatives Considered

- Defer amendment until after Board approves PWSC
 - Impacts cost, schedule & use of federal grants
- Selected Alternative - Expand the Sanitation District's role in AWPf implementation
 - Amend & restate 2015 agreement with the Sanitation District for shared implementation of the AWPf while continuing to work together on long-term planning for PWSC
 - Future agreement would be needed for construction, operation & governance of full-scale program

Current Program Schedule during LSWRP Grant Funding Period



Board Options

- Option #1

Authorize an amended and restated agreement with County Sanitation District No. 2 of Los Angeles County for shared implementation of Pure Water Southern California.

- Option #2

Do not authorize an amended and restated agreement with the County Sanitation District No. 2 of Los Angeles County for shared implementation of Pure Water Southern California.

Staff Recommendation

- Option #1





THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Board Report

Engineering Services Group

- **Capital Investment Plan Quarterly Report for period ending June 30, 2024**

Summary

The attached report provides a summary of actions and accomplishments on the Capital Investment Plan (CIP) during the fiscal years 2022/23 and 2023/24. It also provides updates on the status of capital projects and capital expenditures to date, and information regarding service connections and relocations authorized by the General Manager during the reporting period of April to June 2024, the fourth quarter of fiscal year 2023/24, and the final quarter of the fiscal years 2022/23 and 2023/24 biennium.

Purpose

Administrative Code Requirement Section 2720(a)(1): General Manager's Quarterly Reports

Section 2720 of Metropolitan's Administrative Code requires the General Manager to report quarterly to the Engineering and Operations Committee on the Capital Investment Plan.

Sections 4700-4708 of Metropolitan's Administrative Code require the General Manager to report on service connections approved by the General Manager with the estimated cost and approximate location of each.

Section 8122(c) of Metropolitan's Administrative Code requires the General Manager to report on the execution of any relocation agreement under the General Manager's authority involving an amount in excess of \$100,000.

Highlights of progress and major milestones on selected projects are presented in the attached report grouped by CIP program.

Attachments

Capital Investment Plan quarterly report for period ending June 2024



The Metropolitan Water District of Southern California

Capital Investment Plan Quarterly Report

April - June 2024



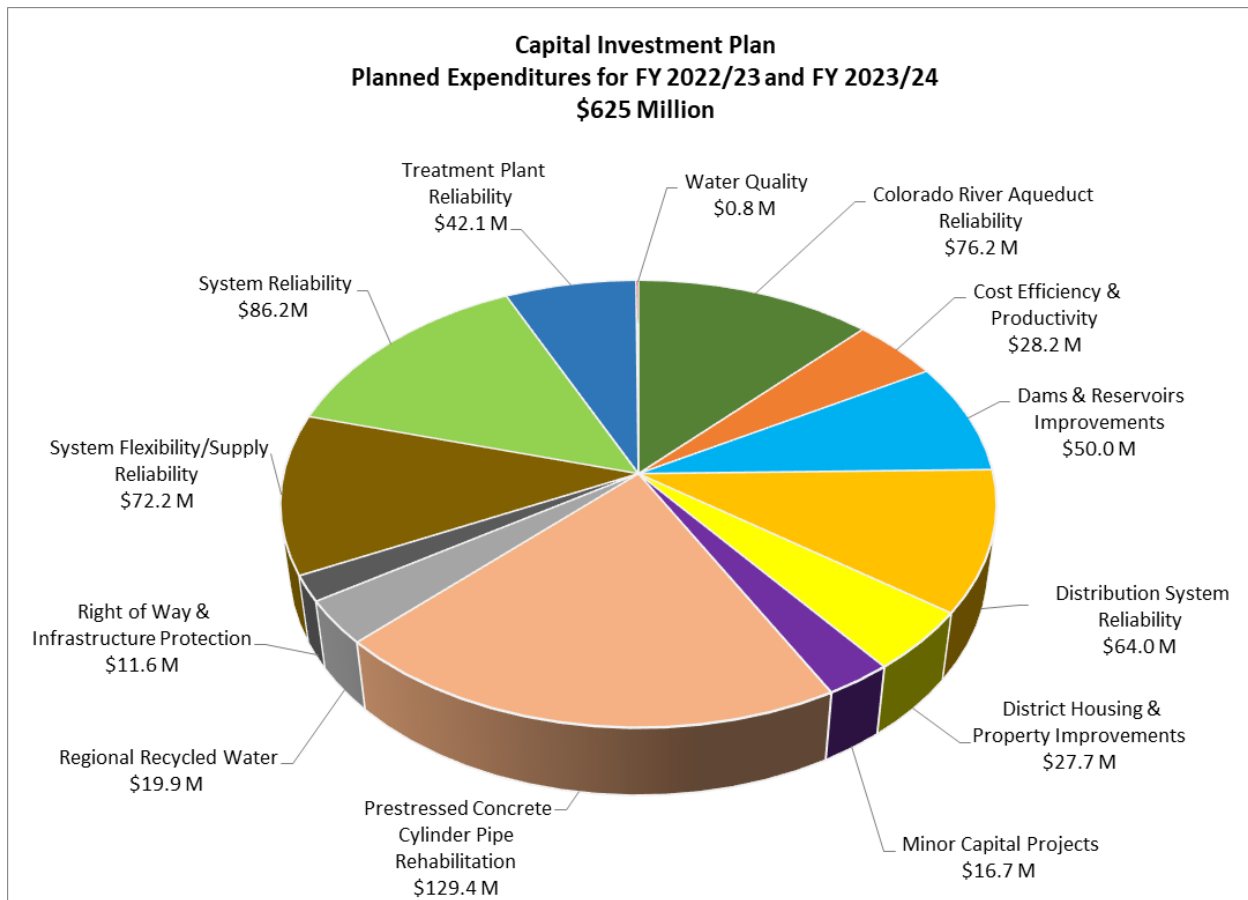
Table of Contents

Capital Investment Plan for Fiscal Years 2022/23 & 2023/24	2	CEQA Determinations	45
Executive Summary	3	Construction and Procurement Contracts	46
Board Action Summary	3	Project Labor Agreement	57
Planned Expenditure and Budget	6	Performance Metrics	60
Funding of Infrastructure Projects with Outside Sources	8	Service Connections and Relocations	62
Major Capital Programs Overview	10	Projects Expensed to Overhead	62
Major Capital Project Programs – Highlights	12	Program/Appropriation Status	63
Minor Capital Projects Program	38	List of Tables	69
Project Actions	41	List of Figures	69

Capital Investment Plan for Fiscal Years 2022/23 & 2023/24

In April 2022, the Board appropriated \$600 million and delegated authority to the General Manager, subject to both CEQA requirements and the General Manager's authority as addressed in Metropolitan's Administrative Code, to initiate or proceed with work on all planned capital projects identified in the Capital Investment Plan (CIP) for FYs 2022/23 and 2023/24. In this reporting quarter, the Board approved and appropriated an increase of \$25 million to the CIP for a new biennium amount of \$625 million. Figure 1 below shows the planned expenditures by program.

Figure 1: CIP for FY 2022/23 and FY 2023/24 by Program



[Cover photos: (left to right; top to bottom): *Perris Valley Pipeline I-215 Tunnel Crossing* – Installing the first carrier pipe in Shaft No. 3; *Inland Feeder/Rialto Pipeline Intertie* – Placement of concrete in a new valve vault; *Lake Mathews PCCP Rehabilitation Valve Storage Building* – View of the building interior]

Executive Summary

This report provides a summary of the Capital Investment Plan (CIP) activities and accomplishments during the 4th Quarter of Fiscal Year (FY) 2023/24, which ended in June 2024. CIP expenditures through the 4th Quarter and at the end of the current biennium totaled \$624.7 million. The CIP funds allocated to specific projects through the reporting quarter totaled \$625.0 million, leaving approximately \$9,400 unallocated.

During the quarter, eleven project-specific board actions were heard in open sessions. Three construction contracts and three procurement contracts were awarded by the Board during the reporting period with a total contract amount of approximately \$29.0 million. During the same time, a total of approximately \$63.2 million in contract payments were authorized, reflecting construction progress on projects such as Badlands Tunnel Surge Protection Facility, Colorado River Aqueduct (CRA) Conduit Structural Protection, CRA Conveyance System Level Sensor Installation, CRA Freda Siphon Barrel No. 1 Internal Seal Installation, Hinds, Eagle Mountain, and Iron Mountain Pumping Plants Storage Buildings, Inland Feeder/Rialto Pipeline Intertie, Jensen and Skinner Water Treatment Plants Battery Energy Storage Systems, Mills Electrical Upgrades - Stage 2, Perris Valley Pipeline Interstate 215 Tunnel Crossing, Second Lower Feeder PCCP Rehabilitation – Reach 3B, Wadsworth Pumping Plant Bypass Pipeline, and Weymouth Basins 5 8 & Filter Building No. 2 Rehabilitation.

Board Action Summary

During the 4th Quarter, board actions heard in open session included eleven project-specific actions summarized in Table 1 below. These actions awarded six contracts totaling approximately \$29.0 million, authorized four new professional/technical services agreement for a not-to-exceed amount of \$12.0 million, authorized an increase to three professional/technical services agreements for an amount not-to-exceed \$3.7 million, appropriated \$636.48 million for projects identified in the CIP for FYs 2024/25 and 2025/26, and approved and appropriated an increase of \$25 million to the CIP for FYs 2022/23 and 2023/24. Information on the awarded contracts can be found in Table 10 of this report. The table below excludes information on board items heard in closed session.

Table 1: 4th Quarter Board Actions

Month	Board Letter Item No.	Project	Action Taken
April	7-1	La Verne Water Quality Laboratory Building Upgrades – Laboratory Equipment Replacement	Certified Final Program EIR for upcoming projects at the Weymouth Water Treatment Plant and La Verne Site, and awarded three procurement contracts for a total of \$2,904,755
April	7-2	Sepulveda Feeder PCCP Rehabilitation - Reach 9	Authorized an agreement not-to-exceed \$3,000,000
April	7-3	Black Metal Mountain 2.4 kV Electrical Power Upgrades	Authorized an increase of \$1,100,000 to an existing agreement
April	7-4	Gene Pumping Plant Pilot Security Improvements	Awarded a \$295,562 construction contract
April	8-1	Capital Investment Plan for Fiscal Years 2024/25 and 2025/26	Appropriated \$636.48 million for projects identified in the CIP for FYs 2024/25 and 2025/26

Month	Board Letter Item No.	Project	Action Taken
May	7-1	CRA Conduit Erosion Control Improvements	Authorized an increase not-to-exceed \$2,350,000 to an existing agreement
May	7-2	Jensen Flocculator System Upgrades	Authorized an unplanned project
May	8-1	Allen-McColloch Pipeline Urgent PCCP Rehabilitation - Stage 2	Awarded a \$24,912,000 construction contract and authorized an increase of \$250,000 to an existing agreement
June	7-2	On-call Agreements for Engineering Services	Authorized three on-call agreements not-to-exceed \$3 million each
June	7-3	Santa Monica Feeder Cathodic Protection	Awarded a \$897,469 construction contract
June	8-1	Capital Investment Plan for Fiscal Years 2022/23 and 2023/24	Approved and appropriated an increase of \$25 million to the CIP for FYs 2022/23 and 2023/24

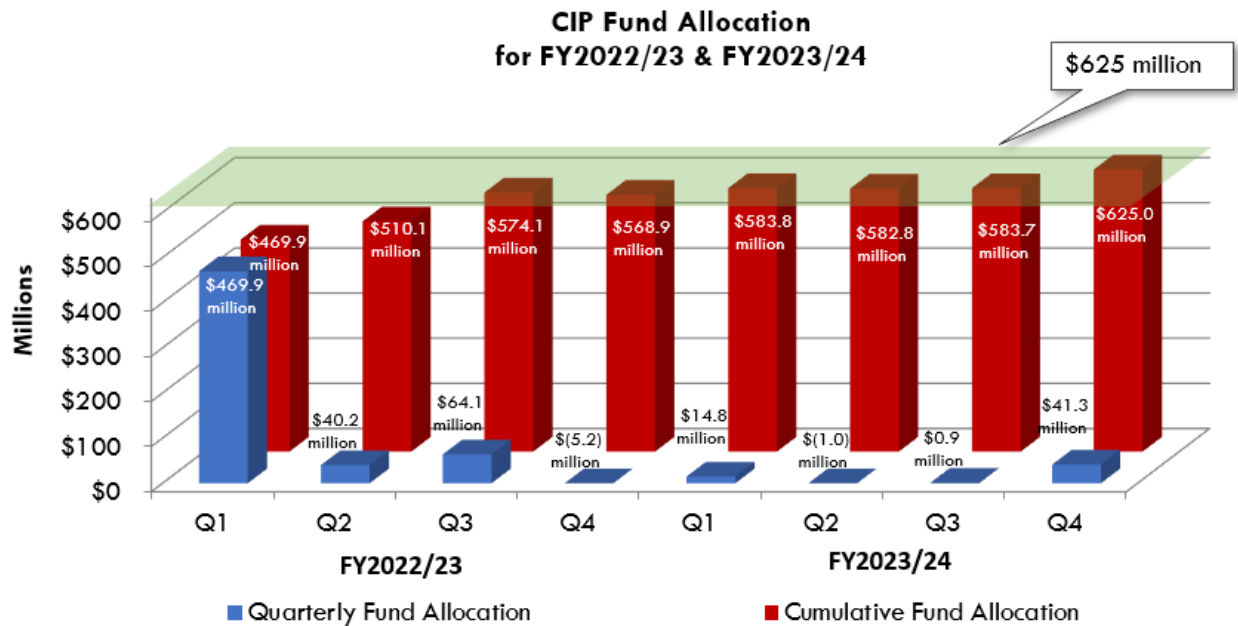
The previously referenced April 2022 and June 2024 board actions appropriated a total of \$625 million to perform work on planned CIP projects through the current biennium. To be considered a planned project, the project must be identified and described in the Capital Investment Plan Appendix for the two-year budget cycle. Consistent with the April 2022 action, all requests to allocate funds and proceed with planned CIP projects are reviewed and approved by the Chief Engineer acting under the General Manager's authority. Unplanned projects, those which are not already identified in the CIP Appendix, require a separate board authorization. During the 4th Quarter, the board amended the CIP to include one new CIP project, Jensen Flocculator System Upgrades.

Figure 2 shows the allocation of the funds from Appropriation No. 15525 for this quarter and total for the current biennium through the quarter¹, which is approximately \$625.0 million, leaving approximately \$9,400 unallocated. This amount includes allocation of \$14.4 million to the Minor Capital Projects Program. During the 4th Quarter, approximately \$14.3 million was allocated for work authorized and approximately a net amount of \$27.1 million was reallocated from the CIP Appropriation 15525 to projects that had prior authorization. Details of the allocations for work authorized during the reporting quarter and from the prior biennium can be found in the **Project Actions** section.

¹ The CIP Quarterly Report for the 1st Quarter of FY 2023/24 reported the CIP allocation for Q1 of FY 2023/24 to be \$583.7 million, which is being amended to \$583.8 million in this quarter's report. This change is necessary to reflect the correction of the amount authorized for the current biennium for Lake Mathews Administration and Warehouse Roof Building Replacement from \$700,886 to \$770,000 and Delta Properties Infrastructure Improvements – Phase 5 from \$515,528 to \$516,000.

The CIP Quarterly Report for the 2nd Quarter of FY 2023/24 reported the CIP allocation for Q2 of FY 2023/24 to be \$582.4 million, which is being amended to \$582.7 million in this quarter's report. This change is necessary to reflect the correction of the amount authorized for the current biennium for Lake Skinner Outlet Tower Butterfly Valve Replacement from \$340,000 to \$573,525 and Lake Skinner Outlet Tower Seismic Upgrade from \$1,229,000 to \$1,290,000.

Figure 2: CIP Fund Allocation from Appropriation No. 15525 – FY 2022/23 and FY 2023/24



*Numbers may not sum due to rounding

Information on construction and procurement contracts activities for the 4th Quarter of FY 2023/24 is presented in the **Construction and Procurement Contracts** section of this report. Progress payments for these contracts in the 4th Quarter totaled approximately \$63.2 million and primarily reflect construction progress on Badlands Tunnel Surge Protection Facility, Colorado River Aqueduct (CRA) Conduit Structural Protection, CRA Conveyance System Level Sensor Installation, CRA Freda Siphon Barrel No. 1 Internal Seal Installation, Hinds, Eagle Mountain, and Iron Mountain Pumping Plants Storage Buildings, Inland Feeder/Rialto Pipeline Intertie, Jensen and Skinner Water Treatment Plants Battery Energy Storage Systems, Mills Electrical Upgrades - Stage 2, Perris Valley Pipeline Interstate 215 Tunnel Crossing, Second Lower Feeder PCCP Rehabilitation – Reach 3B, Wadsworth Pumping Plant Bypass Pipeline, and Weymouth Basins 5 8 & Filter Building No. 2 Rehabilitation.

Planned Expenditure and Budget

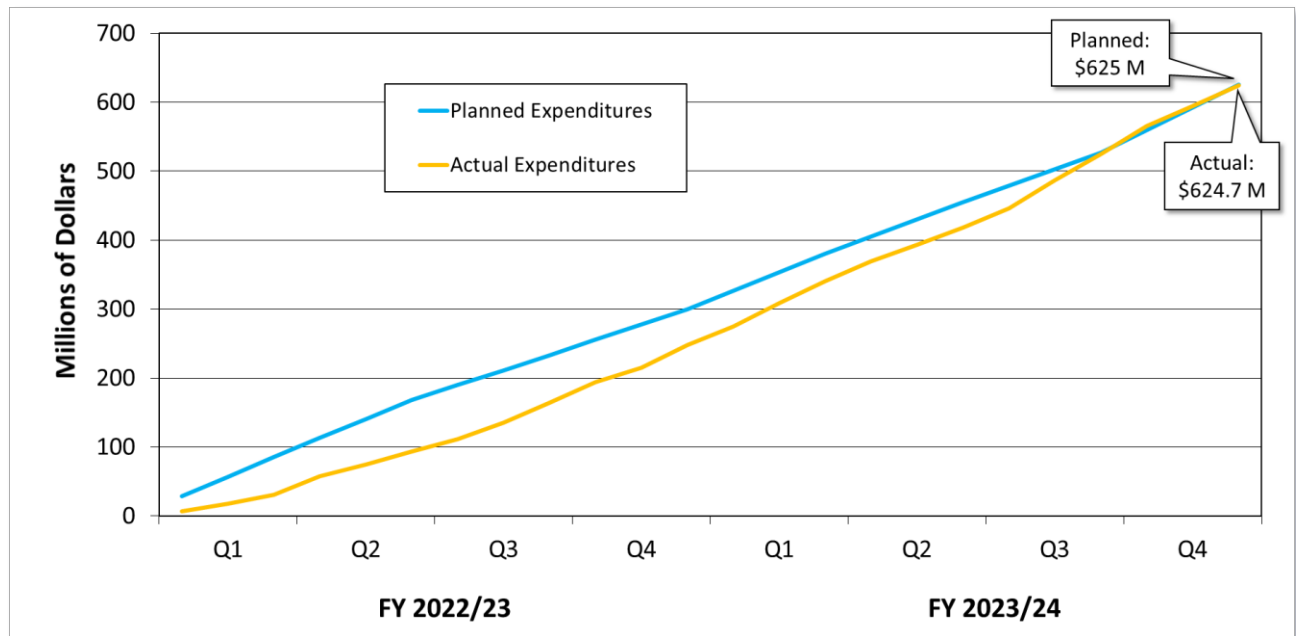
Table 2 and Figure 3 below show planned and actual expenditures for the biennium through the end of the 4th Quarter of FY 2023/24, and the forecast of expenditures through the end of the current biennium, against planned expenditures for the same time interval. Actual expenditures through the 4th Quarter of FY 2023/24 were 99.95% of planned expenditures.

Table 2: Planned & Actual Expenditures for FYs 2022/23 & 2023/24

Quarter	Planned Expenditures (millions)	Actual Expenditures (millions)
FY 2022/23, Q1	\$85.3	\$30.4
FY 2022/23, Q2	\$82.8	\$63.4
FY 2022/23, Q3	\$64.9	\$70.2
FY 2022/23, Q4	\$67.0	\$83.7
FY 2023/24, Q1	\$80.2	\$93.2
FY 2023/24, Q2	\$75.1	\$77.5
FY 2023/24, Q3	\$71.1	\$106.0
FY 2023/24, Q4	\$98.7	\$100.4
Totals*	\$625.0	\$624.7

* Numbers may not sum due to rounding.

Figure 3: Current Biennium – Planned, Actual & Forecasted Expenditures



As shown in Figure 3, the total planned expenditures in the current biennium are \$625 million and the actual expenditures at the end of the current biennium are approximately \$624.7 million.

Funding of Infrastructure Projects with Outside Sources

This section provides information on select grants and other outside sources of funds that Metropolitan receives to support infrastructure projects. The expenditures related to these outside funding sources will be reported in subsequent quarters as the funds are received and expenditures are recorded.

Pure Water Southern California

In December 2022, Metropolitan's Board authorized the General Manager to use \$80 million in project funding from the State Water Resources Control Board (SWRCB) to commence activities related to the initiation of the Pure Water Southern California program. Metropolitan has received the \$80 million funding in one lump sum payment on May 24, 2023, to support the design activities for the program. Funds are available for expenditure until June 30, 2026. The use of these funds is not considered as part of Metropolitan's CIP expenditures. During the reporting quarter, State funds were used to support program management tasks, including the preparation of various plans for program implementation, and preliminary design of the initial two reaches of the conveyance pipelines.

Metropolitan is currently discussing with the program partners, Los Angeles County Sanitation Districts (LACSD), Southern Nevada Water Authority (SNWA), and planning to discuss with the Arizona Department of Water Resources to determine their potential contributions to the program. LACSD has agreed to be responsible for the implementation of the pretreatment and nitrogen management facilities which includes the membrane bioreactor (MBR).

The U.S. Bureau of Reclamation (USBR) awarded a \$5 million WaterSMART grant to Metropolitan in 2023. The grant agreement was finalized in May. A three-time matching fund is required for this grant. Metropolitan also received a notice of intent to award a Large Scale Water Recycling Project (LSWRP) grant in May 2024, which will reimburse 25 percent of the planning and design costs up to \$99,199,096 through the grant term. Metropolitan would share the LSWRP grant with LACSD who would provide their share of the matching funds. Authorization to accept the grant award and approval of the LACSD agreement amendment will be brought to the Board later this year.

Drought Mitigation Projects

In December 2022, Metropolitan's Board adopted a resolution to accept \$50 million in state funding from the California Department of Water Resources to support Metropolitan's drought mitigation projects. The Board also designated the Group Manager of Engineering Services to be the signatory to execute actions related to the funds. The California Department of Water Resources (DWR) will administer the funds and release the reimbursement after Metropolitan invoices expenses. The \$50 million fund is available for reimbursement through June 30, 2026, and five percent of this amount may be used for administrative costs by DWR. From the state-allocated amount, it allocated to Metropolitan \$47.5 million to improve and expand its infrastructure so that it will be more resilient and flexible to respond to fluctuating water supplies from each of its imported water sources and to enhance the ability to convey water throughout all its service area. Under this grant, staff will be required to submit invoices to DWR in order to receive reimbursement of expenditures that comply with the grant requirements. To date, three projects on the east side of Metropolitan's system are covered under this grant, and each of the three projects is in construction as part of an overall plan to connect Diamond Valley Lake (DVL) supplies to the Rialto Pipeline. During the reporting quarter, a progress report and invoices through March 2024 were submitted and approved by DWR for \$7.46 million to be reimbursed. As of June 2024, a total of \$11.6 million reimbursement has been received from the State for the three projects. This funding allows additional rehabilitation projects to proceed as a result of applying state grant funds towards the applicable CIP projects.

Battery Energy Storage System Projects

In October 2020, Metropolitan's Board authorized amending the CIP Appendix to add unplanned battery energy storage system (BESS) projects to enhance the efficiency of Metropolitan's long-term power use, provide a hedge against projected electricity price increases, and improve the resiliency of the electric power supply at the Jensen, Skinner, and Weymouth Water Treatment Plants. This decision was aided by the California Public Utilities Commission's enhanced incentives for microgrid-capable BESS at critical facilities, which are expected to reimburse Metropolitan for \$10.3 million of project costs. Construction of the BESS systems is underway with Weymouth BESS construction estimated to be completed in the first half of FY 2024/25 and Jensen & Skinner BESS construction estimated to be completed in FY 2024/25. Unlike the funds received for Pure Water discussed above, the incentive will be paid to Metropolitan in phases: 50 percent at project completion, with the remaining 50 percent paid equally over five years upon annual proof of a 5 kg CO₂/kWh reduction in greenhouse gas emissions.

Webb Tract Delta Island Flooded Wetlands and Rice Field System Project

In May 2023, Metropolitan's Board adopted a resolution to support a grant application for \$20.9 million grant from the Sacramento-San Joaquin Delta Conservancy (Delta Conservancy) and staff signed a grant agreement with Delta Conservancy in March 2024 that funds two projects on Webb Tract, a Metropolitan-owned island located in Contra Costa County. The two projects include construction of up to 1,500 acres of rice fields and design, permitting, and construction of up to 3,500 acres of wetland on the island. Unlike the funds received for Pure Water discussed above, under this grant, staff will be required to submit invoices to Delta Conservancy in order to receive reimbursement of expenditures that comply with the grant requirements. During the reporting quarter, an RFP was released to find a farming partner to convert the existing agricultural lands to rice farming. Deadline for proposal submission is on August 2, 2024. Metropolitan Board action to award a farming lease agreement is expected in Fall 2024. Wetland design is ongoing with preliminary design expected to be completed by October 2024. Design and permitting of the wetlands are estimated to be completed in the summer of 2025, and construction is estimated to start at the end of the same year.

