

DRAFT
ENVIRONMENTAL IMPACT REPORT
STATE CLEARINGHOUSE NO. 2016031038

Doheny Ocean Desalination Project



LEAD AGENCY



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MAY 17, 2018

Table of Contents

1.0	EXECUTIVE SUMMARY	1.0-1
1.1	PROJECT OVERVIEW.....	1.0-1
1.2	PROJECT OBJECTIVES	1.0-3
1.3	PROJECT LOCATION	1.0-4
1.4	SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES.....	1.0-4
1.5	SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS	1.0-4
1.6	SUMMARY OF ALTERNATIVES EVALUATED	1.0-51
1.7	MITIGATION MONITORING AND REPORTING.....	1.0-56
1.8	AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED	1.0-56
2.0	INTRODUCTION AND PURPOSE	2.0-1
2.1	PURPOSE OF THE EIR	2.0-1
2.2	COMPLIANCE WITH CEQA.....	2.0-2
2.3	COMPLIANCE WITH SRF CEQA-PLUS.....	2.0-3
2.4	NOTICE OF PREPARATION/EARLY CONSULTATION	2.0-5
2.5	COMPLIANCE WITH CEQA.....	2.0-8
2.6	FORMAT OF THE EIR	2.0-10
2.7	RESPONSIBLE AND TRUSTEE AGENCIES.....	2.0-11
2.8	INCORPORATION BY REFERENCE	2.0-11
3.0	PROJECT DESCRIPTION.....	3.0-1
3.1	PROJECT OVERVIEW.....	3.0-1
3.2	PROJECT GOALS AND OBJECTIVES	3.0-5
3.3	PROJECT HISTORY	3.0-8
3.4	PROJECT FACILITIES.....	3.0-14
3.5	REGIONAL PROJECT COMPONENTS.....	3.0-36
3.6	PROJECT CONSTRUCTION	3.0-38
3.7	ANTICIPATED PERMITS AND APPROVALS REQUIRED	3.0-42



4.0	ENVIRONMENTAL IMPACT ANALYSIS	4.0-1
4.0.1	APPROACH TO THE ENVIRONMENTAL ANALYSIS	4.0-1
4.0.2	SECTION CONTENT AND DEFINITION OF TERMS	4.0-1
4.0.3	REGIONAL PROJECT ANALYSIS	4.0-3
4.04	CUMULATIVE IMPACT ANALYSIS	4.0-5
4.1	AESTHETICS, LIGHT, AND GLARE.....	4.1-1
4.1.1	Affected Environment.....	4.1-2
4.1.2	Regulatory Framework	4.1-4
4.1.3	Significance Criteria	4.1-7
4.1.4	Impacts and Mitigation.....	4.1-8
4.1.5	Cumulative Impacts	4.1-16
4.1.6	Significant Unavoidable Impacts.....	4.1-17
4.2	AIR QUALITY	4.2-1
4.2.1	Affected Environment.....	4.2-1
4.2.2	Regulatory Framework	4.2-9
4.2.3	Significance Criteria	4.2-16
4.2.4	Impacts and Mitigation.....	4.2-20
4.2.5	Cumulative Impacts	4.2-33
4.2.6	Significant Unavoidable Impacts.....	4.2-34
4.3	BIOLOGICAL RESOURCES	4.3-1
4.3.1	Affected Environment.....	4.3-2
4.3.2	Regulatory Framework	4.3-16
4.3.3	Significance Criteria	4.3-25
4.3.4	Construction and Operational Impacts to Biological Resources	4.3-26
4.3.5	Cumulative Impacts	4.3-48
4.3.6	Significant Unavoidable Impacts.....	4.3-50
4.4	CULTURAL RESOURCES	4.4-1
4.4.1	Cultural Resource Terminology	4.4-1
4.4.2	Affected Environment.....	4.4-4



Table of Contents

4.4.3	Regulatory Framework	4.4-16
4.4.4	Significance Criteria	4.4-22
4.4.5	Impacts and Mitigation.....	4.4-24
4.4.6	Cumulative Impacts	4.4-34
4.4.7	Significant Unavoidable Impacts.....	4.4-35
4.5	GEOLOGY AND SOILS	4.5-1
4.5.1	Affected Environment.....	4.5-1
4.5.2	Regulatory Framework	4.5-7
4.5.3	Significance Criteria	4.5-12
4.5.4	Impacts and Mitigation	4.5-13
4.5.5	Cumulative Impacts	4.5-27
4.5.6	Significant Unavoidable Impacts.....	4.5-28
4.6	GREENHOUSE GAS EMISSIONS	4.6-1
4.6.1	Affected Environment.....	4.6-1
4.6.2	Regulatory Framework	4.6-5
4.6.3	Significance Criteria	4.6-16
4.6.4	Impacts and Mitigation	4.6-17
4.6.5	Cumulative Impacts	4.6-26
4.6.6	Significant Unavoidable Impacts.....	4.6-27
4.7	HAZARDS AND HAZARDOUS MATERIALS.....	4.7-1
4.7.1	Affected Environment.....	4.7-2
4.7.2	Regulatory Framework	4.7-11
4.7.3	Significance Criteria	4.7-21
4.7.4	Impacts and Mitigation	4.7-22
4.7.5	Regional Project.....	4.7-41
4.7.6	Cumulative Impacts	4.7-41
4.7.7	Significant Unavoidable Impacts.....	4.7-42
4.8	HYDROLOGY AND WATER QUALITY.....	4.8-1
4.8.1	Affected Environment.....	4.8-1



4.8.2	Regulatory Framework	4.8-6
4.8.3	Impacts and Mitigation Measures	4.8-22
4.8.4	Cumulative Impacts	4.8-41
4.8.5	Significant Unavoidable Impacts.....	4.8-46
4.9	LAND USE AND PLANNING.....	4.9-1
4.9.1	Affected Environment.....	4.9-1
4.9.2	Regulatory Framework	4.9-3
4.9.3	Significance Criteria	4.9-8
4.9.4	Impacts and Mitigation	4.9-9
4.9.5	Cumulative Impacts	4.9-17
4.9.6	Significant Unavoidable Impacts.....	4.9-18
4.10	NOISE	4.10-1
4.10.1	Affected Environment.....	4.10-1
4.10.2	Regulatory Framework	4.10-6
4.10.3	Significance Criteria	4.10-11
4.10.4	Impacts and Mitigation	4.10-14
4.10.5	Cumulative Impacts	4.10-34
4.10.6	Significant Unavoidable Impacts.....	4.10-35
4.11	PUBLIC SERVICES.....	4.11-1
4.11.1	Affected Environment.....	4.11-1
4.11.2	Regulatory Framework	4.11-4
4.11.3	Significance Criteria	4.11-9
4.11.4	Impacts and Mitigation	4.11-10
4.11.5	Cumulative Impacts	4.11-15
4.11.6	Significant Unavoidable Impacts.....	4.11-16
4.12	RECREATION.....	4.12-1
4.12.1	Affected Environment.....	4.12-1
4.12.2	Regulatory Framework	4.12-4
4.12.3	Significance Criteria	4.12-8



Table of Contents

4.12.4	Impacts and Mitigation	4.12-9
4.12.5	Cumulative Impacts	4.12-16
4.12.6	Significant Unavoidable Impacts.....	4.12-16
4.13	TRANSPORTATION AND TRAFFIC.....	4.13-1
4.13.1	Affected Environment.....	4.13-1
4.13.2	Regulatory Framework	4.13-3
4.13.3	Significance Criteria	4.13-11
4.13.4	Impacts and Mitigation	4.13-12
4.13.5	Cumulative Impacts	4.13-24
4.13.6	Significant Unavoidable Impacts.....	4.13-25
4.14	TRIBAL CULTURAL RESOURCES	4.14-1
4.14.1	Tribal Cultural Resource Terminology	4.14-1
4.14.2	Affected Environment.....	4.14-1
4.14.3	Regulatory Framework	4.14-3
4.14.4	Significance Criteria	4.14-5
4.14.5	Impacts and Mitigation.....	4.14-6
4.14.6	Cumulative Impacts	4.14-7
4.14.7	Significant Unavoidable Impacts.....	4.14-8
4.15	UTILITIES & SERVICE SYSTEMS	4.15-1
4.15.1	Affected Environment.....	4.15-1
4.15.2	Regulatory Framework	4.15-6
4.15.3	Significance Criteria	4.15-10
4.15.4	Impacts and Mitigation Measures	4.15-11
4.15.5	Cumulative Impacts	4.15-19
4.15.6	Significant Unavoidable Impacts.....	4.15-21
5.0	ALTERNATIVES TO THE PROPOSED PROJECT	5.0-1
6.0	ADDITIONAL CEQA CONSIDERATIONS	6.0-1
6.1	SIGNIFICANT UNAVOIDABLE IMPACTS	6.0-1
6.2	SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES.....	6.0-1



Table of Contents

6.3	GROWTH-INDUCING IMPACTS	6.0-3
6.3.1	Impact Analysis	6.0-3
6.3.2	Economic Growth	6.0-4
6.3.3	Population Growth	6.0-4
6.3.4	Removal of Impediment to Growth.....	6.0-4
6.4	ENERGY CONSERVATION	6.0-5
6.4.1	Regulatory Setting	6.0-5
6.4.2	Environmental Setting	6.0-9
6.4.3	Significance Thresholds and Criteria.....	6.0-10
6.4.4	Conclusion.....	6.0-17
7.0	EFFECTS FOUND NOT TO BE SIGNIFICANT.....	7.0-1
8.0	EIR CONSULTATION AND PREPARATION	8.0-1
8.1	EIR CONSULTATION.....	8.0-1
8.2	EIR PREPARATION	8.0-3
9.0	REFERENCES.....	9.0-1

List of Tables

Table 1-1: Summary of Impacts and Mitigation Measures.....	1.0-5
Table 3-1: SCWD Current and Future Water Supply Portfolio (AFY)	3.0-8
Table 3-2: Summary of Predictive Scenario Basin Impacts.....	3.0-13
Table 3-3: Summary of Predictive Scenario Feedwater Quality	3.0-14
Table 3-4: Surrounding Land Uses and Setting	3.0-16
Table 3-5: Slant Well Dimensions	3.0-20
Table 3-6: Preliminary Finished Water Quality Goals	3.0-28
Table 3-7: Chemical Use and Application Summary	3.0-30
Table 3-8: Projected Electrical Energy Use – Normal Operation (5 MGD Potable Water Production Capacity)	3.0-32
Table 3-9: On-site Power Generation Technology Options	3.0-34
Table 3-10: Anticipated Permits and Approvals Required.....	3.0-43



Table 4-1: Cumulative Projects	4.0-7
Table 4.2-1: Summary of Ambient Air Quality Standards and Attainment Designations.....	4.2-12
Table 4.2-2: South Coast Air Basin Attainment Statuses	4.2-15
Table 4.2-3: South Coast Air Quality Management District Air Quality Significance Thresholds	4.2-17
Table 4.2-4: SCAQMD Localized Significance Thresholds for Construction.....	4.2-18
Table 4.2-5: Orange County De Minimis Levels	4.2-19
Table 4.2-6: Construction Emissions Results (Unmitigated)	4.2-23
Table 4.2-7: Construction Emissions Results (Mitigated)	4.2-24
Table 4.2-8: On-site Construction Emissions Results (Unmitigated)	4.2-24
Table 4.2-9: On-site Construction Emission Results (Mitigated)	4.2-25
Table 4.2-10: Operational Emissions Results (Unmitigated 2021 Summer)	4.2-26
Table 4.2-11: Annual Unmitigated Emissions Results.....	4.2-26
Table 4.2-12: Annual Mitigated Emissions Results	4.2-27
Table 4.2-13: Locations of Nearest Sensitive Receptors.....	4.2-31
Table 4.3-1: Threatened, Endangered and Sensitive Marine Species	4.3-14
Table 4.3-2: Managed Fish Species Found in the Project Site	4.3-17
Table 4.3-3: Area of Production Foregone (APF) Estimates	4.3-34
Table 4.4-1: Summary of Cultural Resource Reports Identified in the SCCIC Records Search	4.4-10
Table 4.4-2: Summary of Previously Recorded Cultural Resources Identified in the SCCIC Records Search.....	4.4-12
Table 4.6-1: SAR GWP Values (100-year Time Horizon)	4.6-3
Table 4.6-2: California GHG Emissions Inventory (Million Metric Tons of CO ₂ e)	4.6-5
Table 4.6-4: Construction GHG Emissions Summary	4.6-18
Table 4.6-5: GHG Emissions Summary.....	4.6-20
Table 4.7-1: Potential Hazardous Materials Sites On/Near the Project Area.....	4.7-7
Table 4.7-2: Schools Within 0.25 Miles of Project Site	4.7-12
Table 4.8-1: 2015 California Ocean Plan Desalination Amendment Water Quality Objectives	4.8-13
Table 4.8-2: Background Seawater Concentrations (Cs)	4.8-16



Table 4.8-3: Summary of Results for the Envelope of Operating Conditions for Producing Buoyant Discharges	4.8-27
Table 4.8-4: Summary of Results for the Envelope of Operating Conditions Producing Dense (Negative Buoyancy) Discharges	4.8-27
Table 4.8-5: Summary of Predictive Scenario Assumptions	4.8-31
Table 4.8-6: Summary of Predictive Scenario Results	4.8-31
Table 4.8-7: Extremal Total Water Level (*TWL) and Overtopping Rates (Q') Analysis	4.8-38
Table 4.8-8: Extremal Total Water Level (*TWL) and Overtopping Rates (Q') Analysis	4.8-39
Table 4.8-9: Tsunami Total Water Level (TWL) and Overtopping Rates (Q') Analysis.....	4.8-42
Table 4.8-10: Tsunami Total Water Level (TWL) and Overtopping Rates (Q') Analysis.....	4.8-43
Table 4.9-1: Coastal Act & Dana Point LCP Consistency Analysis	4.9-19
Table 4.9-2: Doheny State Beach General Plan Consistency Analysis	4.9-27
Table 4.9-3: SCAG Consistency Analysis.....	4.9-28
Table 4.9-4: City of Dana Point General Plan Consistency Analysis.....	4.9-30
Table 4.10-1: Noise Monitoring Results.....	4.10-5
Table 4.10-2: Interior and Exterior Noise Compatibility Standards by Land Use	4.10-10
Table 4.10-3: City of Dana Point Noise Standards	4.10-11
Table 4.10-4: Construction Equipment per Project Component	4.10-15
Table 4.10-5: Distance to Sensitive Receptors.....	4.10-16
Table 4.10-6: Noise Levels at Receptors near Subsurface Intake Wells	4.10-16
Table 4.10-7: Noise Levels at Receptors near Southeast Intake Wells Construction	4.10-19
Table 4.10-8: Noise Levels from Receptors near Northern Alignment Construction	4.10-20
Table 4.10-9: Noise Levels from Construction of the Southern Alignment Construction	4.10-21
Table 4.10-10: Noise Levels from Construction of the Desalination Facility	4.10-22
Table 4.10-12: Typical Vibration Levels for Construction Equipment	4.10-27
Table 4.11-1: Fire Station Details	4.11-3
Table 4.11-2: Estimated Student Generation – Phase 1 Project.....	4.11-13
Table 4.15-1: Total Water Demands (AF).....	4.15-1
Table 4.15-2: Water Supplies, Actual (AF)	4.15-3



Table of Contents

Table 4.15-3: Water Supplies, Projected (AF)	4.15-3
Table 4.15-4: Wastewater Collected Within Service Area in 2015 (AF)	4.15-4
Table 4.15-5: Estimated Wastewater Generation During Operation	4.15-12
Table 4.15-6: Operational Solids Handling System Generation.....	4.15-17
Table 5-1: Stages of Water Shortage Contingency Plan	5.0-12
Table 6.1: Electricity Consumption in Orange County 2008-2015.....	6.0-11
Table 6-2: Non-Residential Land Use Natural Gas Consumption in Orange County 2008-2015	6.0-11
Table 6-3: Automotive Fuel Consumption in Orange County 2007-2016.....	6.0-12
Table 6-4: Summary of Energy Consumption	6.0-14
Table 6-5: Projected Electrical Energy Use – Normal Operation (5 MGD Potable Water Production Capacity)	6.0-15
Table 6-6: Power Requirements at Various Project Sizes	6.0-15
Table 6-7: Onsite Power Generation Technology Options	6.0-15
Table 6-8: Off-site Power Supply Options.....	6.0-16

List of Figures

Figure 3-1: MWDOC Service Area Boundaries.....	3.0-3
Figure 3-2: MWDOC and SCWD Current Water Supply Portfolios	3.0-4
Figure 3-3: Seismic Risk to Imported Water System.....	3.0-6
Figure 3-4: Ranking of Individual Supply Options	3.0-7
Figure 3-5: SCWD Future Water Supply Portfolio – with and without Desalination (AFY).....	3.0-8
Figure 3-6: Conceptual Slant Well Vault	3.0-18
Figure 3-7: Schematic Slant Well Diagram.....	3.0-19
Figure 3-8: Sand Separator Unit.....	3.0-22
Figure 3-9: Typical Spiral-Wound Reverse Osmosis Membrane Design	3.0-23
Figure 3-10: Source Water Replacement Process.....	3.0-25
Figure 3-11: Energy Recovery Device (ERD) Model	3.0-33
Figure 4.5-1: Water Conveyance Systems Crossing the San Andreas Fault.....	4.5-5
Figure 4.6-1: SCWD Future Water Supply Portfolio (No Project)	4.6-19



Figure 4.8-1: Critical Shore-front Infrastructure Locations for the Doheny Desalination Project..... 4.8-37

Figure 4.13-1: CMP Highway System 4.13-7

List of Exhibits

Exhibit 1-1: Project Facility Locations 1.0-59

Exhibit 3-1: Regional Vicinity..... 3.0-49

Exhibit 3-2: SCWD Service Boundary 3.0-50

Exhibit 3-3: Project Facility Locations 3.0-51

Exhibit 3-4: Southeast Intake Well Study Area 3.0-52

Exhibit 3-5: Doheny State Beach Intake Well Installation and Staging Area 3.0-53

Exhibit 3-6: Desalination Facility-Conceptual Site Plan 3.0-54

Exhibit 3-7: Desalination Facility-Easements 3.0-55

Exhibit 3-8: Desalination Facility-Construction Staging Area..... 3.0-56

Exhibit 3-9: Desalination Facility-Water Lines 3.0-57

Exhibit 3-10: Conceptual Process Flow Diagram for Seawater Desalination..... 3.0-58

Exhibit 3-11: Local and Regional Water Pipelines..... 3.0-59

Exhibit 3-12: Underground Electrical Line Extensions 3.0-60

Exhibit 4.1-1: Desalination Facility 4.1-19

Exhibit 4.1-2: Doheny State Beach Intake A 4.1-20

Exhibit 4.1-3: Doheny State Beach Intake B..... 4.1-21

Exhibit 4.1-4: Doheny State Beach Intake C..... 4.1-22

Exhibit 4.1-5: Doheny State Beach Intake D 4.1-23

Exhibit 4.1-6: Doheny State Beach Intake E..... 4.1-24

Exhibit 4.1-7: Capistrano County Beach Intakes F and G 4.1-25

Exhibit 4.1-8: Capistrano County Beach Intake H 4.1-26

Exhibit 4.1-9: Before/After Aerial View 4.1-27

Exhibit 4.1-10: Before/After PCH Bridge View..... 4.1-28

Exhibit 4.1-11: Before/After Resident View..... 4.1-29

Exhibit 4.1-12: Before/After Bike Path..... 4.1-30



Exhibit 4.1-13: Train View	4.1-31
Exhibit 4.4-1: Area of Potential Effect.....	4.4-37
Exhibit 4.4-2: Paleontological Sensitivity Area.....	4.4-38
Exhibit 4.5-1: Regional Fault Map	4.5-29
Exhibit 4.7-1: Recognized Environmental Conditions Map.....	4.7-43
Exhibit 4.7-2: Schools within 0.25 of the Proposed Project.....	4.7-44
Exhibit 4.8-1: Flood Inundation, Existing Conditions	4.8-47
Exhibit 4.8-2: Flood Inundation, Future Condition, 100-year Flood, No Project	4.8-48
Exhibit 4.8-3: Flood Inundation, Future Condition, 100-year Flood, With Project	4.8-49
Exhibit 4.10-1: Noise Measurement Locations	4.10-37
Exhibit 4.15-1: Existing Infrastructure	4.15-22

Appendices (Provided under separate cover)

Appendix 10.1: Preliminary Design Report

Appendix 10.2.1: Amended Notice of Preparation & Public Scoping Meeting Notice

Appendix 10.2.2: Notice of Preparation & Public Scoping Meeting Notice

Appendix 10.2.3: OPC Briefing

Appendix 10.3: Air Quality and Greenhouse Gas Calculations

Appendix 10.4.1: Biological Resource Assessment

Appendix 10.4.2: San Juan Creek Habitat Assessment

Appendix 10.5.1: South Coast Water District Doheny Desalination Project Cultural Resources Report

Appendix 10.5.2: AB52 Correspondence

Appendix 10.6.1: Preliminary Geotechnical Study with Ninyo and Moore 2015

Appendix 10.6.2: Limited Geotechnical Evaluation, San Juan Creek Properties with Ninyo and Moore
1999

Appendix 10.7.1: Coastal Hazard Analysis for the Doheny Desalination Project

Appendix 10.7.2: Coastal Hazard Supplemental Analysis for the Doheny Desalination Project

Appendix 10.8.1: Environmental Data Resources Radius Map Report with Geotcheck

Appendix 10.8.2: Phase I Environmental Site Assessment



Appendix 10.8.3: Phase II Environmental Evaluation

Appendix 10.9: Hydrology Study

Appendix 10.10.1: Doheny Ocean Desalination Project – Model Update and Refinement Using Results from Onshore and Offshore Geophysical Surveys and Exploratory Borehole Data, March 1, 2018.

Appendix 10.10.2: Task 4 – Modeling of Slant Well Feed Water Supply, Impacts and Mitigation Approaches

Appendix 10.10.3: Geophysical Survey Results

Appendix 10.11: Brine Discharge

Appendix 10.12: Noise Data



1.0 Executive Summary

1.1 PROJECT OVERVIEW

South Coast Water District (“SCWD” or the “District”), the project proponent, proposes to develop an ocean water desalination facility in Dana Point, California, at Doheny State Beach and vicinity. The District intends to construct a facility with an initial capacity of up to 5 MGD,¹ with potential for future expansions up to 15 MGD. The District only intends to pursue the Phase I (or “local”) project at this time, with the potential future Regional Project of up to 15 MGD addressed at a programmatic level (see discussion below). Both the initial and ultimate capacities would provide water supply reliability for the District and local water agencies, providing a high quality, locally-controlled, drought-proof water supply. The desalination facility would also provide emergency back-up water supplies, should an earthquake, system shutdown, or other event disrupt the delivery of imported water to the area.

Project Summary

The Project consists of all actions related to the construction and operation of an ocean water desalination facility and associated desalination subsurface intake system. The Project would further reduce SCWD’s dependency on imported water supply by integrating desalinated ocean water with the existing local water supply portfolio. The Doheny Ocean Desalination Project would consist of the following main components, with each described further in Section 3.4, Project Facilities, and shown in Exhibit 1-1, Project Facilities.

- **A subsurface water intake system** consisting of subsurface slant wells that draw ocean water from offshore subsurface alluvial material (located below the ocean floor), while providing natural sand bed filtration and eliminating the entrainment and impingement of marine biota. This subsurface intake system is the recommended approach by state and federal regulators, and is consistent with the State Water Resource Control Board’s (State Board or SWRCB) recently adopted Ocean Plan Amendment. The slant wells would be located and fully buried near the beach, in a study area encompassing Doheny State Beach (DSB) and Capistrano Beach Park. Related Project elements include a small electrical control building (located near the slant well in a disturbed area), and a temporary well development water discharge system, either through connecting to the existing San Juan Creek Ocean Outfall (SJCOO) vault at the DSB campground, or discharging to an existing or new beach diffuser.
- **A raw (ocean) water conveyance pipeline** that would deliver the subsurface intake system’s ocean water to the desalination facility site.
- **A desalination facility** that would receive ocean feedwater at up to approximately 10 to 30 MGD, with a recovery rate of ~50% resulting in up to 5 to 15 MGD of potable drinking water (for the Phase I and Regional Project, respectively). The proposed desalination facility is located on the District’s existing San Juan Creek Property, on an industrial site located away from the beach but

¹ The initial phase, referred to as Phase I, is presently envisioned to be up to a 5 MGD facility. The actual operational capacity may be less depending on final design and other operational considerations. In addition, 5 MGD is the projected average annual daily production, with actual daily production varying by an estimated 10%, up to 5.5 MGD (to account for down time), with annual production averaging no more than 5,300 acre feet per year.



in close proximity to the subsurface intake wells. This facility siting is consistent with state and federal regulator preference to minimize desalination facilities on the coast while being close enough to avoid lengthy raw water and brine conveyance pipelines. The desalination facility includes a variety of typical desalination process equipment and appurtenant facilities, such as pretreatment, seawater reverse osmosis (SWRO) membranes, an energy recovery system, post-treatment conditioning, solids handling and disposal, product water storage, electrical equipment, staff facilities, and connections to off-site brine disposal, sanitary sewer, and product water conveyance facilities. It is assumed there will be a utility power connection required; however the District is also evaluating the feasibility of supplementing or replacing that supply with an alternative energy source. The desalination facility will include solar photovoltaic panels on flat rooftops where feasible. Other alternative energy sources being evaluated include natural-gas turbines and fuel cells to maximize efficiency and minimize energy cost.

- **A concentrate (brine) disposal system** that would utilize the existing SJCOO, to return brine and treated process waste streams to the ocean with negligible impact on coastal and marine water quality. SJCOO is owned by South Orange County Wastewater Authority (SOCWA), in which the District is a member agency. This would be achieved in part through blending in the outfall pipe with the existing wastewater stream from the J.B. Latham Wastewater Treatment Plant, and other regional facilities. Mixing desalination brine with existing wastewater treatment plant flow (a “comingled discharge”) is the preferred method by state and federal regulators and is consistent with the State Board’s Ocean Plan Amendment.
- **A product water storage tank and distribution system** that would feed into the District’s local distribution system and, depending on plant capacity and District demands, other adjacent local and regional transmission pipelines that are located adjacent to the site. Desalinated product water from the Phase I project could be conveyed entirely using existing District and local infrastructure with no off-site improvements other than a short connection to the District’s existing local transmission lines.
- **All appurtenant facilities** (e.g., pump stations, valves, and metering) as well as all construction, operation and maintenance activities associated with all project facilities.
- **Offsite Electrical Transmission Facilities** provided by San Diego Gas & Electric Company (SDG&E). At this time, SDG&E has indicated that electrical service can be provided to the Phase I project using existing facilities, with a short connection from the desalination site to underground electrical lines in Stonehill Drive.

Project Background

SCWD provides potable water, recycled water for irrigation, and sanitary sewer services to approximately 40,000 residents and 1,000 businesses per year in south coastal Orange County, California. The District's service area includes the communities of Dana Point, South Laguna Beach, and areas of San Clemente and San Juan Capistrano. To create a balanced water supply portfolio, SCWD has made investments in conservation, recycled water, and groundwater recovery. However, **SCWD is currently relying on 85 to 100 percent of their water supply from imported sources**. SCWD plans to use the desalination facility to decrease its reliance on imported water sources



The proposed Project aims to further reduce SCWD's dependency on imported water and to secure water supply reliability by developing a drought-proof, hydrologically independent, water supply by integrating desalinated ocean water into the local water supply portfolio to meet the service area demands at either a local or regional scale. The Phase 1 project capacity (up to 5 MGD) would help meet the service area's water demands at a local scale and reduce dependency on imported water supplies. For the potential future Regional Project (up to 15 MGD), SCWD would look to involve regional partners which would expand the service area of the facility and would help meet the water demands at a regional scale further reducing the need for imported water in the Municipal Water District of Orange County (MWDOC) service area and improving overall regional supply reliability. The District only intends to pursue permitting and construction of the Phase 1 Project (up to 5 MGD) at this time.

This Environmental Impact Report's (EIR's) Project-level analysis is based on the Project's Preliminary Design Report ([Appendix 10.1](#)) and related information as described in [Section 3.0, Project Description](#). In addition to Project-level analysis for Phase I, this EIR also functions as a Program EIR pursuant to California Environmental Quality Act (CEQA) Guidelines § 15168, providing a programmatic level analysis of a potential future Regional Project of up to 15 MGD. As discussed further in [Section 3.0, Project Description](#), SCWD only intends to seek regulatory permits and approvals for the Phase I Project at this time, as there are no Regional Project partners in place, and specific Regional conveyance facilities are dependent on Regional Partners and as such cannot be identified at this time. A Program EIR is also appropriate, in that it evaluates a phased public works project where SCWD may implement one or more options, and in that it evaluates a broad range of implementation options to accomplish SCWD's Project objectives.

SCWD intends for this EIR to act as the basis for future regulatory permits and approvals, including a California Water Code § 13142.5(b) determination by the San Diego Regional Water Quality Control Board and State Board, pursuant to the California's Ocean Plan Amendment for Desalination Facilities. Because SCWD intends to seek State Revolving Fund (SRF) financing for the Project, this EIR includes additional information required in a "CEQA-Plus" document, related to evaluation of certain federal "cross-cutter" regulations such as the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), and the General Conformity Rule for the Clean Air Act (CAA), among others.

The purpose for this EIR is to provide adequate information for the public, stakeholders (including trustee and responsible agencies), and SCWD to evaluate the potential environmental impacts of the Project and to consider proceeding with the Project. Upon certification, this EIR will serve as the CEQA basis for future permits or approvals for the Phase 1 Project. On completion of this EIR process, SCWD will determine whether to approve the Project and as appropriate seek regulatory agency permit approvals (refer to [Section 3.0, Table 3-10](#) for a list of Permits, Approvals and Regulatory Requirements). The Regional Project may be considered in the future, subject to identification of specific regional partners and design concepts and associated further stakeholder consultation. The Regional Project would require separate CEQA review, and will be subject to additional regulatory agency permits and approvals.

1.2 PROJECT OBJECTIVES

CEQA Guidelines §15124(b) requires that an EIR contain a statement of the Project objectives, including the Project's underlying purpose. The project objectives are:



- To create a drought-proof, hydrologically independent, reliable and high-quality source of potable drinking water for the District.
- To further diversify the District's water supply portfolio through a locally-controlled supply, combining conservation, recycling, and local supplies to reduce dependence on imported water supplies.
- To provide emergency backup water supplies, should an earthquake, system shutdown, or other event disrupt the delivery of imported water to the south Orange County area.

1.3 PROJECT LOCATION

The Project is located in the City of Dana Point, a coastal community in southern Orange County, situated approximately three miles southwest of San Juan Capistrano and six miles northwest of San Clemente. Subsurface intake wells are located within the City of Dana Point, at Doheny State Beach and at the northwestern end of Capistrano Beach Park. The desalination facility is located on a parcel owned by the District, less than a quarter mile north of Doheny State Beach (see Exhibit 1-1, Project Facilities). Conveyance facilities are located in the City of Dana Point, potentially on either side of San Juan Creek depending on the subsurface intake well location. The Project would discharge brine through the existing SJCOO, which is located adjacent to the desalination site and terminates approximately 10,550 feet offshore, off the coast of Dana Point.

1.4 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The following table is a summary of impacts and mitigation measures associated with the Project as identified in this EIR. Refer to Sections 4.1 through 4.15, for a detailed description of the environmental impacts and mitigation measures for the Project.