Major Capital Programs Overview

Metropolitan's CIP is structured into three levels. In descending order, they are:

- Program
- Project Group/Appropriation
- Project

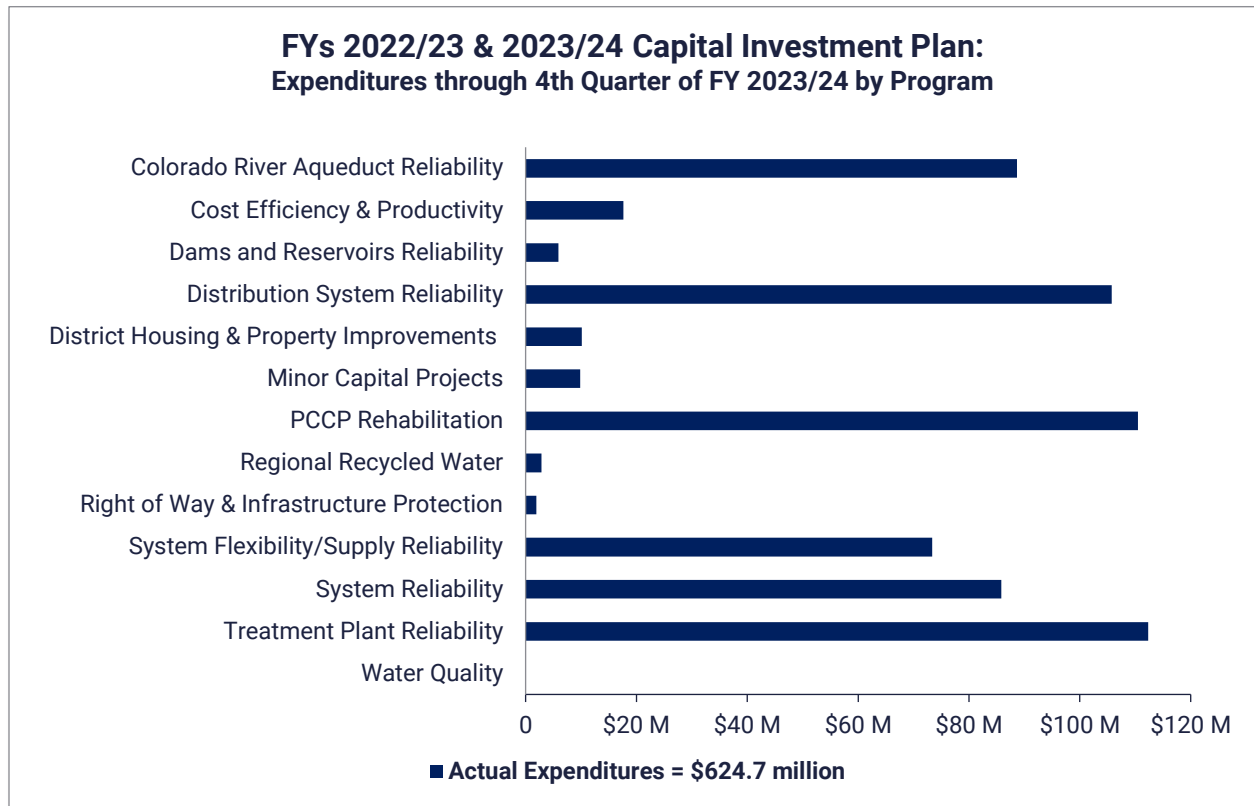
Metropolitan's CIP is comprised of 13 programs, which capture all projects within the CIP. The 13 capital programs are listed below in alphabetical order. Programs are comprised of one or more project groups/appropriations, and project group/appropriations are comprised of one or more projects. The status of each of the programs is provided later in this section of the report.

- Colorado River Aqueduct (CRA) Reliability
- Cost Efficiency & Productivity
- Dams & Reservoirs Improvements
- Distribution System Reliability
- District Housing & Property Improvements
- Minor Capital Projects
- Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation
- Regional Recycled Water Supply
- Right-of-Way and Infrastructure Protection
- System Flexibility/Supply Reliability
- System Reliability
- Treatment Plant Reliability
- Water Quality

For the current biennium, the CIP includes over 37 project groups, 60 planned appropriations, and 447 planned projects (excluding Minor Capital Projects). The list of appropriations that make up each of the programs, along with planned expenditures and actual costs to date for those appropriations, are provided in Table 16 at the end of this report.

Figure 4 below shows actual expenditures for the 13 capital programs for 4th Quarter of FY 2023/24.

Figure 4: Biennium-to-date Actual Expenditures through 4th Quarter FY 2023/24



Major Capital Project Programs – Highlights

This section provides 4th Quarter highlights for the 12 Major Capital Projects Programs; the Minor Capital Projects Program is highlighted in its own section of this report. Status is provided for selected projects within each Major Capital Projects Program. The selected projects typically achieved major milestones during the 4th Quarter of FY 2023/24 or are scheduled to achieve major milestones in the next quarter.

Table 3: Major Capital Projects Programs

Program	Project
Colorado River Aqueduct (CRA) Reliability	CRA Pumping Plant Overhead Cranes Replacement
Cost Efficiency & Productivity	Services Procurement Implementation
Dams and Reservoirs Improvements	Garvey Reservoir Rehabilitation
Distribution System Reliability	Rialto Pipeline Rehabilitation at Station 2986+30
District Housing & Property Improvements	Program highlights only
Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation	Allen-McColloch Pipeline PCCP Urgent Rehabilitation – Stages 1 & 2
Regional Recycled Water	Program highlights only
Right-of-Way & Infrastructure Protection	Program highlights only
System Flexibility/Supply Reliability	Wadsworth Pumping Plant Bypass Pipeline
System Reliability	Applications-Servers Upgrades from Old Windows Operating System
Treatment Plant Reliability	Mills Electrical Upgrades – Stage 2
Water Quality	Program highlights only

Colorado River Aqueduct (CRA) Reliability Program

Actual Biennium Expenditures
(Jul. 2022 through Jun. 2024)
\$88.65 million

Program Information: The CRA Reliability Program is composed of projects to replace or refurbish facilities and components of the CRA system to reliably convey water to Southern California.

Program Highlights (4th Quarter)

Accomplishments

- Initiated equipment procurement of the following project:
 - Gene Pumping Plant Unit No. 1 Brushless Motor Exciter System
- Continued construction activities for the following contracts:
 - CRA Conduit Structural Protection
 - CRA Conveyance System Flow Level Sensor Installation
 - CRA Domestic Water Treatment System Upgrades at all five pumping plants
 - CRA Pumping Plants Overhead Cranes Replacement
 - Gene Communication System Upgrades
 - Hinds, Eagle Mountain, and Iron Mountain Pumping Plants Storage Buildings
- Awarded a construction contract for Gene Pumping Plant Pilot Security Improvements
- Continued final design of the following projects:
 - Cabazon Radial Gates Facility Improvements
 - Copper Basin Reservoir Discharge Valve Structure Rehabilitation
 - CRA Desert Region Security Improvements – Stage 1
 - CRA Pumping Plant Sump System Rehabilitation
 - CRA Pumping Plant Village Utility Replacement
 - CRA Pumping Plants Main Pump Access Improvements
- Initiated final design of the following projects:
 - Black Metal Mountain 2.4 kV Electrical Power Upgrades
 - CRA Pumping Plants 2.3 kV Switchrack Rehabilitation – Iron Mountain Pumping Plant
- Authorized consulting agreement for final design of the following project:
 - CRA Conduit Erosion Control Improvements
- Continued preliminary design of the following projects:
 - CRA Desert Region Security Improvements – Stage 2
 - Hinds Pumping Plant Discharge Valve Platform Replacement
- CRA Main Pump Motor Rehabilitation
 - Continued study to assess rehabilitation options for pump units and their ancillary support systems for all five pumping plants

Upcoming Activities

Upcoming work for the next quarter will include:

- Continue construction activities planned for the following contracts:
 - CRA Conduit Structural Protection
 - CRA Conveyance System Flow Level Sensor Installation
 - CRA Domestic Water Treatment System Upgrades at all five CRA pumping plants
 - CRA Pumping Plants Overhead Cranes Replacement
 - Gene Communication Reliability Upgrades
 - Hinds, Eagle Mountain, and Iron Mountain Pumping Plants Storage Buildings
 - Gene Pumping Plant Pilot Security Improvements
- Continue procurement of the following project:
 - Gene Pumping Plant Unit No. 1 Brushless Motor Exciter System
- Continue final design of the following projects:
 - Black Metal Mountain 2.4 kV Electrical Power Upgrades
 - Cabazon Radial Gates Facility Improvements
 - Copper Basin Reservoir Discharge Valve Structure Rehabilitation
 - CRA Conduit Erosion Control Improvements
 - CRA Desert Region Security Improvements – Stage 1
 - CRA Pumping Plant Sump System Rehabilitation
 - CRA Pumping Plant Village Utility Replacement
 - CRA Pumping Plants 2.3 kV Switchrack Rehabilitation – Iron Mountain Pumping Plant
 - CRA Pumping Plants Main Pump Access Improvements
- Continue preliminary design of the following projects:
 - CRA Desert Region Security Improvements – Stage 2
 - Hinds Pumping Plant Discharge Valve Platform Replacement
- CRA Main Pump Motor Rehabilitation:
 - Continue study to assess rehabilitation options for pump units and their ancillary support systems for all five pumping plants

CRA Pumping Plant Overhead Cranes Replacement

Total Project Estimate:
\$19.7 million

Total Project Cost to Date:
\$19.0 million

This project replaces the overhead bridge crane at all five pumping plants. It also makes improvements to the electrical system, abates hazardous materials, and performs seismic retrofit of the below-grade pump bays.

Phase	Construction
% Complete for Construction	100%
Construction Contract Award Date	September 2020
Construction Completion Date	June 2024
Contract Number	1946

The contractor completed installation of the overhead crane at Intake, completed punch-list items at the other facilities, and notices of completion (NOC) were filed with the Counties of Riverside and San Bernardino. In the upcoming quarter, work will begin on updating the as-built record drawings and project closeout.



Load Testing of Overhead Crane at Intake Pumping Plant

Cost Efficiency and Productivity Program

Actual Biennium Expenditures
(Jul. 2022 through Jun. 2024)
\$17.6 million

Program Information: The Cost Efficiency and Productivity Program is composed of projects to upgrade, replace, or provide new facilities, software applications, or technology, which will provide economic savings that outweigh project costs through enhanced business and operating processes.

Program Highlights (4th Quarter)

Accomplishments

- Diamond Valley Lake Floating Wave Attenuator System Improvements – Stage 2
 - Continued construction
- Diamond Valley Lake to Lake Skinner Trail
 - Continued final design
- Enterprise Content Management Phase II
 - Continued design
- Oracle Database Upgrade
 - Continued execution of the migration plan
- Payroll-Timekeeping Reimplementation
 - Continued design
- Real Property Group Business System Replacement
 - Continued preparation for financial integration testing
- WIFI Implementation
 - Executed consulting agreement for design at San Bernardino Region sites

Upcoming Activities

Upcoming work for the next quarter will include:

- Battery Energy Storage Systems at Jensen, Weymouth, and Skinner Plants
 - Continue construction
- Diamond Valley Lake Floating Wave Attenuator System Improvements – Stage 2
 - Continue construction
- Oracle Database Upgrade
 - Continue database migration
- Payroll-Timekeeping Reimplementation
 - Continue design
- Real Property Group Business System Replacement
 - Continue financial system integration
- WIFI Implementation
 - Receive initial design for San Bernardino Region sites
- WINS Water Billing System Upgrade
 - Continue system upgrade

Services Procurement Implementation

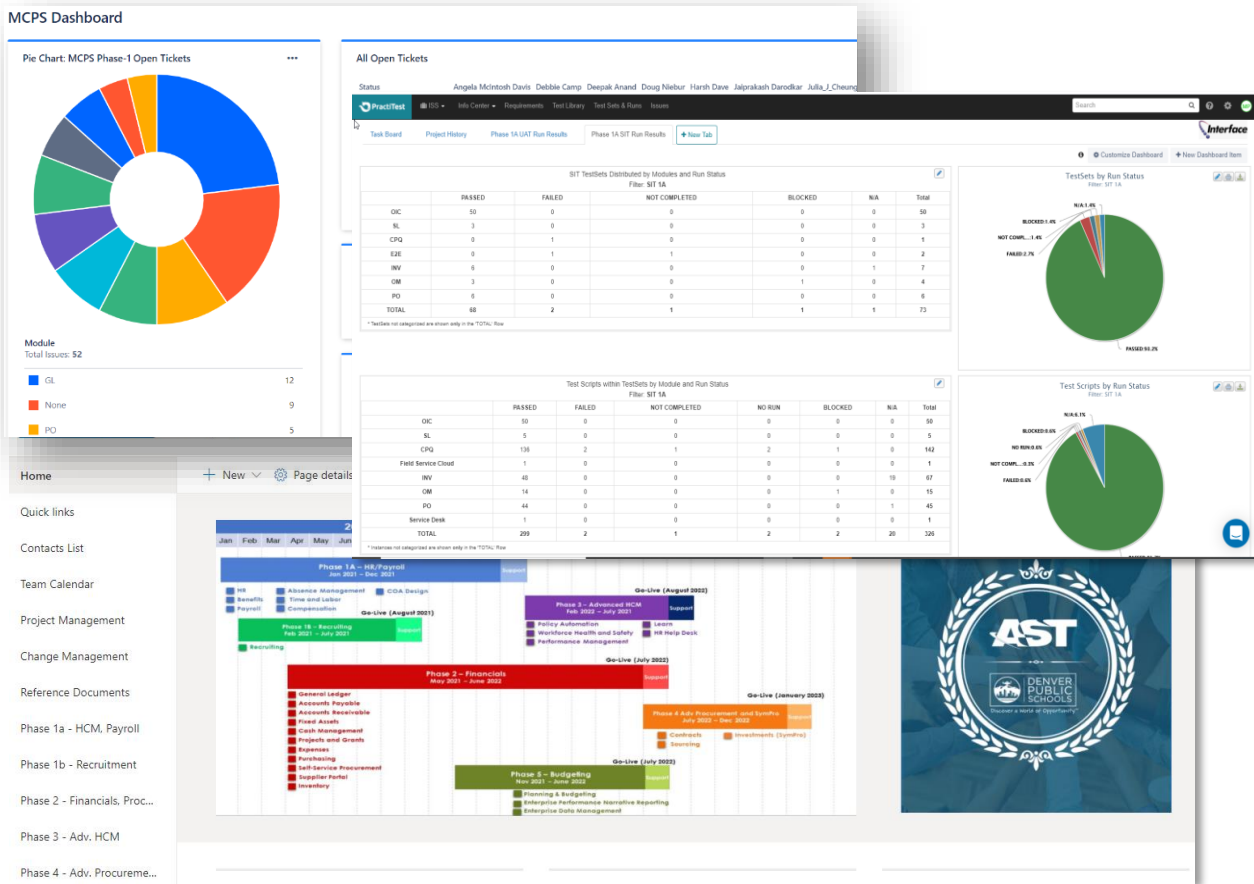
Total Project Estimate:
\$1.72 million

Total Project Cost to Date:
\$0.01 million

This project will implement a new Oracle services procurement module from the Oracle Enterprise Business Suite. This implementation, as part of the E-Business Suite, will help streamline the Construction Contracts & Procurement business process, automating retention or other withholdings required to be specified as liabilities in the General Ledger (GL), and will eliminate missed retention withholdings from future payments and record the transaction correctly and timely in the GL.

Phase	Final Design
% Complete for Current Phase	12%
Current Phase Initiated	May 2024
Estimated Project Completion Date	April 2025

The stakeholders' requirements were gathered, and the preliminary design was completed. Conference room pilot demo is in progress. In the upcoming quarter, the final design will be completed.



Services Procurement Implementation Example Platform Dashboards

Dams and Reservoirs Improvements Program

Actual Biennium Expenditures
(Jul. 2022 through Jun. 2024)
\$5.91 million

Program Information: The Dams and Reservoirs Improvements Program is composed of projects to upgrade or refurbish Metropolitan's dams, reservoirs, and appurtenant facilities to reliably meet water storage needs and regulatory compliance.

Program Highlights (4th Quarter)

Accomplishments

- Diamond Valley Lake Dam Monitoring System Upgrades
 - Continued final design of the new system
- Garvey Reservoir Dam Monitoring System Upgrades
 - Completed installation of new system equipment and began setup, testing, and commissioning
- Garvey Reservoir Rehabilitation
 - Continued final design
 - Issued Draft EIR for public review
- Lake Skinner Outlet Tower Butterfly Valve Replacement
 - Continued valve fabrication
- Lake Skinner Outlet Tower Seismic Upgrade
 - Continued detailed seismic evaluation of outlet tower

Upcoming Activities

Upcoming work for the next quarter will include:

- Diamond Valley Lake Dam Monitoring System Upgrades
 - Continue final design of the system upgrade and authorize procurement of the new equipment
- Garvey Reservoir Dam Monitoring System Upgrades
 - Complete testing of new system and conduct staff training
- Garvey Reservoir Rehabilitation
 - Continue final design
- Lake Skinner Outlet Tower Butterfly Valve Replacement
 - Continue valve fabrication
- Lake Skinner Outlet Tower Seismic Upgrade
 - Continue detailed seismic evaluation of outlet tower

Garvey Reservoir Rehabilitation

Total Project Estimate:
\$98.5 million

Total Project Cost to Date:
\$4.7 million

This project will refurbish aging facilities at the Garvey Reservoir site and restore them to reliable operating condition.

Phase	Final Design
% Complete for Current Phase	35%
Current Phase Authorized	May 2023
Estimated Completion Date of Current Phase	April 2025

30% final design of the outlet tower was completed. In the upcoming quarter, the design consultant will submit 60% final design to Metropolitan for review and comment.



View of the existing Garvey Reservoir floating cover and outlet tower

Distribution System Reliability Program

Actual Biennium Expenditures
(Jul. 2022 through Jun. 2024)
\$105.72 million

Program Information: The Distribution System Reliability Program is comprised of projects to replace or refurbish existing facilities within Metropolitan's distribution system, including reservoirs, pressure control structures, hydroelectric power plants, and pipelines, to reliably meet water demands.

Program Highlights (4th Quarter)

Accomplishments

- Completed construction for the following construction contracts:
 - Lake Mathews Wastewater System Replacement
 - Sepulveda, West Valley, and East Valley Feeders Interconnection Electrical Upgrades
- Awarded the following construction contract:
 - Santa Monica Feeder Cathodic Protection

Upcoming Activities

Upcoming work for the next quarter will include:

- Continue construction activities planned for the following projects:
 - Foothill Hydroelectric Power Plant Seismic Upgrade
 - OC-88 Pump Station Chiller Replacement
- Continue design for the following projects:
 - Auld Valley and Red Mountain Pressure Control Structures Upgrades
 - Hollywood Tunnel North Portal
- Continue procurement for the following projects:
 - Foothill Feeder Blow Off Valves Replacement
 - Lakeview Pipeline Relining - Stage 2
 - Orange County Area Pressure Control Structure Globe Valve Replacement
 - Rialto Pipeline Rehabilitation at Station 2986+30
 - San Jacinto Diversion Structure Slide Gates V-01, V-02, V-03, and V-04 Rehabilitation

Rialto Pipeline Rehabilitation at Station 2986+30**Total Project Estimate:**

\$4.6 million

Total Project Cost to Date:

\$1.1 million

This project will replace an approximately 35-foot segment of a 120-inch diameter steel pipe located in the City of Upland, replace a 24-inch diameter butterfly valve at service connection CB-11 with a 20-inch triple offset ball valve, and replace six 16-inch diameter lubricated plug valves.

Phase	Procurement
% Complete for Final Design	100%
% Complete for Procurement	85%
Final Design Authorized	October 2022
Procurement Contract Award Date	February 2023
Final Design Completion Date	May 2024
Estimated Procurement Completion Date	August 2024
Procurement Contract Number	2046

Final design was completed, and a construction bid package was advertised. In the upcoming quarter, a construction contract will be awarded, and a 20-inch triple offset ball valve will be delivered to the site.



Performing inspection of 120-inch diameter steel pipe with missing mortar lining

District Housing & Property Improvements Program

Actual Biennium Expenditures
(Jul. 2022 through Jun. 2024)
\$10.13 million

Program Information: The District Housing & Property Improvements Program is composed of projects to refurbish or upgrade workforce housing at Metropolitan to enhance living conditions to attract and retain skilled employees.

Program Highlights (4th Quarter)

Accomplishments

- Completed assessment of the alternative housing analysis to provide the most optimal recommendation at four pumping plants (Hinds, Eagle Mountain, Iron Mountain, and Gene)

Upcoming Activities

Upcoming work for the next quarter will include:

- Provide an update to the Board regarding staff's recommendation for the housing, recreational amenities, and the lodges and kitchens with associated costs at four pumping plants (Hinds, Eagle Mountain, Iron Mountain, and Gene)

Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program

Actual Biennium Expenditures
(Jul. 2022 through Jun. 2024)
\$110.45 million

Program Information: The PCCP Rehabilitation Program is composed of projects to refurbish or upgrade Metropolitan's PCCP feeders to maintain water deliveries without unplanned shutdowns.

Program Highlights (4th Quarter)

Accomplishments

- PCCP Rehabilitation Valve and Equipment Storage Building
 - Completed construction and notice of completion will be filed in July 2024
- Second Lower Feeder
 - Reach 3B – Completed construction activities related to the first of two planned shutdowns. Work completed includes installation of approximately 2.4 miles of steel pipe liners, rehabilitation of ten access structures, and replacement of two service connection valves. This project will reline approximately 3.6 miles of Second Lower Feeder PCCP pipeline from the intertie with Sepulveda Feeder south to Oak Street PCS, through the cities of Torrance, Los Angeles, and Lomita, and replace three 48-inch diameter sectionalizing valves at the intertie with Sepulveda Feeder.
 - Isolation Valve Procurement – Continued fabrication and inspection of the remaining three 54-inch valves. To date, Metropolitan has received ten of thirteen large-diameter conical plug valves and actuators, including three 48-inch and seven 54-inch valves.
- Sepulveda Feeder
 - Reach 1 – Continued final design to rehabilitate approximately 4.7 miles of Sepulveda Feeder PCCP pipeline, from just north of the Inglewood Lateral south to the West Coast Feeder, through the cities of Inglewood and Hawthorne, and unincorporated Los Angeles County
 - Reach 2 – Continued final design and permitting to rehabilitate approximately 3.8 miles of Sepulveda Feeder PCCP pipeline, from the Dominguez Gap Channel south to the intertie with Second Lower Feeder, through the cities of Torrance and Los Angeles
 - North Reach – Continued preliminary design of the northern 20-mile portion of the Sepulveda Feeder, including both steel and PCCP portions of the pipeline and appurtenances. The westside pump stations project has prompted a re-prioritization of this northern section.
 - Reach 9 – The Board authorized final design of Reach 9, the first construction package of the North Reach, which is necessary to support the operation of Stage 2 of the Sepulveda Feeder Pump Stations project.
 - Urgent Carbon Fiber Reinforced Polymer (CFRP) Relining at Stations 569+40, 760+33, and 921+69 – Completed construction
- Allen-McColloch Pipeline Urgent Relining
 - Stage 1 – Completed rehabilitation of approximately 2,200 feet out of a total of approximately 4,600 feet of PCCP planned to be relined, including 41 feet of carbon fiber reinforced polymer liner and the remainder with steel
 - Stage 2 – The Board awarded a construction contract to rehabilitate 12,700 feet of PCCP pipeline.

Upcoming Activities

Upcoming work for the next quarter will include:

- Second Lower Feeder
 - Reach 3B - Prepare for work related to the second shutdown, which is scheduled to start in December 2024 and end in April 2025
 - Isolation Valve Procurement - Continue fabrication of the remaining three valves
- Sepulveda Feeder
 - Reach 1 - Continue final design and permitting process for long-lead permits from Caltrans, City of Los Angeles, and City of Torrance
 - Reach 2 - Continue final design and permitting process
 - Reach 9 - Begin final design to rehabilitate 3.8 miles of PCCP
 - North Reach – Continue preliminary design
- Allen-McColloch Pipeline Urgent Relining
 - Stage 1 - Continue rehabilitation of the remaining 2,400 feet of PCCP
 - Stage 2 - Begin rehabilitation of approximately 12,700 feet of PCCP pipeline

Allen-McColloch Pipeline PCCP Urgent Rehabilitation - Stages 1 & 2

Total Project Estimate:

\$67.0 million

Total Project Cost to Date:

\$13.6 million

This project performs urgent relining of approximately 3.2 miles of distressed PCCP segments of the Allen-McColloch Pipeline (AMP) that were discovered during an inspection in November 2023. Work is being performed in two stages to expedite returning the pipeline to service. Stage 1 includes carbon fiber reinforced polymer (CFRP) and steel relining of approximately 4,500 feet of PCCP pipeline, including approximately 2,200 feet upstream of service connection OC-88, installation of a bulkhead just downstream of OC-88, and steel relining approximately 2,300 feet of PCCP downstream of OC-88. Stage 2 includes steel relining of approximately 12,700 feet of pipeline, including all remaining PCCP segments downstream of OC-88. Relining work for Stage 1 is being performed under two change orders to existing construction contracts and a third change order to an existing procurement contract was utilized to procure steel liner pipe for both stages of the work.

Phase	Construction
% Complete for Construction for Stage 1	60%
% Complete for Construction for Stage 2	10%
Change Order Authority Authorized for Stage 1	February 2024
Construction Contract Awarded for Stage 2	May 2024
Estimated Construction Completion Date for Stage 1	October 2024
Estimated Construction Completion Date for Stage 2	February 2025
Construction Contract Numbers for Stage 1 ²	2026, 2088
Construction Contract Number for Stage 2	2108

Relining work for Stage 1 began in March. All relining work upstream of OC-88 and installation of the bulkhead were completed in April, and the AMP returned to service from the Diemer Plant to OC-88. Rehabilitation of 2,300 feet of steel liner installation downstream of OC-88 as part of Stage 1 is currently underway. The Board awarded a construction contract for Stage 2 in May 2024. In the upcoming quarter, the contractor will mobilize and begin excavation works.

² Stage 1 construction is being performed under two existing construction Contract Nos. 2026 and 2088 via change orders.



Placement of concrete encasement for the pipe closure piece in the City of Irvine performed under Stage 1

Regional Recycled Water Program

Actual Biennium Expenditures
(Jul. 2022 through Jun. 2024)
\$2.87 million

Program Information: The Regional Recycled Water Program includes the design and construction of the Advanced Water Treatment (AWT) Demonstration Plant (now known as the Grace F. Napolitano Pure Water Southern California Innovation Center), which represents the initial step in development of a potential regional recycled water system for recharge of groundwater basins within Southern California.

Program Highlights (4th Quarter)

Accomplishments

- Advanced Water Treatment Demonstration Facility
 - Continued performing tertiary membrane bioreactor (MBR) optimization testing
 - Completed updates of record drawings to incorporate recent improvements
- Direct Potable Reuse Demonstration Facility
 - Completed preparation of the direct potable reuse (DPR) bench-scale testing report
 - Continued developing DPR pilot testing and site improvement plans

Upcoming Activities

Upcoming work for the next quarter will include:

- Advanced Water Treatment Demonstration Facility
 - Continue tertiary MBR optimization testing to support the planning and design of a full-scale advanced water purification facility
 - Prepare improvement plans to address long-term site security
- Direct Potable Reuse Demonstration Facility
 - Prepare procurement packages for DPR pilot testing equipment
 - Prepare conceptual design report for DPR pilot system
 - Continue with site improvement planning effort to support DPR pilot testing

Right-Of-Way and Infrastructure Protection Program

Actual Biennium Expenditures
(Jul. 2022 through Jun. 2024)
\$1.93 million

Program Information: The Right of Way Infrastructure Protection Program (RWIPP) is comprised of projects to refurbish or upgrade above-ground facilities and right-of-way along Metropolitan's pipelines to address access limitations, erosion-related issues, and security needs.

Program Highlights (4th Quarter)

Accomplishments

- Riverside and San Diego County – Stage 1
 - Began preliminary design
- Riverside and San Diego County – Upper Feeder Station 919+54 and Lower Feeder Stations 40+06 and 90+08
 - Began site investigation
- Los Angeles County Region – Stage 1
 - Continued final design

Upcoming Activities

Upcoming work for the next quarter will include:

- Western San Bernardino Region – Stage 2
 - Advertise construction documents

System Flexibility/Supply Reliability Program

Actual Biennium Expenditures
(Jul. 2022 through Jun. 2024)
\$73.37 million

Program Information: The System Flexibility/Supply Reliability Program is comprised of projects to increase the capacity and flexibility of Metropolitan's water supply and delivery infrastructure to meet 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.

Program Highlights (4th Quarter)

Accomplishments

- Badlands Tunnel Surge Protection Facility
 - Completed excavation and started construction of valve vault and surge tank foundations
- Inland Feeder/Rialto Pipeline Intertie
 - Completed excavation and started construction of a valve vault foundation
- Inland Feeder/San Bernardino Valley Municipal Water District (SBVMWD) Foothill Pump Station Intertie
 - Continued final design, right-of-way acquisition, CEQA, and permitting activities
 - Continued procurement of two 54-inch diameter butterfly valves
- Perris Valley Pipeline I-215 Tunnel Crossing
 - Completed excavation for the fourth tunnel shaft
 - Completed the second tunnel segment
- Sepulveda Feeder Pump Stations
 - Continued Phase 1 design under a progressive design-build services agreement
- Wadsworth Pumping Plant Bypass Pipeline
 - Completed installation of all piping and related shutdown work

Upcoming Activities

Upcoming work for the next quarter will include:

- Continue progress on four individual projects to allow the delivery of water from Diamond Valley Lake to the Rialto Pipeline
 - Badlands Tunnel Surge Tank Facility: Continue construction
 - Inland Feeder/Rialto Pipeline Intertie: Continue construction
 - Inland Feeder/San Bernardino Valley Municipal Water District (SBVMWD) Foothill Pump Station Intertie: Continue CEQA document preparation, environmental permitting, and right-of-way acquisition; Continue valve procurement
 - Wadsworth Pumping Plant Bypass Pipeline: Continue construction
- Perris Valley Pipeline I-215 Tunnel Crossing
 - Continue construction –Complete tunneling of final segment
- Sepulveda Feeder Pump Stations
 - Continue Phase 1 progressive design-build
 - Proceed with procurement of long-lead equipment

Wadsworth Pumping Plant Bypass Pipeline

Total Project Estimate:
\$21.2 million

Total Project Cost to Date:
\$18.6 million

This project will construct a bypass pipeline between the Wadsworth Pumphouse Conduit and the Eastside Pipeline to allow continuous pumping of water from DVL Forebay into the Eastside Pipeline while filling the forebay with water from DVL at the same time. This project is part of the Rialto Pipeline Water Supply Reliability Improvements, a series of drought response projects.

Phase	Construction
% Complete for Construction	86%
Construction Contract Award Date	January 2023
Estimated Construction Completion Date	June 2025
Contract Number	2020

The contractor completed bypass tie-in pipeline installation during the pipeline shutdown in April 2024. In the upcoming quarter, the contractor will install electrical and control instrumentation equipment.



Contractor using crane to lift bypass tie-in pipeline

System Reliability Program

Actual Biennium Expenditures
(Jul. 2022 through Jun. 2024)
\$85.84 million

Program Information: The System Reliability Program is comprised of projects to improve or modify facilities located throughout Metropolitan’s service area to utilize new processes and/or technologies and improve facility safety and overall reliability. These include projects related to Metropolitan’s Supervisory Control and Data Acquisition (SCADA) system and other Information Technology projects.

Program Highlights (4th Quarter)

Accomplishments

- Control System Upgrade – Phase 4
 - Received 90% final design submittal for Mills plant conduits
- Datacenter Backup Infrastructure Upgrade
 - Completed implementation
- Desert Microwave Site Tower Upgrades
 - Continued preparation of design packages
- Enterprise Data Analytics
 - Completed negotiations with selected vendor
- Headquarters Building Physical Security Improvements - Stage 3
 - Continued construction
- Headquarters Fire Alarm/Smoke Control Upgrades
 - Continued final sign-off by fire department and building department of new fire alarm and smoke control system upgrades
- Headquarters Network Switch Replacement
 - Continued equipment installation
- Headquarters Video Room Upgrades
 - Continued construction
- La Verne Water Quality Laboratory Building Upgrades
 - Awarded laboratory equipment procurement contracts
- Security Operations Center MWD Cyber Security Upgrade – Stage 1
 - Deployed initial monitoring capabilities
- Weymouth Area Paving
 - Began Construction

Upcoming Activities

Upcoming work for the next quarter will include:

- Headquarters Building Physical Security Improvements - Stage 3
 - Complete construction
- Headquarters Fire Alarm & Smoke Control Upgrades
 - Obtain final sign-off by fire department and building department of new fire alarm and smoke control system upgrades and issue notice of completion
- Headquarters Network Switch Replacement
 - Continue equipment installation

- Headquarters Video Room Upgrades
 - Complete construction
- La Verne Water Quality Laboratory Building Upgrades
 - Continue laboratory equipment procurement activities
- Security Operations Center MWD Cyber Security Upgrade – Stage 1
 - Go live with additional functionality
- Weymouth Area Paving
 - Continue construction

Applications-Servers Upgrades from Old Windows Operating System

Total Project Estimate:

\$3.6 million

Total Project Cost to Date:

\$0.3 million

This project will provide the upgrades and migrations of legacy applications and remove unsupported Operating Systems from MWD infrastructure.

Phase	IT Design
% Complete for Current Phase	50%
Current Phase Authorized	February 2024
Estimated Completion Date of Current Phase	February 2025

The migration of Azure servers was completed, and the unused servers were decommissioned. The legal server and the WINS authentication databases were upgraded. In the upcoming quarter, the vendor agreement will be executed, and legacy application migrations will begin.



Microsoft Azure Cloud Platform Overview

Treatment Plant Reliability Program

Actual Biennium Expenditures
(Jul. 2022 through Jun. 2024)
\$112.35 million

Program Information: The Treatment Plant Reliability Program is comprised of projects to replace or refurbish facilities and components of Metropolitan's five water treatment plants to continue to reliably meet treated water demands.

Program Highlights (4th Quarter)

Accomplishments

- Completed construction for the following project:
 - Jensen Ozone PSU Replacement – Stage 1
- Continued construction for the following projects:
 - Mills Electrical Upgrades – Stage 2
 - Weymouth Basins Nos. 5-8 & Filter Building No. 2 Rehabilitation
- Began construction for the following projects:
 - Diemer Power and Distribution Panel Upgrade
 - Weymouth Hazardous Waste Staging and Containment
- Completed equipment procurement for the following project:
 - Diemer Power and Distribution Panel Upgrade
- Continued final design for the following project:
 - Diemer Filter Rehabilitation
 - Weymouth Administration Building Upgrades
- Continued preliminary design of the following projects:
 - Diemer Washwater Reclamation Plant Improvements & Slope Stabilization
 - Jensen Finished Water Reservoir Rehabilitation
 - Jensen Modules Nos. 2 & 3 Solids Removal System Rehabilitation
 - Jensen Reservoir Bypass Gate Replacement
 - Jensen Solids Mechanical Dewatering Facility
 - La Verne Water Quality Laboratory Building Upgrades
 - Mills Basin Solids Removal System Rehabilitation
 - Mills Finished Water Reservoir Rehabilitation
 - Mills Perimeter Security & Erosion Control Improvements
- Began preliminary design for the following projects:
 - Jensen Bromate Control Upgrades

Upcoming Activities

Upcoming work for the next quarter will include:

- Complete testing and commissioning of the following project:
 - Jensen Ozone PSU Replacement – Stage 1
- Continue construction of the following projects:
 - Diemer Power and Distribution Panel Upgrade
 - Mills Electrical Upgrades – Stage 2
 - Weymouth Basins Nos. 5-8 & Filter Building No. 2 Rehabilitation
 - Weymouth Hazardous Waste Staging and Containment

- Continue final design for the following projects:
 - Diemer Filter Rehabilitation
 - Weymouth Administration Building Upgrades
- Continue preliminary design of the following projects:
 - Diemer Washwater Reclamation Plant Improvements & Slope Stabilization
 - Jensen Bromate Control Upgrades
 - Jensen Finished Water Reservoir Rehabilitation
 - Jensen Modules Nos. 2 & 3 Solids Removal System Rehabilitation
 - Jensen Reservoir Bypass Gate Replacement
 - Jensen Solids Mechanical Dewatering Facility
 - La Verne Water Quality Laboratory Building Upgrades
 - Mills Basin Solids Removal System Rehabilitation
 - Mills Finished Water Reservoir Rehabilitation
 - Mills Perimeter Security & Erosion Control Improvements

Mills Electrical Upgrades – Stage 2

Total Project Estimate:
\$18.5 million

Total Project Cost to Date:
\$10.5 million

This project will add a second incoming 12kV service from the Riverside Public Utilities, upgrade the plant's main medium voltage switchgear, and replace the standby generator switchgear and the emergency generator programmable logic controller.

Phase	Construction
% Complete for Construction	65%
Construction Contract Award Date	November 2021
Estimated Construction Completion Date	March 2025
Contract Number	1990

The contractor completed the installation of new HVAC and electrical conduits inside the ozone switchgear building. The Riverside Public Utility (RPU) completed the transformer installation inside the RPU switchyard. In the upcoming quarter, the contractor will begin upgrading the 4.16 kV switchgear doors inside the ozone switchgear building.



Installation of new HVAC system on the ozone switchgear building rooftop (Left)
and transformer on the foundation inside the RPU switchyard (Right)

Water Quality Program

Actual Biennium Expenditures
(Jul. 2022 through Jun. 2024)
\$0.00 million

Program Information: The Water Quality Program is comprised of projects to add new facilities to ensure compliance with water quality regulations for treated water, located at Metropolitan's treatment plants and throughout the distribution system.

Program Highlights (4th Quarter)

Accomplishments

- Mills Enhanced Bromate Control Facilities
 - Continued final design

Upcoming Activities

Upcoming work for the next quarter will include:

- Mills Enhanced Bromate Control Facilities
 - Continue final design

Minor Capital Projects Program

The Minor Capital Projects (Minor Cap) Program is authorized biennially to enable staff to expedite small capital projects. At the commencement of each biennium, the Board had appropriated the entire two-year budget for the program. For the current and the last biennia, the minor cap budget was included in the CIP appropriation. To be considered for inclusion in the Minor Cap Program, a project must have a planned budget of less than \$400,000. The \$400,000 project budget cap was first established by the June 2018 board action Item 8-3 and the same cap is applied for the new minor caps that are approved for the current biennium. Prior to that action, the budget cap for minor cap projects was \$250,000.

The duration of minor capital projects typically ranges from a few months to three years. Since many of these projects require rapid response to address unanticipated failures, safety, or regulatory compliance concerns, or to take advantage of shutdown opportunities, the Minor Cap Program authorizes the General Manager to execute projects that meet defined criteria without seeking additional board approval.

For the past two biennia, the two-year budgets for the Minor Cap Program have been \$15.5 million and \$20 million, respectively. In April 2022, the Board appropriated funds for the projects identified in the CIP appendix for the current biennium, FYs 2022/23–2023/24, including the Minor Cap Program. A total of \$14.4 million has been allocated for the current biennium to date after reallocating \$590,000, which was not used, back to the CIP Appropriation (Appropriation No. 15525) in the reporting quarter.

Minor Cap Program Historical Summary

The following table provides the overall status of the three active Minor Cap appropriations for the fiscal years 2018/19–2019/20 through fiscal years 2022/23–2023/24.

Table 4: Minor Capital Projects Program

	Fiscal Year			Totals*
	2018/19– 2019/20	2020/21– 2021/22	2022/23– 2023/24	
Amount Appropriated	\$15.5M	\$20M	\$14.4M	\$49.9M
Expenditures (through June 2024)	\$12.4M	\$9.9M	\$5.6M	\$27.9M
Number of Projects Approved	48	50	51	149
Number of Projects Completed (through June 2024)	46	22	1	69
Number of Projects with Durations of Over 3 Years	2	8	0	10

* Numbers may not sum due to rounding.

Through June 2024, 69 of the 149 projects approved under the appropriations mentioned above have been completed, and ten active projects have exceeded three years in duration, as described below.

- Dominguez Channel Pressure Release Structure Rehabilitation has been experiencing delays due to longer than anticipated lead time for valve manufacturing and delivery. The project is scheduled to be completed by December 2024.
- DVL Inlet/Outlet Tower UPS Replacement experienced delays due to longer than expected procurement process. Construction has been completed. Additional time is required to pay vendor invoices and complete project closure documents. The project is scheduled to be completed by July 2024.
- East Valley Feeder Vaults Upgrades has been experiencing delays due to additional time required to acquire permits from an external agency. The project is scheduled to be completed by December 2024.
- Jensen Chlorine Railcar Scale experienced delays due to field evaluation performed to determine whether the scales can provide highly accurate information about chlorine usage or chlorine remaining in the railcar. As a result, the scales will no longer be considered to improve the reading system, and the project is scheduled to be canceled in August 2024.
- Live Oak Reservoir Liner Rehabilitation has been experiencing delays due to longer than anticipated time for coordination of final inspection by the Division of Safety of Dams. The project is scheduled to be completed by October 2024.
- OC 88 Surge Tank Recirculation System Upgrade has been experiencing delays due to longer than anticipated lead time for pump procurement. The project is scheduled to be completed by January 2025.
- Pasadena Water and Power Site Microwave Tower Replacement experienced delays due to longer than anticipated time for review and approval of the lease agreement between the City of Pasadena and Metropolitan. The project is scheduled to be completed by January 2025.
- Sepulveda Feeder Stray Current Drain Station Installation & Rehabilitation has experienced delays due to longer than anticipated time for review/approval of permit applications by the City of Los Angeles and Los Angeles Department of Transportation. The project is scheduled to be completed by October 2024.
- Service Connection CB-01 Valve Replacement has experienced delays due to longer than anticipated time for procurement of a fiberglass reinforced plastic platform. The project is scheduled to be completed by October 2024.
- Venice Pressure Control Structure Security Upgrades has experienced delays due to longer than anticipated time for procurement of automatic entrance gates. Delivery of gates is underway. The project is scheduled to be completed by October 2024.

Minor Cap Projects, 4th Quarter

Authorized Projects

Three projects were authorized under the Minor Cap Program during the 4th Quarter of fiscal year 2023/24 (January through June 2024). The total amount authorized for these projects was \$1,015,000.

- Copper Basin Reservoir Outlet Gate Rehabilitation – This project will modify the upper and lower position limits of Copper Basin Reservoir Outlet Gates No. 2 and No. 3 to prevent linkage failure that could compromise the ability to control flows out of the reservoir. The project budget is \$385,000.
- Skinner Plant Fire Alarm Control Panels Replacement – This project will replace obsolete fire alarm control panels at the Skinner plant with up-to-date control panel technology. The project budget is \$370,000.
- Skinner Plant 3 Flocculator Gearboxes Rehabilitation – This project will rehabilitate gearboxes and motors that operate flocculators in Skinner Plant 3, to enhance reliability of the water treatment flocculation process. The project budget is \$260,000.

Completed Projects

Nine projects were completed under the Minor Cap Program during the 4th Quarter of fiscal year 2023/24 (April through June 2024):

- Central Basin CENB-48 Service Connection Access Improvement
- CRA Housing Fencing Improvements
- Eagle Mountain CRA Employee Housing
- Gene Inlet Surge Chamber Access Improvement
- Lake Mathews Overlook Memorial Upgrade
- Rialto Feeder Valve Replacement
- Skinner Emergency Eyewash Shower Station Improvements
- Skinner Plant 1 Filter Inlet Assemblies Rehabilitation
- Weymouth Middle Feeder Chlorination Structure Rehabilitation

Canceled Projects

None

Expenditures

Actual biennium expenditures to date (July 2022 through June 2024) for the Minor Capital Projects Program were \$9.87 million.

Project Actions

Table 5 lists capital project actions authorized by the General Manager along with funding allocation amounts during the 4th Quarter of FY 2023/24, through the authority delegated by the Board in April 2022. The total funding amount authorized during the 4th Quarter is \$69,052,800 through thirty management actions. In some case listed below, the Total Amount Authorized may differ from the Amount Authorized for Current Biennium when the work authorized is scheduled to extend beyond the current biennium. In these cases, it is anticipated that staff will request sufficient funds to be allocated from the CIP Appropriation for the next biennium to cover the planned remaining future-year costs of the project. When the Amount Authorized for Current Biennium is equal to the Total Amount Authorized, the authorized work is planned to be completed within the current biennium. Table 5 excludes any board items heard in closed session and minor cap authorizations. Minor cap authorizations can be found in the Minor Capital Projects Program section of this report.

Table 5: Capital Projects Funded in 4th Quarter

Project Authorized	Activity Authorized	Amount Authorized for Current Biennium	Total Amount Authorized
Allen-McColloch Pipeline PCCP Urgent Rehabilitation of 2024 – Stage 1	Procurement, and Construction	\$8,000,000	\$22,962,000
Allen-McColloch Pipeline PCCP Urgent Rehabilitation of 2024 – Stage 2	Procurement	\$150,000	\$8,584,000
Black Metal Mountain 2.4 kV Electrical Power Upgrades	Final Design	\$100,000	\$2,000,000
Casa Loma Siphon Barrel No. 1 and San Jacinto Pipeline Protection	Environmental Survey and Documentation, and Final Design	\$300,000	\$900,000
CRA Conduit Erosion Control Improvements	Final Design	\$20,000	\$4,300,000
Diamond Valley Lake Domestic Water System Improvements	Preliminary Design	\$25,000	\$135,000
East Lake Skinner Bypass and Bypass No.2 Screening Structure Upgrade	Final Design and Procurement; and Installation of East Lake Skinner Bypass Trash Rack	\$650,000	\$2,510,000
Enterprise Content Management Phase II	Design, Development, and Deployment	\$200,000	\$10,325,000
Foothill Feeder Valve Replacement ³	Additional Procurement	\$0	\$398,700
Gene Pumping Plant Pilot Security Improvements	Construction	\$150,000	\$470,000
Gene Pumping Plant Unit No. 1 Brushless Motor Exciter System	Procurement	\$751,501	\$785,000

³ Additional procurement was necessary to replace deteriorated fourteen 16-inch diameter lubricated plug valves. The procurement contract for these valves were awarded by Metropolitan's Board in January 2024.

Project Authorized	Activity Authorized	Amount Authorized for Current Biennium	Total Amount Authorized
Gene Transformer Bank Protection Relay Replacement	Site Investigation, Design, and Procurement	\$150,000	\$740,000
Gene Wash Reservoir Discharge Structure Rehabilitation ⁴	Additional Site Investigation, Final Design, and Construction	\$980,000	\$1,100,000
Hinds Discharge Valve Platform Units 7, 8, & 9 Urgent Rehabilitation	Design and Construction	\$310,000	\$310,000
Iron Mountain Transformer Bank Protection Relay Replacement	Construction	\$750,000	\$920,000
Jensen Flocculator System Upgrades	Site Investigation and Design	\$10,000	\$460,000
Jensen Module No. 1 Wastewater Pump Rehabilitation – Stage 1	Study	\$65,000	\$65,000
Lake Mathews Dam Erosion Control	Final Design	\$50,000	\$610,000
Lake Mathews Outlet Tower No. 2 Valve Rehabilitation ⁵	Additional Study	\$80,000	\$180,000
Rialto Pipeline Rehabilitation at Station 2986+30	Procurement of six 16-inch Lubricated Plug Valves	\$0	\$326,300
San Diego Canal Concrete Liner Replacement – Site 236	Final Design	\$30,000	\$480,000
Security Operations Center Upgrade Phase 2	Design	\$340,000	\$898,800
Sepulveda Canyon Control Facility Water Storage Tanks Seismic Upgrades ⁶	Additional Geotechnical Investigation	\$10,000	\$455,000
Sepulveda Feeder PCCP Rehabilitation - Reach 9	Final Design	\$100,000	\$4,600,000

⁴ Additional site investigation and final design funds were required to examine the best approach to completing rehabilitation of Gene Wash and Cooper Basin discharge valves in a timely manner by splitting the work into two design packages. Additional construction funds were also required to implement the risk mitigation measures recommended during the Risk Workshop as related to onsite testing and commissioning of the Gene Wash discharge valve.

⁵ Additional study funds were required to perform an investigation to test whether a refurbished actuator and new mechanical seals will improve the operation of a non-operational Tier 1 valve.

⁶ Additional geotechnical investigation funds were required to refine the limits and depth of a liquefaction zone underlying the fill slope, better define the design scope and the extent to which jet grouting is needed for slope stabilization.

Project Authorized	Activity Authorized	Amount Authorized for Current Biennium	Total Amount Authorized
Service Connection EM-04B Meter Replacement	Study	\$15,000	\$268,000
Skinner Service Building No. 1 Rehabilitation	Initial Study	\$45,000	\$50,000
Weymouth Area Asphalt Pavement Rehabilitation	Construction	\$700,000	\$2,660,000
Weymouth Bonita Avenue Railroad Track Replacement	Final Design and Construction	\$20,000	\$220,000
Yorba Linda PCS Rehabilitation	Site Investigation, Final Design, and Construction	\$250,000	\$1,340,000
Total		\$14,251,501	\$69,052,800

Due to changes to the project implementation schedules or completion of projects under budget, \$28,256,000 was reallocated back to the CIP Appropriation (Appropriation No. 15525) from the previously authorized projects and \$55,344,000 of CIP Appropriation funds was allocated to the previously authorized projects listed in Table 6 below.

Table 6: General Manager Actions to Reallocate Capital Project Funds

Project Authorized (Title)	Amount Authorized for Reallocation to CIP Appropriation	Adjusted Amount for Current Biennium
Allen-McColloch Pipeline PCCP Urgent Rehabilitation of 2024 – Stage 1	\$3,500,000	\$12,500,000
Auld Valley and Red Mountain Control Structure Upgrades	\$494,000	\$1,394,000
Badlands Tunnel Surge Protection Facility	(\$1,400,000)	\$0
Battery Energy Storage System	(\$8,830,000)	\$9,053,042
CRA Pumping Plant 6.9 kV Power Cables Replacement	\$300,000	\$2,700,000
CRA Conduit Structural Protection	\$1,100,000	\$10,600,000
CRA Pumping Plant Storage Buildings at Hinds, Eagle Mountain, and Iron Mountain	\$1,300,000	\$5,300,000
Diemer Filter Rehabilitation	\$450,000	\$1,718,000
District Housing Improvements	\$55,000	\$1,667,851

Project Authorized (Title)	Amount Authorized for Reallocation to CIP Appropriation	Adjusted Amount for Current Biennium
Eagle Mountain Pumping Plant Village Pavement Replacement	(\$115,500)	\$0
Electromagnetic Inspections of PCCP Lines - Fifth Cycle	\$700,000	\$3,000,000
Inland Feeder/Rialto Pipeline Intertie	(\$2,500,000)	\$0
Jensen Plant Site Security Upgrades	\$229,000	\$2,029,000
La Verne Shops Building Completion - Stage 5	\$1,700,000	\$20,503,000
Capital Program for Projects Coasting Less Than \$400,000 for FY2022/23 through FY 2023/24	(\$590,000)	\$14,410,000
Perris Valley Pipeline Interstate 215 Tunnel Crossing	\$11,500,000	\$44,500,000
San Diego Canal Concrete Liner Rehabilitation	\$2,300,000	\$5,240,000
San Gabriel Tower Seismic Upgrade	\$661,000	\$2,961,000
Second Lower Feeder PCCP Rehabilitation - Reach 3B	\$27,155,000	\$53,155,000
Wadsworth Pumping Plant Bypass Pipeline	(\$14,820,500)	\$0
Weymouth Treatment Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation	\$3,900,000	\$68,153,000
Total:	\$27,088,000	

CEQA Determinations

Table 7 lists CEQA exemption determinations made by the General Manager during the 4th Quarter. Consistent with CEQA, the Board delegated this authority to the General Manager in April 2022. Adoption of Negative Declarations, Mitigated Negative Declarations, and certification of Environmental Impact Reports will continue to require action by Metropolitan's Board. This table excludes information on board items.