1.5 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS

The Project's potentially significant impacts are set forth in Sections 4.1 through 4.15 of this EIR. As noted in these sections, all of the potentially significant impacts identified can be mitigated to a less than significant level through implementation of feasible mitigation measures. As such, no significant and unavoidable impacts would occur with implementation of the proposed project.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
Aesthetics, Light, And Glare		
Impact 4.1-1 Would the project have a substantial adverse effect on a scenic vista?	Less Than Significant Impact with Mitigation.	<p>AES-1</p> <p>Prior to the start of construction, SCWD shall prepare a Construction Lighting & Screening Plan. The Construction Lighting & Screening Plan should indicate aesthetic and lighting treatments for all construction work areas, including staging areas, slant well drill rig work area, and the desalination facility. The Plan shall identify methods used to ensure construction lighting is directional (aimed toward work areas, and not toward nearby sensitive receptors), and limited to sufficient wattage for safety and security. Construction areas visible to sensitive receptors shall be screened via curtains from public view, including the staging and slant well drill rig work area within the State Park and County Park, and the western and southern edges of the desalination facility site and the western edge of the adjacent staging area. Construction screening materials shall be of sufficient height and appropriate color to minimize viewshed impacts, as determined appropriate by the applicable jurisdiction(s). As noted above, for slant well work areas, the construction screening may be open to the ocean for directional sound control and shall include additional aesthetic enhancements such as temporary landscaping in front of the screen.</p> <p>AES-2</p> <p>SCWD shall prepare a Site Architectural, Landscape and Lighting Plan Prior to the start of construction, for the purposes of minimizing aesthetic and light/glare impacts from all above-ground facilities, including the electrical control panel near the slant wells, and the desalination facility. Given the desalination facility site's visibility from areas west of San Juan Creek and from PCH, the desalination facility architecture and building elevations shall be designed to create an aesthetically appropriate appearance, as determined by the City of Dana Point and/or California Coastal Commission through the facility's Coastal Development Permit review process. Architectural design shall favor natural appearing materials that blend with the surrounding areas, as well as use of non-reflective glass to minimize glare. A Lighting Plan shall be prepared, demonstrating use of directional lighting and lighting that is limited to intensity needed for site security and safety, in order to minimize light/glare</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		impacts to viewers west of San Juan Creek. All rooftop mechanical and electrical equipment will be screened or placed in areas that are not highly visible from residential and public areas, where feasible. A Landscape Plan shall be prepared, to provide adequate site landscaping for aesthetic enhancement, using non-invasive, drought-tolerant native species.
Impact 4.1-2 Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	Less than Significant with Mitigation.	Refer to Mitigation Measures AES-1 and AES-2.
Impact 4.1-3 Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?	Less Than Significant with Mitigation.	Refer to Mitigation Measures AES-1 and AES-2.
Impact 4.1-4 Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Less Than Significant with Mitigation.	Refer to Mitigation Measures AES-1 and AES-2.
Air Quality		
Impact 4.2-1 Would the Project conflict with or obstruct implementation of the applicable air quality plan?	Less than Significant with Mitigation.	None required.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
Impact 4.2-2 Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?	Less than Significant with Mitigation.	<p>AQ-1</p> <p>During Project construction, all internal combustion engines/construction, equipment operating on the Project site shall meet EPA-Certified Tier 4 emissions standards, or higher according to the following:</p> <ul style="list-style-type: none"> All off-road diesel-powered construction equipment greater than 50 horsepower shall meet Tier 4 off-road emissions standards. In addition, all construction equipment shall be outfitted with BACT devices certified by ARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by ARB regulations. A copy of each unit's certified tier specification, BACT documentation, and ARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit of equipment. <p>AQ-2</p> <p>On-road vehicle idling time shall be minimized and shall not exceed a five-minute maximum. Additionally, off-road engines shall not idle for longer than five minutes per § 2449(d)(3) of Title 13, Article 4.10, Chapter 9 of the California Code of Regulations. Clear signage of this requirement shall be provided for construction workers at all access points to construction areas.</p> <p>AQ-3</p> <p>Although the Project's construction emissions are not projected to exceed the PM10 or PM2.5 significance threshold; the District is committed to reducing levels of particulate matter emissions. This includes the implementation of a fugitive dust control plan that is in accordance with techniques prescribed by SCAQMD's Fugitive Dust Mitigation Measure Tables XI-A through XI-E. Actions would include the following:</p> <ul style="list-style-type: none"> Water all active construction areas at least twice daily; Cover all trucks hauling soil, sand, and other loose materials and require trucks to maintain at least 2 feet of freeboard;



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<ul style="list-style-type: none"> ▪ Apply water three times daily, or apply (non-toxic) soil stabilizers, on unpaved access roads, parking areas, and staging areas at construction sites; ▪ Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites; ▪ Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets; ▪ Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 4 days or more); ▪ Enclose, cover, or water twice daily exposed stockpiles (dirt, sand, etc.); ▪ Limit traffic speeds on unpaved roads to 15 miles per hour; ▪ Install sandbags or other erosion control measures to prevent silt runoff to public roadways; ▪ Replant vegetation in disturbed areas as quickly as possible; ▪ Wheel washers shall be installed and used by truck operators at the exits of the construction sites.
Impact 4.2-3 Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	Less than Significant with Mitigation.	Refer to Mitigation Measures AQ-1 through AQ-3 above.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
Impact 4.2-4 Would the Project expose sensitive receptors to substantial pollutant concentrations?	Less than Significant with Mitigation.	Refer to Mitigation Measure AQ-3.
Impact 4.2-5 Would the Project create objectionable odors affecting a substantial number of people?	Less than Significant Impact.	No mitigation measures are required.
Biological Resources		
Impact 4.3-1 Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	Less Than Significant Impact with Mitigation.	BIO-1 Preconstruction Nesting Bird Survey. All construction activities shall comply with the federal MBTA of 1918, and California Fish and Game Code Sections 3503, 3503.5, 3511 and 3513. The MBTA governs the taking and killing of migratory birds, their eggs, parts, and nests and prohibits the take of any migratory bird, their eggs, parts, and nests. Compliance with the MBTA shall be accomplished by following the guidelines contained therein. Construction-related tree removal, if any, shall be conducted between September 1 and December 31. If construction occurs inside the nesting season between January 15 and August 31 (this time frame includes both the passerine and raptor nesting season), the Designated Biologist (DB) [to be approved by the District subject to confirmation by State Parks and CDFW] shall conduct a pre-construction nesting avian species clearance survey in accordance with the following guidelines: a) At least one pre-construction survey shall be conducted within 72 hours preceding initiation of vegetation removal and construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>b) The survey shall cover all potential nesting habitat and substrate, including the beach, on the Project site and within 500 feet of its perimeter.</p> <p>c) If the DB does not find any active nests, the construction work shall be allowed to proceed. The DB conducting the clearance survey shall document a negative survey with a report indicating that no impacts to active avian nests would occur.</p> <p>d) If the DB finds an active nest during the survey and determines that the nest may be impacted, the DB shall establish a no-disturbance buffer zone (protected areas around the nest). The size of the buffer shall be determined by the DB in consultation with the District or its designee (in coordination with CDFW and USFWS), and shall be based on the nesting species, its sensitivity to disturbance, and expected types of disturbance. These buffers are typically 300 feet from the nests of non-listed passerine species and 500 feet from the nests of raptors and listed species.</p> <p>e) Any active nests observed during the survey shall be mapped on an aerial photograph using GPS.</p> <p>f) If active nests are detected during the survey, the Designated Biologist (DB) shall monitor all nests with buffers at least once per week, to determine whether birds are being disturbed (distress or other disruption of nesting activity). Activities that might, in the opinion of the DB, disturb nesting activities (e.g., excessive noise, exposure to exhaust), shall be prohibited within the buffer zone. If signs of disturbance are observed, the DB shall immediately implement adaptive measures to reduce disturbance. These measures may include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity, reducing speed limits, replacing and updating noisy equipment, queuing trucks to distribute idling noise, locating vehicle access points and loading and shipping facilities away from noise-sensitive receptors, reducing the number of noisy construction activities occurring simultaneously, placing noisy stationary construction equipment in acoustically engineered enclosures and/or relocating them away from noise-sensitive receptors, and/or reorienting and/or relocating construction equipment to minimize noise at</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>noise-sensitive receptors. The DB shall implement these or other appropriate measures to ensure that no significant impacts occur to nesting birds pursuant to requirements of the MBTA.</p> <p>g) If active nests are detected during the survey, the DB shall monitor the nest until it is determined that nestlings have fledged and dispersed or the nest is no longer active.</p> <p>h) Only vegetation removal and construction activities (if any) that have been approved by a Biological Monitor (BM) shall take place within the buffer zone until the nest is no longer considered active, consistent with MBTA requirements, such that nesting birds are not disturbed.</p> <p>i) The DB shall serve as a construction monitor when construction activities take place near active nest areas to ensure that no significant indirect impacts on these nests occur, through enforcing measures noted above.</p> <p>j) Prior to the start of any pre-construction site mobilization, the District shall provide applicable regulatory agencies with a letter-report describing the findings of any preconstruction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor(s); and a list of species observed. If active nests are detected during the survey, the report shall include a map or aerial photo identifying the location of the nest and shall depict the boundaries of the proposed no disturbance buffer zone around the nest. All impact avoidance and minimization measures related to nesting birds shall be included in the monitoring plan.</p> <p>BIO-2</p> <p>DSB Facility Siting. Any facilities sited within DSB shall be reviewed and approved by State Parks and applicable regulatory agencies prior to construction, demonstrating avoidance of sensitive habitat, particularly with respect to the potential well development discharge connection to the existing SOCWA SJCOO vault and the proposed electrical control building.</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>BIO-3</p> <p>Preconstruction Groundwater Quality Data. Prior to construction of any slant wells at Capistrano Beach Park, the District or its designee shall obtain additional nearshore groundwater quality data (whether onshore or offshore) to refine the anticipated sourcewater quality for the purpose of pretreatment and characterization of well development discharge water quality. Should the water quality data indicate elevated levels of iron or manganese such that the well development water would not meet applicable water quality requirements, the District will either provide suitable onsite treatment (such as use of Baker tanks to settle out solids), convey the well development water to the existing SOCWA vault at DSB campground, or convey the raw water to the desalination facility for supplemental pretreatment via temporary modular treatment units or equivalent (Capistrano Beach Park wells only).</p> <p>BIO-4</p> <p>DSB Groundwater Monitoring (for SJC Lagoon). The District shall monitor San Juan Creek Lagoon water levels following commencement of pumping for the first slant well installed at DSB. The monitoring reports shall be submitted monthly to the Coastal Commission and NOAA NMFS (at minimum), and shall be used to site any future slant wells at DSB, in consultation with the Coastal Commission and NOAA NMFS, such that Phase I slant wells at DSB do not create a significant impact to San Juan Creek Lagoon water levels relative to southern steelhead trout, as determined by NOAA NMFS.</p> <p>OPA-1</p> <p>OPA Compliance. Prior to issuance of an NPDES Permit, the Project will require an OPA compliance determination from the SDRWQCB and SWRCB in consultation with the State Lands Commission and California Coastal Commission. Should these agencies determine that marine life “mitigation” is required for the Project, the District shall implement required mitigation. One such potential mitigation site would be the San Juan Creek Lagoon, as part of the San Juan Creek Restoration Project outlined in SDRWQCB Resolution NO. R9-2015-0041, adopted June 24, 2015.</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
Impact 4.3-2 Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	Less Than Significant Impact with Mitigation.	Refer to Mitigation Measure BIO-4.
Impact 4.3-3 Would the project have a substantial adverse effect on federally protected wetlands as defined by § 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 Impact with Mitigation.	Refer to Mitigation Measure BIO-4.
Impact 4.3-4 Would the project 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 With Mitigation.	Refer to Mitigation Measures BIO-1 and BIO-4.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
Impact 4.3-5 Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Less Than Significant with Mitigation.	Refer to Mitigation Measures BIO-1 through BIO-4.
Impact 4.3-6 Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	Less Than Significant.	None required.
Cultural Resources		
Impact 4.4-1 Would the project cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?	Less than Significant Impact.	No mitigation measures are required.
Impact 4.4-2 Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5	Less than Significant with Mitigation.	CUL-1 Worker Environmental Awareness Training (all components). Prior to ground disturbing activities and ongoing during construction, all contractors shall undergo a Worker Environmental Awareness Program (WEAP). The training, which may be presented in the form of a video, shall include: a) A discussion of applicable environmental resource laws and penalties under the law; b) Samples or visuals of artifacts that may be found in the Project vicinity;



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>c) Information that the Cultural Resource Specialist (CRS) and Construction Manager (CM) have the authority to halt construction to the degree necessary, as determined by the CRS, in the event of a discovery or unanticipated impact to a cultural resource;</p> <p>d) Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources find, and shall contact their supervisor and the CRS or CM; redirection of work shall be determined by the construction supervisor and the CRS;</p> <p>e) An informational brochure that identifies reporting procedures in the event of a discovery;</p> <p>f) An acknowledgment form signed by each worker indicating that they have received the training; and</p> <p>g) A sticker that shall be placed on hard hats indicating that environmental training has been completed.</p> <p>The District (or its designee) shall maintain WEAP Certification of Completion forms of persons who have completed the training.</p> <p>CUL-2</p> <p>Construction Monitoring. Prior to construction, the District (or its designee) shall retain a CRS that meets the minimum qualifications of the U.S. Secretary of Interior Guidelines (NPS 1983). The CRS shall be present during initial deep excavations for pipeline trenches, vaults and desalination facility structures that penetrate below native ground surface. The District shall offer local Native American tribes the opportunity to be present during such initial deep excavations. The CRS and the CM shall have the authority to halt construction if previously unknown cultural resource sites or materials are encountered. Redirection of ground disturbance shall be accomplished under the direction of the construction manager.</p> <p>If such resources are found or impacts can be anticipated, the halting or redirection of construction shall remain in effect until all of the following have occurred:</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>a) The CRS has notified the District (or its designee), and the CM has been notified within 24 hours of the find description and the work stoppage;</p> <p>b) The CRS, the District (or its designee), and the CM have conferred and determined what, if any, data recovery or other mitigation is needed and the scope of that mitigation;</p> <p>c) Any necessary data recovery and mitigation has been completed.</p> <p>All archaeological materials collected as a result of the archaeological investigations (survey, testing, and data recovery) shall be curated in accordance with the State Historical Resources Commission's "Guidelines for the Curation of Archaeological Collections," into a retrievable storage collection in a public repository or museum. The public repository or museum must meet the standards and requirements for the curation of cultural resources set forth at Federal Code of Regulations, Part 79, Title 36.</p>
<p>Impact 4.4-3</p> <p>Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?</p>	<p>Less than Significant with Mitigation.</p>	<p>CUL-3</p> <p>Paleontological Construction Monitoring and Compliance Program. The following measures would be implemented to reduce potential impacts to paleontological resources to less than significant:</p> <ul style="list-style-type: none"> Retain a Qualified Paleontologist. Prior to initial ground disturbance, the South Coast Water District (SCWD) shall retain a project paleontologist, defined as a paleontologist who meets the Society of Vertebrate Paleontology standards for Qualified Professional Paleontologist, to direct all mitigation measures related to paleontological resources. Paleontological Mitigation and Monitoring Program. After project design has been finalized to determine the precise extent and location of planned ground disturbances, and prior to construction activity, a qualified paleontologist will prepare a Paleontological Mitigation and Monitoring Program to be implemented during ground disturbance activity for the proposed project. This program will outline the procedures for construction staff Worker Environmental Awareness Program (WEAP) training, paleontological monitoring extent and duration, salvage



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>and preparation of fossils, the final mitigation and monitoring report, and paleontological staff qualifications. The program will be prepared in accordance with the standards set forth by current Society of Vertebrate Paleontology guidelines (2010) and with proper implementation, will reduce or eliminate potential impacts to paleontological resources.</p> <ul style="list-style-type: none"> ▪ Paleontological Worker Environmental Awareness Program (WEAP). Prior to the start of construction, the project paleontologist or his or her designee shall conduct training for construction personnel regarding the appearance of fossils and the procedures for notifying paleontological staff should fossils be discovered by construction staff. The WEAP shall be presented at a preconstruction meeting that a qualified paleontologist shall attend. In the event of a fossil discovery by construction personnel, all work in the immediate vicinity of the find shall cease and a qualified paleontologist shall be contacted to evaluate the find before restarting work in the area. If it is determined that the fossil(s) is (are) scientifically significant, the qualified paleontologist shall complete the following conditions to mitigate impacts to significant fossil resources. ▪ Paleontological Monitoring. Ground disturbing construction activities (including grading, trenching, foundation work, and other excavations) in areas mapped as high paleontological sensitivity (see <u>Exhibit 4.4-2, Paleontological Sensitivity Area</u>) should be monitored on a full-time basis by a qualified paleontological monitor during initial ground disturbance. Areas mapped as low to high paleontological sensitivity should be monitored when ground-disturbing activities exceed five feet in depth, because underlying sensitive sediments could be impacted. Areas considered to have an undetermined paleontological sensitivity should be inspected and further assessed if construction activities bring potentially sensitive geologic deposits to the surface. The Paleontological Mitigation and Monitoring Program shall be supervised by the project paleontologist. Monitoring should be conducted by a qualified paleontological monitor, who is defined as an individual who has experience with collection and salvage of paleontological resources. The duration and timing of the monitoring will be determined by the project paleontologist. If the project paleontologist determines that full-time monitoring is



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>no longer warranted, he or she may recommend that monitoring be reduced to periodic spot-checking or cease entirely. Monitoring would be reinstated if any new or unforeseen deeper ground disturbances are required and reduction or suspension would need to be reconsidered by the Supervising Paleontologist. Ground disturbing activity that does not exceed five feet in depth would not require paleontological monitoring.</p> <ul style="list-style-type: none"> ▪ Salvage of Fossils. If fossils are discovered, the project paleontologist or paleontological monitor should recover them. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case, the paleontologist would have the authority to temporarily direct, divert, or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner. ▪ Preparation and Curation of Recovered Fossils. Once salvaged, the District would ensure that significant fossils would be identified to the lowest possible taxonomic level, prepared to a curation-ready condition, and curated in a scientific institution with a permanent paleontological collection (such as the San Diego County Natural History Museum), along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the project paleontologist. Field collection and preparation of fossil specimens will be performed by the project paleontologist with further preparation as needed by an accredited museum repository institution at the time of curation. ▪ Final Paleontological Mitigation Report. Upon completion of ground disturbing activity (and curation of fossils, if necessary) the qualified paleontologist should prepare a final mitigation and monitoring report outlining the results of the mitigation and monitoring program. The report should include discussion of the location, duration, and methods of the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
Impact 4.4-4 Would the project disturb any human remains, including those interred outside of formal cemeteries?	Less than Significant with Mitigation.	Mitigation Measures CUL-1 and 2 are applicable.
Regional Project:	Less than Significant with Mitigation.	Mitigation Measures CUL-1 through 3 are applicable.
Geology and Soils		
Impact 4.5-1 (i) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving; i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	Less than Significant.	No mitigation measures are required.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
ii) Strong seismic ground shaking?	Less Than Significant with Mitigation.	Mitigation Measure GEO-1, below, would reduce impacts to a level of less than significant.
iii) Seismic-related ground failure, including liquefaction?	Less Than Significant with Mitigation.	Mitigation Measure GEO-1, below, would reduce impacts to a level of less than significant.
iv) Landslides?	Less Than Significant with Mitigation.	GEO-1 Prior to ground disturbing activities, a site-specific soils engineering report as required by California Building Standards Code §1803 shall be prepared by a registered geologist. The soils engineering report shall detail existing soils and geologic conditions and shall be required for all Project components located within Liquefaction Investigation Zones, Landslide Investigation Zones or Alquist-Priolo designated Earthquake Fault Rupture Hazard Zones. The soils engineering report shall specifically include laboratory test data, associated geotechnical engineering analysis, and a thorough discussion of seismicity, liquefaction, landslide, dynamic compaction, compressible soils, corrosive soils, and tsunami (as applicable). The soils engineering report shall include any recommendations for ground improvement and/or foundation systems necessary to mitigate potential geologic hazards, as necessary. Recommendations shall be reflected in Project grading and design plans as appropriate.
Impact 4.5-2 Would the project result in substantial soil erosion or the loss of topsoil?	Less Than Significant.	No mitigation measures are required.
Impact 4.5-3 Would the project 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-	Less Than Significant with Mitigation.	Refer to Impact 4.5-1 for Mitigation Measure GEO-1.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
site landslide, lateral spreading, subsidence, liquefaction or collapse?		
Impact 4.5-4 Would the project 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 with Mitigation.	Refer to Impact 4.5-1 for Mitigation Measure GEO-1.
Impact 4.5-5 Would the project 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?	No Impact.	No mitigation measures are required.
Greenhouse Gas Emissions		
Impact 4.6-1 Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less than Significant with Mitigation.	GHG-1 SCWD (or its designee) shall prepare an Energy Minimization and GHG Reduction Plan prior to the start of Project construction activities. The purpose of the Plan is to document Project GHG emissions and the net incremental emissions required to be offset in order to achieve net carbon neutrality (no net increase in GHG emissions beyond emissions associated with imported water, defined as the GHG emissions that are attributed to SCWD's portfolio, with the Project's water supply replaced by water imported from CRA and SWP). The Plan shall, at a minimum, include the following elements:



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>1) Project GHG Emissions – updated GHG emission estimates based upon final design plans;</p> <p>2) Updated CRA and SWP GHG Emissions – updated emissions associated with importing water that would be imported from CRA and SWP if the Project were not constructed;</p> <p>3) Incremental Project GHG Emissions – Project GHG emissions minus GHG emissions associated with importing water, representing the net incremental GHG emissions requiring offset in order to achieve net carbon neutrality, currently estimated at 5,962 959 MTCO₂eq /year for the up to 5 MGD Project.</p> <p>4) GHG Mitigation Options – the Plan shall identify specific strategies to be implemented which shall, at minimum, be sufficient to reduce or offset the Project’s incremental GHG emissions to a “no net increase” performance standard. Strategies shall be verifiable and feasible to acquire and implement over the Project life. The Plan shall identify how each strategy shall be implemented, and the emission reductions associated with strategy. Subject to review and modification by other permitting agencies (including the California Coastal Commission and State Lands Commission), SCWD may include any/or all of the following strategies in the Plan:</p> <p>a) Minimize Project’s Energy Demand – SCWD is committed to constructing and operating an environmentally sound project that minimizes electricity demand through implementation of reasonable and feasible design measures. The Plan shall include a summary of state-of-the-art energy recovery and conservation technologies available for utility-scale desalination facilities and shall include a commitment by SCWD to incorporate all available feasible energy recovery and conservation technologies; or, if SCWD finds that any of the technologies will not be feasible for the project, the Plan shall include a detailed description as to why such technology is considered to be infeasible. The carbon footprint estimate for the approved project shall include consideration of all proposed energy recovery and conservation technologies that will be employed by the</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>project, and shall clearly describe the calculated GHG emissions reductions that will be associated with each technology.</p> <p>b) On-site Solar PV – SCWD is committed to installing on-site roof-top solar PV panels or other on-site renewable energy (subject to space availability and only such that there would be no significant visual impacts). The GHG reduction benefit would depend on rooftop surface area availability and other factors. According to initial design calculations, the desalination facility site buildings would accommodate solar panels on a roof surface of approximately 45,000 square feet, with the potential to generate less than 1,000 MWh/year of electricity. If installed, the electricity produced by the onsite PV system would be used by the Project and therefore would reduce the Project’s electrical demand on SDG&E. SCWD is in the process of exploring solar proposals and will update this information as it becomes available.</p> <p>c) On-site Fuel Cells – The District is committed to reducing GHG emissions by reasonable and feasible methods, including potential use of on-site fuel cells. Potential use of fuel cells is being explored by the District in consultation with SDG&E, relative to cost, requirements for offsite improvements if any, additional permitting requirements, and timeliness of this option. If fuel cells are not deemed feasible, the District commits to a “net carbon neutral” project as described further in Mitigation Measure GHG-2.</p> <p>d) GHG Offsets (or “Carbon Offset”) – SCWD may pursue a Renewable Power Purchase Agreement (PPA) to achieve the required level of GHG emission reductions to achieve net carbon neutrality. If the PPA is not feasible or desirable to provide adequate GHG emissions reduction, SCWD would pursue additional third-party verifiable GHG offsets and/or Renewable Energy Certificates. To the extent practicable, GHG offset projects must be located within California. Offsets may include, but not be limited to:</p> <p>i. Landfill Methane Capture: Methane capture removes GHG emissions from the atmosphere. These GHG offsets are readily available across the country from numerous verified providers.</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>ii. Reforestation: Reforestation provides GHG reduction associated with carbon sequestration, and is a widely available GHG offset nationally and internationally.</p> <p>iii. Wind Power: Wind Power provides clean energy to reduce fossil-fuel related electricity emissions. Wind Power GHG offsets are readily available across the country and internationally.</p> <p>GHG-2</p> <p>SCWD (or its designee) shall prepare and publish an Annual GHG Verification Report in the first quarter of each year following Project construction or operations. The purpose of the Plan is to “true up” the incremental GHG emission estimate annually by reporting on actual estimated Project GHG emissions, emissions associated with importing water, and the GHG offsets associated with verifiable GHG mitigation. The Report shall be prepared by SCWD and verified by an independent accredited verification entity, pursuant to ARB Mandatory Reporting Regulation. The findings of the Report shall be used to adjust the annual GHG offsets required for the subsequent Project operational years. Additional offsets, if required, shall be in place by the end of the next operational year.</p>
<p>Impact 4.6-2</p> <p>Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?</p>	<p>Less than Significant with Mitigation.</p>	<p>Refer to Mitigation Measures GHG-1 and GHG-2.</p>
Hazards and Hazardous Materials		
<p>Impact 4.7-1</p> <p>Would the Project create a significant hazard to the public or the environment through the</p>	<p>Less than Significant with Mitigation.</p>	<p>HAZ-1</p> <p>Drilling Monitoring and Management Program. Prior to the issuance of a grading, drilling, or construction permit, the District or its designee shall prepare a Drilling Monitoring and Management Program (DMMP) to be implemented as part of the Project. The DMMP would be used to minimize potential hazardous materials effects</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
<p>routine transport, use, or disposal of hazardous materials?</p>		<p>and releases to the environment, and shall include best management practices (BMPs). BMPs shall include monitoring all drilling activities and to ensure that the loss of drilling fluids including drilling mud, borehole, collapse, and groundwater interference does not occur. To help prevent such releases or collapse, monitoring of all drilling activities shall be done by a qualified geotechnical engineer and will include strategies to minimize the potential for leaks including; using pilot holes to test best drilling location; using muds with naturally occurring materials and that are heavier than water such as bentonite and non-toxic polymers; monitoring of fluid pressures; adjusting fluids to maintain proper drilling pressures; and by using dyes to detect leaks into the water column.</p> <p>In case of a spill, the DMMP shall clearly define measures that would be used to contain spills and minimize other hazards. The monitoring and response measures shall be designed to be specific to the expected subsurface conditions for each Intake Well proposed to be drilled.</p> <p>HAZ-2</p> <p>Hazardous Waste Management Plan. Prior to issuance of a grading, drilling, or construction permit, the District or its designee shall prepare a Hazardous Waste Management Plan for all waste generated, used, handled, or transported during facility construction and operation to include, seawater intakes, conveyance system, desalination facility, brine disposal, and water distribution system. The Hazardous Waste Management Plan shall define all wastes expected to be generated during construction activities. The Plan shall contain, at a minimum, the following:</p> <ul style="list-style-type: none"> ▪ Incorporation of applicable elements of the District’s Hazardous Material Business Plan as determined by the District; ▪ Address applicable provisions of local, state and federal law, including CalARP; ▪ A description of all waste streams, including projections of frequency, amounts generated, and hazard classifications; and ▪ Methods of managing each waste, including storage, treatment methods, disposal by a licensed contractor, and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation,