Table 7: CEQA Exemption Determinations

Projects
Jensen Battery Energy Storage System – Fiber Optic Cable
Jensen Control Room Wildfire Smoke Control
Jensen Site Security Upgrade
Rialto Pipeline Rehabilitation at Station 2986+30
Weymouth Area Asphalt Pavement Rehabilitation

Construction and Procurement Contracts

The table below summarizes the status of all construction and procurement contracts that were awarded by the Board and active during the reporting quarter. These contracts are listed in Table 11 and Table 12. Total contract earnings for the 4th Quarter were approximately \$63.17 million.

Table 8: 4th Quarter Contract Actions

Contract Actions during Q4 for FY 2023/2024, April 2024 through June 2024	
Contracts Awarded by Board	3 construction contracts totaling \$26.11 million (Table 10)
Total Payments Authorized ⁷	\$63.17 million
Construction Contracts Completed	Notice of Completion was filed for 6 construction contracts (Table 9)
Active Contracts at end of Q4 ⁸	31 construction contracts, totaling \$469.25 million (Table 11) 21 procurement contracts, totaling \$75.97 million (Table 12) \$545.22 million total value*

*Numbers may not sum due to rounding.

The figures on the next two pages show the locations of the thirty-one construction contracts that were active through the end of the 4th Quarter.

⁷ Includes payments for O&M work under CIP contracts and grant-funded drought mitigation contracts.

⁸ Active contracts at the end of the 4th Quarter are those that are ongoing at the end of June 2024 and have not filed Notice of Completion with the county where the work was performed.

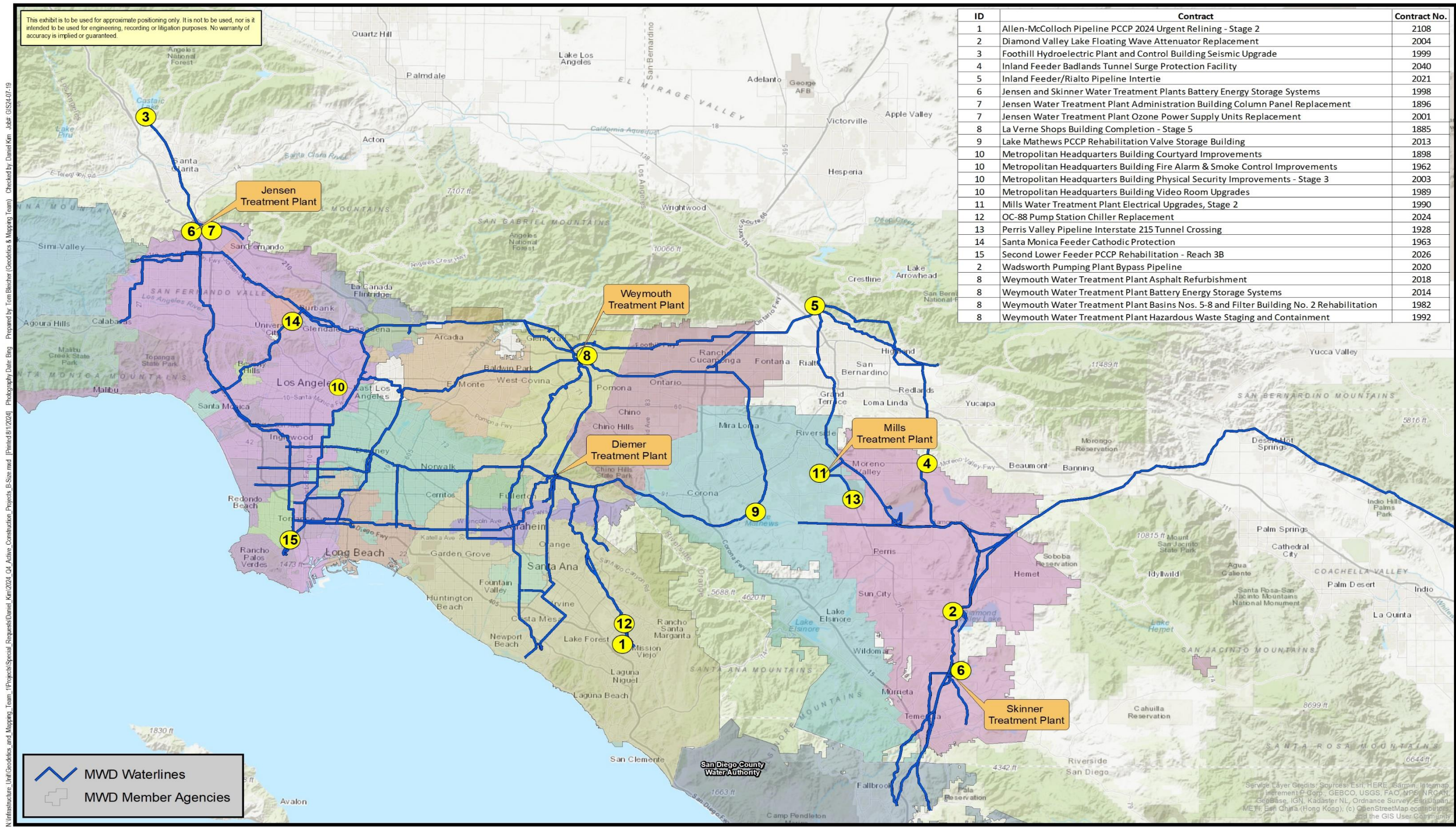


Figure 5: Construction Contracts – Greater Los Angeles Region

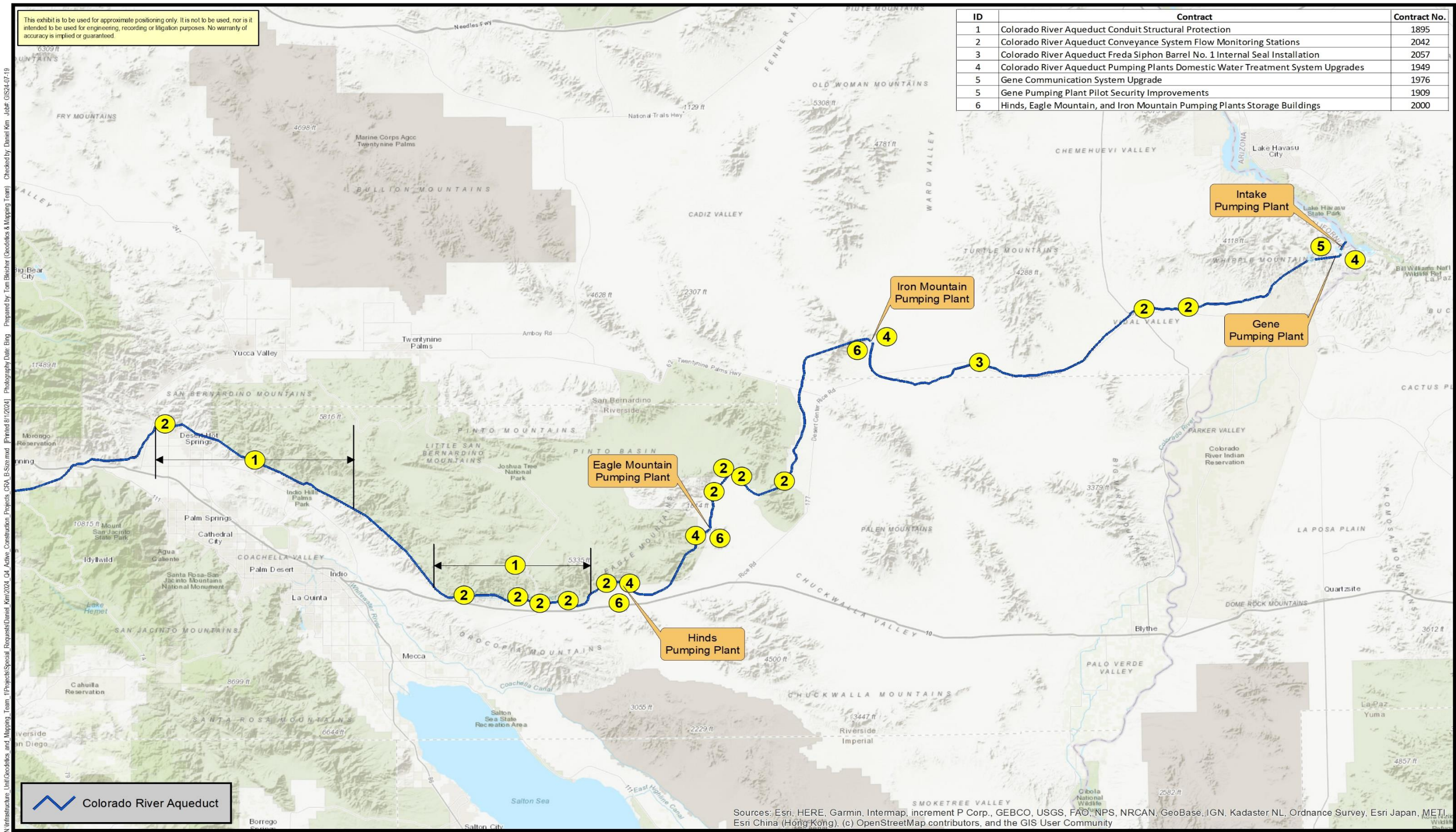


Figure 6: Construction Contracts – Colorado River Aqueduct

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 original amount of the contract or \$250,000, whichever is greater. If changes occur on a construction contract that will exceed this total, additional authorization from the Board is required. In addition, the General Manager is authorized to execute change orders on procurement contracts in an amount not to exceed \$250,000. In the 4th Quarter, the Board did not authorize any increases to the General Manager's change order authority.

Notices of Completion during 4th Quarter:

The following table shows the six board-awarded construction contracts for which Metropolitan accepted the contract as completed during the 4th Quarter of FY 2023/24 and filed a Notice of Completion (NOC) with the county where the work was performed. In accordance with Section 9204 of the Civil Code of the State of California, an NOC is filed within 15 days of acceptance by Metropolitan of completion of construction by the contractor.

Table 9: Notices of Completion Filed This Quarter

Contract No.	Construction Contract	Notice of Completion	Original Bid Amount	Final Contract Costs	Change Order	Change Order %
1944	Lake Mathews Reservoir Wastewater System Replacement	4/19/2024	\$3,815,000	\$4,010,000	\$195,000	5.1%
1946	Colorado River Aqueduct Pumping Plants - Overhead Crane Replacement	6/18/2024	\$13,419,000	*	*	*
1966	Sepulveda, West Valley, and East Valley Feeders Interconnection Upgrades	5/21/2024	\$3,143,592	\$2,949,018	-\$194,574	-6.2%
2051	Lake Mathews Administration and Warehouse Building Roof Replacement	6/18/2024	\$452,886	\$452,886	\$0	0%
2084	San Diego Canal Concrete Liner Rehabilitation	4/18/2024	\$4,400,000	\$4,400,000	\$0	0%
2088	Sepulveda Feeder CFRP Urgent Relining	5/23/2024	\$1,962,691	\$3,112,691	\$1,150,000	58.6%
Totals:			\$27,193,169			

For the 4th Quarter, the total bid amount of the completed construction contract was approximately \$27.2 million.

For Contract No.1946, although an NOC was filed during the reporting quarter, the final contract cost and change order amount have not yet been finalized due to outstanding pending issues. The finalized information is planned to be included in a future CIP quarterly report.

For Contract No. 2088 listed above, \$1,150,000 in change order work was used to install carbon fiber lining to complete the urgent rehabilitation of three pipe segments of the PCCP portions of the Allen McColloch Pipeline. The Board authorized this work in February 2024 by increasing change order authority to perform the urgent rehabilitation.

Final contact costs shown represent actual earnings as of the end of the quarter and may be refined based on resolution of pending issues subsequent to the completion date.

The final contract costs can differ from the original bid amount due to change orders and actual costs incurred on unit price or other various bid items. The rolling average of change orders on completed construction contracts during the preceding 12-month period (July 2023 through June 2024) is 4.06 percent⁹.

Contracts Awarded by the Board during 4th Quarter:

During the period of April through June 2024, three construction contracts totaling \$26,105,031 were awarded by the Board.

Table 10: Construction and Procurement Contracts Awarded This Quarter

Construction Contracts	
Allen-McColloch Pipeline PCCP 2024 Urgent Relining – Stage 2	
Contract Number	2108
Contractor	J. F. Shea Construction, Inc.
Amount	\$24,912,000
Gene Pumping Plant Pilot Security Improvements	
Contract Number	1909
Contractor	The Kepler Group, Inc.
Amount	\$295,562
Santa Monica Feeder Cathodic Protection	
Contract Number	1963
Contractor	Exaro Technologies Corporation
Amount	\$897,469

⁹ Original amount of construction contracts completed (July 2023 through June 2024) = \$ 88,336,269
Change orders for completed construction contracts (July 2023 through June 2024) = \$ 3,585,201
Change order percentage (July 2023 through June 2024) = 4.06%

The table on this page lists the 31 ongoing construction contracts through the end of the 4th Quarter. This list contains construction contracts awarded by the Board.

Table 11: Active Construction Contracts at the End of 4th Quarter

	Cont. No.	Contract Title	Contractor	Contract Amount ¹⁰	Earnings Through June 2024 ¹¹	Start Date	Est. Completion Date	Est. Percent Complete
1	1885	La Verne Shops Building Completion – Stage 5	Woodcliff Corporation, Inc.	\$19,580,047	\$18,120,347	6/10/22	10/24	93%
2	1895	Colorado River Aqueduct Conduit Structural Protection	Granite Construction Company	\$8,662,852	\$8,337,112	5/11/23	8/24	96%
3	1896	Jensen Admin. Bldg. Entrance Glass Fiber Reinforced Concrete Panels Replacement	MMJ Contracting, Inc.	\$281,900	\$105,898	7/14/23	8/24	38%
4	1898	Metropolitan Headquarters Courtyard Improvements	Access General Contracting	\$250,974	\$248,474	1/25/24	7/24	99%
5	1909	Gene Pumping Plant Pilot Security Improvements	The Kepler Group, Inc.	\$295,561	\$0	5/2/24	8/24	0%
6	1928	Perris Valley Pipeline Interstate 215 Tunnel Crossing	James W. Fowler, Company	\$59,620,928	\$43,902,885	2/13/23	3/25	74%
7	1949	Colorado River Aqueduct Pumping Plants Domestic Water Treatment System Replacement	J.F. Shea Construction, Inc.	\$32,869,737	\$13,492,308	1/20/22	3/25	41%
8	1962	MWD HQ Building Fire Alarm & Smoke Control Improvements ¹²	Bernards Bros. Inc.	\$14,355,588	\$13,159,228	9/24/20	8/24	92%
9	1963	Santa Monica Feeder Cathodic Protection	Exaro Technologies Corporation	\$897,469	\$0	7/10/24	3/25	0%

¹⁰ The contract amount may differ from the original bid amount due to periodic change orders approved by the General Manager or, if required, by the Board.

¹¹ Earnings reported in this table are the total contract earnings as they are known to be at the end of the reporting quarter.

¹² Granting of additional working days to complete construction is being considered.

	Cont. No.	Contract Title	Contractor	Contract Amount ¹⁰	Earnings Through June 2024 ¹¹	Start Date	Est. Completion Date	Est. Percent Complete
10	1976	Gene Communication System Upgrade	HP Communications, Inc.	\$1,244,935	\$85,000	12/14/23	11/24	7%
11	1982	Weymouth Water Treatment Plant Basins Nos. 5-8 & Filter Building No. 2 Rehabilitation	J.F. Shea Construction, Inc.	\$95,185,284	\$68,751,048	6/10/22	7/25	72%
12	1989	Metropolitan Headquarters Building First Floor Video Suite Renovation	Acro Constructors	\$637,520	\$637,520	6/15/23	9/24	99%
13	1990	Henry J. Mills Water Treatment Plant Electrical Upgrades, Stage 2	CSI Electrical Contractors, Inc.	\$9,429,862	\$6,346,476	12/13/21	3/25	67%
14	1992	Weymouth Water Treatment Plant Hazardous Waste Staging and Containment	J.F. Shea Construction, Inc.	\$2,375,700	\$215,610	3/12/24	4/25	9%
15	1998	Jensen and Skinner Water Treatment Plants Battery Energy Storage Systems	Ameresco, Inc.	\$11,604,521	\$6,423,160	10/7/21	7/25	55%
16	1999	Foothill Hydroelectric Power Plant Seismic Upgrade	West Valley Investment Group, Inc.	\$6,174,000	\$4,175,732	4/27/23	9/24	68%
17	2000	Hinds, Eagle Mountain, and Iron Mountain Pumping Plants Storage Buildings	J. F. Shea Construction, Inc.	\$16,490,000	\$6,355,679	7/31/23	4/26	39%
18	2001	Jensen Water Treatment Plant Ozone Power Supply Units Replacement	Leed Electric, Inc.	\$2,257,897	\$2,189,323	7/20/22	7/24	97%
19	2003	Metropolitan Headquarters Building Exterior Physical Security Improvements ¹²	Caltec, Corp.	\$2,193,267	\$1,975,530	1/12/23	8/24	90%
20	2004	DVL Floating Wave Attenuator Replacement	Power Engineering Construction Co.	\$7,842,856	\$376,100	3/12/24	3/26	5%

	Cont. No.	Contract Title	Contractor	Contract Amount ¹⁰	Earnings Through June 2024 ¹¹	Start Date	Est. Completion Date	Est. Percent Complete
21	2013	Lake Mathews PCCP Rehabilitation Valve Storage Building	Facility Builders & Erectors, Inc.	\$4,982,022	\$4,982,022	3/10/22	7/24	99%
22	2014	Weymouth Plant Battery Energy Storage System ¹²	Siemens Industry, Inc.	\$6,476,521	\$4,978,069	7/18/22	11/24	77%
23	2018	Weymouth Water Treatment Plant Asphalt Pavement Rehabilitation	Granite Construction Company	\$1,754,000	\$468,757	4/10/24	12/24	27%
24	2020	Wadsworth Pumping Plant Bypass Pipeline ¹³	Steve P. Rados, Inc.	\$14,820,500	\$12,954,562	2/2/23	6/25	86%
25	2021	Inland Feeder/Rialto Pipeline Intertie ¹³	Steve P. Rados, Inc.	\$15,681,000	\$2,440,000	10/16/23	6/25	16%
26	2024	OC-88 Pump Station Chiller Replacement ¹²	Mehta Mechanical Co., Inc. dba MMC Inc.	\$2,654,000	\$1,785,600	6/6/22	11/24	67%
27	2026	Second Lower Feeder PCCP Rehabilitation - Reach 3B	J.F. Shea Construction, Inc.	\$77,718,965	\$56,063,285	2/13/23	9/25	72%
28	2040	Inland Feeder Badlands Tunnel Surge Protection Facility ¹⁴	Steve P. Rados, Inc.	\$18,840,000	\$2,720,000	12/11/23	5/25	14%
29	2042	CRA Conveyance System Solar Level Sensor Installation	LEED Electric, Inc.	\$5,266,000	\$3,786,618	6/15/23	9/24	72%
30	2057	CRA Freda Siphon Barrel No.1 Internal Seal Installation	Miller Pipeline, LLC	\$3,895,000	\$1,864,320	10/9/23	5/25	48%
31	2108	Allen-McColloch Pipeline PCCP 2024 Urgent Relining	J.F. Shea Construction, Inc.	\$24,912,000	\$0	5/30/24	2/25	0%
Total contract value for active construction contracts:				\$469,250,905				

¹³ This contract is funded by a state grant administered by DWR.

¹⁴ This contract is partially funded by a state grant administered by DWR.

The following table lists the 21 ongoing procurement contracts at the end of the 4th Quarter.

Table 12: Active Procurement Contracts at the End of 4th Quarter

	Cont. No.	Contract	Contractor	Contract Amount ¹⁵	Earnings Through June 2024 ¹⁶	Start Date	Est. Delivery Completion Date	Est. Percent Complete ¹⁷
1	1861	Furnishing Lubricated Plug Valves for Second Lower Feeder	Southwest Valve & Equipment, Inc.	\$2,380,909	\$2,362,968	9/11/17	D ¹⁸	99%
2	1867 ¹⁹	Furnishing Butterfly Valves for the Weymouth Water Treatment Plant – Schedule 1	Crispin Valve, LLC	\$5,066,975	\$3,769,482	12/18/17	6/24	74%
3	1868	Furnishing Butterfly Valves for the Weymouth Water Treatment Plant – Schedule 2	DeZurick, Inc.	\$771,984	\$765,184	12/18/17	D ¹⁸	99%
4	1873	Furnishing One Hydraulic Shear System for the La Verne Maintenance Shops	Landmark Solutions, LLC	\$151,870	\$146,970	3/21/18	D ¹⁸	97%
5	1912	Furnishing Large-Diameter Conical Plug Valves	Ebara Corporation	\$23,750,060	\$19,585,112	12/24/18	1/25	82%
6	1922	Furnishing One Double Column Vertical Machining Center for the La Verne Maintenance Shops	Gosiger Machine Tools, LLC (Gosiger West)	\$2,319,600	\$2,273,100	9/17/18	D ¹⁸	99%
7	1948	Refurbishing Valve Actuators for the Diemer Water Treatment Plant	Flowserve Limatorque	\$3,370,402	\$3,370,402	2/16/19	9/24	99%
8	1955	Furnishing Membrane Filtration Systems for the CRA Domestic Water Treatment Systems	Wigen Water Technologies	\$1,380,556	\$1,238,807	5/28/20	7/25	90%

¹⁵ The Contract Amount may differ from the original bid amount due to periodic change orders approved by the General Manager or, if required, by the Board.

¹⁶ Earnings reported in this table are the total contract earnings as they are known to be at the end of the reporting quarter.

¹⁷ Estimated Percent Complete is based on contract payments and may not reflect actual progress of fabrication. The contract will be 100% complete upon delivery of fabricated items and field services.

¹⁸ All items were delivered prior to this reporting quarter but contract remains open pending use of manufacturer field services.

¹⁹ Contract 1867 includes tariff and work on Furnishing Butterfly Valves for the Weymouth Water Treatment Plant – Schedule 1 per extra work directed in the November 2020 Board Letter, Item 7-1.

	Cont. No.	Contract	Contractor	Contract Amount ¹⁵	Earnings Through June 2024 ¹⁶	Start Date	Est. Delivery Completion Date	Est. Percent Complete ¹⁷
9	1965	Furnishing Equipment for the Jensen Ozone Power Supply Units Upgrades	Suez Treatment Solutions, Inc.	\$4,141,194	\$3,616,396	3/30/20	D ¹⁸	87%
10	2002	Furnishing Steel Liner for Lakeview Pipeline	Northwest Pipe Company	\$16,055,500	\$2,280,161	12/14/23	12/24	14%
11	2022	Furnishing Butterfly Valves for the Wadsworth Bypass Pipeline, Inland Feeder-Rialto Pipeline Intertie, and Badlands Tunnel Isolation Surge Tanks	Sojitz Machinery Corp. of America	\$5,647,405	\$0	10/3/22	9/25	0%
12	2028	Furnishing Slide Gates for the San Jacinto Diversion Structure	Whipps, Inc.	\$820,853	\$0	12/8/22	6/24	0%
13	2029	Furnishing Slide Gates for East Lake Skinner Bypass Channel	Whipps, Inc	\$892,552	\$0	4/10/24	11/25	0%
14	2046	Furnishing a 20-inch Triple Offset Ball Valve for Service Connection CB-11	Cascade Consultants, LLC	\$407,800	\$0	3/8/23	8/24	0%
15	2048	Furnishing Butterfly Valves for the Inland Feeder/SBVMWD Foothill Pump Station Intertie - Schedule 1	Sojitz Machinery Corp. of America	\$2,601,437	\$0	6/15/23	7/25	0%
16	2056	Furnishing a Brushless Motor Exciter System for Gene Pumping Plant Unit No. 1	WEG Electric	\$544,501	\$0	5/27/24	6/25	0%
17	2096	Furnishing a 132-inch Butterfly Valve for the Foothill Pump Station Intertie	Vogt Valves, Inc,	\$1,779,174	\$0	6/3/24	6/26	0%
18	PO 214904	Furnishing Two Butterfly Valves for the Lake Skinner Outlet Tower Valve Replacement	B&K Valves and Equipment, Inc.	\$1,174,475	\$0	6/13/23	6/25	0%
19	PO 214941	Furnishing Air Release and Vacuum Valves for San Diego Pipeline Nos. 3 and 5	B&K Valves and Equipment, Inc.	\$1,466,665	\$0	6/13/23	9/24	0%
20	PO 219501	Furnishing of five globe valves to be installed at four pressure control structures in the Orange County region	B&K Valves and Equipment, Inc.	\$698,000	\$0	12/5/23	1/25	0%

	Cont. No.	Contract	Contractor	Contract Amount ¹⁵	Earnings Through June 2024 ¹⁶	Start Date	Est. Delivery Completion Date	Est. Percent Complete ¹⁷
21	PO 219516	Furnishing Plug Valves for the Foothill Feeder and Rialto Pipeline	Caasi Flow Control	\$549,592	\$0	2/15/24	12/24	0%
Total contract value for active procurement contracts:				\$75,971,504				

Project Labor Agreement

Project Labor Agreement

Metropolitan's Board of Directors adopted a Project Labor Agreement (PLA) in October 2022. PLAs require all contractors – union and non-union – to follow certain labor requirements such as payment of prevailing wages, ensuring worker training and workforce development, supporting apprenticeship programs, and hiring local and transitional workers. PLAs promote the hiring of a skilled and trained workforce, and help avoid labor disputes and work stoppages, to ensure that projects are done on-time, safely, and within budget.

Major Provisions of Metropolitan's Project Labor Agreement

Metropolitan's PLA covers 35 projects over the five-year term of the agreement, including all construction contracts under the Pure Water Southern California Program. These projects equate to approximately 90% of the CIP covered by the PLA, on a cost-basis for the next five years. Major provisions and tenets of the PLA include:

- A 60 percent goal for employment of local workers. The local worker provision covers the entirety of Metropolitan's service area, although the PLA can also be customized on a contract-by-contract basis using first-tier zip codes, which would benefit those who are near the project sites.
- A 15 percent goal for employment of transitional workers (e.g., veterans, recently homeless, those living below poverty line).
- Metropolitan's PLA strikes an important balance with Metropolitan's Business Outreach Program – ensuring PLA coverage of a substantial portion of Metropolitan's public works construction contracts, while preserving the integrity of the Small Business Program.
- A unique core employee carveout for small businesses, which allows three core employees per craft for non-union prime contractors and subcontractors, providing flexibility for non-union, small, or micro-small businesses with 25 or fewer employees.
- Workforce development benefits including the required use of the nationally recognized Helmets to Hardhats Program, Construction Career Pipeline Program, and the Multi-Core Craft Apprenticeship Readiness Programs.
- Ability to add projects in the future, upon agreement by the Board and the associated trade councils.

Active PLA Contracts

As of June 2024, 11 construction contracts totaling approximately \$255 million were awarded by the Board which are covered by the PLA.

Table 13: Active PLA Contracts

Contract Number	Contract Title	Contractor	Contract Amount (\$ million)	Board Award Date
1928	Perris Valley Pipeline Interstate 215 Crossing	James W. Fowler Company	\$59.49	01/23
2026	Second Lower Feeder PCCP Rehabilitation – Reach 3B	J.F. Shea Construction, Inc.	\$68.85	01/23
2020	Wadsworth Pumping Plant Bypass Pipeline	Steve P. Rados, Inc.	\$14.82	01/23

Contract Number	Contract Title	Contractor	Contract Amount (\$ million)	Board Award Date
1895	Colorado River Aqueduct Conduit Structural Protection	Granite Construction Company	\$8.66	04/23
1999	Foothill Hydroelectric Power Plant Seismic Upgrade	West Valley Investment Group, Inc.	\$6.17	4/23
2000	Hinds, Eagle Mountain, and Iron Mountain Pumping Plants Storage Buildings	J.F. Shea Construction, Inc.	\$16.49	7/23
2021	Inland Feeder – Rialto Pipeline Intertie	Steve P. Rados, Inc.	\$15.68	9/23
2060	Sepulveda Pump Stations (Phase 1 Progressive Design Build)	J.F. Shea Construction, Inc.	\$9.80	9/23
2040	Inland Feeder Badlands Tunnel Surge Protection Facility	Steve P. Rados, Inc.	\$18.84	11/23
2004	Diamond Valley Lake Wave Attenuator	Power Engineering	\$7.84	2/24
2108	AMP PCCP 2024 Urgent Relining	J. F. Shea Construction	\$24.91	5/24
Total value of contracts under PLA:			\$251.55	

At the end of this reporting quarter, PLA administration costs have totaled 0.7% of the total contract costs incurred to date. These administrative costs include both Metropolitan staff and consultants that routinely work with the contractors on the PLA. This includes initial costs associated with the PLA administration, including labor compliance, outreach to small contractors, facilitating engagement between contractors and Multi-Core Curriculum (MC3) programs. This percentage is not necessarily indicative of long-term PLA administration costs; it will vary as more projects are awarded under the PLA. Staff continuously monitors the costs for PLA administration, as well as any impacts to biddability of projects, and will update the Board annually in a stand-alone PLA Annual Report.

Major Achievements of the PLA

Since its adoption in October 2022, the PLA has allowed Metropolitan to better engage with the broader contracting community to assist in meeting the requirements of the PLA. The landmark PLA includes labor compliance and wage monitoring requirements, local and transitional worker hiring goals, use of union-approved apprentices, and a Construction Careers Pipeline Program. Major achievements during the last two quarters (January to June 2024) include:

- Performed reoccurring contractor training on contracts subject to the PLA
- Monitored labor compliance and prevailing wage requirements
- Conducted various outreach events, and meetings with union labor representatives, establishing relationships, providing information and education on Metropolitan's upcoming PLA projects and business practices:
 - March 6, 2024: Meeting with Executive Secretary for the Los Angeles/Orange County Building and Trades Council, to establish a collaborative relationship in the administration of the PLA
 - March 7, 2024: Pure Water Southern California Networking Event in Carson, CA – presented upcoming bidding opportunities
 - March 14, 2024: The Southern California Pipe Trades invited Metropolitan to tour the Apprentice & Journeymen (A&J) Training Center under construction in El Monte.
 - April 17, 2024: Meeting with Business Manager for the International Union of Operating Engineers Local 12, to discuss the core business requirement in the PLA as it applies to small businesses that are non-union
 - April 17, 2024: Virtual Contractor Academy Orientation event was held to promote Metropolitan upcoming bidding opportunities and provided training to bid on Metropolitan's work.
 - April 25, 2024: Attended the 2024 California State Apprentice Contest hosted by the A&J Training Trust Fund of the Southern California Plumbing & Piping Industry
 - May 8, 2024 to May 29, 2024 (four meetings): Small Contractor Academy in Temecula, CA - training for small contractors on how to do business with Metropolitan and how small contractors can use the PLA to grow their company

Performance Metrics

To measure project performance efficiency and to identify areas for continuous improvements, Metropolitan's Engineering Services Group has established two primary performance metrics for projects that will result in construction activities. These metrics serve as performance targets for Metropolitan staff for both final design and inspection activities. The inspection metric includes fabrication and construction inspection, as well as construction management services.

Separate performance targets have been established for two categories of project size: those with projected construction costs greater than \$3 million, and those with projected construction costs less than \$3 million.

Metropolitan's **performance metric targets** for the two categories of construction projects are listed below:

Project Category	Final Design, % of Construction	Inspection % of Construction
Projects with Construction Costs > \$3 Million	9% to 12%	9% to 12%
Projects with Construction Costs < \$3 Million	9% to 15%	9% to 15%

Prior to proceeding with final design or construction, budgets are established for design and inspection that best provide a quality and timely product. Efforts are made to optimize staff and consultant hours based on project complexity and location. The calculated values for the design and inspection costs, as a percentage of total construction costs, in most cases lie within or below the metric target ranges. In select cases, the calculated values may exceed the metric target ranges.

Once a project phase is complete, either final design or construction, staff's performance against these metrics is then calculated and compared to the target metrics. Table 14 and Table 15 on the following page summarize the comparison between the target metrics and the actual performance metrics for each project category for the current reporting period. In cases where the actual performance exceeded the target metric, explanations for the variance are provided. Actual performances are reported for the Board awarded construction contract projects.

Table 14: Performance Metric Actuals, Construction Costs > \$3 Million

Project	Metric	Actual Cost of Metric	Construction Cost	Target Range	Actual %
Allen-McColloch Pipeline Urgent PCCP Rehabilitation - Stage 2	Final Design	\$745,096	\$32,500,000	9% to 12%	2.3%
Lake Mathews Reservoir Wastewater System Replacement	Inspection	\$518,696	\$4,478,533	9% to 12%	11.6%
San Diego Canal Concrete Liner Rehabilitation	Inspection	\$302,504	\$4,637,787	9% to 12%	6.5%
Sepulveda, West Valley, and East Valley Feeders Interconnection Upgrades ²⁰	Inspection	\$487,816	\$3,368,592	9% to 12%	14.5%

²⁰ Inspection costs for Sepulveda, West Valley, and East Valley Feeders Interconnection Upgrades were higher than the target range due to differing site conditions, which caused construction delays, and additional efforts to minimize impacts to the surrounding community.

Table 15: Performance Metric Actuals, Construction Costs < \$3 Million

Project	Metric	Actual Cost of Metric	Construction Cost	Target Range	Actual %
Gene Pumping Plant Pilot Security Improvements	Final Design	\$48,000	\$414,562	9% to 15%	11.6%
Lake Mathews Administration and Warehouse Building Roof Replacement	Inspection	\$18,820	\$507,740	9% to 15%	3.7%
Santa Monica Feeder Cathodic Protection	Final Design	\$118,485	\$897,469	9% to 15%	13.2%
Sepulveda Feeder PCCP Carbon Fiber Reinforced Polymer Urgent Relining	Inspection	\$213,699	\$2,463,297	9% to 15%	8.7%

Service Connections and Relocations

Service Connections

No new agreements for service connections were approved by the General Manager pursuant to Sections 4700-4708 during the reporting period (April through June 2024).

Relocations

No new relocation agreements involving an amount in excess of \$100,000 were approved under the authority of Section 8122(c) during the reporting period.

Projects Expensed to Overhead

There are no expensed projects to report during the 4th Quarter of FY 2023/24 (April through June 2024).

Program/Appropriation Status

The following table provides the program and appropriation level budget versus cost-to-date and biennium planned expenditures versus actuals-to-date.

Table 16: Program and Appropriation Budget vs. Cost and Planned Expenditures vs. Actuals

Capital Programs/Appropriations	Appn. No.	Total to Date		Biennium to Date	
		Appn. Amount (\$1,000's)	Costs thru June 2024 (\$1,000's)	Biennium to Date Planned Expenditures (\$1,000's)	Biennium Actual Expenditures (\$1,000's)
Colorado River Aqueduct Reliability Program	Total	\$546,544	\$514,188	\$76,170	\$88,651
Cabazon Radial Gate Facility Improvements	15320	\$2,456	\$1,653	\$0	\$948
White Water Siphon Protection	15341	\$15,585	\$14,510	\$2,654	\$27
CRA - Conveyance Reliability	15373	\$119,373	\$118,128	\$1,916	\$1,751
CRA Pumping Plant Reliability	15374	\$24,467	\$24,012	\$0	\$9
CRA - Electrical/Power Systems Reliability	15384	\$60,765	\$58,105	\$7,207	\$9,615
CRA – Discharge Containment	15385	\$8,129	\$7,977	\$0	\$2
CRA - Reliability for FY2006/07 through FY2011/12	15438	\$134,194	\$125,569	\$23,115	\$6,097
CRA Main Pump Reliability	15481	\$76,252	\$72,444	\$15,710	\$19,387
CRA - Reliability for FY2012/13 through FY2017/18	15483	\$77,111	\$74,419	\$23,452	\$38,538
CRA - Reliability for FY2018/19 through FY2023/24	15507	\$28,212	\$17,371	\$2,116	\$12,277
Cost Efficiency & Productivity Program	Total	\$155,033	\$121,287	\$28,240	\$17,618
DVL Recreation Facilities	15334	\$87,004	\$60,723	\$6,654	\$1,338
Yorba Linda Power Plant Modifications	15446	\$17,125	\$17,115	\$0	\$23
Business Operations Improvement	15484	\$19,316	\$14,313	\$1,926	\$4,075
Project Controls and Reporting System	15490	\$6,440	\$6,292	\$0	-\$10

Capital Programs/Appropriations	Appn. No.	Total to Date		Biennium to Date	
		Appn. Amount (\$1,000's)	Costs thru June 2024 (\$1,000's)	Biennium to Date Planned Expenditures (\$1,000's)	Biennium Actual Expenditures (\$1,000's)
Enterprise Content Management	15500	\$3,800	\$3,595	\$4,450	\$0
DVL Recreation Rehabilitation & Refurbishment	15515	\$2,273	\$1,642	\$150	\$729
Energy Sustainability Improvements	15521	\$19,075	\$17,608	\$15,060	\$11,464
Dams and Reservoirs Improvements Program	Total	\$87,027	\$74,901	\$50,000	\$5,913
Reservoir Cover and Replacement	15417	\$71,055	\$63,987	\$740	\$4,619
Dam Rehabilitation & Safety Improvements	15419	\$15,972	\$10,913	\$49,260	\$1,294
Distribution System Reliability Program	Total	\$507,774	\$473,851	\$64,040	\$105,723
Conveyance and Distribution System - Rehabilitation	15377	\$126,196	\$123,979	\$9,980	\$22,235
Conveyance and Distribution System - Rehabilitation for FY2006/07 through FY2011/12	15441	\$157,383	\$151,592	\$170	\$36,104
Hydroelectric Power Plant Improvements	15458	\$32,561	\$26,232	\$5,800	\$8,956
Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	15480	\$140,056	\$129,228	\$36,810	\$15,576
Pipeline Rehabilitation and Replacement	15482	\$1,143	\$1,090	\$410	\$57
Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	15503	\$50,435	\$41,728	\$10,870	\$22,795
District Housing & Property Improvements Program	Total	\$12,340	\$16,684	\$27,700	\$10,134
Employee Village Enhancement	15513	\$12,340	\$16,684	\$27,700	\$10,134

Capital Programs/Appropriations	Appn. No.	Total to Date		Biennium to Date	
		Appn. Amount (\$1,000's)	Costs thru June 2024 (\$1,000's)	Biennium to Date Planned Expenditures (\$1,000's)	Biennium Actual Expenditures (\$1,000's)
Minor Capital Projects Program	Total	\$59,910	\$35,178	\$16,700	\$9,874
Capital Program for Projects Costing Less Than \$400,000 For Fiscal Years 2016/17 And 2017/18	15498	\$10,000	\$7,193	\$0	\$21
Capital Program for Projects Costing Less Than \$400,000 for FY2018/19 through FY2019/20	15504	\$15,500	\$12,440	\$2,050	\$1,015
Capital Program for Projects Costing Less Than \$400,000 for FY2020/21 through FY2021/22	15518	\$20,000	\$9,898	\$7,780	\$3,194
Capital Program for Projects Costing Less Than \$400,000 for FY2022/23 through FY2023/24	15526	\$14,410	\$5,648	\$6,870	\$5,643
Prestressed Concrete Cylinder Pipe Rehabilitation Program	Total	\$411,989	\$378,121	\$129,390	\$110,454
PCCP Rehabilitation and Replacement	15471	\$27,666	\$26,085	\$510	\$3,411
Sepulveda Feeder PCCP Rehabilitation	15496	\$42,906	\$37,254	\$4,280	\$9,331
Second Lower Feeder PCCP Rehabilitation	15497	\$312,082	\$285,967	\$90,450	\$79,602
Allen-McColloch Pipeline, Calabasas Feeder, and Rialto Pipeline PCCP Rehabilitation	15502	\$29,335	\$28,816	\$34,150	\$18,110
Regional Recycled Water Program	Total	\$24,350	\$23,167	\$19,890	\$2,867
Demonstration-Scale Recycled Water Treatment Plant	15493	\$24,350	\$23,167	\$19,890	\$2,867
Right of Way & Infrastructure Protection Program	Total	\$31,715	\$28,986	\$11,560	\$1,926
Right of Way & Infrastructure Protection	15474	\$31,715	\$28,986	\$11,560	\$1,926

Capital Programs/Appropriations	Appn. No.	Total to Date		Biennium to Date	
		Appn. Amount (\$1,000's)	Costs thru June 2024 (\$1,000's)	Biennium to Date Planned Expenditures (\$1,000's)	Biennium Actual Expenditures (\$1,000's)
System Flexibility/Supply Reliability Program	Total	\$744,481	\$714,915	\$72,200	\$73,367
Hayfield and Lake Perris Groundwater Recovery	15402	\$1,500	\$1,136	\$2,910	\$23
Perris Valley Pipeline	15425	\$178,000	\$180,799	\$28,848	\$49,682
Water Delivery System Improvements	15488	\$100,411	\$91,795	\$36,941	\$22,190
Verbena Property Acquisition	15492	\$264,000	\$262,148	\$3,450	\$200
Delta Wetlands Properties (Delta Islands)	15494	\$200,570	\$179,037	\$51	\$1,272
System Reliability Program	Total	\$452,250	\$392,767	\$86,200	\$85,836
Information Technology System - Infrastructure	15376	\$51,306	\$47,815	\$70	\$97
Information Technology System - Security	15378	\$12,691	\$11,701	\$0	\$886
La Verne Shop Facilities Upgrade	15395	\$69,048	\$67,695	\$11,020	\$20,376
Water Operations Control	15467	\$59,561	\$48,527	\$21,190	\$6,445
Union Station Headquarters Improvements	15473	\$114,855	\$101,319	\$9,400	\$15,093
IT Infrastructure Reliability	15487	\$57,867	\$51,748	\$9,820	\$14,955
Operations Support Facilities Improvement	15495	\$32,889	\$29,022	\$14,020	\$9,480
Metropolitan Security System Enhancements	15499	\$25,866	\$17,058	\$7,715	\$6,006
Infrastructure Reliability Information System	15501	\$15,755	\$10,207	\$145	\$7,340
System-Wide Paving & Roof Replacements for FY 2018/19 through FY 2019/20	15516	\$5,491	\$4,376	\$6,580	\$2,783

Capital Programs/Appropriations	Appn. No.	Total to Date		Biennium to Date	
		Appn. Amount (\$1,000's)	Costs thru June 2024 (\$1,000's)	Biennium to Date Planned Expenditures (\$1,000's)	Biennium Actual Expenditures (\$1,000's)
System-Wide Paving & Roof Replacements for FY2020/21 through FY2023/24	15519	\$3,231	\$3,217	\$5,150	\$2,299
Enterprise Data Analytics	15522	\$3,690	\$81	\$1,090	\$76
Treatment Plant Reliability Program	Total	\$893,456	\$860,437	\$42,110	\$112,353
Weymouth Water Treatment Plant Improvements	15369	\$195,711	\$192,787	\$8,820	\$4,646
Jensen Water Treatment Plant Improvements	15371	\$47,437	\$46,786	\$310	\$149
Diemer Water Treatment Plant Improvements	15380	\$216,907	\$209,561	\$3,630	\$1,231
Mills Water Treatment Plant Improvements	15381	\$5,900	\$5,288	\$0	\$11
Diemer Water Treatment Plant Improvements for FY2006/07 through FY2011/12	15436	\$74,207	\$68,844	\$3,660	\$3,173
Weymouth Water Treatment Plant Improvements for FY2006/07 through FY2011/12	15440	\$97,232	\$97,003	\$12,359	\$69,486
Jensen Water Treatment Plant Improvements for FY2006/07 through FY2011/12	15442	\$91,376	\$87,102	\$3,820	\$2,406
Mills Water Treatment Plant Improvements for FY2006/07 through FY2011/12	15452	\$34,852	\$33,079	\$92	\$8,487
Weymouth Water Treatment Plant Improvements for FY2012/13 through FY2017/18	15477	\$77,539	\$77,421	\$39	\$463
Diemer Water Treatment Plant Improvements for FY2012/13 through FY2017/18	15478	\$3,255	\$2,738	\$120	\$1,303

Capital Programs/Appropriations	Appn. No.	Total to Date		Biennium to Date	
		Appn. Amount (\$1,000's)	Costs thru June 2024 (\$1,000's)	Biennium to Date Planned Expenditures (\$1,000's)	Biennium Actual Expenditures (\$1,000's)
Mills Water Treatment Plant Improvements for FY2012/13 through FY2017/18	15479	\$2,664	\$1,459	\$0	\$612
Jensen Water Treatment Plant Improvements for FY2012/13 through FY2017/18	15486	\$8,339	\$7,558	\$0	\$74
Weymouth Water Treatment Plant Improvements for FY2020/21 through FY2023/24	15505	\$1,385	\$1,108	\$0	\$805
Jensen Water Treatment Plant Improvements for FY2020/21 through FY2023/24	15508	\$21,570	\$17,358	\$7,480	\$12,152
Diemer Water Treatment Plant Improvements for FY2020/21 through FY2023/24	15510	\$5,341	\$4,198	\$0	\$3,442
Skinner Water Treatment Plant, Improvements for FY 2020/21 Through FY 2023/24	15512	\$5,364	\$4,912	\$1,720	\$1,275
Mills Water Treatment Plant Improvements for FY2020/21 through FY2023/24	15520	\$2,631	\$2,312	\$60	\$1,716
Chlorine System Improvements	15523	\$1,746	\$924	\$0	\$924
Water Quality Program	Total	\$10,240	\$9,615	\$800	\$0
Enhanced Bromate Control	15472	\$10,240	\$9,615	\$800	\$0
Total CIP		\$3,937,109	\$3,644,096	\$625,000	\$624,722

Notes on the above table:

- Numbers may not sum due to rounding.
- Numbers are based on the general ledger information downloaded on 07/25/2024.
- \$0 under Planned Expenditures indicates that while no expenditures are planned during the reporting period, expenditures may be planned during upcoming periods.
- Negative actual expenditures indicate the result of cost transfers, write-offs, or credits greater than actual costs for this biennium through the reporting quarter.

List of Tables

Table 1: 4 th Quarter Board Actions	3
Table 2: Planned & Actual Expenditures for FYs 2022/23 & 2023/24	6
Table 3: Major Capital Projects Programs	12
Table 4: Minor Capital Projects Program	38
Table 5: Capital Projects Funded in 4 th Quarter	41
Table 6: General Manager Actions to Reallocate Capital Project Funds	43
Table 7: CEQA Exemption Determinations	45
Table 8: 4 th Quarter Contract Actions	46
Table 9: Notices of Completion Filed This Quarter	49
Table 10: Construction and Procurement Contracts Awarded This Quarter	50
Table 11: Active Construction Contracts at the End of 4 th Quarter	51
Table 12: Active Procurement Contracts at the End of 4 th Quarter	54
Table 13: Active PLA Contracts	57
Table 14: Performance Metric Actuals, Construction Costs > \$3 Million	60
Table 15: Performance Metric Actuals, Construction Costs < \$3 Million	61
Table 16: Program and Appropriation Budget vs. Cost and Planned Expenditures vs. Actuals	63

List of Figures

Figure 1: CIP for FY 2022/23 and FY 2023/24 by Program	2
Figure 2: CIP Fund Allocation from Appropriation No. 15525 – FY 2022/23 and FY 2023/24	5
Figure 3: Current Biennium – Planned, Actual & Forecasted Expenditures	7
Figure 4: Biennium-to-date Actual Expenditures through 4 th Quarter FY 2023/24	11
Figure 5: Construction Contracts – Greater Los Angeles Region	47
Figure 6: Construction Contracts – Colorado River Aqueduct	48



Engineering, Operations, & Technology Committee

Capital Investment Plan Quarterly Report for Period Ending June 2024

Item 6a

September 9, 2024

Item 6a

Capital Investment Plan Quarterly Report for Period Ending June 2024

Subject

Capital Investment Plan Quarterly Report for the Fourth Quarter of FY 2023/24 which covers April 2024 through June 2024

Purpose

Informational summary of report that was provided in the board packet

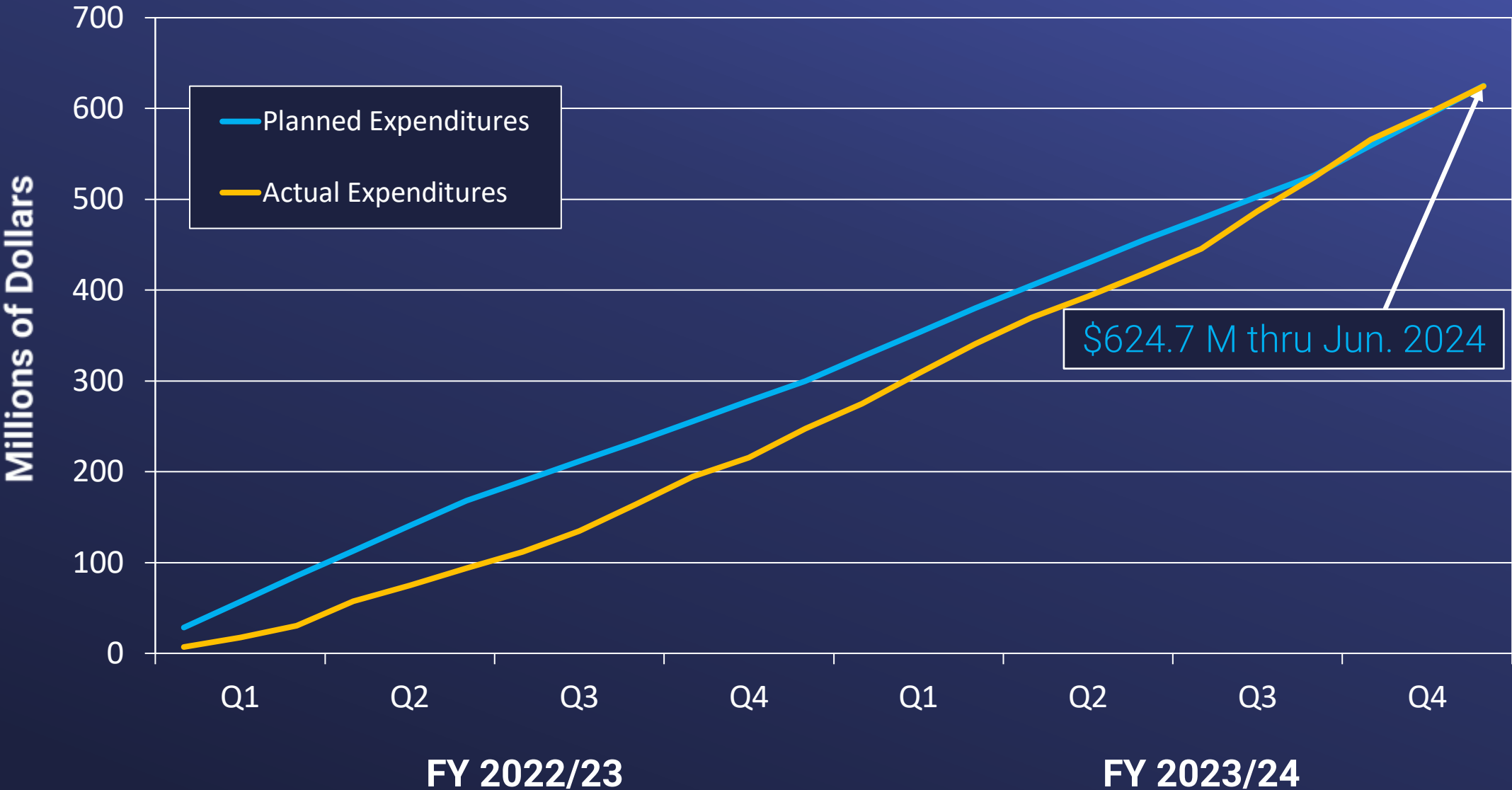
Capital Investment Plan Quarterly Report