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>disposal requirements and sites, and recycling and waste minimization/reduction plans.</p> <p>Implementation of the Hazardous Waste Management Plan shall be verified and implemented through the construction and operation horizon. The District also shall complete an Annual Compliance Report, documenting the actual waste management methods used during the year compared to planned management methods.</p> <p>HAZ-3</p> <p>Registered Professional Engineer or Geologist. The District shall have a Registered Professional Engineer or Geologist, with experience in remedial investigation and feasibility studies, available for consultation during soil excavation and grading activities. The Registered Professional Engineer or Geologist shall be given full authority to oversee any drilling, microtunneling, jack and bore, excavation, trenching, or other earthmoving activities that have the potential to disturb contaminated soil or groundwater and provide recommendations for remediation and/or prevention should it be necessary.</p>
<p>Impact 4.7-2</p> <p>Would the project 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?</p>	<p>Less than Significant with Mitigation.</p>	<p>HAZ-4</p> <p>Inspection of Potentially Contaminated Soils. If potentially contaminated soils are unearthed during site disturbance activities as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the Registered Professional Engineer or Geologist (per HAZ-3) shall inspect the identified area, determine the need for sampling to confirm the nature and extent of contamination, and file a written report to the City of Dana Point Community Development Department (Building and Safety Division) and the Orange County Department of Environmental Health stating the recommended course of action. Depending on the nature and extent of contamination, the Registered Professional Engineer or Geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If significant remediation may be required, the Registered Professional Engineer or Geologist shall contact representatives of the San Diego Regional Water Quality Control Board, DTSC, and other local agencies, as</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>applicable, for guidance and possible oversight. The District is responsible for implementing all recommended actions.</p> <p>HAZ-5</p> <p>Remedial Investigation Workplan. Prior to demolition of any structures or equipment on the proposed desalination facility, in the event hazardous materials are discovered that require remediation (pursuant to HAZ-4), the District shall prepare a Remedial Investigation Workplan (RI Workplan) to the satisfaction of City of Dana Point Community Development Department (Building and Safety Division) and the Orange County Department of Environmental Health. The RI Workplan shall include a detailed site characterization plan with soil and groundwater sampling and analysis to determine the extent and nature of contamination existing beneath the surface of the desalination facility. The RI Workplan shall be provided to the DTSC, San Diego Regional Water Quality Control, and City of Dana Point Fire Department, and other local agencies, as applicable, for review and comment. If contaminated soil or groundwater is found to exist, the District shall contact representatives of appropriate agencies for further guidance and possible oversight. In no event shall the District proceed with site preparation or construction activities at any location on the site where hazardous waste contamination is found to be present until that location is either remediated or shown to pose an insignificant risk to humans and the environment as demonstrated to the satisfaction of the applicable agency responsible for remediation oversight.</p> <p>HAZ-6</p> <p>Survey of Asbestos-Containing Materials and Lead-Based Paint. Prior to demolition of any existing structures (including piping materials), the District shall, to the satisfaction of City of Dana Point Community Development Department (Building and Safety Division) and the Orange County Department of Environmental Health, complete and submit a survey of all Asbestos-Containing Materials (ACM) and Regulated Building Materials (RBM) that contain lead-based paint to the listed agencies for review and comment and for approval. If any such materials are located, and after receiving approval and prior to demolition, the District shall remove all ACM and RBM from the site in accordance with all applicable guidelines and regulations pertaining to the safe</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>handling, removal, and disposal of such materials. The District shall contract with a licensed company to perform all related work efforts and shall inform the City of Dana Point and County of Orange when all ACM and RBM were removed from the site.</p> <p>HAZ-7</p> <p>Project Demolition and Construction Safety and Health Program. Prior to demolition of any existing structures, the District shall, to the satisfaction of City of Dana Point Community Development Department (Building and Safety Division) and the Orange County Department of Environmental Health, submit for review and comment a copy of the Project Demolition and Construction Safety and Health Program containing the following:</p> <ul style="list-style-type: none"> ▪ A Demolition and Construction Safety Program; ▪ A Demolition and Construction Personal Protective Equipment Program; ▪ A Demolition and Construction Exposure Monitoring Program; ▪ A Demolition and Construction Emergency Action Plan; and ▪ A Demolition and Construction Fire Protection and Prevention Plan. <p>The Demolition and Construction Fire Protection and Prevention Plan and Emergency Action Plan shall include the following:</p> <ol style="list-style-type: none"> a) Methods to maintain fire access roadways and submittal of a fire access layout plan for review by the City of Dana Point Fire Department. b) Provision of fire flow calculations to verify that the available water supply proposed will be adequate for emergency operations. c) A requirement that all temporary fire mains and hydrants shall be adequately braced and tied-down to anticipate the effects of water hammer and that protection from vehicular impact is provided as necessary. <p>HAZ-8</p> <p>Project Operations and Maintenance Safety and Health Program. Prior to issuance of any well, grading or construction permit, the District shall, to the satisfaction of City of Dana Point Community Development Department (Building and Safety Division) and</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>the Orange County Department of Environmental Health, submit for approval a copy of the Project Operations and Maintenance Safety and Health Program containing the following:</p> <ul style="list-style-type: none"> ▪ An Operation Injury and Illness Prevention Plan; ▪ An Emergency Action Plan; ▪ Hazardous Materials Management Program; ▪ Operations and Maintenance Safety Program; ▪ Fire Protection and Prevention Program (8 CCR § 3221); and, ▪ Personal Protective Equipment Program (8 CCR § 3401-3411). <p>The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the Cal/OSHA Consultation Service, for review and comment concerning compliance of the program with all applicable Safety Orders for approval. The Operation Fire Protection Plan and the Emergency Action Plan shall also be submitted to the City of Dana Point Fire Department for review and comment. The Project Operations Fire Protection and Prevention Plan and Emergency Action Plan shall address:</p> <ul style="list-style-type: none"> a) Provision of remote annunciation for all fire alarm and automatic suppression devices and the placement of remote annunciation at applicable project sites. b) Provision of fire alarm system and automatic fire sprinklers for all new structures. c) Adequate emergency access for Fire Department operations. <p>HAZ-9</p> <p>Retain a Site Construction Safety Supervisor. The District shall, to the satisfaction of City of Dana Point Community Development Department (Building and Safety Division), retain a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<ul style="list-style-type: none"> Have over-all authority for coordination and implementation of all occupational safety and health practices, policies, and programs; and Ensure that the Project's safety program complies with relevant Cal/OSHA and federal regulations, including the following: <ul style="list-style-type: none"> a) Ensure that all construction workers, operational employees, and supervisors receive adequate safety training; b) Complete accident and safety-related incident investigations, emergency response reports for injuries, and inform the Project Engineer of safety-related incidents; and c) Ensure that all required plans and other applicable mitigation measures are implemented. <p>The CSS shall submit a monthly safety inspection report to the Project Engineer that includes the following:</p> <ul style="list-style-type: none"> Record of all employees trained for that month (all records shall be kept on site for the duration of the Project); Summary report of safety management actions and safety-related incidents that occurred during the month; Report of any continuing or unresolved situations and incidents that may pose danger to life or health; and Report of accidents and injuries that occurred during the month.
Impact 4.7-3 Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	Less than Significant with Mitigation.	Implementation of Mitigation Measures HAZ-1 through HAZ-9 would reduce impacts to a level of less than significant.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
Impact 4.7-4 Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	Less than Significant with Mitigation.	See Mitigation Measures HAZ-1 through HAZ-9 relative to identification and mitigation of potential hazardous materials during Project construction.
Impact 4.7-5 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.	None required.
Impact 4.7-6 For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	No Impact.	None required.
Impact 4.7-8 Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where	Less than Significant.	None required.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?		
Hydrology and Water Quality		
Impact 4.8-1 Would the project violate any water quality standards or waste discharge requirements?	Less than Significant with Mitigation.	<p>Also refer to Mitigation Measure BIO-3.</p> <p>HWQ-1</p> <p>Prior to any ground disturbance activities, SCWD shall manage stormwater pollution from construction activities by complying with State Water Resources Control Board's National Pollutant Discharge Elimination System (NPDES) Waste Discharge Requirements for Discharges of Stormwater Runoff Associated with Construction Activities. At least 30 days prior to construction, SCWD (or its designee) shall develop and implement a construction Stormwater Pollution Prevention Plan (SWPPP) for the construction of the Project that identifies project-specific best management practices (BMPs) to be implemented during the construction phase. The SWPPP shall include applicable erosion control measures, with the intent to satisfy Erosion Control Plan requirements of regulatory permitting agencies including the California Coastal Commission, State Parks, County Parks and City of Dana Point.</p> <p>HWQ-2</p> <p>High Surf Mitigation - In order to minimize potential for coastal wave damage, SCWD or its contractor shall prepare a High Surf Mitigation Plan for any slant well construction proposed at Capistrano Beach Park, or otherwise subject to high surf wave damage. This Plan shall be prepared for applicable regulatory agency review and approval at least 30 days prior to construction, and shall include the following at minimum (or equivalent measures as determined appropriate by the Coastal Commission and County of Orange) to provide for public safety and avoid construction site erosion or related water quality impacts):</p> <ul style="list-style-type: none"> ▪ The drill rig itself shall be on a skid-mounted platform, secured by temporary pilings keyed into competent underlying material, estimated at 20-30 feet deep.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<ul style="list-style-type: none"> ▪ The drill rig shall be capable of elevating above grade during small wave events. ▪ For smaller coastal storm events (typically less than one foot of water over the site, to be determined by the Contractor, based on typical coastal wave patterns for this season), the drill rig work area shall be secured by sandbags or K-rails. ▪ For larger storm events (typically where more than two feet of water would be over the site, to be determined by the Contractor, where local or National Weather Service warnings indicate high surf hazards or the drill rig work area is otherwise anticipated to be exposed to coastal wave damage beyond which sandbags or K-rails will suffice), the drill rig and appurtenant equipment will be temporarily demobilized and relocated depending on the storm severity, requiring 6-12 hours of advanced warning. ▪ To prevent damage to the slant well drill hole, the temporary casings at the surface would be temporarily sealed. <p>HWQ-3</p> <p>Minimum SJCOO Flow – As part of the Project’s NPDES Permit application for brine discharge, the District stipulates that the Project will comply with applicable OPA requirements. If required to meet OPA requirements, the District, as a SOCWA member agency with shared responsibility in managing SJCOO discharges, will ensure that SJCOO wastewater discharges are at least 0.35 MGD where required to provide adequate blending of the Project’s brine discharge.</p> <p>HWQ-4</p> <p>Prior to construction, the District (or its designee) shall prepare a Water Quality Management Plan (WQMP) for review and approval by the City of Dana Point, identifying applicable site design BMPs, which address low impact development and designing the site in sustainable ways, source control BMPs, which are operation, management, LID/Treatment Control BMPs, Hydromodification Management BMPs, and housekeeping activities which control pollutants at the source, include staff and contractor training, street sweeping, storm drain system maintenance, efficient irrigation practices, litter management, etc.; and treatment BMPs, which remove pollutants from runoff prior to discharge. All these BMPs will be implemented for</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		comprehensive pollutant management program and management and treatment of the runoff generated from the project.
Impact 4.8-2 Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	Less than Significant.	No mitigation measures are required.
Impact 4.8-3 Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	Less than Significant.	No mitigation measures are required.
Impact 4.8-4 Would the project substantially alter the existing drainage pattern of the site or area, including	Less than Significant.	No mitigation measures are required.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?		
Impact 4.8-5 Would the project 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?	Less than Significant with Mitigation.	Refer to Mitigation Measure HWQ-1 above.
Impact 4.8-6 Would the project otherwise substantially degrade water quality?	Less than Significant with Mitigation.	Refer to Mitigation Measure HWQ-1 above.
Impact 4.8-7 Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	No Impact.	No mitigation measures are required.
Impact 4.8-8 Would the project place within a 100-year flood hazard area	Less Than Significant with Mitigation.	Refer to Mitigation Measure HWQ-2.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
structures which would impede or redirect flood flows?		
Impact 4.8-9 Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	Less Than Significant Impact with Mitigation.	HWQ-6 Prior to constructing the electrical control building, the District shall prepare a final hydrology study that demonstrates the facility is adequately protected from flood hazards. The facility should be sited as far as practicable from extreme flood hazard potential areas, recognizing the coastal location may make this challenging. In the event the facility is sited in a flood hazard zone, the building shall be designed to withstand reasonably foreseeable future flood hazard events, to the satisfaction of State Parks. HWQ-7 Prior to any construction shoreward of PCH, the District shall prepare a Coastal Hazard Mitigation Plan, for review and approval by the property owner (State Parks and/or County Parks), in addition to the Coastal Commission. The Coastal Hazard Plan shall demonstrate that the proposed facilities are adequately protected from coastal hazards during construction, operation and maintenance activities, such that facilities and workers are protected, as determined appropriate by the reviewing agencies (State Parks and/or County Parks, and Coastal Commission). For any slant well subject to coastal erosion or wave damage, the Plan shall demonstrate that the slant well vault and associated infrastructure are buried sufficiently deep so as to avoid exposure in the reasonably foreseeable future for the life of the slant well. The Plan shall be implemented by the District (or its designee) for the duration of Project construction and operations.
Impact 4.8-10 Would the Project be subject to inundation by seiche, tsunami, or mudflow?	Less than Significant with Mitigation.	Refer to Mitigation Measures HWQ-2 and HWQ-7.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
Land Use and Planning		
Impact 4.9-1 Would the project physically divide an established community?	No Impact.	None required.
Impact 4.9-2 Would the project conflict with any applicable land use plan, policy, regulation of an agency with jurisdiction over the project, adopted for the purpose of avoiding or mitigating an environmental effect?	Less Than Significant Impact with Mitigation.	<p>California Coastal Act: None required.</p> <p>California State Lands Commission: None required.</p> <p>Doheny State Beach General Plan: Mitigation Measures related to DSB are addressed throughout the EIR, particularly in <u>Section 4.12, Recreation</u>.</p> <p>Southern California Association of Governments: None required.</p> <p>City of Dana Point General Plan: None required, other than mitigation measures in <u>Sections 4.2, 4.10 and 4.13</u>.</p> <p>Dana Point Municipal Code: None required.</p>
Noise		
Impact 4.10-1 Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise	Less than Significant with Mitigation.	<p>NOI-1 Prior to construction, SCWD (or its designee) shall ensure that the Grading Plan, Building Plans, and specifications stipulate that:</p> <ul style="list-style-type: none"> All construction equipment, fixed or mobile, is equipped with properly operating and maintained mufflers and other State-required noise attenuation devices.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
ordinance, or applicable standards of other agencies?		<ul style="list-style-type: none"> When feasible, construction haul routes shall avoid noise sensitive uses (e.g., residences, convalescent homes, etc.). During construction, stationary construction equipment shall be placed such that emitted noise is directed away from the nearest noise sensitive receptors. Construction activities that generate noise shall not take place outside of the allowable hours specified by the City of Dana Point Municipal Code Chapter 11.10.014 (8:00 p.m. to 7:00 a.m. on weekdays, including Saturdays, or at any time on Sunday or Federal holiday, with exception on PCH between San Juan Creek Bridge and Crystal Lantern) <p>NOI-2</p> <p>Slant Well 24-hour Drilling Noise Mitigation</p> <p>a) <u>Construction Hours.</u> SCWD shall conduct construction activities between 7:00 a.m. and 6:00 p.m. Monday through Saturday and 9:00 a.m. to 6:00 p.m. Sunday or for a shorter period if so stipulated in the relevant local noise ordinance. Exceptions shall only apply to drilling operations associated with the proposed slant well construction.</p> <p>b) <u>Temporary Noise Barriers.</u> SCWD, the contractor or designee shall install temporary noise barriers between well drilling and sensitive receptors. Temporary noise barriers shall be installed between the drilling rig and nearby receptors such that noise levels at nearby residences and overnight camping sites are reduced. Depending on the length of the noise barrier, it may need to be repositioned after drilling of each well has been completed and the drilling rig has been repositioned. The height and location of the noise barrier shall be determined based on the size of the drilling rig to be used and the location of the proposed wells, and shall be included in a drilling plan submitted to State Parks and County Parks for review and approval. Exceptions shall apply only upon approval by the State or County.</p> <p>c) <u>Advanced Notice to Sensitive Receptors.</u> SCWD or its construction contractor shall provide advanced notice, between 2 and 4 weeks prior to construction, by mail to all sensitive receptors and residences within 300 feet of construction sites, staging areas, and access roads. The announcement shall state specifically where and when</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>construction would occur in the area. If construction delays of more than 7 days occur, an additional notice shall be made, either in person or by mail. Notices shall provide tips on reducing noise intrusion; for example, by closing windows facing the planned construction. The notice shall also advise the recipient on how to inform the applicant/contractor if specific noise- or vibration-sensitive activities are scheduled so that construction can be rescheduled, if necessary, to avoid a conflict. SCWD shall also publish a notice of impending construction in local newspapers, stating when and where construction will occur.</p> <p>d) <u>Dedication of a Public Liaison.</u> SCWD shall identify and provide a public liaison before and during construction to respond to concerns of neighboring receptors, including residents, about noise construction disturbance. Procedures for reaching the public liaison officer via telephone or in person shall be included in notices distributed to the public. SCWD shall also establish a toll-free telephone number for receiving questions or complaints during construction and develop procedures for responding to callers. Prior to public notification, procedures included in the notices shall be submitted to State Parks and County Parks for review and approval. SCWD shall provide State Parks and County Parks with a bi-monthly letter reporting the number of calls received and a summary of caller concerns and how concerns were addressed.</p> <p>e) <u>Use of Appropriate Mufflers.</u> Construction equipment shall be equipped with the appropriate mufflers to reduce noise impacts to less than significant levels in accordance with applicable noise regulations.</p> <p>f) Use of the Doheny State Beach campground shall be prohibited within 120 feet of the drilling sites on the (Pods D and E) in order to avoid exposure to construction noise levels in excess of City standards.</p> <p>g) Throughout Project construction and operation, SCWD (or its designee) shall document, investigate, evaluate, and attempt to resolve all Project-related noise complaints as soon as possible.</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>NOI-3</p> <p>Prior to construction, SCWD (or its designee) shall review noise specifications (noise ratings, power ratings, etc.) for all stationary equipment (microfiltration units, reverse osmosis units, pumps, generators, etc.) and enclosures to confirm that facility noise levels are within the City of Dana Point’s acceptable noise standards at nearby sensitive receptors. If noise levels are anticipated to exceed the applicable City noise standards, noise-attenuation measures, such as locating stationary equipment within an upgraded noise enclosure/structure that provides sufficient attenuation and with adequate setback and screening, would be required to achieve acceptable noise levels at the property lines of nearby sensitive receptors (residential uses) in accordance with the Dana Point General Plan and Dana Point Municipal Code Chapter 11.10 (Noise Standards). Once the equipment is installed, noise levels shall be monitored to ensure compliance with the applicable noise standards. If stationary noise exceeds the City of Dana Point’s standards, an acoustical engineer shall be retained to install additional noise attenuation measures, in order to meet the applicable noise standard.</p> <p>NOI-4</p> <p>Pump Facility Noise. Prior to construction, SWCD (or its designee) shall review noise specifications (noise ratings, power ratings, etc.) for all stationary equipment (conveyance pumps, generators, etc.) to confirm that the Project noise levels are within the City of Dana Point’s acceptable noise standards at nearby sensitive receptors. If noise levels are anticipated to exceed the applicable City’s noise standards, noise-attenuation measures, such as locating stationary equipment within enclosed structures with adequate setback and screening, would be incorporated into Project design sufficient to achieve acceptable noise levels at the property lines of nearby sensitive noise receptors (residential uses) in accordance the Dana Point General Plan and City’s Municipal Code § 11.10.10-12 (Noise Standards). Once the equipment is installed, noise levels shall be monitored to ensure compliance with the City’s noise standards. If stationary noise exceeds City’s standards, an acoustical engineer shall be retained to install additional noise attenuation measures, in order to meet the applicable noise standard.</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
Impact 4.10-2 Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	Less than Significant Impact.	None required.
Impact 4.10-3 Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	Less than Significant with Mitigation.	Mitigation Measures NOI-2 and NOI-4 are applicable.
Impact 4.10-4 Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	Less than Significant with Mitigation.	Mitigation Measures NOI-1 to NOI-4 applicable.
Impact 4.10-5 For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise level?	No Impact.	None required.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
Public Services		
Impact 4.11-1 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: i) Fire protection?	Less than Significant Impact.	None required.
ii) Police protection?	Less than Significant Impact.	None required.
iii) Schools?	Less than Significant Impact.	None required.
iv) Parks?	Less than Significant with Mitigation.	Mitigation Measures REC-1 and REC-2 (below) would be applicable.
v) Other public facilities?	Less than Significant Impact.	None required.
Recreation		
Impact 4.12-1 Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that	Less Than Significant with Mitigation.	REC-1 Minimize Construction Impacts on Parks and Recreational Facilities. As part of final design and permitting, SCWD shall review detailed design plans with affected recreational agencies, in order to refine facility layout, design, staging, construction and operational details. Prior to obtaining encroachment permits or other approvals



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
substantial physical deterioration of the facility would occur or be accelerated?		<p>from State Parks, County Parks and the City of Dana Point, SCWD shall demonstrate that:</p> <ul style="list-style-type: none"> ▪ SCWD has considered potential recreational impacts in its decision for slant well phasing, such that prioritization of Pods A-C and Pods G and H shall be higher for purposes of recreational facility impacts, recognizing that other pods may be more favorable for design purposes, well production capacity, operational/maintenance consideration, or other factors; ▪ Pod F is the lowest priority of all pod locations; ▪ Pod G has been shifted south of the basketball courts; ▪ If pipeline trenching across Palisades Drive is necessary (for Pods G and H), use of the CSD maintenance road or other methods have been explored to minimize temporary disruption of the Class I bike trail; ▪ The Project has incorporated appropriate mitigation measures to reduce recreational impacts, related to aesthetics/lighting, noise, and parking/access (as set forth in Section 4.1, 4.10 and 4.13); ▪ Project construction shall maintain pedestrian/bicycle access for routes within the State Park and County Park, through either avoidance or temporary rerouting; ▪ Where Project construction affects existing on-street Class I bike lanes (such as Dana Point Harbor Drive and Del Obispo Street), temporary bicycle lane closures shall include advanced notice of closures and applicable temporary rerouting (see REC-2 below); ▪ Appropriate signage and advance notification is provided to the affected agency for dissemination to the public and posting on-site; and ▪ Where practical, Project construction shall be timed with any other planned improvements to minimize disruption of recreational facilities. <p>REC-2</p> <p>Provide Construction Updates and Detour Information for Bicyclists. If the use of bicycle facilities must be temporarily impacted due to construction of the proposed</p>



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<p>Project, SCWD or its designee shall coordinate with the affected agency (State Park, County Park and/or the City of Dana Point) to ensure:</p> <ul style="list-style-type: none"> Project construction activities are minimized during peak-use periods for any impacted facilities, to the extent practical; The bicycle facility is restored to its original condition following construction; and Appropriate advance notification is provided to the affected agency and public, in addition to on-site signage and notices for temporary detours and rerouting of bikeways.
Impact 4.12-2 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?	No Impact.	None required.
Transportation		
Impact 4.13-1 Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways,	Less than Significant with Mitigation.	TRF-1 Prior to commencing Project construction, SCWD (or its designee) shall develop and implement a Parking and Staging Plan for all phases of construction to require that all Project-related parking occurs on-site or in pre-designated off-site parking areas. The Staging Area ⁵ shall maintain through park access for motor vehicles, bicycles and pedestrians. To accommodate peak parking demand for Special Events during the off-season, SCWD (or its designee) shall coordinate with State Parks to reschedule Special Events to alternate venues or to outside the off-season construction period, and if not possible, shall arrange for sufficient off-site parking and shuttles such that the displaced parking stalls are offset. The contractor shall utilize shuttles to transport workers to and from any off-site staging/parking areas (if utilized) and Project



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
pedestrian and bicycle paths, and mass transit?		<p>construction areas. At least 60 days prior to start of site mobilization, SCWD (or its designee) shall submit the Plan to each affected jurisdiction for review and approval.</p> <p>⁵ If State Parks determines that an off-site Staging Area is needed, either to supplement or replace the North Day Use Staging Area, the off-site staging area shall be sited such that it is on existing developed or disturbed property, not adjacent to residential uses, and with adequate traffic control to avoid significant temporary construction impacts, to the satisfaction of the City of Dana Point. The District's San Juan Creek Property is the preferred location for any staging required outside of DSB.</p> <p>TRF-2</p> <p>Prior to construction, SCWD (or its designee) shall submit for review and approval a Construction Traffic Control Plan (TCP) to each affected jurisdiction (including State Parks, Caltrans, County Parks, and City of Dana Point), as part of the encroachment permit or related approval process. The TCP shall address, at minimum, the following issues:</p> <ul style="list-style-type: none"> ▪ Controlling construction traffic flow by use of a flag person at construction site entrances on public roads, including Stonehill Drive/SCWD Access Road, Dana Point Harbor Drive/Park Lantern, and Palisades Drive/PCH; ▪ Signage, lighting, and traffic control device placement if required; ▪ Need, if any, for construction work hours and arrival/departure times outside of peak traffic periods; ▪ Maintaining access for emergency vehicles; ▪ Advanced notice to local agencies, transit providers, school districts, and emergency service providers regarding the anticipated schedule, location, and duration of any temporarily reduced through lanes, including clear plans for temporary detours and alternate routes, if applicable; ▪ Main through access in each direction on any public road; ▪ Maintain access to adjacent properties during the construction; ▪ Specify construction related haul routes for any material import/export; ▪ Timing of heavy equipment and building materials deliveries;



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
		<ul style="list-style-type: none"> Identify specific contractor training and related safety procedures for construction vehicles exiting and entering work areas from public roads.
Impact 4.13-2 Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	Less than Significant Impact.	None required.
Impact 4.13-3 Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	No Impact.	None required.
Impact 4.13-4 Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	Less than Significant Impact with Mitigation.	Mitigation Measure TRF-1 and TRF-2.
Impact 4.13-5	Less than Significant with Mitigation.	Mitigation Measures TRF-1 and TRF-2 are applicable to construction-related emergency access mitigation.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
Would the project result in inadequate emergency access?		
Impact 4.13-6 Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	Less than Significant with Mitigation.	Mitigation Measures TRF-1 and TRF-2 are applicable (to reduce construction-related traffic impacts), as are Mitigation Measures REC-1 and REC-2 (to reduce construction-related impacts on recreational facilities including pedestrian facilities and bicycle lanes).
Tribal Cultural Resources		
Impact 4.14-1 Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 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 § 5020.1(k) or b) A resource determined by the lead	Less than Significant with Mitigation.	Please refer to Mitigation Measures CUL-1, CUL-2, and CUL-4.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code (PRC) § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?		
Utilities & Service Systems		
Impact 4.15-1 Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	Less than Significant Impact.	Refer to <u>Section 4.8, Hydrology and Water Quality</u> .
Impact 4.15-2 Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	Less than Significant Impact.	None required.
Impact 4.15-3 Would the project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the	Less than Significant Impact.	None required.



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
construction of which could cause significant environmental effects?		
Impact 4.15-4 Would the project have insufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	Less than Significant Impact.	None required.
Impact 4.15-5 Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity, including treatment and/or outfall capacity, to accommodate the project's projected demand in addition to the provider's existing commitments?	Less than Significant Impact.	None required.
Impact 4.15-6 Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	Less than Significant Impact.	None required.
Impact 4.15-7	Less than Significant with Mitigation.	UTIL-1



Table 1-1: Summary of Impacts and Mitigation Measures

Impact	Significance after Mitigation	Mitigation Measure
Would the project comply with federal, state, and local statutes and regulations related to solid waste?		<p>Prior to the start of both site mobilization and project operation, SCWD (or its designee) shall prepare and submit to the City of Dana Point, and/or any other applicable local agency, for review and comment, a Waste Management Plan (WMP) for all wastes generated during construction and operation of the Doheny Ocean Desalination Project. At a minimum, the WMP shall contain the following:</p> <ul style="list-style-type: none"> ▪ A description of all waste streams, including projections of frequency, amounts generated and hazard classifications; ▪ Requirements in the demolition/construction contracts that all materials that can feasibly be recovered be salvaged and recycled. The contractor(s) shall submit a recycling plan to the District for review and approval prior to commencing demolition or construction; and ▪ Methods of managing each waste, including storage, treatment methods and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.



1.6 SUMMARY OF ALTERNATIVES EVALUATED

This subsection summarizes the project alternatives described in Section 5.0, Alternatives. CEQA requires that “an EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives” (State CEQA Guidelines § 15126.6 (a)). Section 5.0 identifies potential alternatives to the proposed project and evaluates them, as required by CEQA.

In addition to Alternatives described below, the District considered and incorporated numerous design and siting modifications into the Project, which are reflected in the Project Descriptions and throughout the EIR. These include, but are not limited to:

- Expanding the subsurface intake study area to include the southeast intake wells (an “alternative site”), considered throughout the EIR and potentially chosen for slant well construction;
- Evaluating of the broader San Juan Creek Property site for the desalination facility, settling on the southern portion (Lots D, E, and F), for a variety of reasons, including proximity to the slant wells, regional distribution facilities, and SJCOO connection;
- Evaluating multiple alternative slant well pod locations throughout the EIR (pods A-H), including eliminating Pod F from further consideration, and shifting Pod G to south of the basketball courts;
- Evaluating multiple staging area concepts and modifying the staging area locations based on consultation with State Parks and County Parks;
- Incorporating a raw water conveyance “study area” to allow flexibility in final alignment selection, with two potential alignments discussed throughout the EIR;
- Considering alternative power supply options and incorporating solar PV (photovoltaic panels) into the Project; and
- Evaluating alternative slant well development water discharge options, and identifying three options within the EIR.

ALTERNATIVES REJECTED FROM FURTHER CONSIDERATION

Section 15126.6(c) of the State CEQA Guidelines permits the elimination of an alternative from detailed consideration due to: Failure to meet most of the basic project objectives; infeasibility; and inability to avoid significant environmental impacts. The following alternatives have been rejected from further consideration:

Alternative Sites

The District and others (including MWDOC) have been exploring a desalination site at Doheny State Beach since early 2000, and the Project site has been identified in numerous policy, planning and facility siting studies (see Section 3.3, Project History). The District is not aware of any feasible alternative to the desalination facility site being identified in any prior studies, and is not aware of any feasible alternative location that would avoid or substantially lessen significant effects of the Project. The District already owns the San Juan Creek Property. No significant and unavoidable impacts would occur with



implementation of the proposed project at the Project site. Alternative sites located inland are infeasible as the Project must be in close proximity to the ocean. The District has already incorporated various siting and design options as part of the Project, most notably the addition of the southeast intake well study area to explore potential additional feasible subsurface intake well locations. In consideration of the above, the District does not believe an “alternative site” is necessary or relevant to the Doheny Ocean Desalination Project.

Shallow Neodren® Technology

Neodren® is the trademarked name of a patented subsurface ocean water intake system, using horizontal directional drilling (HDD) technology to install porous high-density polyethylene (HDPE) pipe. The Neodren® system has possible advantages over slant wells, including longer well lengths (of 2,000 feet or more), which allow the ability to launch further back from the beach or further out into the ocean. The use of flexible (HDPE) pipe and HDD drilling allows the well to stay relatively shallow, rather than dive deeper on a fixed angle. However, the District has not identified any unavoidable significant impacts associated with slant well construction or operation, and as such this technology is not necessary at this site. Furthermore, the Neodren® method has never been operationally demonstrated in North America (current installations are limited to Spain), and its HDD construction method typically requires the HDD drill to penetrate the ocean floor at the terminus to “pull” the porous HDPE pipe back through the borehole, which represents a new impact not found with slant wells. The District may pilot test the Neodren® technology as part of future subsurface intake well design studies, which would require separate regulatory permitting and CEQA review.

Vertical Well Technology

Because the Project’s slant wells have been shown to meet or exceed source water intake requirements with all impacts mitigated to less than significant levels, alternate technologies such as vertical wells are not being considered. In addition, vertical wells pose other challenges that make this technology less desirable, including lower per unit production rate, greater percentage of inland groundwater, increased variability in groundwater quality, and greater impact upon the San Juan Creek Lagoon.

ALTERNATIVE 1: “NO PROJECT” ALTERNATIVE

Consistent with State CEQA Guidelines § 15126.6, the “No Project” Alternative assumes that the existing land uses and condition of the project site at the time the Notice of Preparation (NOP) was published (March 14, 2016) would continue to exist without changes. The setting of the proposed Project site at the time the NOP was published is described as part of the existing conditions noted throughout Section 4.0 of this Draft EIR, with respect to individual environmental issues and forms the baseline of the impact assessment of the proposed project.

Elimination of Project impacts should be understood as countered by some level of likely future development impact on the District’s San Juan Creek Property should the desalination facility not be constructed (see the 2002 San Juan Creek Property Final EIR). In addition, failure to implement the Project would be in direct conflict with the District’s UWMP and Strategic Plan, would completely fail to meet any of the Project Objectives, would contradict over 20 years of water supply planning for the Project, and would necessitate implementation of one or more alternative water supply sources, each of which would



have its own environmental impacts. The No Project Alternative would leave the District vulnerable to catastrophic water supply shortages in the event of a major system failure or seismic damage, potentially resulting in extraordinary financial impacts to this area and associated tourism-based economy. For these reasons, the District has rejected the No Project Alternative and intends to pursue the proposed Project.

ALTERNATIVE 2: “ENHANCED CONSERVATION” ALTERNATIVE

Under the “Enhanced Conservation” Alternative, water users within the District would be required to conserve at least an additional 4,400 acre-feet per year (AFY) to meet the identified minimum additional supply needed for water reliability of 3.9 MGD. Adding an extra 3.9 MGD of annual conservation to conservation efforts that are currently occurring within the District would essentially require nearly tripling the District’s future water conservation efforts. To triple the future conservation efforts of the District in such a relatively short period of time (to maintain the District’s desired schedule) would require, at a minimum, the imposition of prescriptive water conservation standards for activities, like outdoor residential irrigation, that are today considered discretionary consumptive water use, or the enactment of the District’s Water Conservation and Water Supply Shortage program (Stage 2 or Stage 3) outside of the water supply condition thresholds identified in [Table 5-1](#) in [Section 5.0](#) of the EIR. To achieve a long-term reliable and drought-proof supply similar to the proposed project, Stage 2 and/or Stage 3 water shortage contingency provisions would likely have to be enacted and ultimately enforced on a permanent basis. Enforcement effectiveness at such high conservation targets would likely be challenging.

The “Enhanced Conservation” Alternative would not provide a new, diversified water supply portfolio, and would not provide a hydrologically independent water supply in the event of continued drought. The “Enhanced Conservation” Alternative is not considered a permanent and sustainable method to close the existing minimum additional 3.9 MGD water supply gap while meeting the stated objective of providing an immediate and reliable emergency water source for District customers in the event of a catastrophic failure of District infrastructure or regional distribution facilities such as State Water Project (SWP) and Colorado River Aqueduct (CRA) facilities. As a result, the “Enhanced Conservation” Alternative would not improve the overall supply diversity to the area or improve the protection of public health and welfare during supply shortages that could be caused by outage of the imported system or curtailments in imported water supply due to drought or other emergency outage of the system. As such, “Enhanced Conservation” Alternative would fail to meet the water reliability needs of the District to the same degree as the proposed project.

ALTERNATIVE 3: “ENHANCED RECYCLED WATER” ALTERNATIVE

Under the “Enhanced Recycled Water” Alternative, the District would need to construct additional recycled water treatment facilities and infrastructure to create a supplemental water supply of at least 3.9 MGD (4,400 AFY) to offset potable water shortages during a catastrophic outage. Under the “Enhanced Recycled Water” Alternative, the proposed desalination facility, subsurface water intake system, and raw (ocean) water conveyance pipeline would not be constructed and the existing minimum necessary additional potable water supply gap of 3.9 MGD would be supplemented from existing potable water supplies that would become available through the increased recycled water production.

Full implementation of the recycled water facilities envisioned in the District’s 2015 UWMP would result in a total projected recycled water demand of 1,350 AFY, which approaches the District’s existing 1,350



AFY of available recycled water to supply to customers. Implementation of the “Enhanced Recycled Water” Alternative would require the District to supply an additional 3,350 AFY, or more than four times the District’s current recycled production of 850 AFY, by year 2020. This also assumes that recycled water could be used in direct “flange to flange” potable water applications, which there is no current regulatory pathway in California for this. In addition, the “Enhanced Recycled Water” Alternative would itself require new infrastructure including pipelines and wastewater treatment facilities, which would have similar impacts to the Project, at least for onshore facilities. All of the Project’s impacts can be mitigated to less than significant levels, so this Alternative does not reduce any unavoidable significant impacts.

Regardless, the District has insufficient recycled water production potential to make this alternative feasible. In addition, given the time necessary for regulations to allow for this, to investigate, finance, and construct a number of facilities above and beyond those identified in the District’s 2015 UWMP, implementation of the “Enhanced Recycled Water” Alternative would fail to produce sufficient recycled water offsets to create a minimum additional 3.9 MGD (4,400 AFY) of reliable water supply and eliminate the existing projected supply gap in a timely manner.

The “Enhanced Recycled Water” Alternative would also fail to meet basic Project objectives, as it would not provide an immediate and reliable emergency water source for District customers in the event of a catastrophic failure of District infrastructure or regional distribution facilities such as SWP and CRA facilities. As a result, this Alternative would not improve the overall supply diversity to the area or improve the protection of public health and welfare during supply shortages that could be caused by outage of the imported system or curtailments in imported water supply due to drought or other emergency outage of the system. As such, the “Enhanced Recycled Water” Alternative would fail to meet the water reliability needs of the District to the same degree as the proposed Project, and is not being considered by the District.

ALTERNATIVE 4: “REDUCED CAPACITY” ALTERNATIVE

A minimum desalination facility capacity of 3.9 MGD has been recommended based on certain specific system reliability parameters (including the minimum capacity needed to meet a 60-day imported water supply interruption). However, the District desires to construct up to a 5 MGD facility with the intent to create further reliability and local water supply security, particularly given the difficulty and cost of developing alternative new water supplies for a water-scarce south Orange County. For the purposes of CEQA alternatives, the EIR evaluates a “Reduced Capacity Alternative,” which is hypothesized to be a 3.9 MGD facility to meet the minimum identified 60-day imported water supply shortage gap. This Alternative is assumed to be at the same site and with the same general facility locations, with the exception of reduced source water intake, brine discharge, raw water treatment and desalination and equipment (corresponding to roughly 20% reduction in impacts related to source water production, treatment, and discharge). Depending on individual slant well production, one of the estimated three to four Phase I Project slant wells could be avoided with a 20% reduction in capacity. The desalination facility site would have similar impacts as the Project, since the entire desalination site would require grading, and the structures would be similar in size as those required for the Project.

Overall, the “Reduced Capacity” Alternative would result in a slight reduction in Project impacts, including approximately a 20% reduction in subsurface intake of ocean water, reverse osmosis treatment and



associated pretreatment and posttreatment processes, greenhouse gas emissions, and brine discharge volume. However, in each of these cases, the Project's impacts can be fully mitigated, and the "Reduced Capacity" Alternative would therefore not avoid any unavoidable significant impacts. Comparing effects on the San Juan Creek Lagoon, [Appendix 10.10](#) shows little to no effect by reducing slant well pumping by 20%.

The "Reduced Capacity" Alternative would achieve the basic Project objectives, albeit 20% less as effective as the proposed Project. As a result, this alternative would partially improve the overall supply diversity to the area and partially improve the protection of public health and welfare during supply shortages that could be caused by outage of the imported system or curtailments in imported water supply due to drought or other emergency outages of the system. However, the "Reduced Capacity" Alternative would not avoid any unavoidable significant impacts. This Alternative may still be considered by the District.

"SEAWATER INTRUSION MINIMIZATION (DSB ONLY)" ALTERNATIVE

The District has evaluated a specific alternative to the Phase I Project, involving focusing the initial slant wells in the immediate vicinity of San Juan Creek Lagoon (such as Pods C and D). This Alternative would achieve all of the Project objectives and provide the desired full Phase I production capacity of up to 5 MGD. The overall impacts would, therefore, be similar to the proposed Project, with the exception of seawater intrusion, and temporary slant well construction impacts.

In the SCWD Stonehill Well, total dissolved solids (TDS) concentrations begin to rise after approximately 15 years (compared to the 13.5 years under Baseline conditions) and reach a concentration of roughly 4,000 mg/L by the end of year 2045 (1976 hydrology). This is approximately 3,000 mg/L less than the concentration under Baseline conditions and indicates that slant well pumping at DSB establishes control over ocean water intrusion through the pumping trough created by the feed water system ([Appendix 10.10.2](#), page 9).

Therefore, this Alternative would reduce seawater intrusion compared to the Project (where slant wells could be located anywhere within the Study Area, from Pods A – H). Furthermore, this Alternative involves wells closest to the San Juan Creek Lagoon where slant well production capacity is estimated to be highest, thereby reducing the total number of slant wells and associated temporary construction-related impacts (rather than an assumed three to four wells with the Project, this Alternative could be constructed with two to three slant wells due to higher production capacity). In addition, slant wells sited at San Juan Creek Lagoon would have a shorter total conveyance pipeline length to the desalination facility, thereby reducing pipeline construction-related impacts. Also, slant well facilities would be entirely within DSB, thereby avoiding impacts at Capistrano Beach Park (including greater coastal erosion potential and temporary loss of parking), and reducing the total number of agencies required for permitting and approvals (avoiding a long-term lease and encroachment permits from County Parks). This Alternative would be in closer proximity to the San Juan Creek Lagoon and would focus slant well construction within DSB, although these temporary impacts could be mitigated as discussed in [Section 4.3, Biological Resources](#), and [Section 4.12, Recreation](#).

Therefore, the "Seawater Intrusion Minimization (DSB Only)" Alternative would reduce potential Project impacts, would further reduce seawater intrusion, and would meet all of the Project objectives. This



Alternative is considered “Environmentally Superior” to the proposed Project, and may be considered by the District, pending further consultation with State Parks and other regulatory agencies and stakeholders.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires an EIR to identify the environmentally superior alternative. The environmentally superior alternative is the one that would result in the fewest or least significant environmental impacts. The context of an environmentally superior alternative is based on the consideration of several factors including the reduction of environmental impacts to a *less than significant* level, the project objectives, and an alternative’s ability to fulfill the objectives with minimal impacts to the existing site and surrounding environment. The No Project Alternative would be the environmentally superior alternative because it would eliminate all of the potentially significant impacts of the proposed project. However, while the “No Project” Alternative is the environmentally superior alternative, it is not capable of meeting any of the basic objectives of the proposed Project. § 15126.6(e)(2) of the State CEQA Guidelines states that if the “No Project” alternative is found to be environmentally superior, “the EIR shall also identify an environmentally superior alternative among the other alternatives.”

Therefore, the environmentally superior alternative to the proposed Project is the one that would result in the fewest or least significant environmental impacts while meeting most (or all) of the basic Project objectives. As discussed above, based on the evaluation undertaken, the “Seawater Intrusion Minimization (DSB Only)” Alternative is the environmentally superior alternative, and may be considered by the District, pending further consultation with State Parks and other regulatory agencies and stakeholders.

1.7 MITIGATION MONITORING AND REPORTING

CEQA requires public agencies to adopt monitoring and reporting programs to ensure compliance with mitigation measures adopted or made conditions of project approval in order to mitigate or avoid the significant environmental effects identified in environmental impact reports. A Mitigation Monitoring and Reporting Program (MMRP) incorporating the mitigation measures set forth in this EIR will be prepared and approved by SCWD decision-makers and other responsible agencies concurrently with adoption of the findings of this EIR and prior to approval of the proposed project.

1.8 AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

CEQA Guidelines § 15123 (b)(2) and (3) require that the EIR summary identify areas of controversy known to the lead agency, issues raised by agencies and the public, and issues to be resolved, including the choice among alternatives and whether, or how to, mitigate significant adverse physical impacts.

Based on the District’s review of available information and comments received from the general public and other public agencies in response to the Notice of Preparation and public scoping meetings ([Appendix 10.2, Notice of Preparation & Scoping Meetings](#)), the following issues may be either controversial or require further resolution.



Areas of Controversy

The Project represents the environmentally-preferred approach for ocean desalination and is proposed on existing public land by a public agency. As such, typical areas of controversy associated with seawater desalination were minimized. The following areas of controversy were raised through the scoping and public meetings conducted in association with circulation of the NOP and Amended NOP, as well as comments submitted on the Draft EIR, and are characterized more as “issues of concern” than “areas of controversy.”

- Brine Discharge Impacts, including those that would occur with the Project’s proposed concentrate discharge and its potential impacts to marine life related to turbulent sheer stress and brine toxicity;
- Operational Greenhouse Gas Impacts and Energy Requirements, more specifically the energy-intensive nature of seawater desalination;
- Project Siting, including the Project’s potential aesthetic, land use compatibility, and noise impacts to neighboring existing residential development;
- Growth-Inducing Impacts of the proposed Project, particularly in respect to developing a new water supply, and associated consistency with local and regional growth plans;
- Alternatives to the Proposed Project, particularly those that could reduce the Project’s potentially significant environmental impacts, as well as some stakeholders’ preference for conservation, recycling or other alternatives;
- Cumulative Impacts, including the Project’s potential combined effects to marine resources when taken into consideration with all other existing and proposed California ocean water desalination; and
- The production capacity of the Project and cost of Project water, compared to existing water cost or cost of other new water supplies.

Issues to be Resolved

- The Project is a major capital improvement project planned to be constructed in phases. However, at this time, the District intends to only pursue final design and regulatory permit approvals for the Phase I Project. Furthermore, the Phase I Project allows “up to” 5 MGD, with the precise facility production capacity to be determined later based on a variety of factors, including actual slant well production capacity, funding, and other considerations;
- The Draft EIR evaluates a “Regional Project” at a programmatic level. The actual potential for a Regional Project to ever be pursued remains undetermined as does the specific size of a Regional Project. At this time, there are no regional partners, funding or specific end users for a Regional Project, and as such a detailed analysis would be speculative. The feasibility and specific additional facilities needed to support a Regional Project are also undetermined other than approximate number of new slant wells, raw water conveyance lines to the desalination facility, and desalination facility site equipment additions for pre-treatment, reverse osmosis process, and post-treatment of raw ocean water. This is addressed in the EIR at a conceptual level, And more detailed analysis would be speculative at this time. In particular, Regional Project product



(potable) water pumping, conveyance and storage facilities needed to deliver the additional desalinated water to potential future partners remains undetermined, as this would depend on the specific regional partners, their location, method of delivery, blending considerations, and other factors.

- Pursuant to the intent of CEQA, the District has initiated the CEQA process as early as practical in the Project review process. As is typical of large capital projects, this CEQA document is based on a Preliminary Design Report and related technical studies. As such, there are certain issues that will be resolved as part of the final design and permitting process. The EIR has addressed the range of potential options for the Phase I Project in an effort to anticipate future final design and siting decisions such that no further CEQA analysis is required. These final design level siting and design decisions include but are not limited to:
 - Slant well siting within DSB and/or Capistrano Beach Park (for the initial Phase I Project, DSB is the preferred location, but within DSB or Capistrano Beach Park the actual slant well vault location would be determined during final design and in consultation with regulatory permitting agencies).
 - Phase I production capacity may be less than 5 MGD as noted above;
 - Specific raw water conveyance alignment, although the South Alignment is preferred;
 - Iron/Manganese treatment method during initial well development and through source water stabilization period;
 - Electrical control building location, which will depend on final siting of slant wells; and
 - Alternative power supplies and/or renewable power which may be pursued by the District, above and beyond what is assumed in the EIR as “worst case.”

These issues have been considered in this EIR, where applicable.





Source: Appendix 10.1, PDR, Page. 18. *Offshore discharge shown on Exhibit 3-1 / Offsite electrical lines shown on Exhibit 3-6 / Refer to Preliminary Design Report (Appendix 10.1) / Pacific Coast Highway=PCH/SR-1 / Coast Highway starts on the west edge of the San Juan Creek traversing to the east along the coast.

EXHIBIT 1-1: Project Facility Locations*
South Coast Water District
Doheny Ocean Desalination Project



2.0 Introduction and Purpose

This document is an Environmental Impact Report (EIR) prepared for the South Coast Water District's (herein referred to as "SCWD" or the "District") Doheny Ocean Desalination Project (Project) in compliance with the California Environmental Quality Act (CEQA) and the CEQA-Plus requirements of the State Revolving Fund (SRF) loan process (see Section 2.3 below). This Draft EIR has been prepared by SCWD as the lead agency under CEQA. This Project entails the construction and operation of an ocean water desalination plant, subsurface intake wells, and conveyance systems with a potential ultimate operating capacity of up to 15 million gallons per day (MGD) of potable water. The District intends to construct the Project in phases, with an initial capacity of up to 5 MGD, with potential for future expansions up to 15 MGD. The CEQA Guidelines are located within the California Code of Regulations (CCR), Title 14, Division 6, Chapter 3, § 15000-15387, while the CEQA Statute is codified as Public Resources Code (PRC) § 21000-21189.57.

This Draft EIR evaluates the potentially significant, adverse and beneficial impacts on the environment resulting from implementation of the Project. Section 3.0, Project Description, provides detailed descriptions of the construction and operational components of the proposed Project. Section 4.0, Environmental Impact Analysis, discusses the regulatory environment, existing conditions, environmental impacts, and mitigation measures for the Project. Following public review of the Draft EIR, a Final EIR will be prepared, in which SCWD will respond to public comments on the Draft EIR.

2.1 PURPOSE OF THE EIR

According to §15121 of the CEQA Guidelines, an EIR is an informational document which will inform public agency decision-makers and the public of the significant environmental effects of a proposed project. The purpose of this Draft EIR for the proposed Project is to review the existing conditions at and in the vicinity of the Project site; identify and analyze the potential environmental impacts; and suggest feasible mitigation measures or alternatives to reduce significant adverse environmental effects, as described in Section 3.0, Project Description and Section 5.0, Alternatives to the Proposed Project. The potential impacts include both temporary construction-related effects and the long-term effects of development, operation, and maintenance of the Project, as described in Section 3.0, Project Description.

The intent of this EIR is to address the potential Project impacts utilizing the most current and detailed plans, technical studies, and related information available. This EIR will be used by SCWD as the lead agency, other responsible and trustee agencies, interested parties, and the general public to evaluate the potential environmental impacts of the proposed Project (refer to Section 3.7, Anticipated Permits and Approvals Required, for a list of anticipated responsible and trustee agencies and Project approvals).

SCWD determined that a CEQA-Plus compliant Project EIR is the appropriate CEQA document for the Phase 1 Project, in accordance with §15161 of the State CEQA Guidelines and the State Water Resource Control Board's State Revolving Fund requirements (discussed below in Section 2.3). This EIR is intended to provide a "Project-level" CEQA analysis of the Phase I Project, up to five (5) MGD of potable water (water that is safe to drink and/or used for food preparation). This EIR's Project-level analysis is based on the Project's Preliminary Design Report and related information as described in Section 3.0, Project Description. CEQA Guidelines § 15161 states Project EIRs "examine the environmental impacts of a



specific development project. This type of EIR should focus primarily on the changes in the environment that would result from the development project. The EIR shall examine all phases of the project including planning, construction, and operation.” In addition to Project-level analysis for Phase I, this EIR also functions as a Program EIR pursuant to CEQA Guidelines § 15168, providing a programmatic level analysis of a potential future Regional Project of up to 15 MGD. As discussed further in Section 3.0, Project Description, SCWD intends to seek regulatory permits and approvals for the Phase I Project only at this time, as there are no specific Regional Project partner agreements in place, and specific Regional conveyance facilities are dependent on Regional Partners and as such cannot be identified at this time. CEQA Guidelines § 15168 states that “A program EIR is a EIR which may be prepared on a series of actions that can be characterized as one large project and are related either geographically, as logical parts of in a chain of contemplated actions, in connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, or as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.” Therefore, a Program EIR is appropriate in that it evaluates a phased public works project where SCWD may implement one or more options, and in that it evaluates a broad range of implementation options to accomplish SCWD’s Project objectives.

2.2 COMPLIANCE WITH CEQA

According to the CEQA Guidelines (14 CCR § 15064[f][1]), preparation of an EIR is required whenever a project may result in a significant effect on the environment. An EIR is an informational document used to inform public agency decision-makers and the general public of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project that could feasibly attain most of the basic objectives of the project while substantially lessening or avoiding any of the significant environmental impacts. Public agencies are required to consider the information presented in the EIR when determining whether to approve a project. CEQA requires that state and local government agencies consider the environmental effects of projects over which they have discretionary authority before taking action on those projects.

This document analyzes the environmental effects of the Project to the degree of specificity appropriate to the current proposed actions, as required by § 15146 of the CEQA Guidelines. The analysis considers the activities associated with the Project, to determine the short-term and long-term effects associated with their implementation. This EIR discusses both direct and indirect impacts of the Project, as well as cumulative impacts associated with other past, present, and reasonably foreseeable future projects.

Based on significance criteria, the effects of the Project have been categorized as either “no impact,” “less than significant impact,” “less than significant with mitigation incorporated,” or “significant unavoidable impact” (refer to [Section 4.0, Environmental Impact Analysis](#)). Mitigation measures are recommended for potentially significant impacts, to avoid or lessen impacts. In the event the Project results in significant unavoidable impacts even with implementation of feasible mitigation measures, the decision-makers may approve the Project based on a “Statement of Overriding Considerations.” This determination would require the decision-makers to balance the benefits of the Project to determine if they outweigh identified unavoidable impacts. The CEQA Guidelines § 15093 provides in part the following:

- CEQA requires that the decision-maker balance the benefits of a proposed project against its unavoidable environmental risks in determining whether to approve the Project. If the benefits



of the Project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered “acceptable.”

- Where the decision of the public agency allows the occurrence of significant effects that are identified in the Final EIR but are not avoided or substantially lessened, the agency must state in writing the reason to support its action based on the Final EIR and/or other information on the record. This statement may be necessary if the agency also makes the finding under § 15091 (a)(3) of the CEQA Guidelines.
- If an agency makes a Statement of Overriding Considerations, the statement should be included in the record of the Project approval and should be mentioned in the Notice of Determination.

2.3 COMPLIANCE WITH SRF CEQA-PLUS

This EIR is intended to satisfy the “CEQA Plus” requirements for the SRF program for low-interest loans to public agencies. The State Water Resources Control Board (SWRCB) administers the State Revolving Fund Loan Program, which is partially funded by the United States Environmental Protection Agency (USEPA) and is a low-interest loan funding source for large water and sanitation projects. To receive SRF loans, a Project applicant must demonstrate compliance with several federal regulations, including the Endangered Species Act (ESA), National Historic Preservation Act (NHPA), and the General Conformity Rule for the Clean Air Act (CAA). Rather than utilizing a separate document to comply with the National Environmental Policy Act for the SRF loan program, USEPA and the SWRCB uses CEQA in conjunction with the following additional requirements as mandated by ESA, NHPA, and CAA generally referred to as “CEQA-Plus.”¹

Endangered Species Act

The purpose of the ESA is to protect and recover imperiled wildlife and plant species and the habitats/ecosystems upon which they depend for survival. Section 7 of the ESA requires federal agencies to utilize their legal and discretionary authorities to conserve and assist in the recovery of threatened and endangered species. Federal agencies are required to consult with the United States Fish and Wildlife Service (USFWS) to ensure actions they authorize, permit, fund, or implement are not likely to jeopardize the continued existence of the listed threatened or endangered species. To comply with the ESA, a project applicant analyzes the project’s effects on threatened and endangered species, as well as any critical habitat designated for any of the species. The applicant uses biological assessments that have been prepared for the project, as well as any documents pertaining to the project’s effects on listed species and designated critical habitat. If a listed species may be adversely affected by a project, SWRCB staff will confer with the USFWS, and/or National Marine Fisheries Service (NMFS) to inform these agencies of project impacts to any federally listed species or critical habitat. If USFWS/NMFS and SWRCB staff determine the project will adversely impact a federally listed species or designated critical habitat, formal consultation is initiated, where USFWS assumes the role as the lead agency (see Section 4.3, Biological Resources).

¹ California Environmental Protection Agency. State Water Resources Control Board. Frequently Asked Questions Environmental Review Requirements for the Clean Water State Revolving Fund.
https://www.waterboards.ca.gov/water_issues/programs/grants_loans/docs/environmental_review/environmental_faq.pdf (accessed January 26, 2018).



National Historic Preservation Act

Federal agencies are required to determine an SRF project's significant impacts on historic properties pursuant to Section 106 of the National Historic Preservation Act (NHPA) and to initiate consultation with the State Historic Preservation Officer (SHPO). Historic properties are defined as historic-era buildings, archaeological sites, and traditional cultural properties that are either listed or eligible for the National Register of Historic Places. The USEPA has delegated to the SWRCB's Cultural Resource Officer the responsibility of carrying out NHPA Section 106 consultation (see [Section 4.4, Cultural Resources](#)).

Clean Air Act

The federal Clean Air Act (CAA) general conformity analysis is applied to all actions a federal agency intends to take in a nonattainment air basin where the criteria air pollutants do not meet National Ambient Air Quality Standards (NAAQS) and are subject to a maintenance plan. If an air basin project does not meet NAAQS or is subject to a maintenance plan, the project must specifically analyze criteria pollutants including ozone, carbon monoxide, sulfur dioxide, lead, nitrogen dioxide, and inhalable particulate matter. If the project emissions are above the "de minimis" levels, a conformity determination must be made if the proposed facilities are sized to meet current population prediction needs found in an approved Air Quality State Implementation Plan. The conformity determination must include detailed descriptions of the proposed capacity increase calculations. If it is determined that project emissions are below "de minimis" levels and result in less than 10% of the nonattainment or maintenance area emissions inventory, a general conformity analysis is not needed (see [Section 4.2, Air Quality](#)).

Additional SRF CEQA-Plus Requirements

Additional environmental analyses are required for SRF loan applications, including:

- **Coastal Zone Management Act (CZMA)** – CZMA compliance is discussed in [Section 4.9, Land Use and Planning](#). CZMA compliance will be required for the Project due to federal permits required by the USACE, with the CZMA consistency determination made by the California Coastal Commission concurrent with Coastal Act compliance permitting.
- **Environmental Justice** – SRF loans require demonstration of compliance with Environmental Justice provisions pursuant to Executive Order 12898 and related NEPA integration policies established by the EPA's Office of Environmental Justice (addressed in [Section 4.9, Land Use and Planning](#)).
- **Farmland Protection Policy Act** – this provision of CEQA-Plus is not applicable to the Project (see [Section 7, Effects Found not to be Significant](#)).
- **Flood Plain Management** – SRF loan applications require documentation regarding the 100-year floodplain and related Project effects (addressed in [Section 4.8, Hydrology and Water Quality](#)).
- **Magnuson-Stevens Fishery Conservation Management Act** – SRF loan applications must describe the Project's effects upon Essential Fish Habitat (addressed in [Section 4.3, Biological Resources](#)).
- **Migratory Bird Treaty Act** - SRF loan applications must describe the Project's effects upon migratory birds (addressed in [Section 4.3, Biological Resources](#)).
- **National Forest Lands** - this provision of CEQA-Plus is not applicable to the Project (see [Section 7, Effects Found not to be Significant](#)).



- **Protection of Wetlands** – SRF loan applications must describe the Project’s effects upon wetlands and waters of the U.S. (addressed in Section 4.3, Biological Resources).
- **Rivers and Harbors Act** – the Project will require a Section 10 Permit from the USACE, due to placement of slant wells beneath the ocean floor (the slant wells will not affect navigable waters, but are located beneath navigable waters and therefore require a Section 10 Permit).
- **Safe Drinking Water Act, Sole Source Aquifer Protection** - this provision of CEQA-Plus is not applicable to the Project, as the Project does not affect a Sole Source Aquifer.²
- **Wild and Scenic Rivers Act** - this provision of CEQA-Plus is not applicable to the Project, as no Wild and Scenic Rivers would be affected.³

2.4 NOTICE OF PREPARATION/EARLY CONSULTATION

In compliance with the CEQA Guidelines, SCWD has provided opportunities for various agencies and the public to participate in the environmental review process. During preparation of the Draft EIR, efforts were made to contact various federal, State, regional, and local government agencies and other interested parties to solicit comments on the scope of review in this document. This included the distribution of a Notice of Preparation (NOP) to various responsible agencies, trustee agencies, and interested parties. Pursuant to CEQA Guidelines § 15082, SCWD circulated the NOP directly to public agencies (including the State Clearinghouse Office of Planning and Research), special districts, and members of the public who had requested such notice. The first NOP was distributed on March 14, 2016, with the 30-day public review period concluding on April 12, 2016. Since the original NOP in March 2016, SCWD refined the project through preliminary design and related technical studies. The Amended NOP was issued to notify interested parties of the refinements to the proposed Project, distributed on November 17, 2017, with a 30-day public review period ending on December 18th, 2017. The Amended NOP and NOP comment letters are provided in Appendix 10.2, Notice of Preparation and Scoping Meeting Notice.

During the scoping process, certain environmental issues were identified as having the potential for significant environmental impacts. The following issues identified as “potentially significant impact” in the NOP are addressed in detail in this EIR (see Appendix 10.2, Notice of Preparation and Scoping Meeting Notice):

- | | |
|------------------------------------|-----------------------------------|
| ■ Aesthetics, Light & Glare; | ■ Land Use and Planning; |
| ■ Air Quality; | ■ Noise; |
| ■ Biological Resources; | ■ Public Services; |
| ■ Cultural Resources; | ■ Recreation; |
| ■ Geology and Soils; | ■ Transportation and Traffic |
| ■ Greenhouse Gas Emissions; | ■ Tribal Cultural Resources; and |
| ■ Hazards and Hazardous Materials; | ■ Utilities and Services Systems. |
| ■ Hydrology and Water Quality; | |

² <https://www.epa.gov/dwssa/map-sole-source-aquifer-locations> (accessed May 9, 2018).

³ <https://www.rivers.gov/california.php> (accessed May 9, 2018).



The NOP also noted that cumulative and growth-inducing impacts would be analyzed and that alternatives would be considered. The following issues identified as “no impact” in the NOP are addressed in Section 7.0, Effects Found Not to be Significant:

- Agriculture and Forestry Resources;
- Mineral Resources; and
- Population and Housing.

PUBLIC SCOPING MEETINGS

A notice of a public scoping meeting for the Project was included within the original NOP. A public scoping meeting was held on March 31, 2016, at the Dana Point Community Center located at 34052 Del Obispo Street, Dana Point, California. Although CEQA only requires a single scoping meeting (pursuant to CEQA Guidelines § 15082(c)(1)), SCWD has held separate scoping meetings to solicit input and questions on the Project for three groups: agencies, interested parties, and the public. As summarized further below, each scoping meeting included a PowerPoint presentation followed by an opportunity to ask informal questions or submit written comments. The Environmental Group and Agency scoping meetings included an opportunity for a site visit at Doheny State Beach, the location proposed for the subsurface intake wells. The meeting for the environmental community was held on March 29, 2016, and the meeting for government agencies and interested parties was held on March 30, 2016.

Following revisions to and updated information on the Project, an additional notice of a public scoping meeting for the Project was included with the Amended NOP. A second public scoping meeting was held on December 7, 2017, at the Dana Hills Tennis Center at 24911 Calle De Tennis, Dana Point, California. The first session of the Amended NOP Public Scoping Meeting was held in the afternoon where agencies gathered to discuss the Project. The Amended NOP Public Scoping Meeting occurred in the evening and included a Project update presentation followed by opportunity for public comment, for members of the environmental community, public agencies, as well as interested parties/members of the public to learn about the proposed Project as well as orally present input directly to SCWD, in an effort to assist in further refining the intended scope and focus of the EIR.

A total of 31 comment letters were received in response to the NOP and Amended NOP. The comment letters received during the NOP and Amended NOP comment period; along with Scoping Reports for the NOP and Amended NOP, providing a more detailed summary of the issues raised during the public scoping meetings, are included in Appendix 10.2, Notice of Preparation and Scoping Meetings.

Areas of concern that were identified during the scoping meetings include:

- | | |
|---|---|
| ▪ Project Costs | ▪ Energy/alternatives |
| ▪ Groundwater use/
Groundwater Recovery Facility | ▪ Underground electrical |
| ▪ Flood Hazards | ▪ Transportation |
| ▪ Alternatives | ▪ Regional growth |
| ▪ Beach access/parking | ▪ Air quality |
| ▪ Coastal hazards | ▪ Relationship to other local water supply projects |



- Design impacts on nearby residences
- Recycled Water
- Ocean Water Quality
- Noise Impacts

Native American Consultation

SCWD contacted the Native American Heritage Commission (NAHC) to request a review of the Sacred Lands File (SLF) in February 2016 as part of the project Notice of Preparation. The NAHC responded on March 3, 2016, stating that a search of the SLF was completed for the Project area “with negative results,” meaning no sacred lands were found. The NAHC also included a contact list of four (4) tribal groups or individuals who may have knowledge of cultural resources within the Project area. On March 11, 2016, SCWD consultants mailed letters to each of these contacts requesting any information they may have regarding Native American cultural resources within the Project area. As of the date of this report, SCWD received one response letter from the Juaneno Band of Mission Indians, Acjachemen Nation. AB52 consultation and correspondence (including the aforementioned response letter) is included as [Appendix 10.5.2, AB52 Correspondence](#).

Stakeholder Outreach

In addition to required public notifications under CEQA, SCWD has implemented an extensive, comprehensive and ongoing outreach to Project stakeholders, as summarized below:

- **CEQA Public Scoping** – SCWD has exceeded the CEQA minimum requirement of one public scoping meeting as noted above, with one formal public scoping meeting for the NOP and Amended NOP, as well as additional agency and environmental group scoping meetings for the NOP and an additional agency scoping meeting for the Amended NOP. SCWD provided extensive public notifications for the NOP and Amended NOP as shown in [Appendix 10.2, Notice of Preparation and Scoping Meetings](#).
- **Regulatory Agency Consultation** – SCWD has been consulting with various regulatory agencies on its ocean desalination program since early 2000 when the test slant well was permitted and constructed; refer to Section 3.3. Following the release of the NOP, SCWD has consulted with regulatory permitting agencies regarding the proposed Project, including the following:
 - o Ocean Protection Council (OPC) Interagency Desalination Briefing in May 2016, SCWD provided a Project briefing at an OPC-facilitated briefing to state and federal agencies, held at the OPC offices in Sacramento, CA. A copy of the OPC briefing and agency sign-in sheet is included in [Appendix 10.2.3, OPC Briefing](#).
 - o U.S. Army Corps of Engineers
 - o U.S. Fish and Wildlife Service
 - o NOAA National Marine Fisheries Service
 - o State Water Resources Control Board
 - o San Diego Regional Water Quality Control Board
 - o SWRCB Drinking Water Program
 - o California Coastal Commission
 - o California State Lands Commission



- o California State Parks
 - o California Public Utilities Commission
 - o California Department of Fish and Wildlife
 - o City Dana Point
 - o County of Orange
 - o South Orange County Wastewater Authority
 - o Santa Margarita Water District
 - o San Juan Creek Basin Authority
 - o Southern California Regional Rail Authority
 - o California Department of Transportation (Caltrans)
 - o South Coast Air Quality Management District
- **Stakeholder Consultation** – in addition to regulatory agency consultation, SCWD has been in ongoing communication with the Metropolitan Water District of Orange County (MWDOC) member association and other local interest groups.

2.5 COMPLIANCE WITH CEQA

PUBLIC REVIEW OF DRAFT EIR

The Draft EIR is available to the general public for review at the locations listed below and on SCWD's website at:

http://scwd.org/depts/engineering/projects/water_supply_projects/oceandesal3/default.htm

- | | |
|--|--|
| ▪ South Coast Water District
31592 West Street
Laguna Beach, CA 92651-6907 | ▪ City of Dana Point Planning Department
33282 Street of the Golden Lantern
Dana Point, CA 92629 |
| ▪ City of Dana Point Library
33841 Niguel Road
Dana Point, CA 92629 | |

In accordance with CEQA Guidelines § 15087 and 15105, this Draft EIR will be circulated for a 60-day public review period. The public is invited to comment in writing on the information contained in this document. Interested agencies and members of the public are invited to provide written comments on the Draft EIR and are encouraged to provide information that they believe should be included in the EIR.

Comment letters should be sent to:

Desalination EIR
South Coast Water District
Attn: Mr. Rick Shintaku, PE – Acting General Manager/Chief Engineer
31592 West Street, Laguna Beach, CA 92651
(949) 499-4555



Final EIR

Upon completion of the 60-day Draft EIR public review period, SCWD will evaluate all written comments received during the public review period on the Draft EIR. Pursuant to CEQA Guidelines § 15088, SCWD will prepare written responses to comments raising environmental issues. Pursuant to CEQA Guidelines § 15132 (Contents of Final Environmental Impact Report), the Final EIR will be prepared and will include:

- a) The draft EIR or a revision of the draft;
- b) Comments and recommendations received on the Draft EIR either verbatim or in summary;
- c) A list of persons, organizations, and public agencies commenting on the Draft EIR; and
- d) The Lead Agency's responses to significant environmental points raised in the review and consultation process.

Additionally, pursuant to CEQA Guidelines § 15088 (Evaluation of and Response to Comments), after the Final EIR is completed, SCWD will provide a written proposed response to each public agency on comments made by that public agency at least ten days prior to certifying the EIR.

CERTIFICATION OF THE FINAL EIR

The Draft EIR, as revised by the Final EIR, will be considered by the SCWD Board of Directors (the decision-making body for the Project) for certification, consistent with CEQA Guidelines § 15090, which states:

Prior to approving a project, the lead agency shall certify that:

- 1) *The final EIR has been completed in compliance with CEQA;*
- 2) *The final EIR was presented to the decision-making body of the lead agency, and that the decision-making body reviewed and considered the information contained in the final EIR prior to approving the project; and*
- 3) *The final EIR reflects the lead agency's independent judgment and analysis.*

Regarding the adequacy of an EIR, according to CEQA Guidelines § 15151, "An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure."

PROJECT CONSIDERATION

After certification of the Final EIR, SCWD Board of Directors may consider approval of the proposed Project. A decision to approve the Project would be accompanied by specific, written findings, in accordance with CEQA Guidelines § 15091 and, if necessary, a specific, written statement of overriding considerations, in accordance with CEQA Guidelines § 15093.



2.6 FORMAT OF THE EIR

The purpose of this EIR is to enable SCWD and other responsible and trustee agencies and interested parties to evaluate the environmental impacts of the Project. The purpose of this EIR is to provide environmental review of the Project, such that SCWD will be able to utilize this EIR to satisfy CEQA and CEQA-Plus requirements for Project-related permits or approvals for the Phase I Project (up to five MGD), and to provide programmatic CEQA analysis of a potential future Regional Project of up to 15 MGD.

This Draft EIR is organized into twelve sections:

Section 1.0 Executive Summary, provides a project summary and summary of environmental impacts, and the proposed mitigation measures and alternatives.

Section 2.0 Introduction, provides CEQA compliance information.

Section 3.0 Project Description, provides Project history, as well as the environmental setting, Project characteristics and objectives, phasing, and anticipated permits and approvals that may be required for the Project.

Section 4.0 Environmental Impact Analysis, provides a discussion of the existing conditions for each of the environmental impact areas. This section also describes methodologies for significance determinations, identifies both short-term and long-term environmental impacts of the Project, recommends mitigation measures to reduce the significance of environmental impacts, and identifies any areas of potentially significant and unavoidable impacts. This section includes a discussion of cumulative impacts that could arise as a result of the implementation of the proposed Project.

Section 5.0 Alternatives to the Proposed Project, describes potential Project alternatives, including alternatives considered but rejected from further consideration, the No Project Alternative, various Project Alternatives, and identifies the Environmentally Superior Alternative.

Section 6.0 Other CEQA Considerations, summarizes unavoidable significant impacts, and discusses significant irreversible environmental changes, growth-inducing impacts, and energy conservation, in accordance with CEQA Guidelines Appendix F.

Section 7.0 Effects Found Not to Be Significant, describes potential impacts that have been determined not to be significant throughout the EIR process.

Section 8.0 Consultation and Preparation identifies the CEQA Lead Agency and EIR preparation team, as well as summarizes the EIR consultation process.

Section 9.0 References, identifies informational resources used for the preparation of the EIR.

Section 10.0 Appendices, contains the NOP and DEIR notification documents and Project-specific technical studies.



2.7 RESPONSIBLE AND TRUSTEE AGENCIES

LEAD AGENCY

South Coast Water District (SCWD)

For this Project, SCWD is the lead agency under CEQA and the proponent of the Project. This Draft EIR has been prepared in accordance with PRC § 21000 *et seq.* and the State CEQA Guidelines (CCR § 15000 *et seq.*). CEQA requires lead agencies to consider potential environmental effects that may occur with implementation of a project and to avoid or substantially lessen significant effects to the environment when feasible. When a project may have a significant effect on the environment, the agency with primary responsibility for carrying out or approving the Project (the lead agency) is required to prepare an EIR.

TRUSTEE, RESPONSIBLE, AND COOPERATING AGENCIES

Other federal, state, and local agencies are involved in the review and approval of the proposed project, including trustee and responsible agencies under CEQA. Under CEQA, a trustee agency is a State agency that has jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California. A responsible agency is an agency other than the lead agency that has responsibility for carrying out or approving a project. Responsible and trustee agencies are consulted by the CEQA lead agency to ensure the opportunity for input and also review and comment on the Draft EIR. Responsible agencies also use the CEQA document in their decision-making. Several agencies other than SCWD may require permits, approvals, and/or consultation in order to implement various elements of the Project, as listed in Section 3.7, Anticipated Permits and Approvals Required.

2.8 INCORPORATION BY REFERENCE

Pertinent documents relating to this EIR have been cited in accordance with CEQA Guidelines § 15148, or have been incorporated by reference in accordance with CEQA Guidelines § 15150, which encourages incorporation by reference as a means of reducing redundancy and the length of environmental reports. The following documents are hereby incorporated by reference into this EIR, and are available for review online and at SCWD District headquarters. Information contained within these documents has been utilized for various sections of this EIR.

SCWD 2015 Urban Water Management Plan. The 2015 urban water management plan (UWMP) details how SCWD manages its water supplies and demands under various hydrologic conditions. It also demonstrates how SCWD proposes to meet its service area's retail demands over the next 25 years and provide long-term water reliability. The UWMP describes SCWD's comprehensive program to stretch water supplies through a variety of programs. The UWMP identifies ocean desalination as a key component of a reliable, diverse water supply portfolio. The UWMP was used in this EIR as a source of baseline and forecast data for water demand, supplies, and infrastructure.

Orange County General Plan. The County of Orange adopted the Orange County General Plan in 2005. The General Plan serves as a blueprint for growth and development. The Orange County General Plan primarily focuses on the unincorporated area - territory that is not located within a city - but also addresses regional services and facilities provided by the County such as regional parks, roads, and flood control facilities. As part of its General Plan, the County must include the following seven elements: 1) Land Use; 2) Circulation; 3) Housing; 4) Conservation; 5) Open Space; 6) Noise; and 7) Safety. The County's General Plan also



includes two optional elements: Public Services and Facilities, and Growth Management. The General Plan was used throughout this EIR since it contains information, policies, and regulations relevant to the proposed Project. This document is available for review on the County's website at: <https://www.ocgov.com/gov/pw/cd/planning/generalplan2005.asp>

Dana Point General Plan. The City of Dana Point adopted the comprehensive Dana Point General Plan (General Plan) in 1991. The General Plan constitutes the City's overall plans, goals, and objectives for land use within the City's jurisdiction. The General Plan addresses a broad range of issues relating to the community's physical, economic, and social development. It contains an evaluation of existing conditions and provides the long-term goals and policies necessary to guide growth and development in the direction that the community desires. Through the Goals, Objectives, Policies, and Programs it contains, the General Plan serves as a decision-making tool to guide future growth and development decisions.

The General Plan consists of nine elements:

- Economic Development Element
- Land Use Element (updated 1999)
- Circulation Element (updated 1995)
- Housing Element (updated 2013)
- Conservation/Open Space Element
- Urban Design Element (updated 1995)
- Noise Element
- Public Facilities/Growth Management Element
- Public Safety Element (updated 1995)

The General Plan was used throughout this EIR since it contains Dana Point land use plan, policies, and regulations relevant to the proposed Project. This document is available for review on the City's website at: <http://www.danapoint.org/i-want-to-/general-plan>.

Dana Point General Plan Final Environmental Impact Report (SCH #91021054). Certified June 12, 1991. The Dana Point General Plan Environmental Impact Report (General Plan EIR) analyzed the potential environmental impacts that would result from implementation of the Dana Point General Plan. In consideration of the General Plan Amendments that have occurred subsequent to preparation of the General Plan EIR, buildout of the City is forecast to include up to 2,459 dwelling units, and 35 percent increase in square feet of non-residential land uses. The General Plan EIR was used in this EIR as a source of baseline data and cumulative impacts for buildout of the City.

Dana Point Municipal Code. The Dana Point Municipal Code (DPMC) regulates land use and activities within the City's jurisdiction including, zoning regulations (codified in DPMC Title 9). DPMC Title 9 is the primary tool for implementing the Dana Point General Plan's goals, objectives, and policies. The DPMC is referenced throughout this EIR to establish the Project's baseline requirements according to the City's municipal code regulations.