Period Ending
June 2024

4th Quarter Summary for Fiscal Year 2023/24

- Board awarded contracts – \$29.0 M
 - 3 Construction contracts awarded
 - 3 Procurement contracts awarded
- Contracts currently underway – \$545.2 M
 - 31 Construction
 - 21 Procurement

CIP Expenditure Performance – Fiscal Years 2022/23 & 2023/24



CRA Pumping Plant Overhead Cranes Replacement

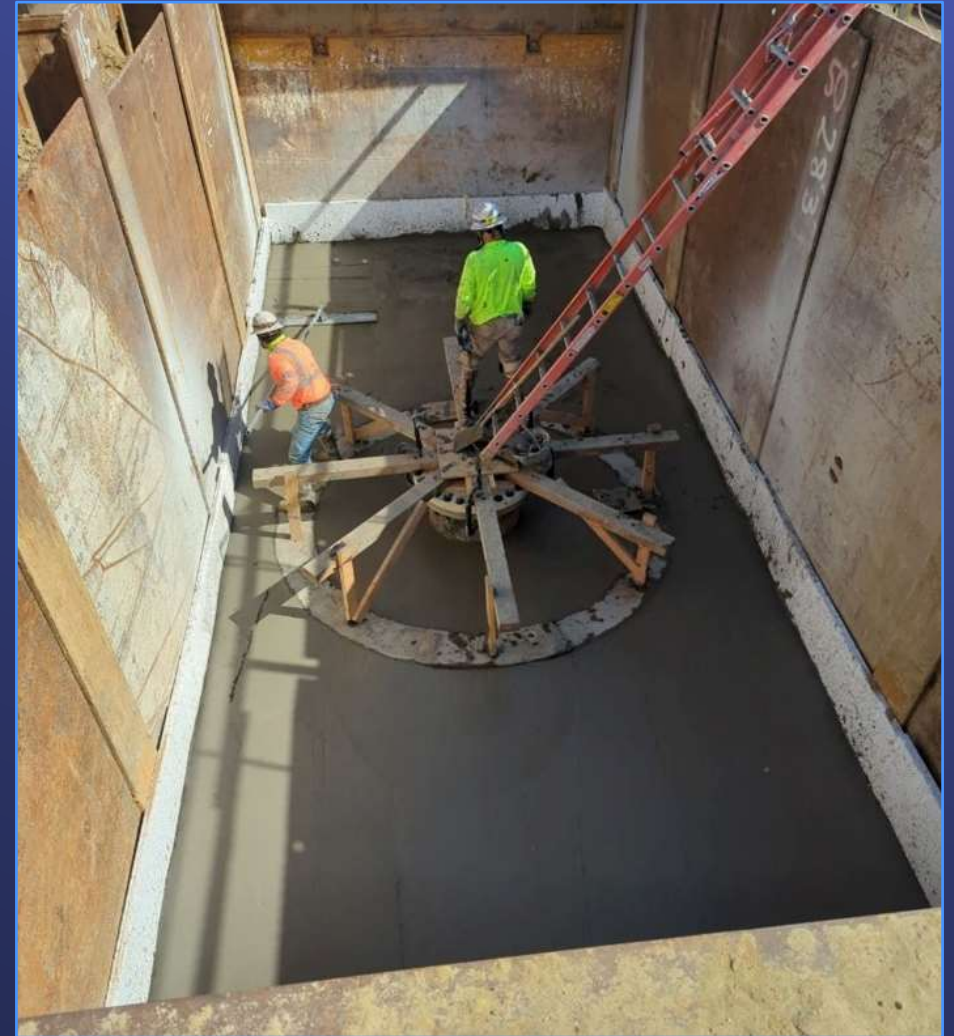


- Contract awarded in September 2020
- Completed crane installation at Intake
- Notices of completion filed in June 2024
- Total Project Estimate: \$19.7 M
- Total Project Cost thru Jun: \$19.0 M

Load testing of overhead crane at Intake
Pumping Plant

Allen-McColloch Pipeline PCCP Urgent Rehabilitation – Stages 1 & 2

- Change Order Authority for Stage 1 Authorized in February 2024
 - All relining upstream of OC-88 completed
 - Pipeline returned to service from Diemer to OC-88
- Contract for Stage 2 awarded in May 2024
- Total Project Estimate: \$67.0 M
- Total Project Cost thru Jun: \$13.6 M



Contractor placing concrete encasement for the pipe closure piece within the City of Irvine

Construction Contract Completion and Change Orders

Contract	Original Contract Amount	Contract Change Orders
Colorado River Aqueduct Pumping Plants – Overhead Crane Replacement	\$13,419,000	*
Lake Mathews Administration and Warehouse Building Roof Replacement	\$452,886	0%
Lake Mathews Reservoir Wastewater System Replacement	\$3,815,000	5.1%
San Diego Canal Concrete Liner Rehabilitation	\$4,400,000	0%
Sepulveda Feeder CFRP Urgent Relining	\$1,962,691	58.6%
Sepulveda, West Valley, and East Valley Feeders Interconnection Upgrades	\$3,143,592	-6.2%
Total	\$27,193,169	

Performance Metrics – 4th Quarter of FY 2023/24

Projects w/ Construction Costs Greater Than \$3 Million

	Final Design % of Construction	Inspection % of Construction
Target Performance Range	9% to 12%	9% to 12%
Actual Performance	2.3%	10.5%

Projects w/ Construction Costs Less Than \$3 Million

	Final Design % of Construction	Inspection % of Construction
Target Performance Range	9% to 15%	9% to 15%
Actual Performance	12.7%	7.8%

Minor Capital Projects

Fiscal Year Appropriation	2018/19 2019/20	2020/21 2021/22	2022/23 2023/24
Amount Appropriated	\$15.5 M	\$20.0 M	\$14.4 M
Amount Allocated	\$13.6 M	\$16.4 M	\$14.0 M
Expenditures Through June 2024	\$12.4 M	\$9.9 M	\$5.6 M
% of Work Complete	98%	69%	36%





Engineering, Operations, & Technology Committee

Emergency Management Program Update

Item 6c

September 9, 2024

Overview

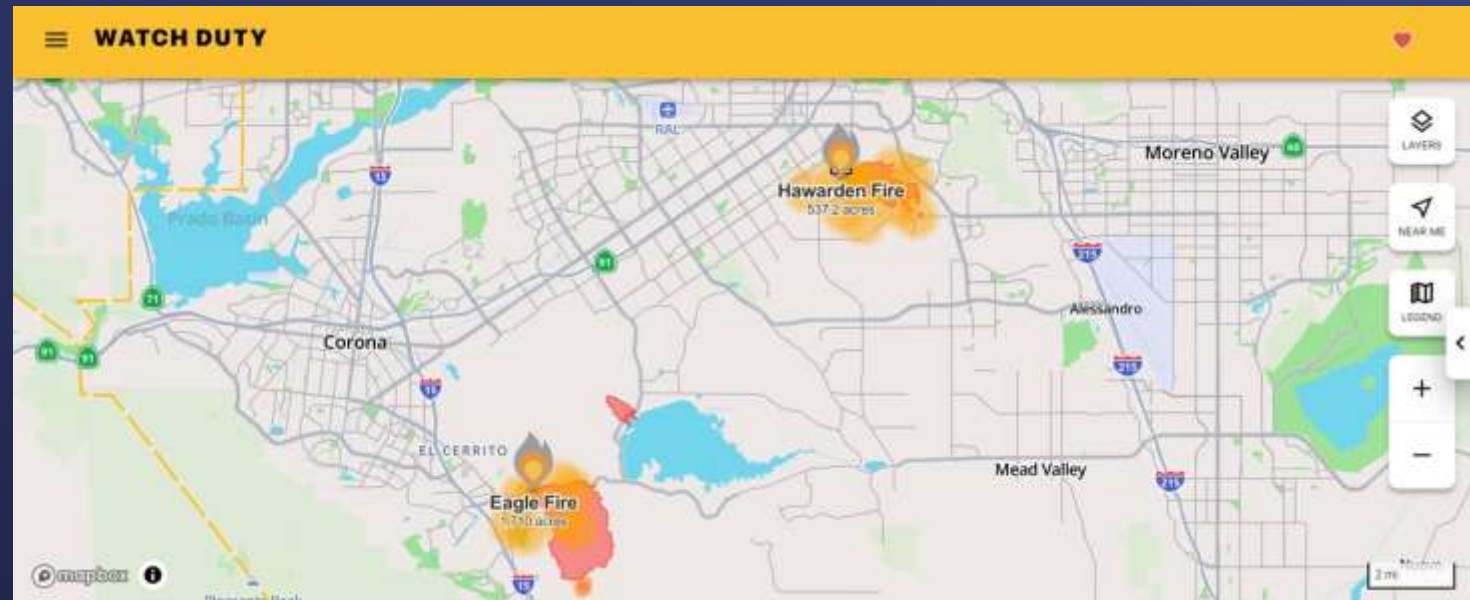
Program Overview

- Part of Office of Safety, Security and Protection
- Program Structure
 - Response
 - Preparedness and Planning
 - Recovery
- Real-World Responses
- Program Development

Response

Duty Officer and Field Response

- EOC Duty Officer - 24/7 coverage
- Security Agents added to Duty Officer cadre
- On-call Duty Manager



Wildfires near Lake Mathews

Response

Duty Officer and Field Response

- Monitors and responds to incidents
- Sends alerts to employees and Board of Directors



Crowded airport during worldwide IT outage

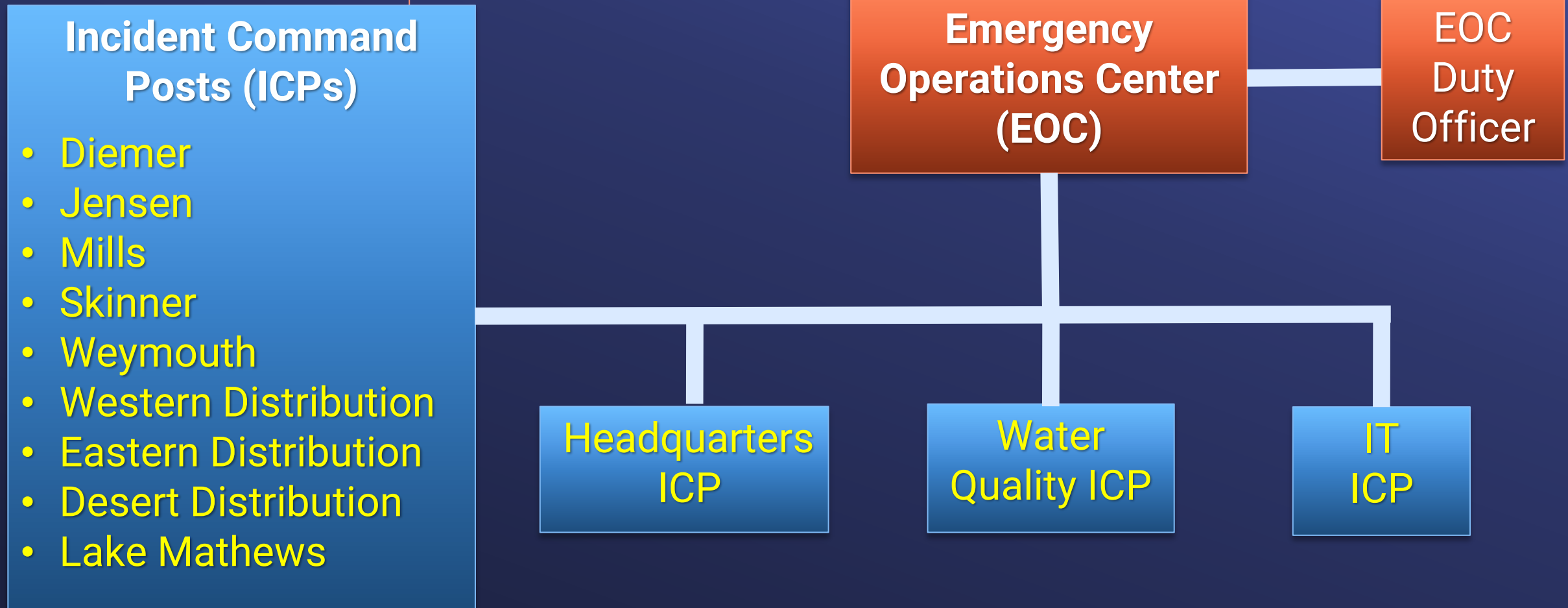


Response

Field Response: Emergency Management Command Vehicle

Response

Emergency Response Organization

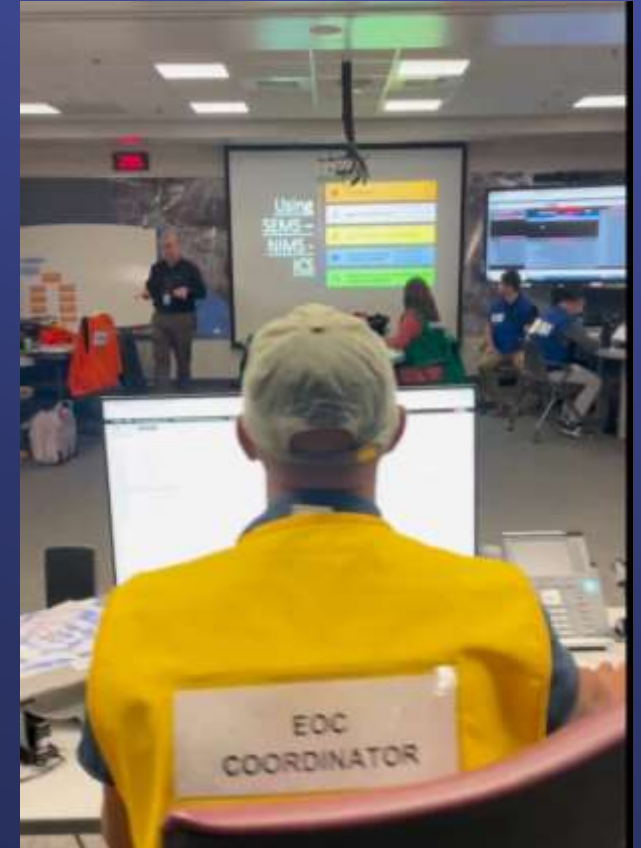


Response



EOC staff working with maps and online tools

- EOC Functions:
 - Strategic in scope
 - Follows state and federal guidelines
 - Can be fixed or virtual
 - Brings decision makers together



EOC staff participating in tabletop exercise

Response

Training and Exercises

- Ran over 50 exercises
- Standardized for continuous improvement



Water Quality ICP exercise



Eastern C&D ICP exercise

Response

Training and Exercises

- Exercises with outside agencies
- Partnering with SCE for ShakeOut 2024



Riverside County Fire
participating in joint training



Emergency Alert and Warning

- Met-Alert
- Real-time Notifications
- For employees and Board of Directors
- Phone, text, email
- Safety issues and EOC responses

Response

Air Quality Index (AQI) categories for PM2.5	Levels of Health Concern
0 to 50	Good
51 to 100	Moderate
101 to 150	Unhealthy for Sensitive Groups
151 to 200	Unhealthy
201 to 300	Very Unhealthy
301 to 500	Hazardous

Air Quality Index – Alerts sent when "Unhealthy" or higher

Planning and Preparedness

Updated every 2-3
years – Due in 2025

- Adheres to the American Water Infrastructure Act (AWIA) requirements
- Plan is a living document
- Next update due in Fall 2025

Metropolitan Emergency Response Plan



Dam Emergency Action Plans

- 13 Dam EAPs
- Approved by Cal OES
- Updated Annually
- Exercised Regularly

Planning and Preparedness

Coordinated Planning

- Employee Safety Plans
- Local Hazard Mitigation Plan
- Fire Management Plan
- Crisis Communications Plan
- County and State Emergency Plans
- Business Continuity Plans

Recovery

Pursuing Damage Recovery

- Three Active Recovery Projects
- From August 2023 to present
- Potential for over \$900,000 reimbursed



Sepulveda Feeder Erosion –
February Storms 2024



Whitewater Debris & Erosion –
Tropical Storm Hilary 2023



Foothill Feeder Erosion –
January Storms 2023

Real-World Responses



Tropical Storm Hilary August 2023



Highland Fire Command Post at Valley Wide (DVL) Nov 2023



I-10 Freeway Fire/Closure November 2023



OC Hangar Fire November 2023

Real-World Responses



February Storms 2024



Riverside Fires July 2024



Weymouth Domestic Water
Line Leak June 2024

Program Development

Looking to the Future

- Expanding scope
- More planning
- More collaborative exercises
- Multiple large-scale events in the future







Engineering Services Group

• Engineering services Monthly Activities Report for August 2024

Summary

This monthly report provides a summary of Engineering Services Group activities for August 2024 in the following key areas:

- Colorado River Aqueduct (CRA) Program
- Dams & Reservoirs Program
- Distribution System Program
- Information Technology and Control Systems Program
- Additional Facilities and Systems Program
- Prestressed Concrete Cylinder Pipe (PCCP) Program
- Water Treatment Plants Program
- Pure Water Southern California
- Drought Mitigation – State Water Project Dependent Areas
- Value Engineering Program
- Mentoring Programs

Purpose

Informational

Attachments

Attachment 1: Detailed Report - Engineering Services Group's Monthly Activities for August 2024

Engineering Services

Key Activities Report for August 2024

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. In addition, Engineering Services provides technical services to enhance reliable system operation and real property planning, valuation, acquisition, and disposition services to protect Metropolitan's assets. Engineering Services empowers our staff and partners with our business partners and the communities we serve to accomplish Metropolitan's mission.

Recent activities on CIP programs and other key engineering functions are described below.



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

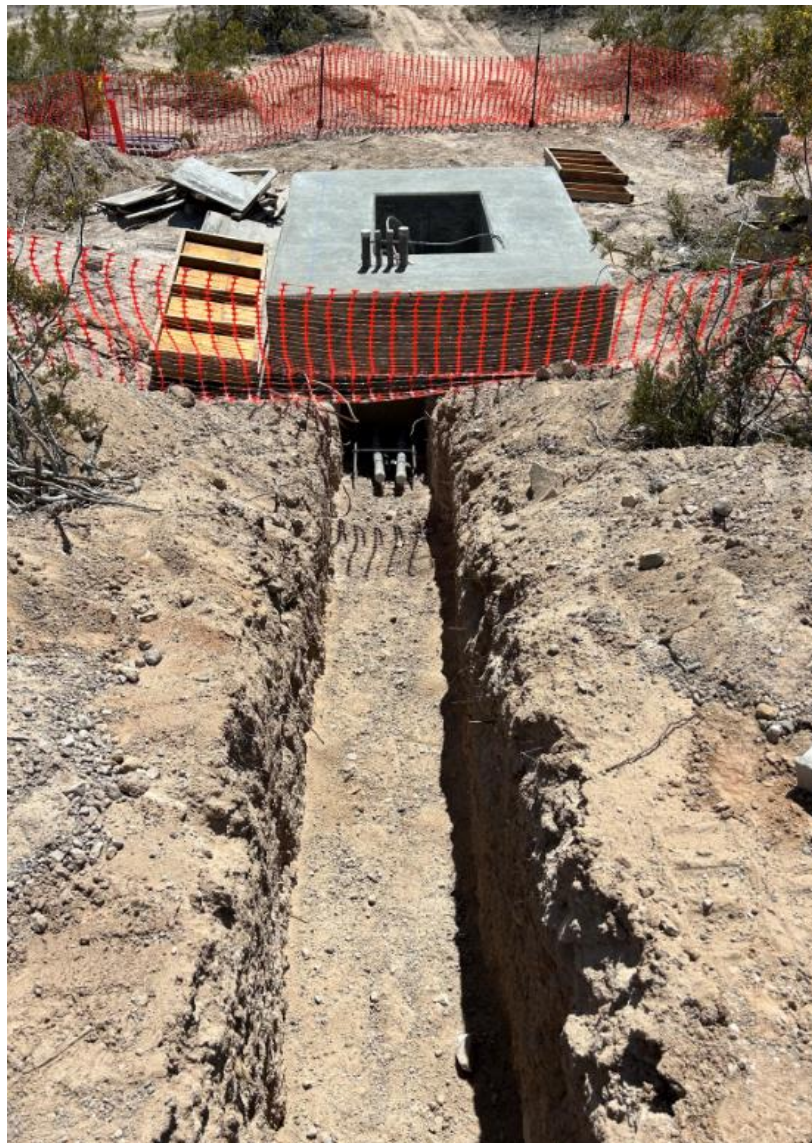
Colorado River Aqueduct (CRA) Program

The CRA program is composed of CIP projects to replace or refurbish facilities and components of the CRA system to reliably convey water from the Colorado River to Southern California.

- **Conduit Structural Protection**—This project consists of installing new reinforced concrete slab protection crossings over portions of the cut-and-cover conduits on the Colorado River Aqueduct. Construction is complete with the notice of completion filed in July 2024.
- **Flow Level Monitoring Stations**—This project will install 12 flow monitoring stations at remote locations along the Colorado River Aqueduct. The contractor has completed the modifications of the existing manhole structures and has placed the concrete for the building foundation at mile marker 54.25. Construction is 90 percent complete and is scheduled to be complete in September 2024.
- **CRA Storage Buildings**—This project furnishes and installs storage buildings at Hinds, Eagle Mountain, and Iron Mountain and constructs associated site improvements. The contractor has mobilized at all three sites and is performing site work. Construction is 40 percent complete and is scheduled to be completed in April 2026.
- **CRA Main Transformer Replacement**—This project replaces the 35 230 kV and 69 kV step-down transformers that are used to run the main pumps at all five of Metropolitan's Colorado River

Aqueduct pumping plants. Preliminary design was completed in June 2023. The transformer procurement was advertised as a best-value procurement contract, and staff is currently reviewing and evaluating proposals. The procurement contract award and authorization of a consulting agreement for final design are scheduled for a November 2024 board action.

- **Erosion Control Improvements**—This project will install erosion control features at 23 conduit locations along the CRA, which are vulnerable to erosion during storm events. The Board authorized an agreement amendment for final design in May 2024. The consultant agreement is being amended with final design scheduled to begin in September 2024.



Flow Level Monitoring Stations—MM 100.91 Building Foundations



CRA Storage Buildings—Julian Hinds FMS 8 inch HDPE Fire Water Line Trench Hydro Excavation

Dams & Reservoirs Program

The Dams & Reservoirs Program is composed of CIP projects to upgrade or refurbish Metropolitan's dams, reservoirs, and appurtenant facilities to reliably meet water storage needs and regulatory compliance.

- **Garvey Reservoir Rehabilitation**—This project will replace the aging reservoir floating cover and liner, structurally strengthen the 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. The draft Environmental Impact Report (EIR) for this rehabilitation effort was released on June 12, 2024, for review and is scheduled to be considered in a November board action. Final design is approximately 38 percent complete and is scheduled to be completed in June 2025.
- **Diamond Valley Lake Secondary Inlet Improvements**—This project rehabilitates the Diamond Valley Lake secondary inlet sleeve valve and inlet piping and replaces the instrumentation for the sleeve valve. Rehabilitation is approximately 70 percent complete and is scheduled to complete testing and commissioning in the spring of 2025.

Distribution System Program

The Distribution System Program is composed of CIP projects to replace, upgrade, or refurbish existing facilities within Metropolitan's distribution system, including pressure control structures, hydroelectric power plants, and pipelines, to reliably meet water demands.