The DPMC can be accessed online at:

<http://www.danapoint.org/departments/community-development/planning/planning-documents/municipal-code>.

Doheny State Beach General Plan EIR (SCH #2003021146). The Doheny State Beach General Plan was adopted in February 2004. Under law, every State Park in California must develop a general plan. The plan



defines the purpose, vision, and long-term goals and guidelines for the management of the park. The general plan provides a comprehensive framework that guides the park's developments, ongoing management, and public use for the next 20 years or more. The General Plan was used throughout this EIR since it contains land use plan, policies, and regulations relevant to the proposed Project. This document is available for review on the City's website at: https://www.parks.ca.gov/?page_id=22580.

Southern California Association of Governments. The Southern California Association of Governments (SCAG) 2016 Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS) was adopted in April 2016. The RTP/SCS aims to create a long-range vision plan that balances future mobility and housing needs with economic, environmental and public health goals. The RTP/SCS charts a course for closely integrating land use and transportation – so that the region can grow smartly and sustainably. The 2016 RTP/SCS Final EIR (SCH #2015031035) addresses the cumulative impact of future development and associated infrastructure improvements for the SCAG region, which includes Orange County and the City of Dana Point.

The SCAG RTP/SCS can be accessed online at:

<http://scagrtpscs.net/Pages/default.aspx>



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3.0 Project Description

3.1 PROJECT OVERVIEW

South Coast Water District (“SCWD” or the “District”), the project proponent, proposes to develop an ocean water desalination facility in Dana Point, California, at Doheny State Beach and vicinity. The desalination facility would produce up to 15 million gallons per day (MGD) of potable drinking water. The District intends to construct a facility with an initial capacity of up to 5 MGD,¹ with potential for future expansions up to 15 MGD. Both the initial up to 5 MGD and ultimate up to 15 MGD capacities would be available for the District and local water agencies to provide a high quality, locally-controlled, drought-proof water supply. The desalination facility would also provide emergency backup water supplies, should an earthquake, system shutdown, or other event disrupt the delivery of imported water to the area. The Project would consist of a subsurface slant well² intake system, raw (sea) water conveyance to the desalination facility site, a seawater desalination facility, brine disposal through an existing wastewater ocean outfall, solids handling facilities, and potable water delivery to adjacent distribution infrastructure. Project facility locations are shown in [Exhibit 3-1, Regional Vicinity](#).

Project Summary

The Doheny Ocean Desalination Project would consist of the following main components, with each described further below in [Section 3.4, Project Facilities](#).

- **A subsurface water intake system** consisting of subsurface slant wells that draw ocean water from offshore subsurface alluvial material (located below the ocean floor), while providing natural sand bed filtration and eliminating the entrainment and impingement of marine biota. This subsurface intake system is the recommended approach by state and federal regulators, and is consistent with the State Water Resource Control Board’s (State Board or SWRCB) recently adopted Ocean Plan Amendment. The slant wells would be located and fully buried near the beach, in a study area encompassing Doheny State Beach and Capistrano Beach Park (see [Exhibit 3-3, Project Facility Locations](#), [Exhibit 3-4, Southeast Intake Well Study Area](#), and [Exhibit 3-5, Doheny State Beach Intake Well Installation and Staging Area](#). Related Project elements include a small electrical control building (located near the slant well in a disturbed area), and a temporary well development water discharge system, either through connecting to the existing San Juan Creek Ocean Outfall (SJCOO) vault at the DSB campground, or discharging to an existing or new beach diffuser.
- **A raw (ocean) water conveyance pipeline** that would deliver the subsurface intake system’s ocean water to the desalination facility site (see [Exhibit 3-3, Project Facility Locations](#)).

¹ The initial phase, referred to as Phase I, is presently envisioned to be up to a 5 MGD facility. The actual operational capacity may be less depending on final design and other operational considerations. In addition, 5 MGD is the projected average annual daily production, with actual daily production varying by an estimated 10%, up to 5.5 MGD (to account for down time), with annual production averaging no more than 5MGD.

² The project utilizes state-of-the-art “slant well” technology, which draws ocean water from perforated intake wells installed under the ocean floor. Slant wells are similar to traditional vertical groundwater wells, except that they are made of high-grade non-corrosive steel and are angled to extend diagonally from their launching point (an onshore below-grade “vault”) to underneath the ocean. The slant well design is described in greater detail in [Section 3.4](#) below and in [Appendix 10.1, Preliminary Design Report](#).



- **A desalination facility** that would receive ocean feedwater at up to approximately 10 to 30 MGD, with a recovery rate of ~50% resulting in up to 5 to 15 MGD of potable drinking water (for the Phase I and Regional Project, respectively). The proposed desalination facility is located on the District's existing San Juan Creek Property, on an industrial site located away from the beach but in close proximity to the subsurface intake wells. This facility siting is also consistent with state and federal regulator preference to minimize desalination facilities on the coast while being close enough to avoid lengthy raw water and brine conveyance pipelines. The desalination facility includes a variety of typical desalination process equipment and appurtenant facilities, such as pretreatment, seawater reverse osmosis (SWRO) membranes, an energy recovery system, post-treatment conditioning, solids handling and disposal, product water storage, electrical equipment, staff facilities, and connections to off-site brine disposal, sanitary sewer, and product water conveyance facilities. It is assumed there will be a utility power connection required; however the District is also evaluating the feasibility of supplementing or replacing that supply with an alternative energy source. The desalination facility will include solar photovoltaic panels on flat rooftops where practical. Other alternative energy sources being evaluated include natural-gas turbines and fuel cells to maximize efficiency and minimize energy cost (see [Exhibits 3-6 to 3-9](#)).
- **A concentrate (brine) disposal system** that would utilize the existing SJCOO, to return brine and treated process waste streams to the ocean with negligible impact on coastal and marine water quality. SJCOO is owned by South Orange County Wastewater Authority (SOCWA), with which the District is a member agency. This would be achieved in part through blending in the outfall pipe with the existing wastewater stream from the J.B. Latham Wastewater Treatment Plant, and other regional treatment plants. Mixing desalination brine with existing wastewater treatment plant flow (a "comingled discharge") is the preferred method by state and federal regulators and is consistent with the State Board's Ocean Plan Amendment.
- **A product water storage tank and distribution system** that would feed into the District's local distribution system and, depending on plant capacity and District demands, other adjacent local and regional transmission pipelines that are located adjacent to the site. Desalinated product water from the Phase I project could be conveyed entirely using existing District and local infrastructure with no off-site improvements other than a short connection to the District's existing local transmission lines.
- **All appurtenant facilities** (e.g., pump stations, valves, and metering) as well as all construction, operation and maintenance activities associated with all project facilities.
- **Offsite Electrical Transmission Facilities** provided by San Diego Gas & Electric Company (SDG&E). At this time, SDG&E has indicated that electrical service can be provided to the Phase I project using existing facilities, with a short connection from the desalination site to underground electrical lines in Stonehill Drive.

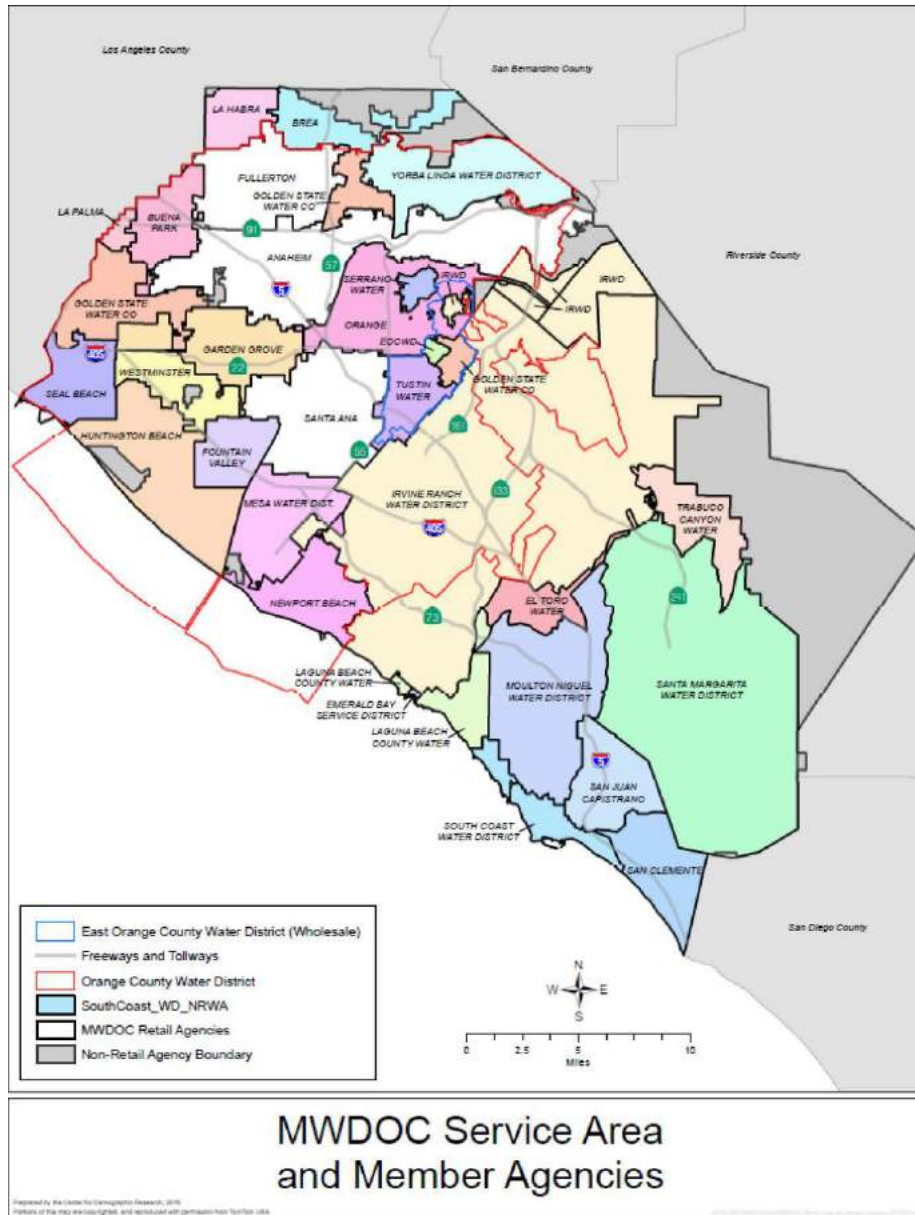
South Coast Water District Background

SCWD is a public agency formed in 1932 and provides potable water, recycled water for irrigation, and sanitary sewer services to approximately 40,000 residents, 1,000 businesses, and 2 million visitors per year in south coastal Orange County, California. The District is a member agency of Municipal Water



District of Orange County (MWD OC) and is located in MWD OC's southern service area. The District serves the communities of Dana Point, South Laguna, and areas of San Clemente and San Juan Capistrano (see Figure 3-1, MWD OC Service Area Boundaries below, and Exhibit 3-2, SCWD Service Boundary).

Figure 3-1: MWD OC Service Area Boundaries



The District is committed to developing a balanced water supply portfolio that provides high quality and reliable water to its customers. Through decades of careful planning and stewardship, the District continues to strengthen its water supply portfolio, with significant investments made over the years in the areas of water conservation, recycled water, groundwater recovery, and water system loss control. Refer to the District's 2015 Urban Water Management Plan and [Section 4.15, Utilities](#) for additional details regarding existing and planned future water supplies and related facilities.



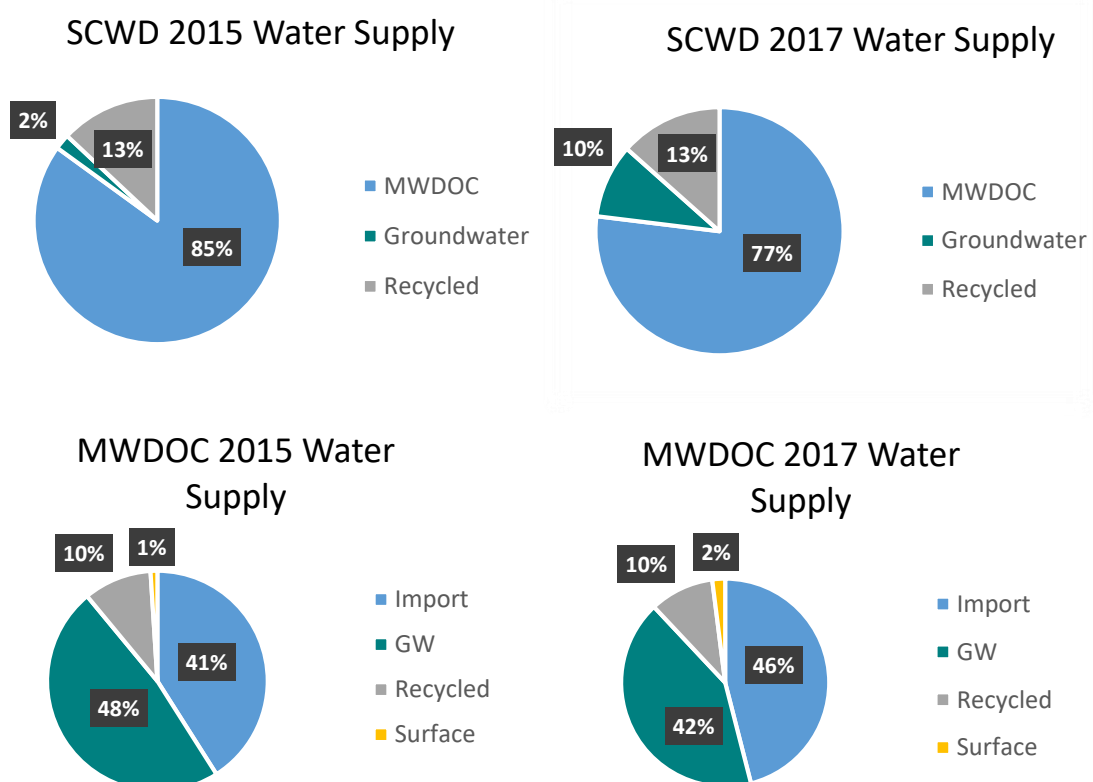
Section 3.0

Project Description

- The District has reduced water use by 22 percent in calendar year 2017 and currently experiences less than 2 percent water system losses. The District has also implemented an Automated Meter Reading (AMR) Leak Detection Program and Landscape Efficiency Program.
- The District has invested in the Aliso Creek Runoff Recovery & Reuse Project to enhance its water recycling program and is currently expanding its network of recycled water distribution piping. The current recycled water expansion program will result in 100 percent build-out of available recycled water.
- The District owns and operates a Groundwater Recovery Facility utilizing a Reverse Osmosis (RO) system to treat brackish water to drinking water standards. This facility was shut down for more than two years from September 2014 due to groundwater basin stress related to the drought, but is currently operational (the GRF produced approximately 62.81 AF in February 2018, which is well below its maximum production capacity of 1,300 AFY).³

Despite significant efforts toward creating a balanced water supply portfolio, the District is currently relying on imported water for approximately 85-100 percent of its water supply needs, as summarized below in Figure 3-2, MWDOC and SCWD Current Water Supply Portfolios.

Figure 3-2: MWDOC and SCWD Current Water Supply Portfolios



2015 data from respective UWMP; 2017 data is from MWDOC and District data per email dated April 30, 2018.

³ SCWD Board of Directors Meeting, April 26, 2018, Agenda Item 8.



3.2 PROJECT GOALS AND OBJECTIVES

Doheny Ocean Desalination Project Objectives

- To create a drought-proof, hydrologically independent, reliable and high-quality source of potable drinking water for the District.
- To further diversify the District's water supply portfolio through a locally-controlled supply, combining conservation, recycling and local supplies to reduce dependence on imported water supplies.
- To provide emergency backup water supplies, should an earthquake, system shutdown, or other event disrupt the delivery of imported water to the south Orange County area.

Need for the Project

The need for the Project was recognized over a decade ago in the 2004 South Orange County Reliability Study, published by MWDOC. This study highlighted the vulnerability of South Orange County to prolonged interruptions of imported water deliveries, and was prompted in part by the December 13, 1999 failure of the Allen-McColloch Pipeline (AMP), which interrupted imported water delivery to various South County communities and took eight days to repair. A desalination facility in Dana Point was one of the recommendations in the study to improve regional reliability. The location in Dana Point was favorable due to the geology, availability of land, existing outfall for brine disposal, and proximity to existing large diameter potable water transmission pipelines. Since that time, the concern over reliable supply of imported water to South Orange County has increased. The State of California experienced a record multi-year drought, and recent State mandates for conservation coupled with restrictions on imported water allocations from Metropolitan Water District of Southern California (MWD) highlight the region's vulnerability even further. The SCWD service area, located at the southerly end of MWDOC's imported water delivery system, is particularly vulnerable to water supply interruptions from maintenance or repair to regional water importation infrastructure, such as may occur due to a major seismic event. MWD has cited the water supply system vulnerability to major earthquakes, which affect virtually all regional water importation pipelines, as represented in the graphic below, Figure 3-3, Seismic Risk to Imported Water System.

SCWD Water Supply Reliability Study (December 2017 Final Report)⁴

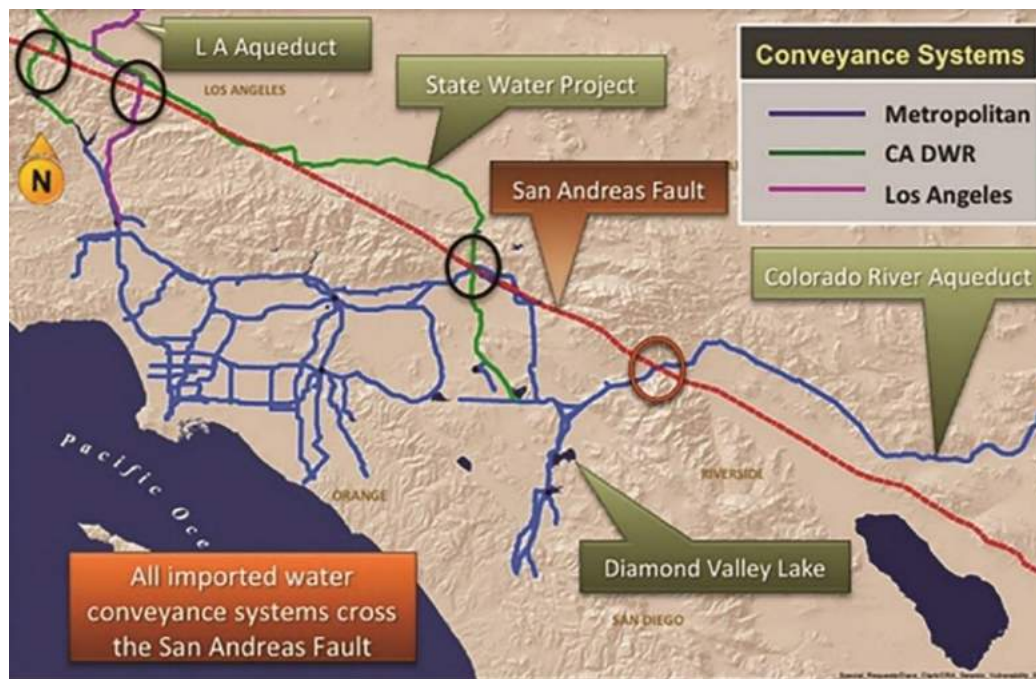
The District completed a comprehensive water supply reliability study in December 2017, building off of prior regional water supply reliability studies conducted by the District and MWDOC. The study, conducted by CDM Smith, has the following findings:

- A projected 3.9 MGD water system gap based on a 60-day outage of MWD supplies;
- An estimated potable water supply gap of up to 3,600 acre-feet per year (AFY), depending on Colorado River Aqueduct supplies and other variables; and

⁴ Presentation to the SCWD Board of Directors, May 25, 2017, and August 2, 2017, accessed on December 20 2017 at https://www.scwd.org/services/drinking/supply/water_reliability/presentations.htm. The draft report has since been published, dated December 21, 2017, and is available on the District's website at <https://www.scwd.org/civicax/filebank/blobdload.aspx?blobid=8044>.



Figure 3-3: Seismic Risk to Imported Water System



- Projected year 2040 potable water demand increase to 6,940 AFY (an increase of 645 AFY to allow for 90% demand “bounce-back” and climate change).

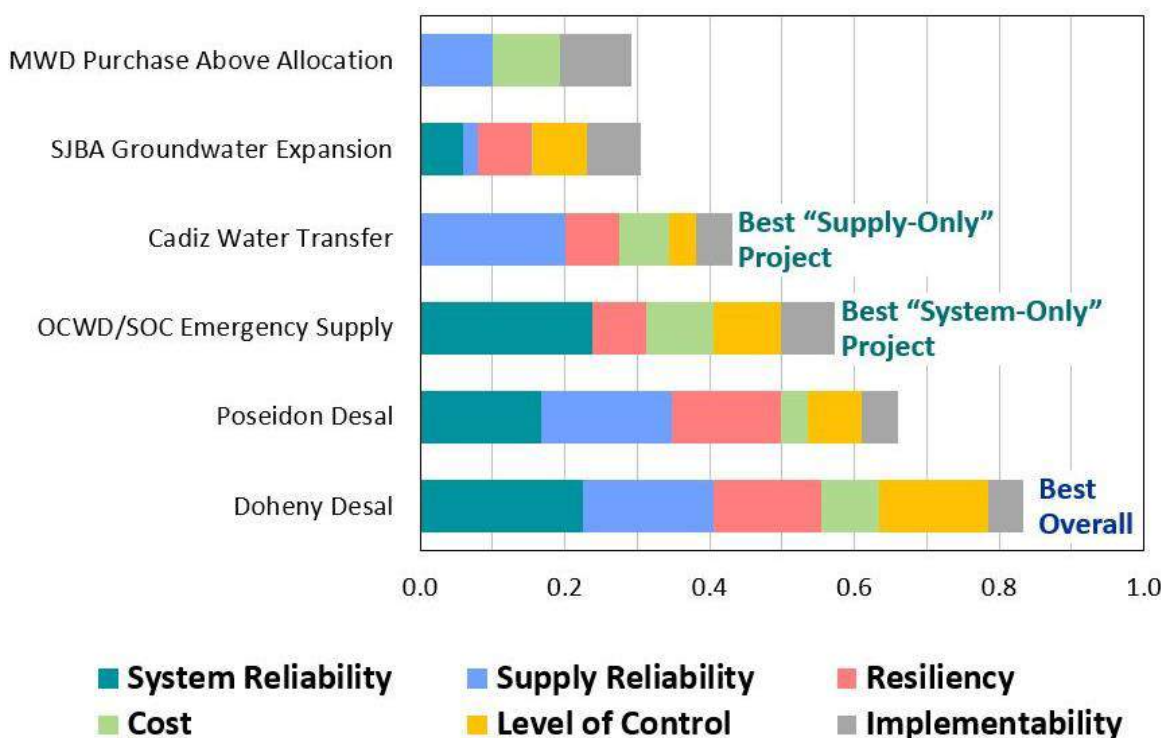
The report also indicates that the Doheny Ocean Desalination Project ranks well above all other available water supply options for the District, for the following reasons:

- 1) As an individual Project, Doheny Desalination ranks first by high margins, due to the following benefits (see [Figure 3-4](#) below):
 - a. High system and supply reliability benefits due to hydrologic cycle independence and climate change resilience;
 - b. High resiliency to unknowns (climate change; reductions in imported water supply; increased regulations or reduced access to imported water supplies);
 - c. High level of local control over operations and cost; and
 - d. Moderate implementation risks and moderate cost-effectiveness.
- 2) Poseidon Huntington Beach Desalination, the only other project that provides similar system and supply reliability benefits, ranks a distant second due to lower overall reliability, higher cost of water, and no local control by the District.



- 3) When the top-ranked “system-only” project (OCWD/SOC emergency supply)⁵ and “supply-only” project (Cadiz)⁶ are combined and compared to the Doheny Ocean Desalination Project on a net present value basis, Phase I of the Doheny Ocean Desalination Project is less expensive by \$11 million.

Figure 3-4: Ranking of Individual Supply Options



Source: SCWD Water Supply Reliability, August 22, 2017 Presentation to SCWD Board of Directors.

Due to the extraordinary need for water supply diversification and the Doheny Ocean Desalination Project consistently being determined as the best water supply option, the District is pursuing the Project to provide a drought-proof water supply independent from vulnerable imported water supplies. The Phase I project will provide the District with up to 5 MGD of desalinated water supply (roughly 40-70% of its total supply). Together with the recycled water and groundwater, this equates to providing the District with approximately 92% of its water supply through local, reliable sources. The resultant future water supply portfolios are reflected in Table 3-1, SCWD Current and Future Water Supply Portfolio (AFY), and Figure 3-5, SCWD Future Water Supply Portfolio below.

Having a reliable diverse water supply portfolio will provide SCWD and its customers with water security in the face of numerous future water uncertainties. Additionally, as a coastal agency, SCWD has the option to evaluate ocean water desalination as a potential water supply, something many other agencies do not have the opportunity to do.

⁵ The OCWD/SOC emergency water supply project would pump groundwater from the Orange County groundwater basin, only during emergencies, and would not be a year-round supply option for drought, and would provide less local control by the District.

⁶ The Cadiz water supply project (<http://www.cadizwaterproject.com/>) would pump groundwater from the Cadiz basin (east of 29 Palms), transporting the water through conveyance lines to the Colorado River Aqueduct for delivery to Southern California agencies such as the District.



The Phase I Project would also provide the District with the opportunity to meet emergency water demands from other local water agencies, as well as baseload water supply, subject to consistency with applicable Urban Water Management Plans.

Table 3-1: SCWD Current and Future Water Supply Portfolio (AFY)

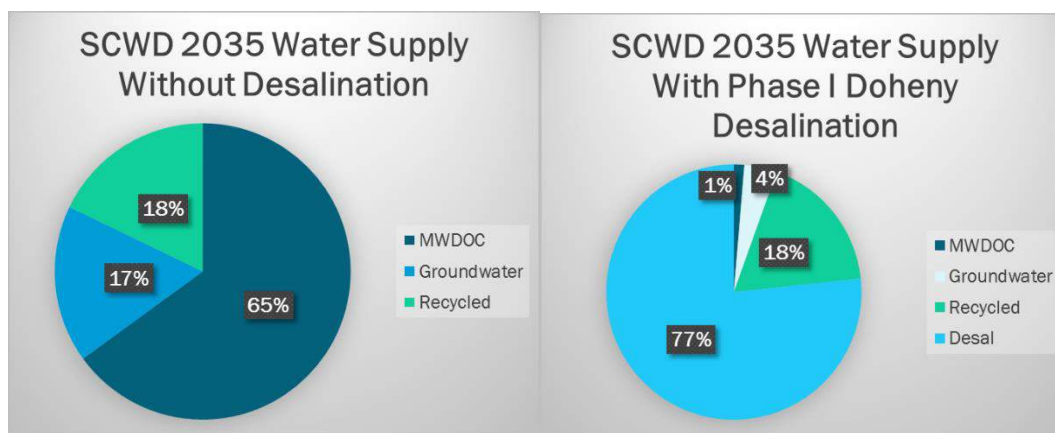
Supply Source	2015	2035 No Desal	2035 With Desal
MWDOC	5,737	4,919	585
Groundwater Recovery Facility	0 ¹	1,300 ²	314 ²
Recycled Water	859	1,350	1,350
Seawater Desalination	-	-	5,320 ³
Total Supply	6,596	7,569	7,569

NOTES:

- The District's Groundwater Recovery Facility (GRF) was not producing potable water due unfavorable conditions in the San Juan Groundwater Basin between October 2014 and February 2017. Current GRF capacity of 1,040 AFY is estimated at 1,440 AFY with added well capacity from GRF wellhead #2. Note, in the 2015 SCWD UWMP, the total groundwater extracted is 178 AF. This value represents amount extracted from Fiscal Year 2014-2015. This table reflects calendar 2015 extraction. Therefore the 178 AF is not included in the summary.
- Excess GRF capacity could be used for San Juan Basin Authority basin restoration or for other agencies.
- 5 MGD at 95% utilization.

Source: South Coast Water District, 2015 Urban Water Management Plan.

Figure 3-5: SCWD Future Water Supply Portfolio – with and without Desalination (AFY)



Source: SCWD 2015 UWMP

3.3 PROJECT HISTORY

The Doheny Ocean Desalination Project has been studied for over 15 years, with extensive prior feasibility studies, technical studies, and a successfully installed and operated test slant well. The following represents a partial summary of prior studies for the project (which has also been referred to in the past as the South Orange County Ocean Desalination Project):⁷

⁷ Additional prior technical reference documents are available at the District's website at http://www.scwd.org/depts/engineering/projects/water_supply_projects/oceandesal3/default.htm and MWDOC's SOCOD website at <https://www.mwdoc.com/your-water/water-supply/local-water-supply/ocean-desalination/doheny-desalination-project/>.



Early Feasibility Studies by Boyle Engineering (2003-2008)

Several major studies were completed by MWDOC from 2003 to 2008 that continued the advancement of the Doheny Ocean Desalination Project, including the following:

- MWDOC Ocean Desalination Feasibility Study – Boyle Engineering, 2003
- Comprehensive Hydrogeology Study (Phase 1, 2A and 2B) - Geoscience, 2005-2008
- Assessment of Power Options Technical Memorandum (TM) and Engineering Study for Electric Services at the Dana Point Ocean Desalination Plant – MRW, 2006
- Dana Point Ocean Desalination Project – Engineering Feasibility Report - Boyle Engineering, 2007

Site Identification

The 2003 study initially focused on three sites:

- 1) Huntington Beach – At the site of the power plant owned by AES Corporation.
- 2) San Juan Creek – Near the mouth of San Juan Creek in Dana Point.
- 3) San Onofre – At the San Onofre Nuclear Generating Station (SONGS), which is now out of service and planned for decommissioning.

Because of the primary focus to meet the needs of south Orange County and because the Huntington Beach site was already being pursued separately by Poseidon Resources (a private applicant) for the development of a 50 MGD desalination plant, the selection of a site for this project was then reduced to either San Juan Creek or San Onofre site.

While there were some benefits to the San Onofre site and the preliminary cost comparison was approximately equivalent, ultimately MWDOC moved forward with San Juan Creek location in Dana Point. Reasons for this included the potentially significant political/public perception issues with locating a potable water facility near a nuclear power facility and that while SCWD owns the site in Dana Point, the San Onofre site would need to be leased from the Marine Corps.

Subsurface Intake Wells

The 2003 study also evaluated various subsurface intake designs. The following two main conclusions were drawn from the comparison of a linear intake array versus a clustered array, and a centralized pumping facility configuration versus a submersible well pump configuration:

- The clustered array intake system is favorable over the linear array primarily due to less construction effort and cost for the clustered array.
- The submersible well pump configuration is favorable over the centralized pumping facility configuration due to relative construction costs, construction duration, and potential limitations in flow capacity with the centralized pumping facility.

Therefore, the conclusion was that the best option for the slant well intake system is a clustered array with submersible well pumps.



Raw Water Conveyance Alignment

In the 2007 study Boyle Engineering put forth several conveyance pipeline alternatives based on a raw water intake of 30 MGD (the ocean water volume needed to produce 15 MGD of drinking water) which have since been re-evaluated and are presented in the Preliminary Design Report (PDR) ([Appendix 10.1](#)) and [Section 3.4](#), below.

Desalination Facility

The 2007 study presented recommendations for desalination processes based on likely seawater quality characteristics and treated water quality. The study envisioned a 15 MGD capacity Seawater RO system designed per industry standards at the time.

Brine Disposal System

The 2007 study included a review of blending the RO concentrate with wastewater in the existing SJCOO, owned by the SOCWA of which the District is a member. The analysis looked at flow conditions relative to the rated outfall capacity of 85 MGD, and indicated that there appears to be sufficient capacity to handle the proposed 15 MGD of RO concentrate.

Environmental Work: Slant Well Intake Impacts on Benthic Organisms (2010)

Concern over the impact of a subsurface intake system on benthic (ocean floor) organisms and the entrainment and impingement of small floating microorganisms on the ocean floor has been voiced by various California agencies. As a result, a set of technical memorandums (TM) were developed, one by Dr. Scott Jenkins, an expert in physical oceanography at the Scripps Institution of Oceanography, and the other by Geoscience, collectively labeled “Evaluation of Potential Impacts to Marine Life by Slant Wells, 2010.”

Dr. Jenkins evaluated the potential for seabed erosion and micro-organism impingement on the seabed due to infiltration rates and pressure gradients induced by the slant well field at Doheny State Beach. The calculations were based on infiltration rates and seabed pressure gradients modeled by Geoscience. While the modeled infiltration rates were found to increase net bottom shear stress by no more than 1% at the onset of erosion, this value is considered statistically insignificant as it is nine times smaller than the error implicit in the net shear stress increases determined under controlled laboratory conditions. Even then, whatever sediment transport is attributable to this 1% increase in bottom stress is both limited to the immediate vicinity of the slant well intake and is insignificant in comparison to naturally occurring seasonal beach profile variation and storm-induced erosion. Force balance calculations show that the ocean would have to become perfectly quiescent in order for neutrally buoyant, freely drifting micro-organisms to become impinged or trapped on the seabed by the vertical pressure gradient induced by the slant well field. Such a quiescent wave climate has never been measured or observed at this site. Therefore, Dr. Jenkins’ report concluded the potential impacts of subsurface slant wells to seabed erosion and benthic micro-organisms would be less than significant.

The second TM by Geoscience found that the vertical infiltration rate of ocean water migrating downward through the seafloor during slant wellfield operation is quite low, at approximately 0.000051 feet per second (fps) in the immediate vicinity overlying the wellfield and 0.00000078 fps at the outer limits of the ocean water source area. This slow rate of infiltration would be imperceptible to benthic organisms, which



routinely experience much greater currents and wave surge in the active wave climate offshore Doheny Beach.

Taken together, the Jenkins' study and GeoScience study indicate that subsurface slant well intake operations do not significantly impact the benthic marine environment.

Recent Design Work and Investigation (2012-2016)

The following technical studies were completed more recently, building on and refining the earlier investigations and findings:

- Phase 3 [Test Slant Well] Extended Pumping and Pilot Plant Report – SPI, 2013
- Task 1_Advancement of Slant Well Technology – Geoscience, 2015
- Task 3_Prediction of Coastal Flow and Groundwater Quality – Geoscience, 2015
- Task 4_Modeling of Slant Well Feedwater Supply – Geoscience, 2016
- TM 1_Final Assessment of Slant Well Down Hole Technology – Carollo, 2015
- TM 2_Full Scale Slant Well Siting on Beaches – Carollo, 2015
- TM 3_Conceptual Design – Carollo, 2015
- Preliminary Geotechnical and Coastal Processes Study – Ninyo & Moore, 2015

Phase 3 [Test Slant Well] Extended Pumping and Pilot Plant Report (2013)

Phase 3 of the hydrogeological investigation conducted by Geoscience involved extended pumping of the test slant well. This work included the installation of a submersible pump, vault with control valves, a diffuser for surf zone discharge of the pumped water, conveyance lines to and from a Mobile Test Facility (MTF), and electrical service. Separation Processes, Inc. (SPI) was the contractor selected to do the operations, testing and evaluation (OTE) work. This entailed evaluation of pump, well, and aquifer performance, evaluation of corrosion and microbial fouling potential, and iron and manganese pretreatment pilot testing.

The initial test slant well operated during a 21-month period from June 2010 to April 2012 and produced approximately 3 MGD with relatively stable drawdowns. The well extended 350 feet out under the ocean into alluvium at an angle of 23 degrees from horizontal. 120 gallons per minute (gpm) of marine aquifer water was fed to the MTF, where SPI primarily conducted their analyses, sampling and treatment process testing. The majority of the test slant well's flow was diverted directly to a surface discharge at a nearby rock jetty. The MTF streams were recombined with the balance of well flow prior to discharge. Conclusions and lessons learned for the test slant well were developed by Geoscience and are presented below. Geoscience has a continuing role in the Project to ensure the lessons and conclusions are incorporated into the design and construction of the Project slant wells:

- An experienced "Team" is necessary, especially for the unforeseen issues that arise in all aspects of construction. Senior experienced hydrogeologists, engineers and drilling personnel, in the field as well as experienced supervisors, along with field inspection personnel and the casing, screen manufacturer all need to be available on a moment's notice to collaborate and come to a consensus on how to approach issues which need to be addressed. Tried and true vertical water



well technology for well design, artificial filter packing, construction, and testing can be modified for near-horizontal wells with equal success.

- The dual rotary method of drilling is a proven technique for construction of an artificial filter packed slant well beneath the ocean floor. Telescoping is critical if proper development is to take place with a larger pump house casing.
- Artificial filter packing the near-horizontal well is more challenging than vertical wells and creative methods must be adapted to ensure proper filter pack placement and development of the near-well zone.
- Well logging of a slant well requires special tools and methods for successful logging. Procedures require the fabrication of special tools and cradles which can be pushed or pulled and that do not rely on gravity.
- Slant wells can be pumped at high capacities using submersible pumps placed on an angle and centered within the pump house chamber.
- The maximum length and diameter of an artificially filter packed subsurface slant well for desalination supply is only a function of the final temporary casing diameter in a telescoped well. Slant well lengths of greater than 1,000 ft are possible. (The Monterey Test Slant Well was completed at a total well length of 720 ft.). The Project slant wells would vary in length up to 1,000 feet, as described further below in [Section 3.4](#).
- A feasible design for a high capacity 1,000 ft slant well would include a blank 18- or 20-inch pump house casing with a 12- to 14-inch ID well screen. The inclination and azimuth angles for angled wells can be varied as required to minimize interference.
- Analysis of pumping test data for slant wells is best accomplished by using a three-dimensional groundwater flow model. The most accurate results employ “forward simulation” which consists of varying aquifer parameters until measured pumping test and modeled water levels are in close agreement.
- Values for total iron and total manganese followed an initial upward trend for several months before leveling out. The concentrations represented values much higher than found in typical seawater. Further geotechnical work has indicated this is due to a pocket of “old marine groundwater.” Modeling has indicated the project will be replaced by ocean water over several months or years with slant well pumping. These findings underline the potential need for iron and manganese pretreatment at the Plant, discussed in [Section 3.4](#) and in the Preliminary Design Report ([Appendix 10.1](#)).

Foundational Action Funding Program (FAFP)

A series of TMs were developed by Geoscience, Carollo Engineering, and Ninyo & Moore (as a subcontractor to Carollo) as part of the MWD Foundational Action Funding Program (FAFP) – Overcoming Barriers to Slant Well Seawater Desalination. These TMs provided additional study related to updating the groundwater model developed by Geoscience in earlier work, providing a more in-depth geotechnical study and coastal processes evaluation, and also further development on various engineering aspects of



slant well intakes and the Project. These TMs were delivered over the course of 2015, with Geoscience’s final TM, Task 4 Modeling of Slant Well Feed Water Supply, completed in March 2016.⁸

The focus of Geoscience’s groundwater model, referred to as the San Juan Basin Model, or “SJB Model,” is to simulate and understand full-scale slant well impacts and mitigation scenarios, including the prediction of the amount of coastal/ocean groundwater flow, feedwater quality produced over time from the slant well system and drawdown effects. The work completed by Geoscience for the FAFP has been amended by more recent geophysical surveys, as well as updated assumptions for the potential desalination facility design and intake requirements.

Geoscience Model Update TM (2017)

Geoscience completed an update of the SJB Model in December 2017 using results from additional offshore geophysical survey and geophysical survey of a potential additional seawater intake location at Capistrano Beach Park, southeast of Doheny Beach. The models were rerun and were verified to be consistent with the results from previous model calibration. Five predictive model scenarios were run to predict impacts under various conditions. The results indicated that pumping from wells on Capistrano Beach Park would have no impact on the SJB. Model-simulated impacts on ocean water intrusion, shallow aquifer water levels, and lagoon levels are summarized in Table 3-2, Summary of Predictive Scenario Basin Impacts, below.

Table 3-2: Summary of Predictive Scenario Basin Impacts

Model Run	Impact on Ocean Water Intrusion	Impact on Shallow Aquifer	Impact on Lagoon Level
Scenario 1 (Project Pumping of 10 MGD from Doheny Beach)	Stops Further Ocean Water Intrusion	-10.46 to -13.96 ft	-0.14 to -0.26 ft
Scenario 2 (Project Pumping of 10 MGD from Capistrano Beach Park)	None	None	None
Scenario 3 (Project Pumping of 30 MGD – 20 from Doheny Beach, 10 from Capistrano Beach Park)	Stops Further Ocean Water Intrusion	-21.84 to -26.64 ft	-0.16 to -0.85 ft

Source: Geoscience, Model Update and Refinement Using Results from Onshore and Offshore Geophysical Surveys and Exploratory Borehole Data, December 2017

As shown in Table 3-3 below, the percentage of ocean water in the feedwater from wells at Doheny Beach will average approximately 93.4 percent under Scenarios 1 and 3. Wells at Capistrano Beach Park are expected to produce feedwater with an Ocean Water Percentage of 100 percent after a short period due to the limited presence of onshore infiltration of freshwater. The time for TDS in the slant well feedwater to reach 30,000 mg/L (approaching ocean salinity of 35,000 mg/L) is 10 months for the Phase 1 Project

⁸ These reports can be found on South Coast Water District’s website, here:
http://scwd.org/depts/engineering/projects/water_supply_projects/oceandesal3/technical_library/foundational_actions_funding_progrm_study.htm.



and 12 months for the Regional Project. To reach full equilibrium is approximately 4 years at Doheny Beach wells and a matter of days at Capistrano Beach Park wells.

Table 3-3: Summary of Predictive Scenario Feedwater Quality

Model Run	Doheny Beach		Capistrano Beach Park	
	Percentage of Ocean Water	Time for TDS for Stabilize	Percentage of Ocean Water	Time for TDS for Stabilize
Scenario 1 (Project Pumping of 10 MGD from Doheny Beach Park)	93.4%	10 months ⁹	-	-
Scenario 2 (Project Pumping of 10 MGD from Capistrano Beach Park)	-	-	100%	days
Scenario 3 (Project Pumping of 30 MGD – 20 from Doheny Beach, 10 from Capistrano Beach Park)	93.4%	12 months	100%	days

Source: Geoscience, Model Update and Refinement Using Results from Onshore and Offshore Geophysical Surveys and Exploratory Borehole Data, December 2017

3.4 PROJECT FACILITIES

The Doheny Ocean Desalination Project would consist of the following main components: a subsurface water intake system, a raw (ocean) water conveyance pipeline, a desalination facility, a concentrate (brine) disposal system, a product water storage tank and distribution system, appurtenant facilities, and Offsite Electrical Transmission Facilities. The Doheny Ocean Desalination Project is anticipated to be developed in two or more phases. Phase I would have a capacity of up to five (5) MGD of potable water, and the Regional Project would have a capacity of up to 15 MGD. At this time, the District is only pursuing approvals for the Phase I project, as there are currently no regional partners identified for the Regional Project. Accordingly, this EIR evaluates the Phase I Project at a “project-level” for final CEQA review for use by Responsible and Trustee agencies in the project’s future permit and approval process. The Regional Project (up to 15 MGD) is evaluated at a “programmatic” level pursuant to CEQA, although construction approvals are not being sought at this time and the District will complete additional CEQA review and associated regulatory approvals for any capacity above 5 MGD. The Regional Project is discussed further in [Section 3.5](#) below. A detailed description of proposed facilities is provided in [Appendix 10.1, Preliminary Design Report](#).

The Doheny Ocean Desalination Project would consist of the following main components, with the location of each shown in [Exhibit 3-3, Project Facility Locations](#), [Exhibit 3-4, Southeast Intake Well Study Area](#), [Exhibit 3-5, Doheny State Beach Intake Well Installation and Staging Area](#), [Exhibit 3-6, Desalination Facility-Conceptual Site Plan](#), [Exhibit 3-7, Desalination Facility-Easements](#), [Exhibit 3-8, Desalination Facility-Construction Area](#), and [Exhibit 3-9, Desalination Facility-Water Lines](#).

⁹ [Appendix 10.10.1](#), Figures 9 and 10 show that slant well salinity levels reach 30,000 mg/L after 10 months of pumping for the Phase I Project and one year of pumping for the Regional Project.



Project Site

The project is located in the City of Dana Point, a coastal community in southern Orange County, situated approximately three miles southwest of San Juan Capistrano and six miles northwest of San Clemente. Subsurface intake wells are located within the City of Dana Point, at Doheny State Beach and at Capistrano Beach Park. The desalination facility is located on a parcel owned by the District, less than a quarter mile north of Doheny State Beach (see Exhibit 3-3, Project Facility Locations). Conveyance facilities are located in the City of Dana Point, potentially on either side of San Juan Creek depending on the subsurface intake well location (see discussion below). The SJCOO is located adjacent to the desalination site and terminates approximately 10,550 feet offshore south of Dana Point Harbor, with an existing diffuser discharging approximately 94.5 to 97.5 feet below mean sea level.¹⁰ Table 3-4, Surrounding Land Uses and Setting, below, shows surrounding land uses around each major project component.

For the desalination facility site, the District originally identified two potential sites on San Juan Creek Property, referred to as the north site and the south site, divided by the existing drainage facility L01S02. In consideration of more favorable proximity to the proposed subsurface intake wells and SJCOO connection, the south site is the preferred site by the District and is the site assumed in this EIR for the Phase I project. The desalination facility property is bounded by drainage facility L01S02 to the north, San Juan Creek to the west, Pacific Coast Highway to the south, and the SCRRA (Southern California Regional Rail Authority) railroad to the east.

The subsurface intake wells, desalination facility site and portions of the conveyance lines are within the California Coastal Zone, under the jurisdiction of the City of Dana Point and its Local Coastal Program (LCP). Although much of the project's coastal facilities are within the City of Dana Point's LCP authority, the project's facilities in the Coastal Zone are also appealable to the California Coastal Commission (CCC). The CCC also has original permit jurisdiction over project facilities that extend into the ocean beyond the mean high tide, including the subsurface intake wells and use of the SJCOO. The portion of the slant wells that extend through the shoreline and offshore beneath the Pacific Ocean, and the discharge area at the end of the outfall, is also within the jurisdiction of the California State Lands Commission.

3.4.1 DESIGN ASSUMPTIONS

Production Capacity/Project Phasing

The District is proposing a Phase I Local Project at up to 5 MGD, based upon water supply reliability studies and the project goals and objectives to create a hydrologically independent, drought-proof, locally-controlled high-quality water supply that is both cost-effective and environmentally sound. The May 2017 Water Supply Reliability Study presentation indicated a recommended minimum desalination facility capacity of 3.9 MGD based on certain imported water supply system reliability issues.¹¹ The District desires up to 5 MGD for the Phase I project, for further reliability and local water security, given the projected favorable costs (in comparison to other water supply alternatives) and environmentally benign effects.

¹⁰ San Juan Creek Outfall Junction Structure Rehabilitation – Technical Memorandum, SOCWA, April 2014, Page 1-1.

¹¹ The Water Supply Reliability Study has since been published and is available on the District's website - <https://www.scwd.org/civicax/filebank/blobdload.aspx?blobid=8044>.



Table 3-4: Surrounding Land Uses and Setting

Location	Land Use Designation	Existing Land Use
Desalination Facility Site	Industrial / Business Park Community Facility	Boat, Auto and RV Parking Lots Misc. tenant storage lots
North	Industrial / Business Park	Stockpile (dirt mound) Misc. tenant storage lots
South	Visitor / Recreation Center Recreation / Open Space	DoubleTree Hotel Pacific Coast Highway
East	Community Commercial	Commercial/Office Uses SCRRA Rail Line
West	Recreation / Open Space	San Juan Creek
Subsurface Intake Wells	Recreation / Open Space	Doheny State Beach Park Capistrano Beach Park
Conveyance Lines	Various	Various
SJCOO	N/A (Pacific Ocean)	Pacific Ocean

The Preliminary Design Report ([Appendix 10.1](#)) evaluates three desalination capacity increments, of 5 MGD, 10 MGD, and 15 MGD. However, the EIR focuses on the 5 MGD¹² Local Project for a project-level construction analysis, and 15 MGD as the upper range of a potential future Regional Project. The associated technical studies (particularly groundwater modeling and brine discharge) evaluated intermediate capacities to verify that there would not be new or more significant impacts at some intermediate capacity such as 7.5 MGD or 10 MGD. Therefore, the product water capacities evaluated in this EIR are as follows:

- **Phase 1 Local Project:** Up to 5 MGD, which equates to up to approximately 3,192-AFY at 95% utilization.
- **Regional Project:** Up to 15 MGD, or approximately 15,960 AFY at 95% utilization.

Certain pieces of common infrastructure for the Phase I project could be initially sized for the Regional Project, although utilization of this additional capacity could only occur following further CEQA review and appropriate regulatory approvals. This limited “flexible-sizing” decision would minimize future construction costs and downtime requirements should a larger capacity be pursued in the future (up to 15 MGD, subject to further CEQA review and regulatory approvals). As noted above, the Regional Project is discussed further below in [Section 3.5](#), and the District only intends to pursue approvals for the Phase I project at this time. The following components could be sized for the Regional Project:

- Raw water conveyance pipeline (only key segments, not including the additional facilities noted in [Section 3.5](#))
- Reverse Osmosis (RO) Building, Electrical Building, Administration Building (excluding additional RO membrane systems)

¹² Note that actual production capacity may be smaller than five MGD depending on phasing, financing, and optimization during final design.



- Chemical Storage Structure
- Product Water Storage Tank
- Brine Disposal Tank and Discharge Piping

If the District elected to size any or all of the above-outlined facilities for possible future expansion, no production above 5 MGD could occur without an additional public review process and associated supplemental CEQA document and regulatory approvals necessary for Regional Project facilities noted in Section 3.5.

Water Quality Goals

Treatment processes at the desalination facility will be designed to provide finished water quality that achieves or is superior to the required levels and standards put forth in Title 22 of the California Code of Regulations and as set forth in the State Board's recently adopted Ocean Plan Amendment. These water quality goals are described in detail within the PDR ([Appendix 10.1](#)), and evaluated for Ocean Plan consistency within [Section 4.8, Hydrology and Water Quality](#). Product water goals are discussed further below.

3.4.2 PHASE 1 PROJECT COMPONENTS

Subsurface Intake Wells/Southeast Intake Wells

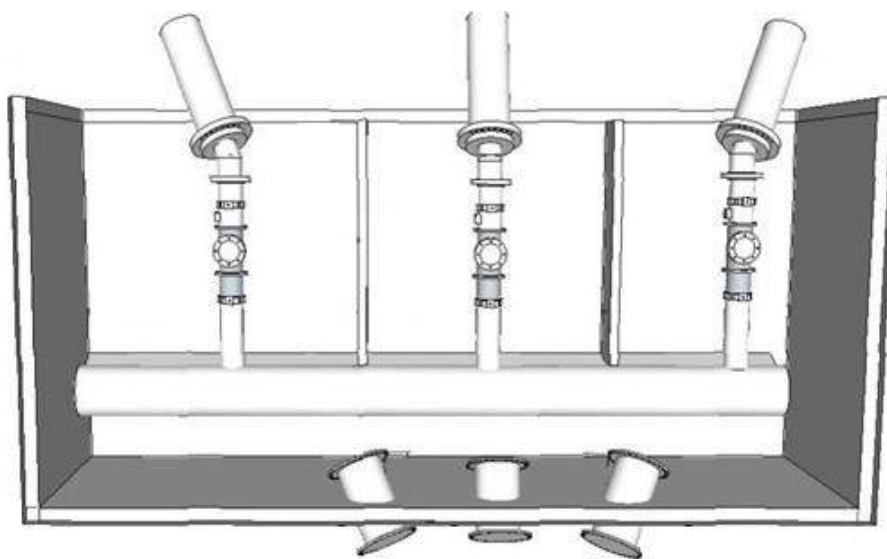
The project's subsurface slant wells would be utilized to withdraw seawater from underneath the ocean floor, and eliminate the effects of impingement and entrainment on marine life. The slant wells would be developed in "clusters" or "pods," and each wellhead cluster would be encased in a fully buried cast-in-place concrete vault following the completion of the slant wells. The wellhead vaults would provide ease of access and maintenance and would be located far enough back from the shoreline to provide adequate protection from the effects of sea level rise and beach retreat.¹³ Proposed locations for the slant wells are shown in [Exhibit 3-3, Project Facility Locations](#), and [Exhibit 3-4, Southeast Intake Well Study Area](#) based on recent hydrological modeling done by Geoscience ([Appendix 10.1](#)).

A schematic representation of a slant well vault with a cluster of three wellheads is shown in [Figure 3-6, Conceptual Slant Well Vault](#), below. The slant wells would vary in length, up to 1,000 lineal feet. The exact length, angle and location of each well will be optimized in future design phases. For the Phase I Project (up to 5 MGD), the subsurface intake wells could be located anywhere within the intake well study area shown on [Exhibit 3-3, Project Facility Locations](#). At present, based on modeled well production capabilities, the District estimates that the Phase I Project would require two to three well clusters. [Figure 3-7, Schematic Slant Well Diagram](#), below shows a conceptual representation of the subsurface details of a slant well.

¹³ Slant well vault locations are approximate, subject to modification during final design and in-field construction. The buried depth and location of slant well vaults will be based on the coastal hazard analysis ([Appendix 10.7](#)) and regulatory agency permitting requirements, such that the vaults and related infrastructure are adequately protected from coastal wave and erosion hazards.



Figure 3-6: Conceptual Slant Well Vault



Source: Preliminary Design Report, GHD, May 2018

Electrical Control Building

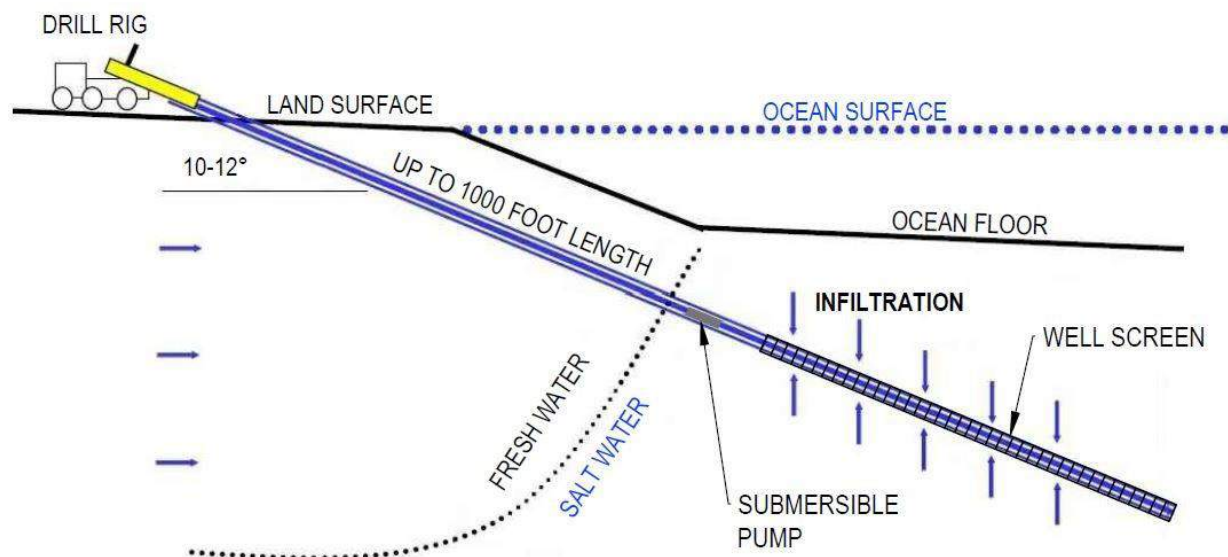
A small electrical control building will be required, in proximity to the slant wells, located in a disturbed portion of DSB, depending on final siting of the slant wells. Based on discussions with State Parks staff, the building would be located either in the southeast corner of the North Day Use parking lot (least desirable) or within the DSB campground near the amphitheater and other accessory park uses. The specific architectural design and siting of this building would be subject to final design and permitting process through State Parks.

Temporary Well Development Discharge Facilities

Following slant well construction, the wells will need to be “developed,” which is a process using a separate pump capable of pumping at higher rates to clear the new well of sand and well installation fluids. This well development water is typically conveyed to a sanitary sewer line, existing ocean outfall, or a temporary diffuser. The Project proposes a temporary well development discharge line to run from the slant well to either the existing SJCOO via a connection at the DSB campground, or to the existing beach diffuser located on the north side of San Juan Creek Lagoon (that was installed with the test slant well and remains in place), or a new beach diffuser to be installed in the riprap if slant wells are installed at Capistrano Beach Park. The well development process will also be used to clear out “old marine groundwater that may have accumulated in offshore groundwater with higher levels of iron and manganese (see Iron/Manganese Removal Process discussion below).



Figure 3-7: Schematic Slant Well Diagram



Source: Preliminary Design Report, GHD, May 2018 ([Appendix 10.1](#))

Southeast Intake Wells

The District is evaluating the feasibility of subsurface intake wells southeast of Doheny State Beach Park. These wells are hereafter referred to as the “Southeast Intake Wells,” and are discussed separately in the EIR due to their unique characteristics. The Southeast Intake Well study area extends southerly beyond Doheny State Beach (DSB) and includes Capistrano Beach Park (while still in the City of Dana Point). This study area is composed of a paleochannel¹⁴ that would feed the Southeast Intake Wells (pods F, G and H as shown in [Exhibit 3-3, Project Facility Locations](#) and [Appendix 10.1](#)), and is distinct from the paleochannel offshore of DSB at the mouth of San Juan Creek and hydrologically separated from the San Juan Groundwater Basin, which avoids the Project’s effects on inland groundwater and the lagoon, as demonstrated by the modeling work presented in [Section 3.3](#). The Southeast Intake Wells are in a section of beach that is generally more narrow than near the lagoon and is less protected from coastal wave and erosion hazards, and therefore would require additional design considerations to protect the buried well vaults. It is envisioned that up to three additional well clusters can be located at the site on Capistrano Beach Park. Slant wellhead cluster locations are shown in [Exhibit 3-3, Project Facility Locations](#), but may be revised based on further design work. Individual slant well dimensions are shown in [Table 3-5, Slant Well Dimensions](#), which may be modified during final design, regulatory permitting, and/or field construction adjustments to reflect conditions in the field at the time of construction.

As discussed further in Section 4.0, the District has eliminated Pod F from consideration at this time due to the narrow beach section, likely beach construction required, vulnerability to coastal hazards, temporary closure required for the Class I Beach Trail bike path, and temporary closure required for the Capistrano Bay Community Service District’s maintenance facility access road. In addition, Pod G has been

¹⁴ A paleochannel is a formation of relatively younger sediment deposited by a previously active river or stream.



shifted south, to the south of the basketball courts, to minimize disruption to the Capistrano Beach Park parking lot.

Table 3-5: Slant Well Dimensions

Area	Pod	Slant Well	Length	Angle Below Horizontal [°]	Screen Length	Bottom of Well Casing Below Ocean Floor	Bottom of Well Casing Below Ocean Surface
			[Lineal ft]		[Lineal ft]	[ft]	[ft]
Doheny Beach	A	A1	600	10	250	-74	-104
		A2	600	10	300	-74	-104
	B	B1	700	10	400	-92	-122
		B2	760	10	430	-102	-132
	C	C1	860	10	550	-119	-149
		C2	800	10	450	-109	-139
		C3	800	10	470	-109	-139
	D	D1	820	10	500	-112	-142
		D2	860	10	500	-119	-149
		D3	880	10	520	-123	-153
Capistrano Beach	E	E1	880	10	600	-123	-153
		E2	920	10	610	-130	-160
	F	F1	700	9	375	-92	-122
	G	G1	750	10	425	-100	-130
		G2	750	10	425	-100	-130
		G3	900	10	575	-126	-156
	H	H1	900	10	575	-126	-156
		H2	800	10	475	-109	-139
		H3	800	9	475	-109	-139

Source: GeoScience Support Services.

Note: All slant well dimensions, angles, and screen lengths are conceptual, subject to refinement during final design, regulatory permitting, and during construction to reflect field conditions.

Raw Water Conveyance Alignment

The raw¹⁵ ocean water conveyance alignment would deliver raw water pumped from the subsurface intake slant wells to the Doheny Ocean Desalination Facility for treatment. Generally, these raw water conveyance alignments would utilize existing roads and public rights of way, except as noted below. The final alignment location could occur anywhere within the conveyance study area shown in [Exhibit 3-3, Project Facility Locations](#) and the final alignment location will depend on the subsurface intake well locations and other factors. The EIR evaluates two primary alignments, which are referred to as the “North” and “South” Alignments, with the South Alignment being the preferred alignment. In the case the South Alignment is deemed infeasible, the North Alignment would be the preferred alternative, although this alignment requires pipeline construction in Del Obispo Street which currently is under a repaving moratorium due to recent major repaving work done under a State grant. Wells on either side of San Juan

¹⁵ “Raw” ocean water is a term that simply refers to untreated ocean water. Except for pockets of “old marine groundwater” with high iron and manganese, which can easily be removed through pretreatment, local ocean water is of relatively high water quality. Furthermore, the subsurface slant wells draw ocean water through natural alluvial sand, effectively filtering the ocean water, which is why subsurface intake design requires substantially less pretreatment than conventional open ocean intakes, and is not impacted by surface water quality such as urban runoff, algal blooms, and wastewater treatment plant stream discharges.



Creek lagoon would be connected by trenchless construction under the lagoon or by installing the conveyance line within the Doheny Park access road bridge deck over San Juan Creek, to connect the subsurface intake wells with the conveyance pipelines.

Raw water conveyance pipeline diameter would vary from 26 inches (Phase I project) to 48 inches (Regional Project). These pipeline diameters are subject to modification during final design, may be smaller in the collector pipelines feeding from individual slant well clusters, and as noted below certain key trunk sections may be “flexibly sized” to accommodate future phases (to avoid additional physical impact and construction-related disruption across sensitive locations such as Caltrans right-of-way, San Juan Creek undercrossing, and the SCRRA undercrossing). In these areas, the raw water conveyance pipeline could be installed as a larger diameter, or a casing could be installed that would serve as a sleeve for easier (and less disruptive) installation of a second conveyance line in the future, should capacities greater than 5 MGD be pursued.

North Alignment: The North Alignment (represented by Alignment 3 and Alignment 4 within the PDR) would take raw water from the slant wells northeast along Del Obispo Street, and cross San Juan Creek via trenchless construction into the desalination facility at either the Dana Point Community Center or Del Obispo Park. However, the City of Dana Point completed a major paving project in Del Obispo Street in 2016. The paving was grant funded with a 5-year moratorium on construction. As a result, this moratorium precludes the construction of the pipeline along the North Alignment under the current Project schedule. This alignment will only be considered should the South Alignment (described below) be determined infeasible or if the District elects to offset the City’s loss of grant funds (which the City would forfeit if repaving occurs prior to Fall 2021).

South Alignment: The South Alignment (represented by Alignment 6 in the PDR) is the preferred alignment and is located generally on the east side of San Juan Creek lagoon. The South Alignment runs southeast through Doheny State Beach Campground, then crosses under SCRRA rail line through trenchless construction to follow Doheny Park Road toward the desalination plant site (the conveyance line would pass underneath PCH in existing Doheny Park Road). From Doheny Park Road, the conveyance pipeline would head west to the desalination facility site in Las Vegas Avenue, which ends close to the pretreatment portion of the desalination facility site. The South Alignment would have to cross the SCRRA rail line a second time to enter the desalination facility site, using trenchless construction. This alignment would connect the wells west of the lagoon via a conveyance section utilizing either the existing Beach Road (“Beach Road” or “Park Lantern”) bridge deck over San Juan Creek or through trenchless construction under San Juan Creek lagoon.

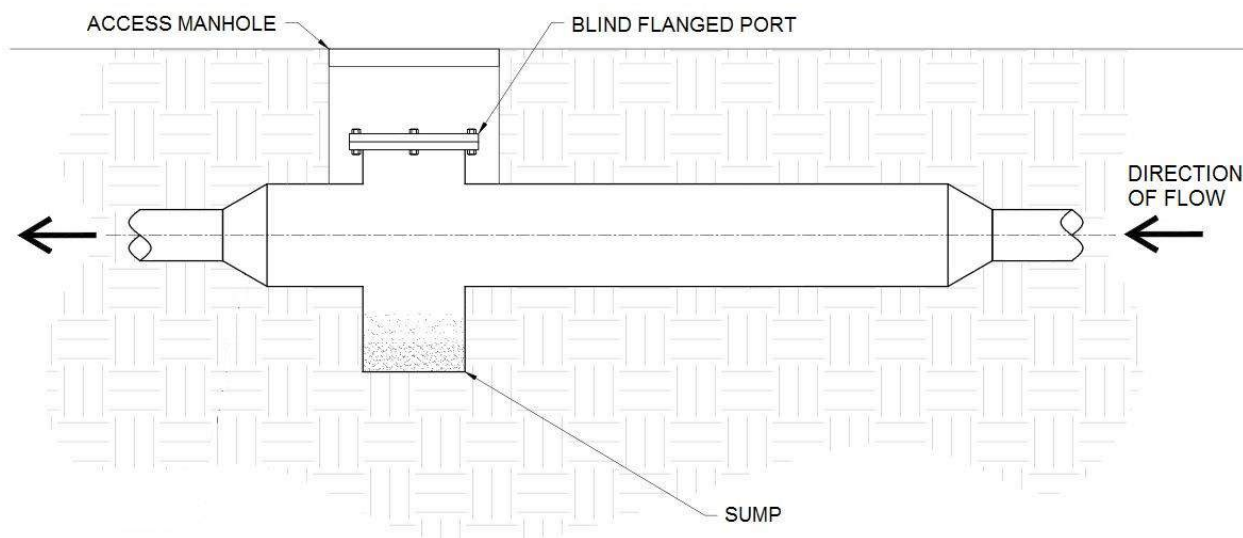
The Southeast Intake Wells would connect to the conveyance system via a pipeline running northwesterly within the existing Doheny Park beach access road (“Beach Road” or “Park Lantern”). In the South Alignment, the pipeline would join the conveyance system at the SCRRA rail line crossing, while in the North Alignment the pipeline would connect to the conveyance system at the Doheny State Beach Campground, just east of San Juan Creek.

In each alternative, the majority of the alignment would be constructed using open cut pipeline construction methods. Trenchless construction would occur under San Juan Creek, PCH, the SCRRA line, and portions of Doheny Park Road, as necessary.



The raw water conveyance pipeline would require periodic cleaning as there is a potential for fine sands and precipitated iron and manganese to settle out along the pipeline over time. Therefore, the pipeline will be designed with up to three sand separator units; one after the intake wells at Doheny State Beach Park, one after the intake wells at Doheny State Beach Campground and one after the southeast intake wells at Capistrano Beach Park. The sand separator units will consist of an access manhole over a blind flanged port and sump. Prior to the sump, the pipeline would increase in size to decrease the velocity sufficiently for the solids to settle into the sump. An example is shown in [Figure 3-8](#), below.

Figure 3-8: Sand Separator Unit



Source: Preliminary Design Report, GHD, May 2018.