- **Perris Valley Pipeline Tunnels**—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. The contractor has excavated all four shafts and completed construction of the three tunnel reaches and has started installing the welded steel carrier pipe. Construction of the last tunnel reach, which crosses I-215 and the railroad tracks, commenced in early August 2024. Overall construction is 75 percent complete and is scheduled to be complete in early 2025.
- **San Jacinto Diversion Structure Gates**—This project will replace three cast iron slide gates at the San Jacinto Diversion Structure with stainless steel slide gates designed for throttling. Final design is approximately 30 percent complete. The shutdown for installation has been scheduled for the 2026 CRA shutdown.
- **Yorba Linda PCS Valve Replacement**—This project will rehabilitate five 54-inch sleeve valves in the pressure control structure. Before rehabilitation of the sleeve valves, the project will also rehabilitate five 54-inch butterfly valves needed for isolation of the sleeve valves. The shutdown for the butterfly valve rehabilitation has been scheduled for April 2025. Currently, materials for the shutdown are being procured.
- **San Diego Canal Gates Rehabilitation**—This project replaces two deteriorated radial gates along the San Diego Canal. The radial gates are used to modulate flows in the San Diego Canal. Final design is approximately 60 percent complete and is scheduled to be complete in December 2024.
- **San Diego Canal Liner Rehabilitation**—This project will replace damaged concrete lining at one location along the San Diego Canal. Final design is complete, and a contract award is planned for the October 2024 board meeting.
- **Foothill Hydroelectric Plant and Control Building Seismic Upgrade**—This project strengthens the Foothill Hydroelectric Plant and Control Building to withstand a major earthquake and retain its functionality as an essential facility. The contractor completed the structural strengthening of the roof and continued installing structural rebars and placing concrete around the existing concrete columns. Construction is approximately 70 percent complete and is scheduled to be complete in December 2024.



Perris Valley Pipeline Tunnels—Drive 2 Carrier Pipe Installation

Information Technology and Control Systems Program

The Information Technology and Control Systems Program is composed of projects to replace, upgrade, or provide new facilities, software applications, or technology that will enhance cyber security, reliability, flexibility, and capability of information, communication, and control systems.

- **Supervisory Control and Data Acquisition (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 pilot phase is 100 percent complete. Staff continued evaluating the results of the recently installed pilot equipment to determine the criteria for equipment implementation. The system upgrades at the Mills plant are scheduled to be completed in October 2026.

Additional Facilities and Systems Program

The Additional Facilities and Systems Program is composed of CIP projects to refurbish, replace, upgrade, or provide new facilities and systems that support Metropolitan’s business and district-wide operations.

- **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. The 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. Construction of Stage 3 improvements is underway and will provide security system upgrades around the perimeter of the building. The contractor completed installation of the ornamental fence around the courtyard and placement of sleeves for the concrete bollards. Construction is 98 percent complete and is scheduled to be complete in October 2024.

- **La Verne Shop Improvements**—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, began installing reinforcing steel for the new blast booth foundation, continued installing maintenance holes for the new electrical ductbank, began installing concrete formwork for the blast booth pit walls, and began installing new underground natural gas lines. Construction is approximately 93 percent complete and is scheduled to be complete in October 2024.
- **Lake Mathews Above Ground Storage Tank**—This project will replace the existing above-ground diesel storage tank at Lake Mathews with a new code-compliant tank. Final design is approximately 95 percent complete and is scheduled to be complete in November 2024.



Headquarters Physical Security Upgrades—Stamping Concrete at Gate 4



La Verne Shop Improvements—Blast booth retrofit structure at Coating Shops

Prestressed Concrete Cylinder Pipe (PCCP) Program

The PCCP Program is composed of CIP projects to refurbish or upgrade Metropolitan's PCCP feeders to maintain water deliveries without unplanned shutdowns.

- **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. Ten valves have been delivered as of January 2024. The 11th and 12th valves are expected to arrive in late September 2024. Fabrication of the final valve will be completed in late 2024, and delivery is projected for early 2025. Stored valves at Lake Mathews were moved into the new valve storage warehouse.
- **Second Lower Feeder 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. The contractor is currently installing accessway assemblies, replacing vent stacks, and acquiring permits. A shutdown is planned for next winter to complete the relining and replace three 42-inch valves with three 48-inch valves. Construction is 74 percent complete and is scheduled to be complete in September 2025.

- **Allen-McColloch Pipeline Urgent PCCP Rehabilitation**—This project will perform urgent relining of approximately three miles of distressed PCCP segments of the Allen-McColloch Pipeline (AMP) that were discovered during an inspection in 2023. Relineing of the AMP is being performed in stages to minimize impacts to member agencies by installing a bulkhead and returning the northern portion of the pipeline to service while the southern portion remains under construction. Stage 1 includes carbon fiber reinforced polymer (CFRP) lining of four segments and steel relining of approximately 4,500 feet of pipeline. Construction of the CFRP and 2,100 feet of steel liner within the northern portion of the AMP was successfully completed in April 2024. The remaining 2,300 feet of steel liner installation in the southern portion is approximately 70 percent complete and will be finished by October 2024. Stage 2 work consists of 12,600 feet of steel liner installation and appurtenant work. The Board awarded the Stage 2 contract in May 2024. The Stage 2 contractor has completed potholing, mobilized in July, and shutdown work is planned to be completed by December 2024. All encroachment permits have been issued.

Electromagnetic Inspections—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. Inspections of the San Jacinto Pipeline and Orange County Feeder were completed in March 2024 and inspection reports received in May 2024.

Valve Warehouse—This project constructs an 18,160 square-foot 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. All construction was completed in June 2024, and the valves were moved into the warehouse in July.



PCCP Valve Warehouse—Offloading crated valves



PCCP Valve Warehouse—Valves in storage with room for valves still to be received

Water Treatment Plants Program

The Water Treatment Plants Program comprises CIP projects to replace or refurbish facilities and components at Metropolitan's five water treatment plants and the chemical unloading facility to continue to reliably meet treated water demands.

- **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 completed all rehabilitation work in Basins 7 and 8, and continued construction activities in Basins 5 and 6 and Filter Building No. 2. Overall construction for this contract is approximately 75 percent complete and is scheduled to be complete in July 2025.
- **Weymouth Administration Building Upgrades**—This project upgrades the Weymouth Administration Building to withstand a significant earthquake. The planned upgrades include structural strengthening consistent with current seismic standards for essential facilities as well as accessibility and fire/life safety improvements, architectural modifications near the areas of structural upgrades, and improvements associated with the preservation of historic architectural features. The project constructability review workshop was completed in July 2024. Final design is approximately 70 percent complete and is scheduled to be complete in April 2025.



Weymouth Basins 5–8 and Filter Building No. 2 Rehabilitation—Installing the formwork for the Basin 6 East Flocculation Wall

- **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. Stage 2 improvements will add a second incoming 12 kV service from Riverside Public Utilities, reconfigure the existing 4.16 kV switchgear, and replace the standby generator switchgear and the emergency generator programmable logic controller. The contractor continued bench testing and began installation of the switchgear doors inside the Ozone Switchgear Building. Construction is approximately 70 percent complete and is scheduled to be complete in August 2025.
- **Diemer Filter Rehabilitation**—This project rehabilitates the 48 filters at the Diemer plant by improving critical filter features, replacing filter media, and installing filter valve actuators, along with modifications to the filter upstream influent weir, surface wash laterals, instruments, and appurtenances. The planned upgrades also include improving the coal grit removal facilities for the east and west side of the plant. Final design is approximately 75 percent complete and is scheduled to be complete in December 2024.
- **Diemer Chemical Tank Farm Rehabilitation**—This project rehabilitates the fluoride tank farm at the Diemer plant by replacing the two fluoride tanks, associated feed equipment and roof over the fluoride tank farm. A temporary fluoride feed system and appurtenant equipment will be installed in order to maintain operations during construction. Final design is approximately 80 percent complete and is scheduled to be complete in November 2024.



Mills Electrical Upgrades—ORP Switchgear New Door Testing



Adapt to changing climate and water resources

Pure Water Southern California

The Pure Water Southern California (PWSC) Program is a large regional recycled water program that will provide a new local source of safe and reliable drinking water for Southern California. PWSC currently focuses in four areas: demonstration testing, environmental planning, technical studies, and preliminary design of initial pipeline reaches. PWSC will produce up to 150 million gallons per day (mgd) of purified water from the Advanced Water Purification Facility (AWPF) in Carson, for indirect potable reuse (IPR) and direct potable reuse (DPR) applications, with Phase 1 Program completion by 2035.

- **Demonstration Testing**—Demonstration testing began in 2019 with N-only tertiary membrane bioreactor (tMBR) testing completed in 2021 and secondary MBR (sMBR) testing completed in 2023. Modifications for tMBR optimization testing have been completed. The system is online and currently operating in the nitrification/denitrification mode.
- **Environmental Planning**—The environmental planning phase began in 2020 with the goal of preparing an EIR for approval in 2026. Various technical studies have been prepared to support the effort. The

draft EIR is currently scheduled for publication in early-2025, with board certification of the document in early 2026. Staff continues to review individual draft technical sections and complete the remaining technical studies.

- **Program Management**—PWSC program management efforts lead the planning for the PWSC Program, including project controls, scheduling, budget development, risk management, coordination with program partners and stakeholders, grants and funding, and preparation of various plans and studies.
 - Metropolitan received notice in May 2024 that it was one of the recipients of the U.S. Bureau of Reclamation (USBR) Large-Scale Water Recycling grant (LSWR). The USBR announced that they intend to grant Metropolitan up to \$99,199,096 to advance the PWSC planning and design efforts. Staff provided an update to the Board in August 2024 on both the grant and proposed modifications to the agreement with Los Angeles County Sanitation Districts (LACSD). Staff plans to return to the Board to amend the agreement with LACSD in September and request authorization to adopt a resolution to receive and match the USBR grant funding in fourth quarter 2024.
 - A second grant application to the LSWR program was prepared and submitted to the USBR in May for up to \$26 million dollars, or the difference between the initial grant request of \$125 million and the amount awarded.
 - Additional information on program updates, grant status, and LACSD agreement amendment will be presented at the next PWSC/Regional Conveyance Subcommittee meeting in September 2024.
 - Program governance and program management information systems are currently being developed. Technical studies are underway to support the preparation of the direct potable reuse white paper, and EIR analysis on per- and polyfluoroalkyl substances (PFAS) compounds, and development of program phasing options.
- **Advanced Water Purification Facility**—The AWPf will purify wastewater from LACSD's A.K. Warren Water Resource Facility (Warren Facility) using membrane bioreactors (MBRs), reverse osmosis (RO), and ultraviolet/advanced oxidation (UV/AOP). With its expertise in biological wastewater treatment, LACSD will assume the responsibility of implementing the AWPf pretreatment and the MBR facilities.
 - A draft conceptual facilities plan has been prepared to document key assumptions of AWPf components. The final draft plan is currently being prepared.
 - Metropolitan has finalized the Method of Services (MOS) study agreements with Southern California Edison (SCE) for SCE to evaluate SCE infrastructure needed to meet AWPf power requirements. The MOS investigation is anticipated to be complete later this year.
- **Direct Potable Reuse (DPR)**—The California Division of Drinking Water (DDW) published the final DPR regulations in December 2023. On August 6, 2024, the California Office of Administrative Law approved these direct potable reuse (DPR) regulations. These regulations will now take effect on October 1, 2024. Metropolitan has completed bench-scale testing to screen the potential DPR treatment processes that could be used for the program. Planning of pilot-scale testing is in progress. Following a technical workshop with the Independent Scientific Advisory Panel (ISAP) in March 2024,

a DPR white paper has been developed to establish Metropolitan's DPR implementation approach via the PWSC Program. Potential opportunities for treated water augmentation (TWA) are also being investigated, and a technical memorandum is being prepared.

- **Conveyance Pipeline System**—The PWSC conveyance system consists of the backbone pipeline, which extends over 40 miles from the AWP in the city of Carson to as far north as the city of Azusa; repurposing an existing pipeline owned by another agency (Phase 1) and new DPR pipeline (Phase 2) to convey water from the backbone eastward for raw water augmentation at Metropolitan's Weymouth Plant in the city of La Verne. It also includes several pump stations, service connections, isolation valves, and other pipeline appurtenances. As part of the current environmental planning phase efforts, the project team is preparing the Conveyance Facilities Conceptual Design Report to support the environmental studies and permitting processes required by CEQA. The draft report was recently completed, with the final report anticipated by the end of the year. In addition, Metropolitan's Board authorized consulting agreements for preliminary design of the first two pipeline reaches in March 2023, and both projects are on schedule to complete preliminary design by end of the year.
 - **Reach 1**—This reach is approximately 6 miles long and runs through the city of Carson, with service connections for LADWP and West Basin MWD. Current work includes utility field investigation and geotechnical work, incorporating value engineering comments, as well as the completion of the preliminary design report and associated engineering drawings. Preliminary design is 82 percent complete.
 - **Reach 2**—This reach is approximately 8 miles long and runs through the cities of Long Beach and Lakewood, with a service connection for Long Beach Utilities District. Current work includes utility field investigation and geotechnical work, incorporating value engineering comments, as well as coordination with Long Beach Utilities District, Caltrans and other permitting entities for the major tunnel crossing of the I-710 and Los Angeles River. Preliminary design is 47 percent complete.

Drought Mitigation—State Water Project Dependent Areas

The Drought Mitigation—State Water Project (SWP)-Dependent Areas Program is composed of CIP projects to replace, refurbish, upgrade, or construct new facilities, which are identified to mitigate the vulnerability experienced by specific member agencies that are affected during shortages of State Water Project supplies.

- **Furnishing Three 84-Inch Valves**—This contract was awarded in August 2022 to procure the three 84-inch butterfly valves needed for planned infrastructure improvements at multiple locations on the Inland Feeder to enhance operational flexibility to deliver water from Diamond Valley Lake to the Rialto Pipeline service area for member agencies that are currently dependent on supplies from the State Water Project. The valves were successfully delivered in July 2024 to a warehouse at Diamond Valley Lake. Each valve will be transferred to its respective project in early 2025 before the Inland Feeder pipeline shutdown.

- **Foothill Pump Station Intertie**—This project will connect Metropolitan’s Inland Feeder to San Bernardino Valley Municipal Water District’s (SBVMWD) Foothill Pump Station. The project is one of four Rialto Pipeline service area supply reliability improvement projects. Foothill Pump Station will provide the hydraulic lift needed for direct water delivery from Diamond Valley Lake to Rialto Pipeline. The project will install supply and discharge bypass pipelines, isolation valves and their vault, and a surge protection system. Final design for the project is anticipated to be complete by late 2024. CEQA documentation is complete, and adoption is to be considered during August 2024 board action. The project requires permits from CA Fish and Wildlife and US Fish and Wildlife to address impacts to endangered species found at the project site. The project is to receive a \$5 million US Bureau of Reclamation (USBR) grant, and USBR will assist Metropolitan with permit consultation with US Fish and Wildlife Service.
- **Sepulveda Feeder Pumping Stations, Stage 1**—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 30 cubic feet per second from the Central Pool to portions of the Jensen plant-exclusive area. This project uses a progressive design-build (PDB) project delivery method. The Board awarded a Phase 1 PDB agreement in September 2023. A July 2024 board action authorized amending the agreement for procurement of the project’s electrical transformers. A September 2024 board action is planned for the procurement of the remaining long-lead equipment including the pumps, large valves, electrical switchgear, and motor control centers. Phase 1, which includes site investigation, design to the 70 percent level, and development of a guaranteed maximum price to complete all work is scheduled to be completed in November 2024.



Sustain Metropolitan’s mission with a strengthened business model

Value Engineering Program

Engineering Services conducts a Value Engineering (VE) program to review capital projects and identify opportunities and alternatives to enhance project performance, optimize the use of funding for CIP projects, and demonstrate responsible use of public funds. The objective of the VE program is to improve the overall value of CIP projects by applying an industry-accepted assessment methodology to examine a project’s function, design, equipment, material selections, and contracting approach. This comprehensive assessment is conducted at multiple stages in a project’s life cycle.

- **New Value Engineering Agreements**—In August, Engineering went to the Board to award new on-call agreements with AECOM, RHA LLC, Strategic Value Solutions Inc., and Value Management Strategies Inc., for value engineering and related technical services. The maximum duration for these agreements is three years.



Empower the workforce and promote diversity, equity, and inclusion

Mentoring Programs

Engineering Management Mentoring Program

With nine individuals promoted to team manager this past year, Engineering launched a spinoff of its core mentoring program to focus on new engineering managers. The Engineering Management Mentoring Program seeks to provide increased support for these highly motivated leaders, including holding a “hackathon” session. A hackathon is an intensive, often multi-day event where individuals from diverse backgrounds and areas of expertise collaborate to develop solutions to tackle problems. The impact of hackathons can be substantial, the combination of cross-disciplinary collaboration, time constraints, and competitive spirit can lead to new ideas that may not emerge from a traditional working environment.



Information Technology Group

• Information Technology Group Monthly Activities for August 2024

Summary

This report provides a summary of activities related to the Information Technology Group for August 2024.

Purpose

Informational

Detailed Report

In preparation for the end of the availability of classic Teams, the Information Technology Group began performing the required updates to the new version of Teams. The new Teams application has been completely reimagined to offer improved performance, enhanced reliability, security, and IT management capabilities. As a result, users can expect a faster, simpler, smarter, and more flexible application experience. The upgrades included the following:

- Cloud policy enforced to centrally manage settings
- Integrated New Teams version into the Metropolitan standard image (Win10 and Win11)
- Updated 190 devices within the IT team and then proceeded to update the remaining 1,985 Windows 10 devices within the district
- Created deployment packages to support ongoing deployments via both System Center Configuration Manager (SCCM) and Tanium
- Removed Teams Classic from all district devices



Operations Groups

• Operations Monthly Activities for August 2024

Summary

This monthly report for the Operations Groups provides a summary of activities for August 2024 in the following key areas:

- Enhance Workforce Safety
- Develop Workforce and Prepare Employees for New Opportunities
- Manage Business Operations, Budget, and Staffing
- Provide Reliable Water Deliveries and Manage Storage
- Develop New Supplies and Optimize System Flexibility
- Manage Power Resources and Energy Use in a Sustainable Manner
- Protect Source Waters and Ensure Water Quality Compliance
- Optimize Water Treatment and Distribution
- Protect Infrastructure and Optimize Maintenance
- Optimize Asset and Maintenance Management
- Enhance Emergency Preparedness and Response
- Prepare for Future Legislation and Regulations
- Advance Education and Outreach Initiatives
- Engage with Member Agencies and Other Stakeholders on Technical Matters

Purpose

Informational by the Operations Groups on a summary of key activities for the month of August 2024

Attachments

Attachment 1: Detailed Report –Operations Groups’ Monthly Activities for August 2024

Operations Groups

Core Business Objectives

Enhance Workforce Safety

Staff completed the emergency extraction training at Garvey Reservoir. Employees used Metropolitan-provided extraction devices to practice different emergency extraction scenarios they may encounter in the field. The four-hour class was provided by an external vendor. Additional classes will be provided for other staff, as needed.



Emergency extraction training at Garvey Reservoir

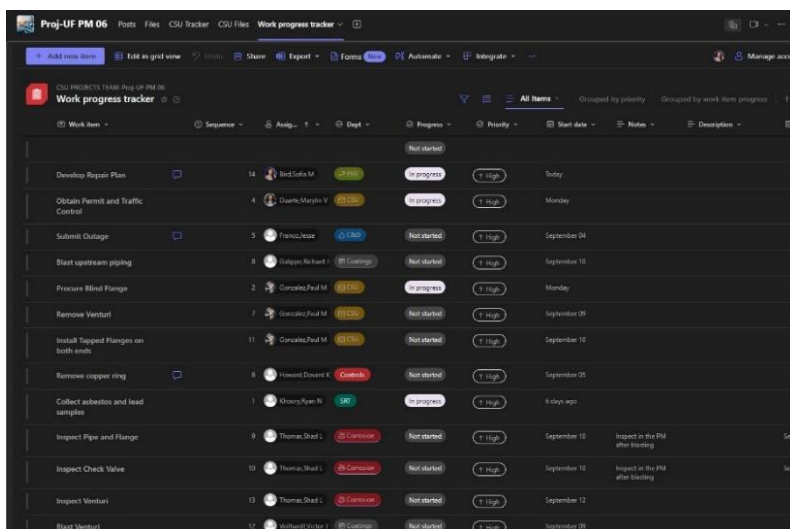
Operations and Safety, Regulatory, and Training (SRT) staff coordinated a tour for the Buckskin Fire Department from Parker, Arizona, at the Gene pumping plant. The tour provided an opportunity to familiarize the Fire Department with CRA equipment and potential hazards, such as high-voltage electrical, chemical handling, and confined spaces.



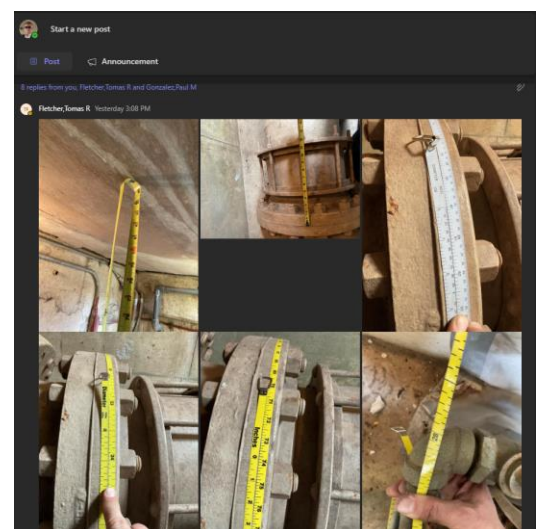
Tour with the local fire department at Gene pumping plant

Develop Workforce and Prepare Employees for New Opportunities

Staff is incorporating new work flows by leveraging technology to manage urgent and more complex projects. After discovering a compromised piping section within the Upper Feeder PM-06 meter structure, staff across Metropolitan was brought together through an MS Teams channel where photos, drawings, files, schedules, and communication reside in one location. This streamlined communication across multiple units provides stakeholders with real-time updates, preserves data, and eliminates miscommunication, redundant files, and emails.



Staff using coordination lists accessible to all stakeholders



Staff sharing field information with the team

Manage Business Operations, Budget, and Staffing

During August, the Business Management team (BMT) finalized Operations budget reporting for FY2023/24. Also, the quarterly Business Support team meeting was held to discuss and prepare for FY2025/26 operating equipment requests.

Provide Reliable Water Deliveries and Manage Storage

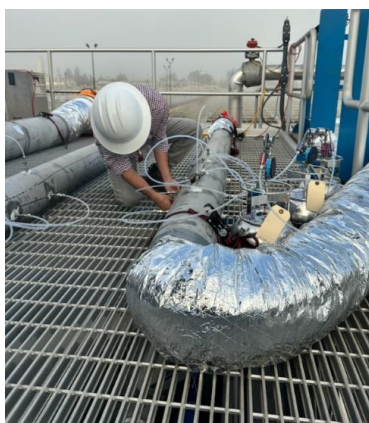
Metropolitan member agency water deliveries were 145,200 acre-feet (AF) for August with an average of 4,700 AF per day, which was about 300 AF per day higher than in July. Metropolitan continued delivering water to the Cyclic and Conjunctive Use Programs. Treated water deliveries were 4,000 AF higher than in July for a total of 80,300 AF, or 55 percent of total deliveries for the month. The Colorado River Aqueduct (CRA) pumped a total of 98,000 AF in August. State Water Project (SWP) imports averaged 3,300 AF per day, totaling about 102,9000 AF for the month. The target SWP blend is 25 percent for Weymouth, Diemer, and Skinner plants.

Metropolitan expects to have sufficient SWP and Colorado River supplies to meet demands in 2024. 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 has resumed deliveries to Desert Water Agency and Coachella Valley Water District because of the improved supply conditions. Metropolitan is continuing to optimize the use of Table A supplies this year to improve SWP carryover for next year for drought reliability.

Develop New Supplies and Optimize System Flexibility

During August, staff continued baseline monitoring for tertiary membrane bioreactor nitrification-denitrification testing at the Pure Water Southern California Napolitano Innovation Center (NIC) demonstration plant. Staff resolved a biological upset involving partial nitrification loss that began in late June. Staff also returned the reverse osmosis (RO) system to 85 percent recovery and resolved operational issues while running the RO at design setpoints.

Acetone spike testing was performed to demonstrate removal of volatile organic compounds in gas and liquid forms and confirm operational setpoints to support full-scale permitting and future direct potable reuse testing. Staff also supported Los Angeles County Sanitation District's emissions tests to support future environmental permitting of the full-scale facility.



Installation of bioreactor materials in preparation for acetone spiking test at the NIC

Manage Power Resources and Energy Use in a Sustainable Manner

The summer operating period to date has been relatively mild across the California Independent System Operator (CAISO) and Western Electricity Coordinating Council (WECC) operational footprints. Energy markets in August 2024 reflected the relatively mild summer weather to date and relatively plentiful natural gas supplies. Natural gas prices remained in the \$2–3 per Metric Million British Thermal Unit (MMBtu) range, with electricity prices in the CAISO SP15 market at \$40–60 per megawatt-hour (MWh) off-peak and around \$100/MWh on-peak. A minor heat event at the end of July and early August did not have any significant operational or pricing impacts.

The CRA continued full operation following the March shutdown, averaging about seven pumps. The CRA energy cost budget for fiscal year 2024/25 is \$71.4 million; the current cost forecast is slightly higher at \$80.4 million because of increased pumping. Monthly costs are forecast to increase as natural gas prices increase in anticipation of winter heating demands.

Lighting upgrades were installed at the Chemical Unloading Facility (CUF) located in Perris to improve illumination near the site entrance. This facility is key to ensuring water treatment chemical deliveries to the treatment plants and can be accessed both day and night. With the latest solar and battery technology innovations, solar-powered street lighting has become reliable and viable for this location. The Mills Electrical Team installed a solar-powered streetlight that provides sufficient light to illuminate the area. Adding a traditionally powered light would have cost around \$250,000 for the underground duct bank system and fixtures—the entire solar light installation costs around \$7,000, demonstrating efficient and sustainable use of energy resources.



Newly installed solar light shown pre-dawn at the Chemical Unloading Facility

Protect Source Waters and Ensure Water Quality Compliance

Metropolitan complied with all water quality regulations and primary drinking water standards during August 2024.