Desalination Facility

The Project includes a desalination facility that would receive raw ocean feed water at up to approximately 10 to 30 MGD, with a recovery rate¹⁶ of approximately 50% to yield up to 15 MGD of potable drinking water. This facility would be located on part of a 31.3-acre site currently owned by the District on the east side of San Juan Creek, referred to as the "San Juan Creek Property."¹⁷ The desalination facility will utilize well-proven technologies to convert ocean water into potable drinking water, a process which is used around the world and throughout the United States, and is scrupulously regulated by local, state and federal agencies, including the State of California's Division of Drinking Water. The reverse osmosis (RO) process, or in this case, seawater reverse osmosis (SWRO), produces purified water by pressurizing the seawater sufficiently to overcome its osmotic pressure and cause the water to permeate through a semi-permeable membrane from the seawater side to the pure water side, leaving the majority of salts on the seawater (brine) side. The process utilizes a relatively large amount of energy due to the high-pressure pumps required to exceed the osmotic pressure of the seawater. State-of-the-art energy recovery devices (or "ERDs") are used to recapture the pressure in the brine which can reduce the desalination facility's

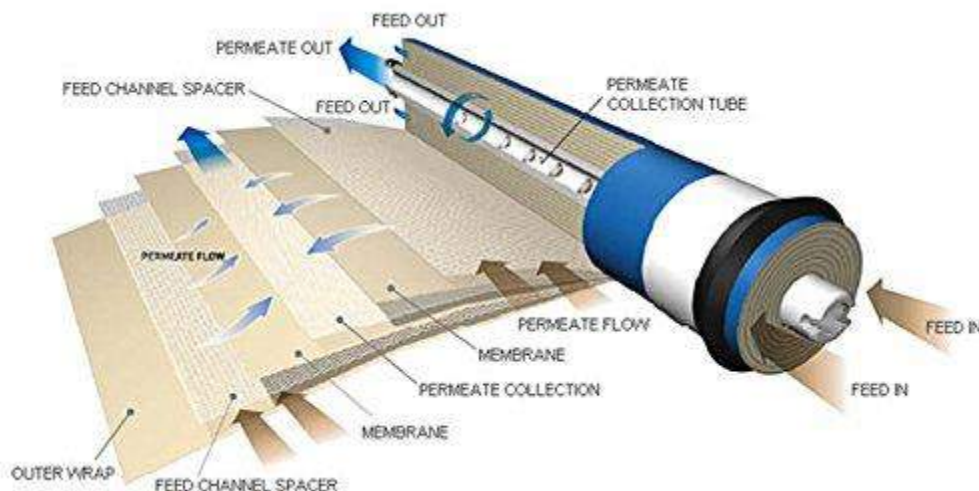
¹⁶ "Recovery rate" refers to the Reverse Osmosis process effectiveness, with a 50% recovery rate meaning that for every 100 gallons of raw ocean water received, the RO process produces 50 gallons of purified drinking water.

¹⁷ The desalination facility could be located anywhere within the District's San Juan Creek Property, consisting of Lots A – F (approximately 28.7 acres, which excludes the existing GRF, also owned by the District). The preferred location, as represented in the EIR, is on lots D, E and F (approximately 10.4 acres). The desalination site staging area is proposed adjacent and north, on Lot C (a 7.2-acre parcel). Source: District GIS, transmitted in email dated March 15, 2018.



pumping energy demand by nearly 50%. The specific SWRO membranes utilized will be determined during final design, as well as specific pre-treatment and post-treatment processes. A typical reverse osmosis membrane design is shown in [Figure 3-9, Typical Spiral-Wound Reverse Osmosis Membrane Design](#), below.

Figure 3-9: Typical Spiral-Wound Reverse Osmosis Membrane Design



Source: Preliminary Design Report, GHD, May 2018.

Seawater will be conveyed to the desalination facility using subsurface intake wells drilled in the ocean floor at a slant, i.e., “slant wells.” Due to the natural filtering provided by subsurface intakes, the desalination facility will require minimal pretreatment. In order to meet end user water quality targets, including for example boron, a portion of the SWRO-treated water will be passed through another RO process (a partial second pass). Post-treatment processes are required primarily to condition the purified water (referred to as product water, or permeate) for end user odor/taste preferences and to minimize corrosion of distribution pipelines. Pretreatment, SWRO, second pass RO, and post-treatment processes are described further below.

The proposed desalination facility includes pretreatment, SWRO, an energy recovery system using state-of-the-art ERDs, partial second pass RO, post-treatment conditioning, and solids and brine handling and disposal. The conceptual desalination facility layout includes flocculators, sedimentation basins, backwash water clarifier, chemical storage area, media filter backwash tank, brine storage tank, a Research & Development pad¹⁸, RO flush tank, product water pump station, product water tank, RO membrane building, carbon dioxide feed system, media filters, electrical building, calcite contractors, and an admin/lab/operations/public outreach building. A conceptual seawater desalination facility layout is shown in [Exhibit 3-6, Desalination Facility-Conceptual Site Plan](#) and a conceptual Process Flow Diagram is shown in [Exhibit 3-10, Conceptual Process Flow Diagram for Seawater Desalination](#).

¹⁸ The R&D Pad is an area set aside to perform research and development testing, such as piloting new technologies, etc. It is plumbed with water at various stages of treatment to allow process testing using these sources. The R&D pad could be used for testing potential refinements to the subsurface intake design as final design and phased construction proceeds, such as possible consideration of the Neodren® technology discussed in Section 5, Alternatives to the Proposed Project).



Pretreatment

‘Pretreatment’ in the context of seawater reverse osmosis (SWRO) refers to the treatment processes prior to the RO membranes, to prevent or reduce fouling of RO membranes. Pretreatment is often crucial to the success of an RO system. Typical causes of membrane fouling include:

- Presence of suspended particles (such as algal skeletons, clay, and precipitated iron/manganese);
- scale formation (e.g. calcium carbonate (CaCO₃), calcium sulfate (CaSO₄), strontium sulfate (SrSO₄), calcium fluoride (CaF₂), etc.);
- oil/grease, and/or biological growth on the membrane (i.e., biofilm formation).

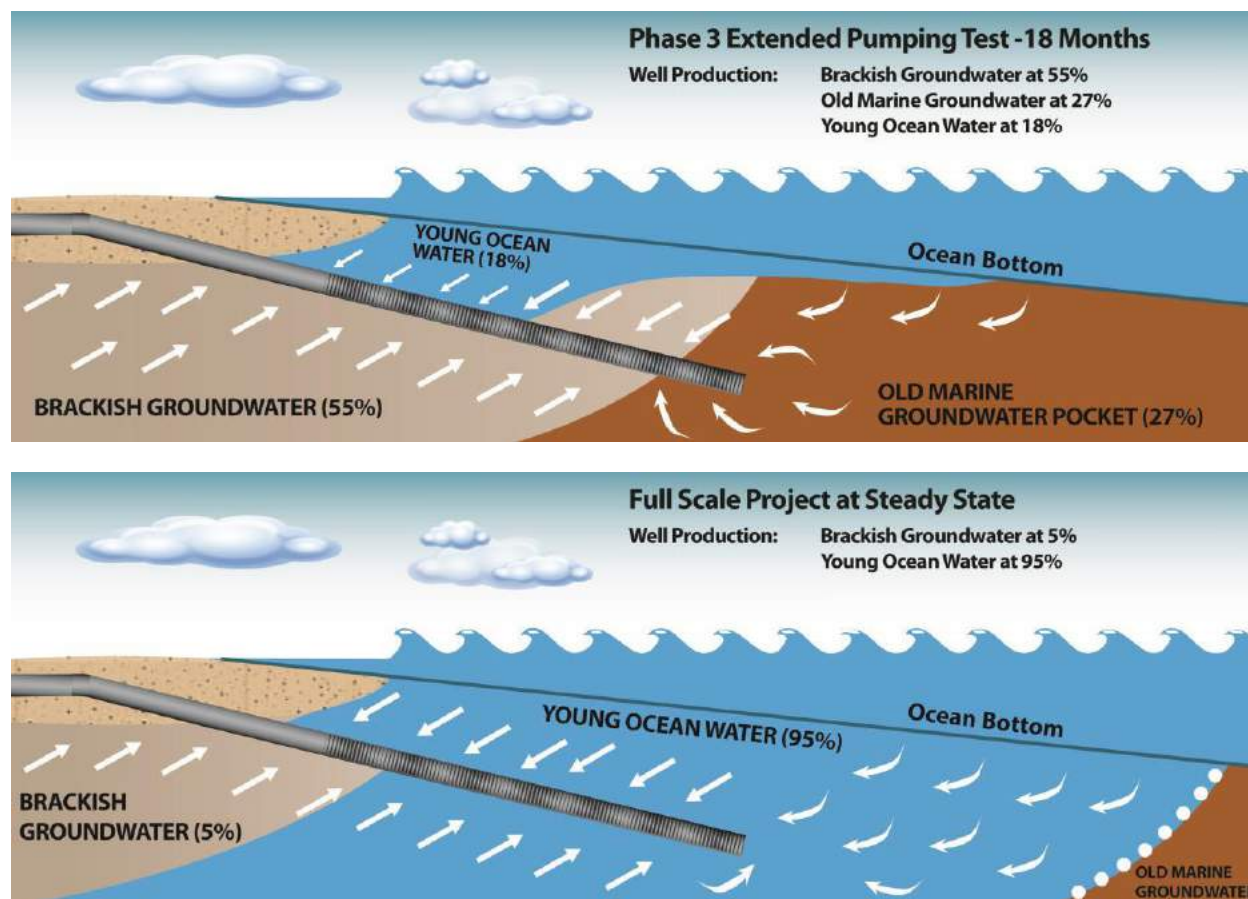
Fouling increases the product water cost by increasing energy consumption due to decline in RO membrane permeability, more frequent chemical cleaning to recover performance, and ultimately shortening membrane life. The type of pretreatment required to protect the RO membranes will depend on the quality of the water feeding the SWRO plant. This, in turn, is influenced by the type of intake. Open seawater intakes typically require extensive pretreatment to remove suspended matter such as silt, sediment, plankton, etc., found in the ocean. Removal of oil and grease may also be required in certain instances, as well as pretreatment for severe algal blooms. Slant well intakes typically produce feed water free of the foulants above. However, feed water from slant wells may contain mineral constituents which can cause scale formation or particulate fouling. Anticipated pretreatment requirements for the Project, based on past test slant well studies at Doheny State Beach, indicate a need for (at least) temporary pretreatment modules to remove iron and manganese in the offshore groundwater. Lenses of “old marine groundwater” containing dissolved iron and manganese (Fe/Mn) are believed to have accumulated over long time periods and are anticipated to be gradually replaced with filtered “young ocean water” once the subsurface intake wells begin pumping. A description of this process is given below and a schematic of this replacement process is shown in [Figure 3-10, Source Water Replacement Process](#), below.

According to models, when the slant wells begin pumping, 50-85% of the source water will be brackish groundwater (saline-impacted onshore groundwater), and about 25-30% old marine groundwater. This percentage will decline as the slant wells continue pumping, to a point where the intake system reaches a “steady state,” with salinity approaching ocean water quality in as little as 10-12 months after full-scale, continuous pumping, depending on slant well locations and production volume. At steady state, groundwater modeling supports that the Project will only be drawing in approximately 6.6% of brackish groundwater (full equilibrium is estimated to be achieved in approximately four years, where slant well production water salinity is fairly constant, as discussed in detail in [Appendix 10.1](#)). These percentages will be monitored throughout the Project’s life. The brackish groundwater pumped by the Project is not usable freshwater and would require RO and other treatment processes in order to be used for domestic or even industrial purposes.

The District completed additional groundwater modeling of the paleochannel offshore of Capistrano Beach Park, the site of the potential Southeast Intake Wells, which is hydrologically separated from the San Juan Basin. It was determined that source water will be 100% ocean water at commencement of pumping or several days thereafter, as indicated in [Table 3-3](#). Subsequent work will need to be completed to determine whether the water will experience similar issues with Fe/Mn concentrations. As a conservative design approach, Fe/Mn concentrations at each intake location are assumed to be the same (refer to detailed discussion below and in [Appendix 10.1](#)).



Figure 3-10: Source Water Replacement Process



Source: Doheny Ocean Desalination Project Phase 3 Investigation Final Summary Report, January 2014.

Iron/Manganese Removal Process

The PDR ([Appendix 10.1](#)) evaluates several management strategies to reduce anticipated high concentrations of Fe/Mn. The preferred strategy is to initially and temporarily discharge slant well water through existing or new ocean outfall diffusers to reduce or eliminate the need for onsite pretreatment at the desalination facility. Several pretreatment options were reviewed in the PDR as well, in the event pretreatment for Fe/Mn is determined to be necessary. Option 4, the preferred pretreatment option, uses aeration followed by chemical oxidant addition and pH adjustment to optimize precipitation of Fe/Mn. Chemically dosed water is then flocculated, and precipitate is removed in a sedimentation basin and downstream catalytic media filter. If pumping to discharge reduces Fe/Mn levels sufficiently, a less robust Option 4 could be implemented that does not require flocculation and sedimentation. In the preferred strategy, the slant wells would be pumped the equivalent of one well for 12-18 months. A practical solution to accomplish this level of pumping in the first available Doheny State Beach off-season construction window (October 1 to May 1), would be to install two wells and pump both during this period. During the pump to discharge period, the temporary slant well development water at DSB would be piped to an existing diffuser that is located within the rock jetty along the west edge of the mouth of San Juan Creek. This diffuser was used in the Phase 3 test slant well pilot test (and is still in place) to send slant well water dispersed back to the ocean along the jetty and in the surf zone for approximately 18 months with



no adverse effects to ocean water quality. Alternately, the temporary well development water at DSB could be conveyed to the SJCOO via an existing connection in the DSB campground near the amphitheater.

For Southeast Intake Wells at Capistrano Beach Park, the temporary well development water would be piped to a proposed diffuser in the existing riprap along the park's western edge. If Fe/Mn levels or associated discoloration pose regulatory permitting issues, the initial well development process could either employ use of Baker tanks to settle out solids prior to discharge, or simply proceed directly to Option 4 (use of pretreatment at the desalination facility site). As the slant wells continue to pump out the Fe/Mn-containing old marine water, the District will monitor water quality and evaluate the best treatment solution. The desalination facility site layout has included space for pretreatment facilities.

Seawater Reverse Osmosis (First Pass)

The pretreated water will be pumped using high pressure pumps to the SWRO membranes. In the SWRO process, 50 percent of the seawater will permeate the membranes and the other 50 percent will be disposed back to the ocean as brine with nearly twice the salinity of the original seawater. Anti-scalant chemical and acid will be added to the SWRO feed to prevent scaling due to the increased concentration of sparingly soluble salts such as calcium sulfate, calcium carbonate, strontium sulfate and calcium fluoride in the brine. The brine will be sent to the brine tank to be disposed of into the ocean through diffusers at the end of SOCWA's existing SJCOO. The product water will proceed to the next step in the process.

Reverse Osmosis (Second Pass)

The product water from SWRO, although greatly reduced in salinity, will not meet irrigation goals for boron, sodium (SAR), and chloride. In order to meet these goals, a partial second pass reverse osmosis system will be used to further treat a portion of the flow. The second pass system will use brackish water membranes instead of seawater membranes for this less-saline water.

Post-Treatment

Reverse osmosis product water (permeate) has very low concentrations of dissolved salts. The low mineral content of this water results in an aesthetically displeasing taste and is also corrosive to pipes and other water distribution infrastructure. Remineralization of the permeate stream involving dosing of carbon dioxide and contact with calcite (calcium carbonate) to increase the mineral content of water will remedy the poor taste characteristic and the corrosivity.

Key parameters that are adjusted during this process are:

- Alkalinity
- pH
- Hardness and calcium content
- TDS
- Corrosivity – quantified using indices like the calcium carbonate precipitation potential (CCPP) and Langelier Saturation Index (LSI)



The interaction between these key parameters is complex. The Rothberg-Tamburini-Windsor (RTW) model¹⁹ was used to model the impacts of chemical dosing on RO permeate water to achieve the required finished water targets. Product water quality (discussed further below) will be subject to the State's Division of Drinking Water regulations to achieve applicable drinking water standards.

Product Water Quality

Treatment processes at the desalination facility will be designed to provide finished water quality that meets or exceeds all standards for drinking water in California. In addition to the drinking water standards, other finished water quality goals have been developed based on the Claude "Bud" Lewis Carlsbad Desalination Plant, which is currently blending its product water with MWD water. Relevant goals are summarized in Table 3-6, below.

Target levels for boron in finished water are designed to minimize impacts from irrigation with desalinated seawater. While boron is essential to plant development, many plants exhibit toxicity problems when concentrations exceed 2 mg/L. For this reason process design will be carefully tailored to achieve target boron removal.

Target levels for bromide in finished water are set to minimize the decay of chloramines. Chloramines are formed through the addition of chlorine and ammonia during post-treatment, for the purpose of residual disinfection in the distribution system.

Ultimately, a blending study will be performed comparing finished water from the Doheny Ocean Desalination Facility with existing drinking water in the distribution system to guide finished water quality targets and post-treatment water conditioning.

Product Water Storage Tank

The product water storage tank will be located downstream of and adjacent to the calcite contactors and will provide storage and residual disinfection prior to distribution. The tank will contain baffles, which direct flow along a specific route, to reduce short-circuiting of water through the basin and to meet disinfection requirements for the Phase I Project and ultimate facility capacity of up to 15 MGD.

A 2.75 million gallon concrete tank was selected based on conservative design criteria to achieve 3.0 log giardia inactivation for the ultimate plant capacity of up to 15 MGD potable water production. Giardia inactivation requires longer chlorine contact time than virus inactivation and is, therefore, the limiting requirement.

A prestressed concrete tank will provide a durable structure and is an appropriate design for tanks of similar size to the product water tank. The tank wall is circumferentially prestressed with continuous high strength steel, placing the tank in permanent compression. The prestressing process is performed by machine wrapping, which requires a space of 10 feet around the tank diameter during construction. The roof will be a concrete, two-way, flat slab design. The 2.75-million-gallon tank will have an outside diameter of roughly 125 feet and a height of 37 feet.

¹⁹ RTW Model, American Water Works Assoc., Denver, CO.



Table 3-6: Preliminary Finished Water Quality Goals

Parameter	Limit Value	Units	Limit type
TDS	320	mg/L	50th percentile maximum
	375	mg/L	90th percentile maximum
	600	mg/L	Maximum allowable
Chloride	120	mg/L	50th percentile maximum
	150	mg/L	90th percentile maximum
	N/A	mg/L	Maximum allowable
Bromide	0.4	mg/L	50th percentile maximum
	0.7	mg/L	90th percentile maximum
	N/A	mg/L	Maximum allowable
Boron	0.75	mg/L	50th percentile maximum
	1.0	mg/L	90th percentile maximum
	N/A	mg/L	Maximum allowable
Turbidity	0.5	NTU	50th percentile maximum
	0.8	NTU	90th percentile maximum
	1.0	NTU	Maximum allowable
pH	8.2 – 8.8		90th percentile range
	8.0 – 9.0		Limiting range
Carbonate alkalinity	45	mg/L as CaCO ₃	90th percentile minimum
Langelier saturation index (LSI)	>0		90th percentile minimum
	<1		Maximum allowable
Calcium	40	mg/L as CaCO ₃	90th percentile minimum
Calcium carbonate precipitation potential (CCPP)	>0		90th percentile minimum
	10		Maximum allowable
Iron	0.07	mg/L	Maximum allowable
Manganese	0.02	mg/L	Maximum allowable

Source: Preliminary Design Report, GHD, May 2018.

Product Water Pump Station

The drinking water will be delivered into the District's existing potable water distribution system. As details about the final distribution of water are pending final design, this EIR has conservatively assumed a set of distribution pumps and surge vessels to deliver water at a pressure of approximately 200 pounds per square inch (psi) to match pressure in the District's existing distribution system, as shown on Exhibit 3-11, Local and Regional Water Pipelines. Product water will be pumped to the distribution system through separate connections to two pressure zones (PZ), PZ 390 and PZ 415. Each connection will be supplied by two (2) duty pumps with one (1) common standby pump connected to both zones to provide the system with a total of 5 mgd of product water.

Chemicals and Discharge

The RO concentrate brine stream can be directly discharged to the ocean, but various other residual waste streams produced in the SWRO process cannot. Backwash high in iron and manganese will be treated and remaining solids will be disposed of by landfill. Flows including neutralized CIP solutions and site stormwater runoff will be disposed of to the District's existing sanitary sewer system.



Periodic cleaning of RO membrane elements using clean-in-place (CIP) systems significantly extends their useful life. Cleaning is also necessary when the system shows evidence of fouling or just prior to a long-term shutdown. Evidence of fouling can include a decrease in normalized permeate flow or normalized permeate water quality, or an increase in normalized pressure drop between the feed and concentrate headers. Scheduled cleaning frequency will be at the discretion of the plant operator, but generally should not be needed more frequently than once every 3 months. More frequent cleaning might indicate poor process control.

A small portion of RO permeate is placed in a CIP tank for use during cleaning events. The necessary chemicals are then added to the tank, heated, and recirculated through the CIP pump and tank for several minutes to ensure proper mixing. The cleaning solution is then recirculated through the RO train for a period of up to several hours, depending on the degree of fouling.

A CIP system typically includes a CIP tank (or two), circulation pump(s) and cartridge filters to prevent foulants from re-entering the membranes during recirculation. A tank heater is included to optimize the cleaning process. Necessary chemicals may include caustic soda, detergents, acids, or proprietary cleaners. These are neutralized salts prior to being discharged to the sanitary sewer system.

The project proposes a chemical storage area to be located on the east side of the site that would house all of the chemical storage tanks in a safe and contained manner. Each tank would be fully enclosed and mounted on a concrete pad with individual containment. A chemical delivery containment area would be located adjacent to the road for convenient truck access.

Table 3-7, Chemical Use and Application Summary, provides a summary of the chemicals, application points and average chemical doses based on preliminary design for the Doheny Ocean Desalination Project.

Brine Disposal System

The brine disposal system would utilize the existing SJCOO to return brine and treated process waste streams to the ocean with negligible impact on coastal and marine water quality. This would be achieved in part through blending in the outfall pipe with the existing wastewater stream from the J.B. Latham Wastewater Treatment Plant, and other regional treatment plants.²⁰ This connection would be from the Desalination Facility to the existing SJCOO that currently runs through the southwest corner of the desalination facility Project site (the connection location is shown on Exhibit 3-1, Regional Vicinity). A 24" pipe would be used to allow for the potential future up to 15 MGD of ultimate capacity of the proposed Project.

The brine discharge stream from the Doheny Ocean Desalination Project would be subject to meeting the requirements of an NPDES discharge permit, which would be issued by the Regional Water Quality Control Board-Region 9 (RWQCB).

²⁰ SOCWA JB Latham Wastewater Plant – 13.0 mgd permitted flow, Santa Margarita Water District Chiquita Water Reclamation Plant – 9.0 mgd, SOCWA 3A Reclamation Plant – 6.0 mgd, San Clemente Water Reclamation Plant – 6.98 mgd, San Juan Capistrano Groundwater Treatment Plant – 2.2 mgd, SCWD Groundwater Recovery System – 0.60 mgd, and San Clemente Segunda Deshecha Runoff Plant – 1.0 mgd.



Table 3-7: Chemical Use and Application Summary

Chemical	Description of Use	Application Points	Suggested Dose (mg/L)
Antiscalant	Minimize scaling and iron fouling in SWRO membranes.	+1 st Pass RO Feed +2 nd Pass RO Feed	3 3
Aqueous Ammonia	Generation of chloramines in the presence of chlorine for residual disinfection in product water distribution system.	+Distribution System Feed	1
Calcite (Calcium Carbonate)	Increase calcium hardness and pH in RO permeate during post-treatment.	+RO Permeate Post pH Adjustment with Carbon Dioxide	100
Carbon Dioxide	Alkalinity addition and pH reduction to improve calcium uptake in post-treatment calcite contactors.	+Calcite Contactor Feed	23
Caustic Soda (Sodium Hydroxide)	Adjust pH to optimize pretreatment oxidation of Mn/Fe, improve boron rejection, for cleaning and neutralization, and control product water pH.	+Pretreatment Feed +2 nd Pass RO Feed +Product Water Tank Feed +Cleaning and Neutralization Tanks	10 20 5 As Needed
Fluorosilicic Acid	Fluoride supplement for dental health in drinking water.	+Product Water Tank Feed	0.7
Polymer	Coagulant aid for onsite clarification	+Pretreatment Feed +Sludge Thickening Feed	0.5
Sodium Bisulfite	Dechlorinate RO feed water and neutralize chlorinated discharges and cleaning solutions before disposal. Preservative for RO membranes during downtime.	+1 st Pass RO Feed +Cleaning and Neutralization Tanks	0.2 As Needed
Sodium Hypochlorite	Oxidation of Fe/Mn before pretreatment and residual disinfection in product water.	+Pretreatment Feed +Calcite Contactor Feed +Product Water Tank Feed	20 (Intermittent) 3
Sulfuric Acid	Periodic cleaning of RO membranes.	+1 st Pass RO Feed	5

Source: Preliminary Design Report, GHD, January 2018.

Administration and Operations Building

The Administration and Operations Building will contain the necessary space to accommodate operations staff in addition to small groups visiting the site for educational purposes. The metal stud, steel frame building, will be a two (2) story facility and will contain the following spaces (specifics are subject to modification during final design):



Ground Floor

1. Conference Room: ~ 2,000 square feet. This room will be used for educational purposes to seat and discuss water conservation, ocean desalination, etc.
2. Restrooms: ~ 200 square feet.
3. Storage / Miscellaneous: ~ 200 square feet. Ground floor storage for miscellaneous items.

First Floor

1. Control Room / Security Monitoring: ~ 400 square feet. This area will house all Supervisory Control and Data Acquisition (SCADA) monitors and plant/process control, along with security monitoring.
2. Offices: ~ 500 square feet. For operations staff.
3. Lockers / Restrooms / Showers: ~ 400 square feet.
4. Laboratory: ~ 400 square feet. This laboratory will be "Chain of Custody" only, with limited equipment to be furnished.
5. Kitchen: ~ 400 square feet.
6. Storage / Miscellaneous: ~ 300 square feet. Second-floor storage for filing, supplies, and similar items.

Audio visual services, fire suppression, HVAC, etc., are to be included in the facility; typical for all buildings containing occupants.

Water/Wastewater Connections

The Project can be served entirely by existing District water and wastewater facilities, in terms of demand for employees, visitors and normal non-process operations. The conceptual layout shown in Exhibit 3-9, Desalination Facility-Water Lines shows connections to the District's potable water supply system and sanitary sewer system. The existing sewer lift station²¹ requires expansion to serve the Project, although this improvement, part of the District's capital improvement program, is necessary with or without the Project, and has already been environmentally reviewed in a prior CEQA document.²² As noted below in Section 3.5, the Regional Project would require additional offsite product water conveyance, pumping and storage facilities.

Energy Requirements

Electrical energy use was estimated for the desalination system and ancillary systems based on the descriptions, drawings and design criteria summarized in this section and as described in greater detail in Appendix 10.1, Preliminary Design Report.

The projection includes energy use for slant well intake water pumping, desalination facility treatment systems, product water pumping and brine disposal during typical operations following startup. Ancillary

²¹ Shown on Exhibit 3-6, Desalination Facility-Conceptual Site Plan, in the Southeast corner of the desalination facility site.

²² South Coast Water District Capital Improvement Program Initial Study/Mitigated Negative Declaration, SCH# 2017081049, adopted October 2017.



loads have been included and account for small process equipment (e.g., chemical metering pumps, instruments, etc.) and non-process electrical loads (e.g., building and site lighting, computers, laboratory instruments, etc.).²³ The projected average energy use is anticipated to be approximately 15.61-kilowatt hours (kWh) per 1,000 gallons of treated water during Phase 1, as summarized in Table 3-8, Projected Electrical Energy Use – Normal Operation (5 MGD Potable Water Production Capacity).

For the potential Regional Project, a slightly higher energy use due to additional losses through piping and the membranes is likely to be partially offset by a reduction in pre-treatment requirements. Source water quality and temperature, operating conditions, membrane age and degrees of fouling and other factors may influence the actual energy use at the proposed desalination facility.

**Table 3-8: Projected Electrical Energy Use – Normal Operation
(5 MGD Potable Water Production Capacity)**

Process / System Description	kWh/kgal	MWh/year	% of Total
Slant Well Pumping	0.93	1607	6%
Pre-treatment (including backwashing, backwash water recycling), Solids Handling	0.77	1342	5%
RO Transfer Pumps	0.85	1474	5%
High-Pressure RO Pumps and ERS Booster Pumps	9.15	15858	59%
2nd Pass RO HP Pumps	0.74	1,288	5%
Post-treatment	0.23	400	2%
Product Water Pumping	2.09	3628	13%
Brine Disposal via Ocean Outfall Pumping	0.22	388	1%
Ancillary	0.62	1074	4%
Total Estimated Energy Use	15.61	27,059	100%
Note: 27,059-megawatt hour per year (MWh/year) is roughly equivalent to a 3 megawatt (MW) constant source of power year-round, for which 3.9 MW is used as a peak design load.			

The Phase I Project's peak energy demand is estimated to be 3.9 MW. The energy demand for the Regional Project is roughly three times that of Phase 1. These energy demand estimates reflect the Project Design Feature of using state-of-the-art ERDs, which can reduce energy demand substantially over earlier types of ERDs. One such state-of-the-art ERD is shown in Figure 3-11 below.

In addition to incorporating an Energy Recovery System into the project, the Project will also utilize solar photovoltaic panels on flat rooftop space where practical, further reducing the Project's power demands. Based on the preliminary design, the approximate available roof area will likely be less than 45,000 square feet. Based on typical values for currently available panels this would equate to less than 1000 MWh/year, or roughly 3.7%, of the power demand for Phase 1 of the Project, and less for the potential Regional Project.

²³ Construction related energy demands are factored into the air quality and greenhouse gas analysis in Sections 4.2 and 4.6, respectfully. Energy conservation is discussed in Section 4.6, Greenhouse Gas Emissions, and Section, 6.2, Energy Conservation.



Figure 3-11: Energy Recovery Device (ERD) Model



The electric load-serving entity for the service area that includes the Project site is SDG&E. A study was undertaken by SDG&E (completed in June 2017) to investigate a number of items including the following:

- Supply Voltage
- Power Supply Route
- Reliability and Redundancy
- Cost Implications

The District is continuing to evaluate power supply options that include SDG&E, an alternative power supply, or a combination of the two. The study concluded that local infrastructure can support the 5 mgd Phase 1 Project. The study further identified where Project power would need to come from for the regional Project, shown in Exhibit 3-12, Underground Electrical Line Extensions.

Alternative Power Supply Analysis

The electrical supply assumed for the Project in this EIR is a conventional connection to the existing SDG&E power grid. The Preliminary Design Report (Appendix 10.1) also evaluates several onsite alternative power supply options to reduce cost and improve reliability, including natural gas turbines and natural gas driven fuel cells (see Appendix 10.1 for additional discussion). In addition to onsite alternative energy options, such as battery power, the District is evaluating the feasibility of a Power Purchase Agreement to further reduce project energy cost and potentially reduce greenhouse gas emissions. This option is discussed further in the EIR, in Section 4.6, Greenhouse Gas Emissions.

Several on-site alternative power generation technologies were analyzed. A comparison in terms of footprint constraints for the 15,000 square foot on-site parcel, and pros and cons to determine their applicability to onsite power generation is presented in Table 3-9.

Natural Gas Turbine - Simple cycle natural gas turbines provide a flexible and reliable power generation solution. Simple cycle power plants consist of a gas turbine that is connected to an electrical generator. Modern gas turbines are high-technology packages comprising a gas compressor, fuel combustors and a gas expansion turbine (power turbine). In the gas turbine, air is compressed in the gas compressor. Energy is added to the compressed air by burning liquid or gaseous fuel in the combustor. The hot, compressed air is expanded through a gas turbine, which drives both the compressor and an electric power generator.



A 15,000 square foot building could accommodate gas turbine units capable of meeting 100% of both the Phase I and Regional Project's energy demand.

Table 3-9: On-site Power Generation Technology Options

Technology	Footprint Constraints	Pros/Cons
Internal Combustion Engine	No Constraints	Pros: Mature Technology, Inexpensive/abundant Fuel Supply Cons: Emissions control require additional CAPEX
Natural Gas Turbine	No Constraints	Pros: Mature Technology, Inexpensive/abundant Fuel Supply Cons: Lower overall efficiency than IC Engines
Natural Gas Fuel Cell	Possible Constraints at 15 mgd desalination facility	Pros: Lower GHG emissions than combustion technology Cons: Newer Technology
Solar	Severe Constraints	Pros: Technology continues to advance Cons: Off-site generation decreases overall system reliability compared to on-site generation
Wind	Severe Constraints	Pros: Mature Technology Cons: A suitable off-site location may be difficult to find and does not add reliability to the Project
Waste-To-Energy	Likely Constraints	Pros: Environmentally Friendly Cons: Securing a reliable long-term supply of fuel may be problematic
Battery	Likely Constraints	Pros: Technology continues to advance Cons: Expensive and large space requirements

Natural Gas Fuel Cells - A fuel cell is an electrochemical device that converts chemical energy into electricity. Using natural gas as a fuel source, methane (natural gas) is first converted to hydrogen. The hydrogen then reacts with oxygen in the fuel cell stack to create direct current (DC) power. The DC power is then converted to alternating current (AC) power for use within the facility. Heat is generated in the process, which can be recovered for beneficial use, or rejected to the atmosphere. The Phase I project would require approximately 5,500 square feet to accommodate a fuel cell area producing an estimated 8.4 MW, which would easily meet 100% of the Phase I Project demand, and would meet over 70% of the Regional Project's energy demand. The remainder of the demand for the Regional Project would need to be provided from off-site generation offset or from SDG&E. Natural gas driven fuel cells have many advantages over traditional electrical grid power, even with the SDG&E's diversified grid portfolio of renewable power. Natural gas driven fuel cells have relatively small footprints (can be accommodated within the Project site footprint), have available credits as renewable or alternative energy sources, serve to sequester methane gas (a major source of greenhouse gas emissions) by converting the methane gas to hydrogen and carbon dioxide (which as a much lower global warming potential than methane gas),



have high energy efficiency (up to 90% with heat recovery), and result in very low emissions since there is no combustion involved.²⁴

If natural gas turbine or fuel cells are included in the Project, compliance with South Coast Air Quality Management District (SCAQMD) Rules and Regulations as well as City of Dana Point noise ordinance requirements would be required.

There are three technology options for on-site power generation that are considered to be severely constrained (and thus, infeasible to supply significant power for this Project): Solar Photovoltaic, Wind, and waste-to-energy. Solar Photovoltaic is a technology that is continuing to make advancements in efficiency and cost but only a small portion of the demand can be met using Solar PV onsite. Solar PV would not be consistently reliable as it is dependent on weather conditions. Additionally, an off-site installation would not provide a second power feed to the plant. The second severely constrained option is Wind energy, which is a mature technology but due to the built-up area of Dana Point and the surrounding region, it would not be feasible to find a location for this technology. Lastly, the most constrained technology for this Project is Waste-to-Energy. This type of energy can be one of the more environmentally friendly options but is difficult to secure long-term supply of adequate fuel stocks.

In addition to various Project Design Features including a state-of-the-art Energy Recovery System (using ERD) and rooftop solar PV, natural gas turbines and natural gas fuel cells may also be considered as part of final design, and if included, would require compliance with South Coast Air Quality Management District (SCAQMD) Rules and Regulations as well as City of Dana Point noise ordinance requirements.