Optimize Water Treatment and Distribution

The SWP target blend entering the Weymouth and Diemer plants stayed at 25 percent in August. The SWP blend entering Lake Skinner remained at 25 percent. The blend leaving Lake Skinner gradually increased and now matches the blend entering the lake.

Flow-weighted running annual averages for total dissolved solids from July 2023 through June 2024 for Metropolitan's treatment plants capable of receiving a blend of supplies from the SWP and the CRA were 460, 535, and 475 mg/L for the Weymouth, Diemer, and Skinner plants, respectively.

This month, staff worked to upgrade and replace the Garvey Reservoir sodium hypochlorite monitoring sample line. The sample line supplies water to the water quality analyzers at the tank farm; these analyzers provide operators with data needed to complete accurate chemical feed adjustments. Staff removed the damaged copper line, installed a new one, and ensured that it was anchored correctly and tested. The work was completed, and the line was returned to service.



Garvey Reservoir tank farm water quality analyzers

Protect Infrastructure and Optimize Maintenance

Staff worked on disassembling a CRA pump at Eagle Mountain pumping plant. The pump was experiencing corrosion and cooling water leaks. The pump was removed from service to allow staff to complete maintenance to repair or replace worn components and be recoated to prevent corrosion.



Staff disassembling a pump at the Eagle Mountain pumping plant

Staff is responsible for many of the high-voltage systems within Metropolitan's system. Metropolitan utilizes specialized skills and equipment to maintain the critical systems which includes transmission powerline maintenance and vegetation control. Staff replaced a 2300V transformer for the industrial area at the Gene pumping plant. This transformer steps down power from 2300V to the 480V that is used throughout the site industrial areas.



Staff replacing a 2300/480V transformer at the Gene pumping plant

Repair and maintenance of the CRA require specialized fixtures, stands, and other customized components to facilitate this critical work. One of the pumps at Gene pumping plant is being upgraded to a brushless excitation system as part of a pilot to evaluate different technologies that may be incorporated into future CRA pump upgrade projects. A “rotisserie” is utilized to hold the pump cover, which allows for rotation of the component when performing repairs and upgrades.



Pump cover staged on a rotisserie at the Gene pumping plant

It was noted that high-voltage transmission line towers were close to the highway. Staff installed additional protection for these 230kV transmission towers by installing K-Rails around the towers. These K-Rails will serve as a barrier to protect the towers in the event of a vehicular incident.



K-Rails to be used as 230kV tower protection

Staff recently completed rehabilitation on five of the six 16-inch hydraulic globe valves at Ramona Pressure Control Structure (PCS), which are used to relieve excess pressure on the Middle Feeder North. This project included coordination with Eagle Rock Operations Control Center, removal of valves, and replacing moving components that control flow.



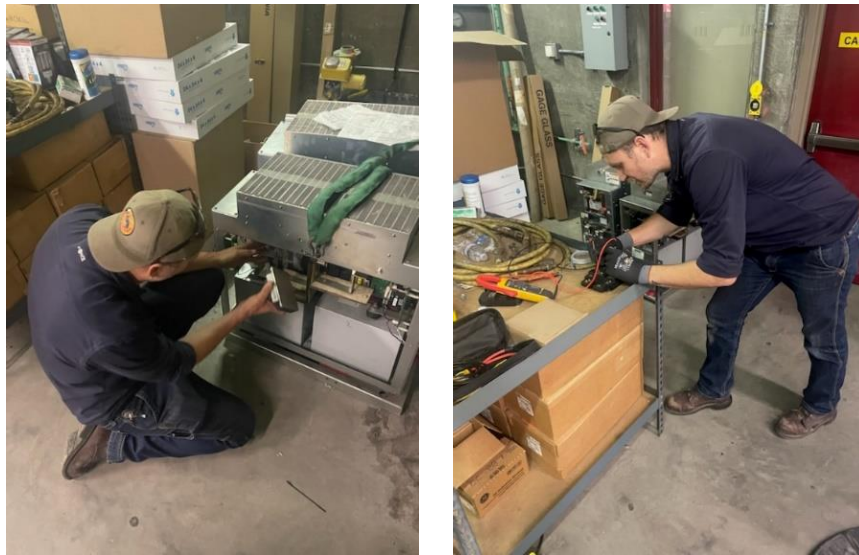
Staff repairing hydraulic globe valves at the Ramona PCS

Staff removed the motor from a pump unit at Wadsworth pumping plant. The pump will be removed for inspection and rehabilitation. Foreign material was found inside the pump impeller during a routine inspection earlier in the year. These pump/generator units have not been removed and refurbished since their installation in 1999 when the pumping plant was commissioned as part of Diamond Valley Lake construction.



Staff removing motor for repairs at the Wadsworth pumping plant

Staff at the Diemer plant is repairing a power module for one of the pumps at OC-88. The power module is outdated and no longer supported by the manufacturer. Staff is troubleshooting each component in the power module to identify which ones have failed. OC-88 Pump Station, located in Orange County, is on the Allen-McColloch Pipeline. OC-88 Pump Station is a critical facility that supplies treated water to the Municipal Water District of Orange County.

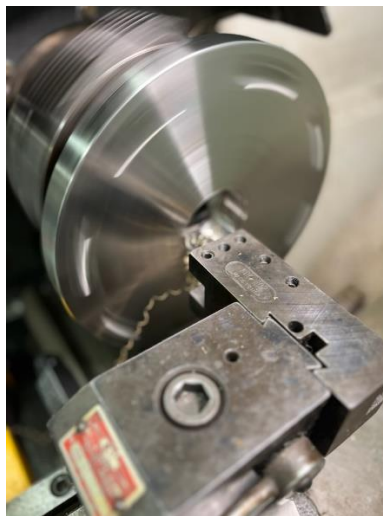


Staff working on a power module for a pump at OC-88 Pump Station

Staff completed the replacement of spools, valves, and valve actuators for the ozone open-loop cooling water strainers at the Skinner plant. Staff used their machining and fabrication skills to make the necessary modifications to replace the valves with materials more resistant to corrosion than the previous valves and spools.



Open loop strainer valve, spool, and actuator (before replacement)



Components being machined on lathe at Skinner plant



Open loop strainer valve, spool, and actuator (after replacement)

Weymouth Electrical Team is installing Electric Vehicle (EV) charging stations throughout the Weymouth Plant as part of a pilot project. Staff installed two new charging stations this month to be used exclusively for district EVs. This brings a total of six EV charging stations to the Weymouth plant. With the expansion of the district's Zero Emission Vehicles (ZEV) fleet, a full-scale electrical charging station project will be launched this year.



Staff terminating cables (left) and the complete installation of an EV Charger Station (right) at Weymouth plant

Older copper communication lines are being replaced throughout the district at remote structures. The new fiber optic cables will allow for higher bandwidths, greater security, and improved reliability in areas that frequently experience communication issues. A crew at the Cone Camp structure along the Inland Feeder began the necessary construction for the new fiber optic cable installation.



Installing a pull rope for the new fiber optic cable



Routing conduit inside the structure

Staff completed storm damage repairs at the Sepulveda PCS Facility. Heavy rains last year caused mud and debris to wash down from the hillsides above the PCS, damaging the perimeter fence and clogging drainage grate. Staff completed the repair of the chain link fence, cleared the storm drain, and removed 120 cubic yards of debris that washed down from the hillside.



Long-reach excavator removing debris from catch basin



Backhoe loading truck with debris

The La Verne Shops received a request to support the refurbishment of five needle valves for the Sepulveda Hydroelectric Plant. Staff blasted, assessed, and coated a multitude of components for the valves and actuators. The components were successfully coated to ensure the reliability of these critical valves.



As-received actuator components



Deflector components



As-received valve bodies in blast booth



Operations

(continued)



As-received shafts



Finished shafts



Finished valve bodies



Protecting shields

Optimize Asset and Maintenance Management

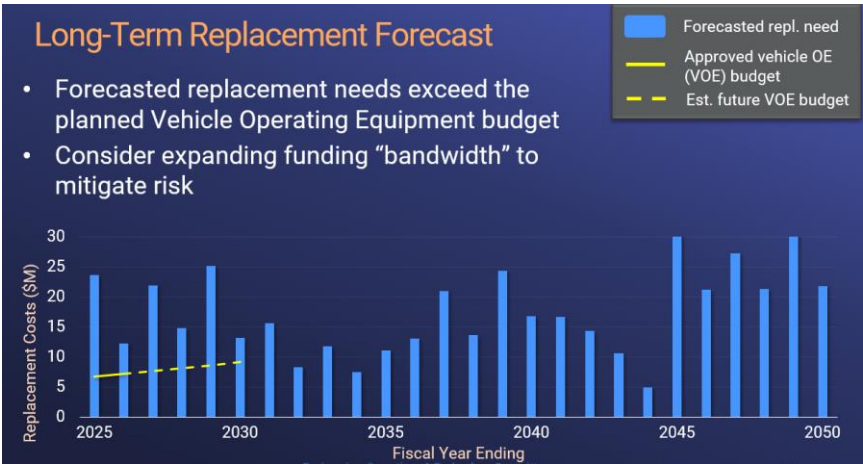
During the August meeting for the Engineering, Operations, and Technology Committee, staff provided an update of the transition plan to ZEVs and described the three components that are being balanced: complying with regulations and Metropolitan’s Climate Action Plan, addressing a backlog of aging vehicles, and staying within budget constraints.

The presentation included an overview of the current condition of Metropolitan’s fleet and emphasized that over 50 percent of the existing fleet needs replacement. In addition, staff highlighted a preliminary effort to categorize all 1,039 fleet vehicles into various criticality levels to help understand the role of each fleet vehicle in achieving Metropolitan’s mission of water delivery and emergency response. Staff presented to the Committee a fleet risk heat map that combines both fleet criticality and condition to provide a “birds-eye” view of costs to mitigate each risk level. A preliminary 25-year forecast was also developed to optimize the fleet replacement needs and help the Board understand the long-term funding needs relative to the planned operating equipment budget.



Existing Fleet Condition

Fleet Risk Heat Map



Fleet’s Long-term Replacement Needs

Enhance Emergency Preparedness and Response

From August 26 to 29, Metropolitan participated as the co-lead agency in a regional emergency preparedness functional exercise coordinated by the U.S. Environmental Protection Agency (EPA). This full-scale exercise provided the opportunity for hands-on practice in laboratory response procedures. Other participants included Southern Nevada Health District and local facilities that are part of EPA's Compendium of Environmental Testing Laboratories. This hands-on training offered continued experience in standardized emergency response procedures and communication pathways.



Staff participating in EPA emergency preparedness exercise

Prepare for Future Legislation and Regulations

On July 24, the California Office of Administrative Law (OAL) approved the final hexavalent chromium MCL of 10 µg/L. The rule also established a detection limit for purposes of reporting (DLR) of 0.1 µg/L; 2–4 yr. compliance timelines depending on system size; and the need for a compliance plan, among other provisions. Metropolitan had previously provided comments in support of the 10 µg/L MCL, compliance timelines, and the use of stannous chloride as a best available technology. Metropolitan also expressed concerns over the cost of compliance and asked for additional funding to help offset treatment costs. The rule will be effective on October 1, 2024.

On August 1, EPA submitted the final Lead and Copper Rule Improvements (LCRI) to the Office of Management and Budget (OMB) for review. Unless OMB has major concerns and sends the final LCRI back to EPA, this would be the final step before EPA publishes the final LCRI. As drafted, the rule will result in additional sampling at Metropolitan's desert housing but is not applicable to Metropolitan's large water system. EPA's goal is to publish the final LCRI by October 16, 2024 (the deadline for public water systems to submit the initial lead service line inventory).

On August 2, staff submitted written comments on SCAQMD's Proposed Rule 1445, Plasma Arc Cutters (PACs). Staff requested that SCAQMD justify requiring existing stationary PACs to have either HEPA dust collectors or control technology that meets 99.97 percent efficiency. Under the proposed rule, Metropolitan's PAC with a water table located at the Weymouth plant would either need to be source tested or have a dust collector installed before 2039. Staff will continue efforts to have the rule recognize the Metropolitan's PAC as compliant as the cutter is fully submerged. Final draft language is expected in late August with a November rule adoption.

On August 6, the California Office of Administrative Law (OAL) approved the final Direct Potable Reuse (DPR) regulations. The regulations provide the regulatory framework by which highly treated recycled water can be introduced either immediately upstream of a water treatment plant or directly into a public water system. The final DPR regulations will take effect on October 1, 2024. Staff will continue to monitor any future developments with respect to DPR.

During August, staff provided technical support to the California-Nevada Section of the American Water Works Association in their work with Senator Portantino's Office on the development of Senate Bill 1147, which will require public health standards and monitoring of microplastics in drinking water, including bottled water.

Advance Education and Outreach Initiatives

On August 9, a tour of the Water Quality Laboratory was provided for a group of high school students who are studying public policy issues, including provision of drinking water.

Engage with Member Agencies and Other Stakeholders on Technical Matters

Staff provided technical updates on microplastics in drinking water to the Pittsburgh Water and Sewer Agency (July 30) and to the Santa Ana Watershed Project Authority Emerging Constituents Task Force on August 12.

On August 29, staff participated in the first of a series of regional workshops on nitrification. The workshop was coordinated by the Municipal Water District of Orange County and included many of their retail agencies. Staff provided presentations on the science of nitrification and operational constraints and considerations.

Staff hosted members from the New York City (NYC) Department of Environmental Protection to share information on operations and maintenance of covered reservoirs as they prepare to determine which type of cover to use for one of their reservoirs. The group toured Garvey Reservoir and the Jensen plant to view different types of covered reservoirs and learned from first-hand experience of Metropolitan staff. This information sharing opportunity was a productive discussion on a common goal of providing safe drinking water to each agency's constituents.



**Tour of Garvey Reservoir (left) and Jensen plant (right) with
NYC Department of Environmental Protection staff**

Operations

(continued)

Staff from the Jensen plant provided a guided tour to State Senator Caroline Menjivar of District 20 and Mayor Celeste Rodriguez of the City of San Fernando. The tour began with a presentation of the Jensen plant treatment process, followed by an in-depth walking tour of the facility. Senator Menjivar and Mayor Rodriguez showed interest in understanding the treatment process, distribution system, and how the plant ensures a consistent and reliable water supply source to areas of their responsibility. Also present at the tour were Chairman Adan Ortega, Director Marsha Ramos, and Director Jacque McMillan.



State Senator Menjivar and Mayor Rodriguez, accompanied by Chairman Ortega and Directors Ramos and McMillan, received a presentation and tour of the water treatment process at the Jensen plant



Engineering, Operations, & Technology Committee

Management Announcements and Highlights

Item 7a

September 9, 2024

Engineering Services

MetWorks

Next Event – October 17, 2024 in Anaheim



Previous MetWorks Event:
Pure Water Networking – March 2024 in Carson

The Metropolitan Water District of Southern California

METWORKS

presents **Water Infrastructure Talk**
Learn about \$1Billion in upcoming work



October 17, 2024
8:00 AM – 12:00 PM
Anaheim Marriott Suites
12015 Harbor Boulevard
Garden Grove, CA 92840

LEARN ABOUT:

- Upcoming Public Works Projects
- Upcoming Consultant Opportunities

Questions?
Or more information, contact:
Jeannette Correa at jcorrea@mwds20.com, 213-217-7650

PLEASE REGISTER WITH QR CODE:



Upcoming MetWorks Event:
Water Infrastructure Talk

Weymouth Basins 5-8 and Filter Building No. 2 Rehabilitation

- Construction Contract - \$93.8 M
 - Rehabilitation of Basins 7 & 8 complete
 - Overall - 75% complete
 - Expected construction completion – Summer 2025



Testing Refurbished Effluent Valve at Filter 41



Preparing Walls for Formwork at Basin 6

Headquarters Building Exterior Physical Security Improvements

- Construction Contract - \$93.8 M
 - Completing punch list items
 - Overall - 99% complete
 - Expected construction completion – Sept 2024



Saw-cutting a Concrete Joint Near Gate 4



Cleaning Stainless Steel Bollard

Water System Operations

Managing State Water Project Supplies

Current Operational Conditions



Colorado River Aqueduct

- 2024 SWP Allocation at 40%
- CRA at 7-pump flow
- Deliveries to DWCV at ~700 cfs
- Deliveries to CUP and Cyclic ongoing
- SWP blend targets are 25% at Weymouth, Diemer, and Skinner
- August 2024 deliveries of 145 TAF were 11 TAF higher than August 2023

Managing State Water Project Supplies

September
2024
Operations

*Manage SWP supplies to
meet storage goals*

Maintain 25% SWP blends

*Managing nitrification
through proactive measures*

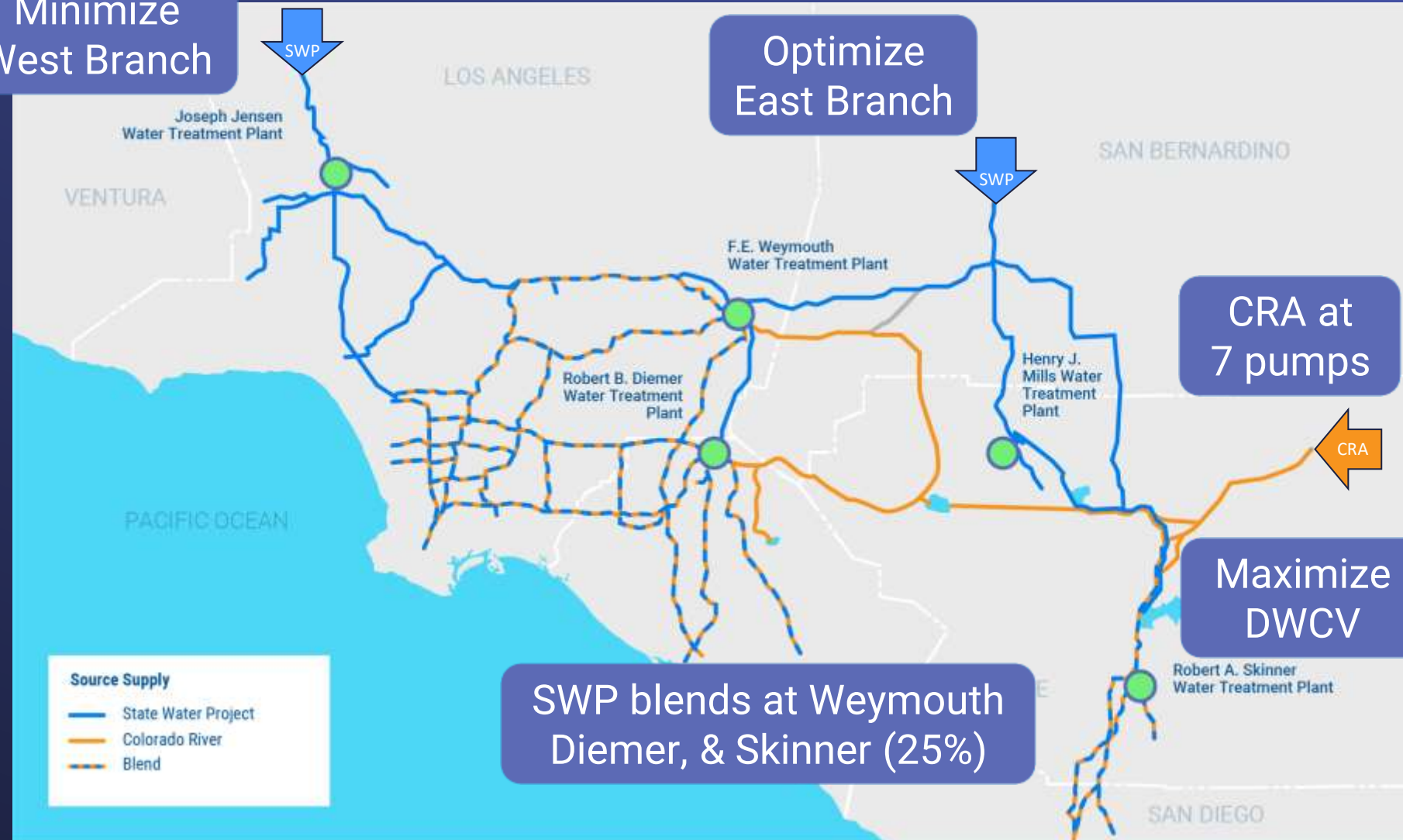
Minimize
West Branch

Optimize
East Branch

CRA at
7 pumps

Maximize
DWCV

SWP blends at Weymouth
Diemer, & Skinner (25%)



Ensuring Continued System Reliability

Santa Monica Feeder
Contractor to perform
pipe realignment
October 3 – 13, 2024

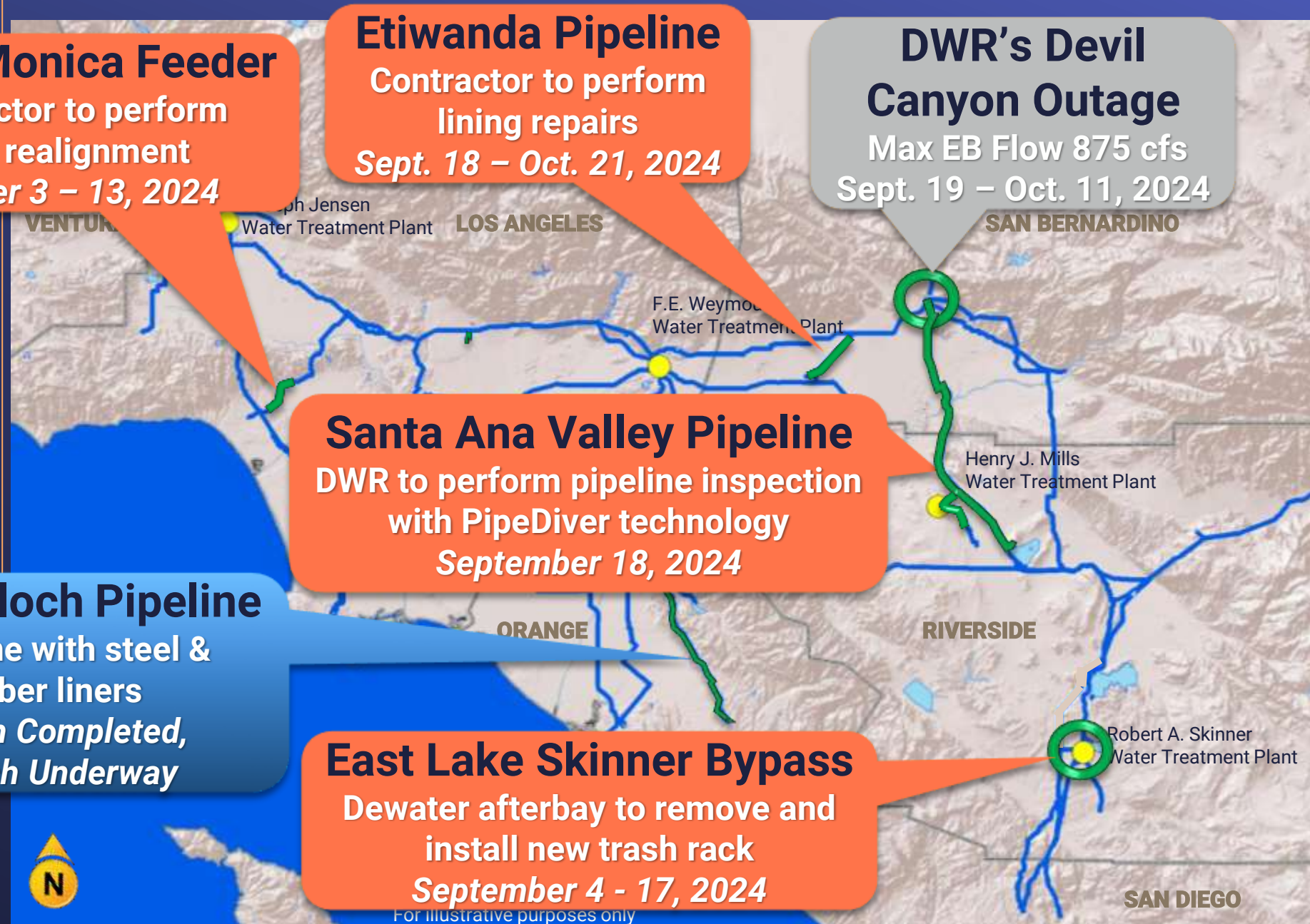
Etiwanda Pipeline
Contractor to perform
lining repairs
Sept. 18 – Oct. 21, 2024

**DWR's Devil
Canyon Outage**
Max EB Flow 875 cfs
Sept. 19 – Oct. 11, 2024

Santa Ana Valley Pipeline
DWR to perform pipeline inspection
with PipeDiver technology
September 18, 2024

Allen-McColloch Pipeline
Repair pipeline with steel &
carbon fiber liners
*Upper Reach Completed,
Lower Reach Underway*

East Lake Skinner Bypass
Dewater afterbay to remove and
install new trash rack
September 4 - 17, 2024



Water Laboratory Alliance Analytical Preparedness Full-Scale Exercise



- August 26-29, 2024 – Simulated source water contamination event
- Multiple participating agencies:
 - Metropolitan, EPA, Southern Nevada Health District, Southern Nevada Water Authority, Texas State Health Services Laboratory, and two commercial labs
- Provides an opportunity to practice emergency response plan and operating procedures using the Incident Command System
- Strengthens relationships among utilities, laboratories, and other response partners

Member and Retail Agency Nitrification Survey

Expanding Regional Knowledge for Improved Management of Nitrification



- Survey to be distributed to Member Agency water quality managers in early September
 - Requesting distribution to retail and sub-agencies
- Assess regional issues and enhance preparedness
 - Characteristics of distribution systems and operational challenges
 - Water quality impacts experienced during 2023 nitrification event
 - Nitrification monitoring and control programs
 - Strategies, technologies, and plans for dealing with nitrification
- Responses requested by early October

Information Technology

No update for this period