Hours of Operation

It is expected that the subsurface slant wells and Doheny Ocean Desalination Facility would be operated continuously 24 hours a day, 7 days a week, with periodic downtime for maintenance activities over the course of the year. Visitor and commercial delivery traffic would generally be limited to typical working hours of 7 AM to 7 PM. Between 4 to 6 employees would be staffed during the Phase 1 Local Project, and up to 12-15 employees for the potential future Regional Project phase.

Site Grading and Hydrology

Based on preliminary design analysis, the desalination facility site will either need flood protection from the adjacent San Juan Creek's 100-year storm (requiring various improvements along the western site boundary and on San Juan Creek's eastern bank) or elevating the Project site approximately three to five feet above existing grade in order to bring project facilities above the 100-year flood zone. The EIR has assumed the hydrology study's "Alternative 1" (elevating the site), which is a worst-case analysis and requires importing additional fill (estimated at 64,600 cubic yards (CY) of import). Alternatives 2 (estimated at 27,000 cubic yards (CY) of import), 3 (estimated at 24,600 cubic yards (CY) of import and an alternative detention basin) and 4 (estimated at 4,100 cubic yards (CY) of import) would each require considerable off-site improvements to San Juan Creek and are therefore not being pursued at this time. Detailed analysis of these options are included in the Project's hydrology study contained in Appendix 10.9.

²⁴ <https://www.fuelcellenergy.com/products/#SureSource4000> (accessed April 26, 2018).



Site Access

Site access would be provided via Pacific Coast Highway (PCH), Interstate 5 (I-5), Stonehill Drive, and the District San Juan Creek Property site's existing internal access road. A more detailed description of the existing transportation system and roadway characteristics can be found in Section 4.13, Transportation and Traffic.

Pacific Coast Highway: PCH is a City facility in the Project area with a speed limit of 35 miles per hour (mph). It is a divided six-lane, east-west arterial highway adjacent to the desalination facility site.

Interstate 5: I-5 is located east of the Project site and provides regional access from Los Angeles County to San Diego County. Access to I-5 can be obtained via Pacific Coast Highway exit, located approximately 1.2 miles east of the desalination facility site.

Stonehill Drive: Stonehill Drive is a four-lane, divided roadway, which runs in an east-west direction located north of the desalination facility site. The posted speed limit is 40 mph. Curbside parking is permitted on both sides of the roadway in select locations.

Site Lighting

The desalination facility site would minimize the extent of permanent site lighting and projection of light, to a level no greater than regular street lighting. Site lighting would be applied only where needed for safe performance of common operation and maintenance activities that may be performed at night and in areas needing lighting for security or safety purposes.

All building and outdoor lighting would be controlled in accordance with California Title 24 requirements, and shall use LED lighting fixtures unless otherwise approved.

3.5 REGIONAL PROJECT COMPONENTS

Note: At this time, the District is only intending to approve the Phase I Project. In addition, the Regional Project would require one or more Regional Partners and a Regional Project product water conveyance system, which has not been identified. Therefore, the Regional Project is addressed in this EIR at the "program" level, and as such would require additional CEQA documentation and regulatory agency approvals before it could be implemented.

A potential future Regional Project would include increased capacity at all of the above-stated components of the desalination facility. In addition, a regional water distribution line would be constructed to carry additional potable water to future (as yet unidentified) Regional Project partners. The following Regional Project components are proposed (detailed descriptions of Regional Project facility components are included in Appendix 10.1, Preliminary Design Report). The District is only pursuing the Phase I Project at this time, and any capacity beyond 5 MGD would be subject to additional CEQA public review and applicable regulatory agency permits and approvals.



Desalination Facility Expansion

The following desalination facility components are anticipated to be sized initially to accommodate an eventual expansion up to 15 MGD of desalination capacity: the chemical storage area, R&D pad, RO membrane building, electrical building, administration/ operations/ lab building, RO suck-back tank, product water tank, discharge holding tank, and several key components of the seawater intake pipeline.

The following desalination facility components would need to be expanded to accommodate the additional intake capacity as part of the Regional Project: the catalytic media filters, RO membrane system, calcite contactors, electrical switchgear and transformers, product water pump station, and solids handling system. All expansions associated with the desalination facility would occur within the footprint of the desalination facility identified in Phase I (see [Exhibit 3-6, Desalination Facility-Conceptual Site Plan](#)).

Additionally, depending on the quality of intake water with respect to iron and manganese at the time of the expansion, the pretreatment flocculators, sedimentation basin, and appurtenances may need to be expanded.

Additional Wells

Additional subsurface intake vaults (pods) and associated slant wells will be necessary to accommodate the additional seawater intake needed for a Regional Project (30 MGD of raw ocean water is required for 15 MGD of product water). The exact location and size of these wells has not yet been determined, although they would be located anywhere within the intake well study area shown in [Exhibit 3-3, Project Facility Locations](#).

Pump Station

A Regional Pump Station (RPS) will likely be necessary to supply water to higher elevations. The potential future RPS would provide the additional pressure needed to push water through local and regional potable water conveyance lines, such as the existing Water Importation Pipeline (WIP), which crosses the Project site and currently delivers imported treated water from the Robert B. Diemer Filtration Plant to SCWD.

Energy Demand

The Regional Project would require roughly three times the energy of the Phase I project, or a peak design load of roughly 12 MW, representing approximately 82,600 MWh/year of electricity.

Offsite Electrical Transmission Facilities

The Regional Project will require extension of electrical service from existing SDG&E substations, either the Laguna Niguel substation or Capistrano substation. Offsite electrical lines would be installed below ground from the substations, within existing streets. Conceptual alignments are shown in [Exhibit 3-12, Underground Electrical Line Extensions](#).



3.6 PROJECT CONSTRUCTION

Phases of Construction / Timeline

The Project is not yet final, and as such, the final construction schedule has not been prepared. In lieu of a finalized construction schedule and scope, conservative parameters and estimates are identified below for Project construction.

- **Phase I** – start October 2019 and complete by December 2021
- **Regional Project** – Depending on regional partnership, phasing and other factors

Staging Areas

Construction equipment and materials would be stored in the construction work areas. Construction staging for the subsurface slant wells on Doheny State Beach and Capistrano Beach Park, the SCWD desalination facility, the product water conveyance alignment, and the raw water conveyance alignment would be within the Project area boundary. To facilitate these activities and provide access in a tight area, a construction zone around the slant well drill rig (the “drill rig work area”) will be required, estimated at 130 feet by 75 feet for DSB, and 100 feet by 75 feet for Capistrano Beach Park. The drill rig work areas will be screened to minimize noise, lighting and aesthetic impacts.

In addition to the drill rig work areas, the slant well construction will require staging areas for equipment laydown and storage. The primary staging area will be at San Juan Creek Property Lot C, immediately adjacent to and north of the proposed desalination facility site. This will minimize loss of parking within DSB and/or Capistrano Beach Park. A small staging area is also desired in close proximity to the slant well under construction, which would be within developed or disturbed areas of Doheny State Beach, preferably the parking lot. Conceptual locations are shown on Exhibit 3-5, Doheny State Beach Intake Well Installation and Staging Area, and include a potential 240 foot by 125 foot staging area in the south portion of the DSB North Day Use Area (where the test slant well modular units were located), and/or a narrow staging area within the DSB South Day Use Area, such that through traffic within DSB is maintained. The specific staging location is subject to modification as part of final design and further discussions with State Parks and County Parks staff. It is envisioned that use of the staging area will include a dewatering system and a crane for a short period of time for structural and mechanical installation.

Due to the current state of the staging areas (e.g. dirt, sand, gravel, or paved) removal of trees or vegetation to use the sites for staging is not anticipated to be necessary. Heavy machinery would not be operated in the staging areas and only motion-censored night-time lighting would be installed.

Due to limited available parking at DSB and Capistrano Beach Park, the District assumes that park encroachment permits for construction will require that construction workers park at the District’s San Juan Creek Property or other offsite locations and shuttle to construction areas within the parks.

Construction Methods

As stated in the Preliminary Design Report (Appendix 10.1), the preliminary construction locations were specifically chosen to minimize beach impacts during testing and commissioning, and maintenance.



Subsurface Intake Wells/Southeast Intake Wells

The installation of the subsurface and southeast intake wells using the proposed dual rotary drilling method would take place in two phases: well drilling followed by well development. Both are discussed in greater detail below.

The dual rotary drilling method provides a large-diameter cased borehole inside which the well is constructed and gravel packed before the outer casing is then extracted. With the dual rotary method, the outer drill casing ensures a stable borehole, even in unconsolidated aquifer materials. This is favorable to methods that require drilling fluids to stabilize the borehole, which may plug the surrounding aquifer and can be difficult to remove during well development. Dual rotary drilling is also a relatively fast method of construction. The method is able to successfully drill through cobbles and boulders with the help of a carbide studded casing guide. Additionally, dual rotary drilling has a relatively small footprint, which is ideal for the Doheny and Capistrano Beach Park settings.

Dual rotary drilling has been effectively used for decades in oil and gas, and to set large-diameter water supply, dewatering and injection wells. Its effectiveness for use in subsurface slant wells has been proven in the 2006 construction of the Doheny test slant well and more recently the 2014 construction of the Monterey Peninsula test slant well.

Construction of the beach facilities will include mobilization, excavation, vault construction, mechanical piping installation, electrical/controls installation, commissioning, and demobilization. Once excavation and construction are completed, the wellhead vaults will be buried with access left via a manway. However, the roof of each vault will be removable in the event that large scale maintenance and infrastructure replacement is required. Note that these preliminary locations have been specifically chosen to minimize beach impacts during testing and commissioning, and maintenance. The final locations of the vaults will be determined in a future design phase and will factor in results from the Coastal Hazards Analysis and any future permit requirements.

High Surf Mitigation

The subsurface slant wells at Doheny State Beach will be set back from the shoreline and as such would not be exposed to high surf hazard conditions during construction. However, due to the more narrow beach conditions, subsurface slant well construction at Capistrano Beach Park would be exposed to high surf conditions during the winter construction period running from October 1 to May 1, to minimize beach recreational and access impacts. Therefore, the following special construction measures are anticipated for High Surf conditions, subject to further refinement during final design and regulation agency permitting.

- The equipment onsite during construction of slant wells is anticipated to include a 10 foot by 40 foot skid-mount containing the DR-40 drill rig and appurtenances, which includes an 8 foot by 40 foot pipe trailer; cyclone/mud tanks, doghouse, generator, as well as other auxiliary items used to support the drilling operation. Due to the close proximity to the coast at the Capistrano Beach Park site area, protection equipment on the drill site will be required in the event of storms or other events which may cause large swell and excessive wave run-up. The skid-mounted drill rig will be supported by four pilings, which will be keyed in to underlying competent materials and will be grouted in place. It is anticipated the pilings will be on the order of 20-30 feet deep. The



platform portion of the skid-mounted rig has the capability of being raised approximately 3-8 feet off the ground and secured by means of the support pilings.

- In the event of large swells and storm surge, depending on the height of the anticipated swells and resulting storm surge, several high surf measures can be implemented. A sand bag wall can be constructed around the drilling equipment to inhibit wave run-up under low run-up conditions of under one-half foot. A K-rail system could be put in place in the event of a larger anticipated wave run-up, less than one foot. In anticipation of an event of larger wave swells, the rig may be temporarily raised where less than 2 feet of water would temporarily be onsite. In the event of a larger storm, appurtenant equipment will be either moved or demobilized depending on the severity of the storm. In this case, the drilling skid may be demobilized or moved depending on the severity of the predicted storm. An approximate 6 to 12 hour lead time would be required in the event that the decision was made to demobilize equipment ahead of a large storm event. To prevent filling the well during a large storm event, the temporary steel casings at the surface would be temporarily sealed with steel caps to secure the well.

Raw Water Conveyance Alignment

The Doheny Park Road alignment is approximately 4,900 LF and will primarily be constructed within Doheny Park Road and Las Vegas Boulevard. Approximately 880 LF of the alignment will consist of a tunnel construction due to two crossings of the BNSF/Metrolink Railroad and one fairly long crossing through Caltrans right of way which includes the underpass of the Pacific Coast Highway Bridge and the associated on-ramps and off-ramps. The tunnel construction will require a steel casing sized at 66 inches to accommodate the ultimate pipe size.

The various tunnel construction methods which will be considered for the raw water pipeline include: microtunneling, horizontal directional drilling (HDD), and conventional jack and bore. The suitability of each method is based on the geotechnical conditions, presence of groundwater, required alignment accuracy, working area requirements, and length of the tunnel. Detailed geotechnical investigations will be required to minimize the likelihood and consequences of the risks associated with each of these tunnel construction methods.

The preferred pipe material of construction is high density polyethylene (HDPE) pipe. HDPE is a pipe material that is commonly used in this application due to its excellent corrosion and chemical resistance compared to traditional pipe materials. It also offers an easy installation due to its flexibility, and is virtually leak free due to its fused joints. This feature also makes HDPE pipe very well suited for seismic conditions.

The preliminary design of the raw water conveyance pipelines use a maximum pressure of 80 pounds per square inch (psi) and a maximum velocity of 7 fps. The raw water conveyance preferred alignment would be along Doheny Park Road. It will begin at the intake wells at Doheny State Park and will require a tunnel crossing at San Juan Creek to intersect the well at Doheny State Beach Campground. The raw water pipeline will continue east through the Doheny State Beach Campground towards the BNSF/ SCRRRA Railroad. To cross the railroad right of way, a tunnel crossing of approximately 140 LF is required using a steel casing. The alignment continues into Pacific Coast Highway/Doheny Park Road with an open cut construction method. Tunnel construction within a steel casing is also required within Caltrans right of way, which begins at the on-ramp onto the Pacific Coast Highway bridge. The tunnel construction spans



approximately 570 LF to the intersection of Las Vegas and Doheny Park Road. The alignment of the raw water pipeline beneath the Caltrans PCH bridge assumes the bents (columns/piles of the bridge) have been seismically retrofitted which will allow a transverse crossing within 10 feet of the footings. The raw water pipeline continues west using open cut methods in Las Vegas Boulevard toward the BNSF/ SCRRRA Railroad and ultimately to the desalination facility. The final reach of tunnel construction is across the railroad right of way onto the desalination facility site, where the length of the tunnel and steel casing is approximately 170 LF.

Construction equipment would include excavators, loaders, haul trucks, compaction equipment, water trucks, cranes, soil sorting and screening equipment, shoring systems, paving equipment, and welding equipment. Soils excavated would be reused to the extent possible or hauled for offsite disposal.

Desalination Facility Site

Exhibit 3-6, Desalination Facility-Conceptual Site Plan provides a diagram of the different site components: SJCOO surge tower, solids handling, discharge holding tank, backwash water clarifier, catalytic media filters, flocculators, booster pumps, potential sedimentation basin, media filter backwash tank and pumps, spent backwash tank, RO membrane building, chemical storage area, chemical delivery containment area, R&D pad, RO suck-back tank, calcite contractors, electrical building, switchgear, approximate location of existing gravity manhole, indicative property boundary, generator, transformers, product water tank, and the admin lab/operations/public outreach building. The site would be accessed via the access road off of Stonehill Drive. Construction of these Project components would include cutting, laying, and welding pipelines and pipe connections; pouring concrete footings for foundations, tanks, and other support equipment; building walls and roofs; assembling and installing major desalination process components; installing piping, pumps, storage tanks, and electrical equipment; testing and commissioning facilities; and finish work such as paving, landscaping, and fencing the perimeter of the site. Construction equipment would include excavators, loaders, haul trucks, graders, compaction equipment, water trucks, dewatering system, cranes, shoring systems, paving machines, pile drivers, and typical equipment required for forming and placing concrete structures. The Project would require the transport of approximately 79,600 CY of dirt, with 15,000 CY to be hauled from the site and 64,600 CY to be hauled to the site.

Brine Disposal System

The pipe which connects the Brine Disposal Tank to the existing SJCOO will be sized for the ultimate capacity so that multiple connections are not required to the SJCOO . Accordingly, a pipe diameter of 24" has been assumed based on design criteria of 8 fps for piping.

Construction Monitoring

During construction of all Project components, contractors would be required to monitor and implement various standard practices in accordance with existing regulations and required measures to mitigate construction-related impacts.

Cleanup

The construction site, access roads, and material storage areas would be maintained in an orderly condition during the construction period. Approved enclosed refuse containers would be used at the



construction site of each Project component. Refuse and trash would be removed from the site and disposed of in an approved manner. Oils or chemicals would be hauled to a disposal facility authorized to accept such materials. No open burning of construction trash would occur without approval of the appropriate agency.

Construction Schedule

There are two phases of development for the proposed Project: Phase I which would consist of up to an initial 5 MGD facility, and Regional Project consist of up to a 15 MGD facility. Per discussions with State Parks and County Parks, construction at the beach would only be allowable during the “off-season” to minimize impacts to beach access and recreation (the specific timeframes are subject to further discussion with State Parks and County Parks staff as part of the Project’s permitting process, but for the purposes of this EIR has assumed to be from 10/1 through 5/1 to avoid the peak Summer season and also to minimize conflict with special events in the Fall and early Summer). It is estimated that it will take 2-3 months to drill and develop a 1000 foot slant well. Following well construction, the “well development” process (pumping the well to remove sands prior to initiating production) would require approximately one month. Therefore, during this off-season construction period, two wells could be constructed with a single drill rig and a separate well development rig, depending on the available construction period based on State Parks and County Parks requirements (the actual available construction period may be less, particularly for DSB, due to relatively steady visitor demand year-round, as discussed in [Section 4.12, Recreation](#)). During Phase 1, for example, 2 wells could be drilled during the first winter period and the other 2 wells could be drilled during the second winter period. Overall, the Phase 1 project is expected to last from October 2019 to December 2021. Future expansions of the Regional Project, up to 15 MGD, have yet to be determined by the District, therefore construction schedules are not yet determined.

The Project would not require any maintenance in the marine environment since all facilities are subsurface, and there are no diffuser modifications proposed as part of the Project. The slant wells are anticipated to require periodic maintenance, estimated at every 5 years. During maintenance, workers would access the slant well from the below-ground wellhead vault, and would typically lower mechanical brushes into the wells to clean the screens. If chemical cleaning products are needed for maintenance, only environmentally inert products would be used. The desalination facility would have ongoing operations/maintenance for continuous potable water production, including periodic deliveries, repairing or replacing equipment as needed, and similar activities. Other relatively minor maintenance activities would occur typical of groundwater well and pipeline projects, similar to the District’s existing facilities.

3.7 ANTICIPATED PERMITS AND APPROVALS REQUIRED

The ocean water desalination facility is proposed almost entirely within the Dana Point city limits. Various Project components would traverse or be located within adjacent cities (i.e., San Juan Capistrano, Laguna Niguel), or in offshore areas under the jurisdiction of the State Lands Commission and California Coastal Commission. Coordination with the cities of Dana Point, San Clemente, and San Juan Capistrano, in addition to multiple federal, State, and regional agencies, would be required for Project implementation. [Table 3-10, Permits, Approvals, and Regulatory Requirements](#), lists the various agencies that will likely be consulted, along with anticipated permits and activities needed for consultation/permit approval. The purpose of this EIR is to analyze the Project and the EIR is intended to apply to all project approvals listed below as well as to any other approvals necessary or desirable to implement the Project.



The Metropolitan Water District's **Local Resources Program** (LRP) provides funding for the development of water recycling, groundwater recovery and seawater desalination supplies that replace an existing demand or prevent a new demand on Metropolitan's imported water supplies either through direct replacement of potable water or increased regional groundwater production. Metropolitan periodically reviews and updates the LRP to accommodate member agencies' needs and encourage more recycled water production to meet regional demand. The last review was in 2014, the impetus for which was the fact that no LRP applications were received in 2013. Metropolitan held a series of workgroup meetings with our member agencies to identify constraints to local project development and explore effective strategies to increase local resource production. Agencies indicated that the \$250/AF incentive was no longer enough to incentivize new projects. Subsequently, the Board authorized the LRP refinements in October 2014 that are in effect today. Under the current program, there are three LRP incentive payment structure options to choose from: (1) sliding scale incentives up to \$340/AF over 25 years, (2) sliding scale incentives up to \$475/AF over 15 years, or (3) fixed incentive up to \$305/AF over 25 years.²⁵ MWD has confirmed that the Project is eligible for LRP funding.

Table 3-10: Anticipated Permits and Approvals Required

Agency/Department	Permit/Approval	Required For
FEDERAL AGENCIES		
Federal Emergency Management Agency (FEMA)	Conditional Letter of Map Revision (CLOMR) or Letter of Map Revision (LOMR)	<ul style="list-style-type: none"> To remove project from 100 year flood zone
U.S. Fish and Wildlife Service (USFWS)	Section 7 consultation under the Endangered Species Act, Migratory Bird Treaty Act (MBTA) (16 USC 703-711), and Fish and Wildlife Coordination Act (16 USC 661-667c)	<ul style="list-style-type: none"> Required to evaluate potential effects of Project construction and operation on any federally protected (i.e., endangered and threatened) plant/wildlife species or habitat.
NOAA National Marine Fisheries Service (NMFS)	Consultation in accordance with Section 7 of the ESA, Section 104 of the Marine Mammal Protection Act of 1972 (16 USC §1374), and Section 305(b), Magnuson-Stevens Fishery Conservation and Management Act (16 USC 1855 (b))	<ul style="list-style-type: none"> Required for Interagency cooperation to avoid take of marine mammals and protect Essential Fish Habitat. Required for concentrate discharge and any temporary work, construction, or operation in the marine environment.
U.S. Army Corps of Engineers (USACE)	Section 404 of the Clean Water Act (33 USC §1344) and Section 10 of the Rivers and Harbors Appropriation Act (33 USC §403)	<ul style="list-style-type: none"> Required for discharge of dredged or fill material into navigable waters of the United States (Section 404 Permit), structures in navigable waters (Section 10 Permit), and activities—including the placement of structures—affecting navigable waters.

²⁵ [http://www.mwdh2o.com/PDF/About Your Water/2794_001.pdf](http://www.mwdh2o.com/PDF/About%20Your%20Water/2794_001.pdf) (accessed May 9, 2018).



Agency/Department	Permit/Approval	Required For
STATE AGENCIES		
State Water Resources Control Board (SWRCB)	Coverage Under the NPDES General Permit For Storm Water Discharges Associated With Construction Activity (General Permit) Water Quality Order 99-08-DWQ	<ul style="list-style-type: none"> Required for discharges that could affect surface, coastal, or groundwaters whose projects disturb one (1) or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres. Specifically required for Project construction activity, which includes clearing, grading, and ground disturbances.
	Ocean Plan Consistency consultation and coordination with San Diego RWQCB, Coastal Commission and State Lands Commission	<ul style="list-style-type: none"> Required pursuant to the SWRCB's Ocean Plan Amendment process.
California State Lands Commission (CSLC)	General Surface Lease (Right-of-Way Permit) (Pub. Resources Code §6000 et seq.; 14 Cal. Code Regs. §1900 et seq.)	<ul style="list-style-type: none"> Required for any construction occurring on CLSC lands, located below the Mean High Tide Line. Required SJCOO relative to change in use/concentrate discharge.
California Department of Fish and Wildlife (CDFW)	Lake/Streambed Alteration Agreement (Fish and Game Code §1602)	<ul style="list-style-type: none"> Required for any activities that divert, change, or deposit debris, waste, or other materials within the bed, channel, or bank of any river, stream, or lake, including inland waters and within some areas of bays and estuaries (i.e., drainage crossings and concentrate discharge). Required for any activities that may substantially adversely affect existing fish or wildlife resources.
	California Endangered Species Act Consultation (Fish and Game Code §2081.1)	<ul style="list-style-type: none"> Required if the Project involves the potential impacts to CDFW-listed candidate, threatened, or endangered species.
Coastal Zone Management Act (CZMA)	CZMA Consistency Determination	<ul style="list-style-type: none"> Required for all Coastal Development Permits where federal permits or approvals are involved.
California Coastal Commission (CCC)	Coastal Development Permit in accordance with the California Coastal Act (Pub. Res. Code §30000 et seq.)	<ul style="list-style-type: none"> Required for marine-related improvements that change the intensity of land use within the Coastal Zone. Required for Project development proposed on tidelands, submerged lands, and public trust



Agency/Department	Permit/Approval	Required For
		lands (i.e., intake wells and brine discharge facilities). <ul style="list-style-type: none"> With “consolidated permit review”, the Coastal Commission may also act as Coastal Act reviewing authority for onshore areas within the jurisdiction of the City of Dana Point.
California Division of Drinking Water (DDW)	Permit to Operate a Public Water System (Health and Safety Code §116525)	<ul style="list-style-type: none"> Required prior to operation for potable use of the desalinated water (public water system).
California Department of Parks and Recreation Office of Historic Preservation	Coordination under Section 106 of the National Historic Preservation Act (16 USC 470 et seq.)	<ul style="list-style-type: none"> Required for any Project activities which may impact historic properties that are listed in or meet the criteria in the National Register of Historic Places.
California Department of Transportation (Caltrans)	Encroachment Permit (Streets & Highway Code §660 et seq.)	<ul style="list-style-type: none"> Required for raw water conveyance components that would be installed within State highway right-of-ways under Caltrans jurisdiction.
California Department of Toxic Substances Control	Hazardous Waste Identification Number	<ul style="list-style-type: none"> Required for the desalination facility. Pertains to anyone who generates, transports, offers for transport, treats, stores, or disposes of hazardous waste.
	Groundwater Remediation (if required)	<ul style="list-style-type: none"> May be required for construction dewatering should groundwater require remediation.
REGIONAL AGENCIES		
Metropolitan Water District of Southern California	Local Resource Program Funding	<ul style="list-style-type: none"> The District intends to seek LRP funding from MWD.
San Diego Regional Water Quality Control Board (SDRWQCB)	NPDES Permit/Amendment in accordance with Clean Water Act Section 402 (33 USC §1342)	<ul style="list-style-type: none"> Required for post-construction brine concentrate discharge (new NPDES Permit or amendment to existing SOCWA SJCOO NPDES Permit)
	Waste Discharge Requirements (WDR) in accordance with the Porter-Cologne Water Quality Control Act (Water Code §13000 et seq.)	<ul style="list-style-type: none"> Required for construction dewatering and for post-construction brine concentrate discharge.
	Water Quality Certification in accordance with Section 401 of the Clean Water Act (33 USC §1341). Certification based upon finding that discharge will meet water quality standards and that the proposed discharge will comply with water quality	<ul style="list-style-type: none"> Required for post-construction brine discharge.



Section 3.0

Project Description

Agency/Department	Permit/Approval	Required For
	standards, defined as numeric and narrative objects in the Basin Plan.	
	Ocean Plan Consistency Determination, including Water Code §13142.5(b) Determination	<ul style="list-style-type: none"> Required for the operation of new or expanded desalination facilities using seawater. Determination required by Water Code § 13142.5, subdivision (b) for evaluation of the best available site, design, technology, and mitigation measures feasible to minimize the intake and mortality of all forms of marine life.
	Groundwater Extraction Permit	<ul style="list-style-type: none"> Well development water discharge
South Coast Air Quality Management District (SCAQMD)	Permit to Construct	<ul style="list-style-type: none"> Required for the construction of the ocean water desalination facility and raw water conveyance components.
	Permit to Operate	<ul style="list-style-type: none"> Required for any backup sources of power that could emit air contaminants, such as emergency generators located at the desalination facility.
LOCAL AGENCIES		
CEQA Lead Agency (South Coast Water District Board of Directors)	<ul style="list-style-type: none"> Certification of Final Environmental Impact Report (CEQA Compliance) Project Approval 	<ul style="list-style-type: none"> Required for Project implementation.
City of Dana Point	Coastal Development Permit in accordance with City of Dana Point Local Coastal Program	<ul style="list-style-type: none"> Required for onshore construction of the desalination facility and related Project component, located within the Coastal Zone and under the City of Dana Point LCP jurisdiction. May be administered by the California Coastal Commission with the City's consent for consolidated permit review.
	Encroachment Permit	<ul style="list-style-type: none"> Required for raw water conveyance components.
Orange County Department of Public Works	<ul style="list-style-type: none"> Letter of Map Revision (LOMR) Encroachment Permit and Review/Approval by Manager of OCPW/IP/FPS 	<ul style="list-style-type: none"> File LOMR with FEMA required when floodplains change Required if pipelines encroach into OCFD's ROW
Orange County Health Care Agency	<ul style="list-style-type: none"> Well Construction permit 	<ul style="list-style-type: none"> Potential permit needed for beach diffuser
South Orange County Wastewater Authority	Connection Agreement	<ul style="list-style-type: none"> Required for use of SOCWA's San Juan Creek Ocean Outfall for brine discharge, and associated NPDES Permit coordination TBD



Agency/Department	Permit/Approval	Required For
San Juan Basin Authority/ SWRCB	Water Rights Agreement (if needed)	<ul style="list-style-type: none"> For San Juan Basin water rights
Orange County Transportation Authority	License Agreement	<ul style="list-style-type: none"> May be required to use real property owned by OCTA
Orange County Parks City of Laguna Niguel City of San Juan Capistrano	Encroachment Permit Encroachment Permit (Regional Project only) Encroachment Permit (Regional Project only)	<ul style="list-style-type: none"> May be required for raw water conveyance components and intake well construction at Capistrano Beach Park. Required for offsite underground SDG&E electricity line extensions to the desalination facility site Required for offsite underground SDG&E electricity line extensions to the desalination facility site
Southern California Regional Rail Authority	Right of Entry Permit	<ul style="list-style-type: none"> Required for raw water conveyance pipeline
Capistrano Bay Community Services District	Easement/Encroachment Agreement	<ul style="list-style-type: none"> For potential alternate raw water conveyance alignment along CSD access road.
OTHER		
San Diego Gas & Electric	Electricity Service	<ul style="list-style-type: none"> Required for ocean water desalination facility utility connections.



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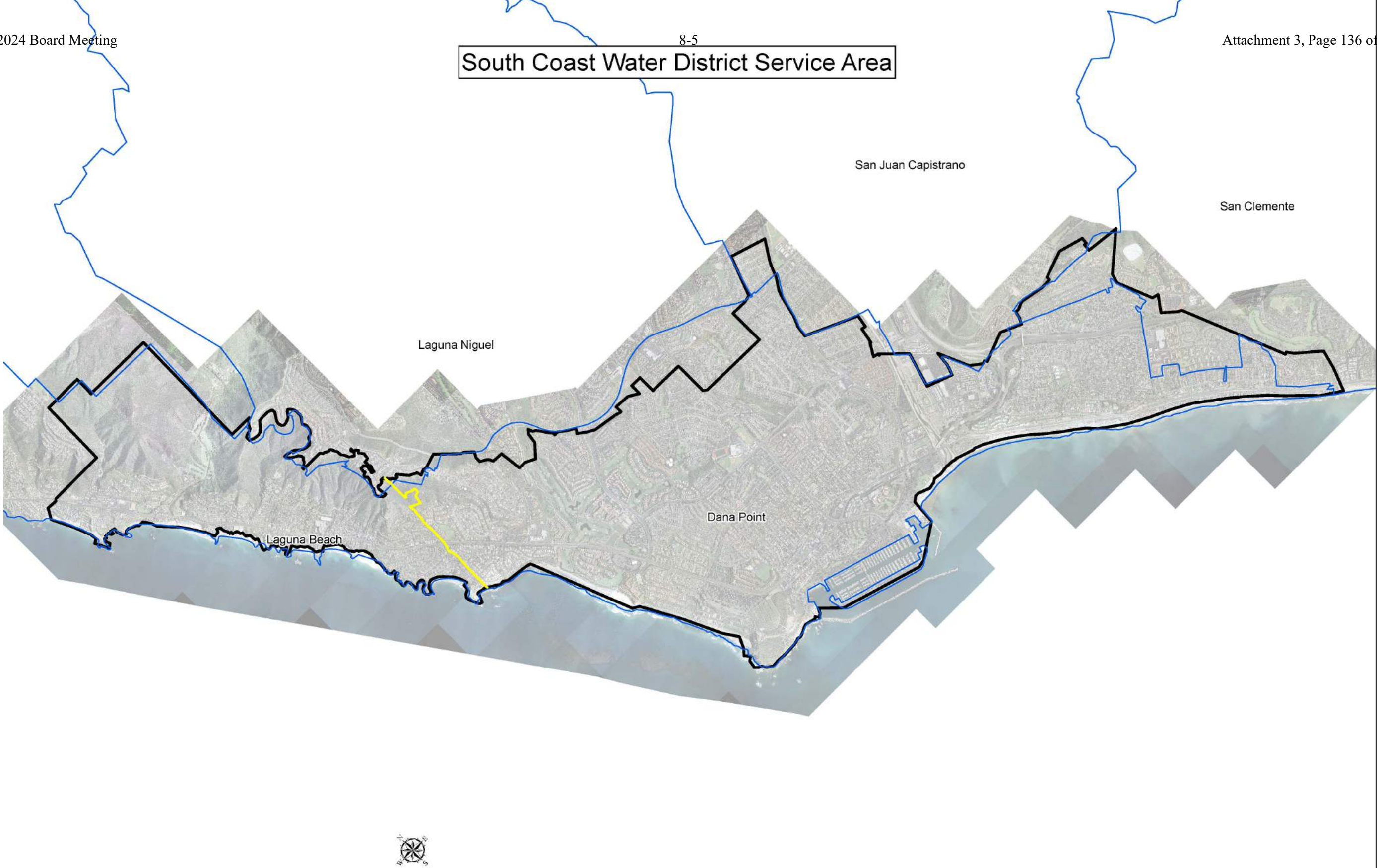
EXHIBIT 3-1: Regional Vicinity

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn

South Coast Water District Service Area



Source: http://www.scwd.org/about/service_area/default.htm SCWD





Source: Appendix 10.1, PDR, Page. 18. *Offshore discharge shown on Exhibit 3-1 / Offsite electrical lines shown on Exhibit 3-6 / Refer to Preliminary Design Report (Appendix 10.1) / Pacific Coast Highway=PCH/SR-1 / Coast Highway starts on the west edge of the San Juan Creek traversing to the east along the coast.

EXHIBIT 3-3: Project Facility Locations*

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn



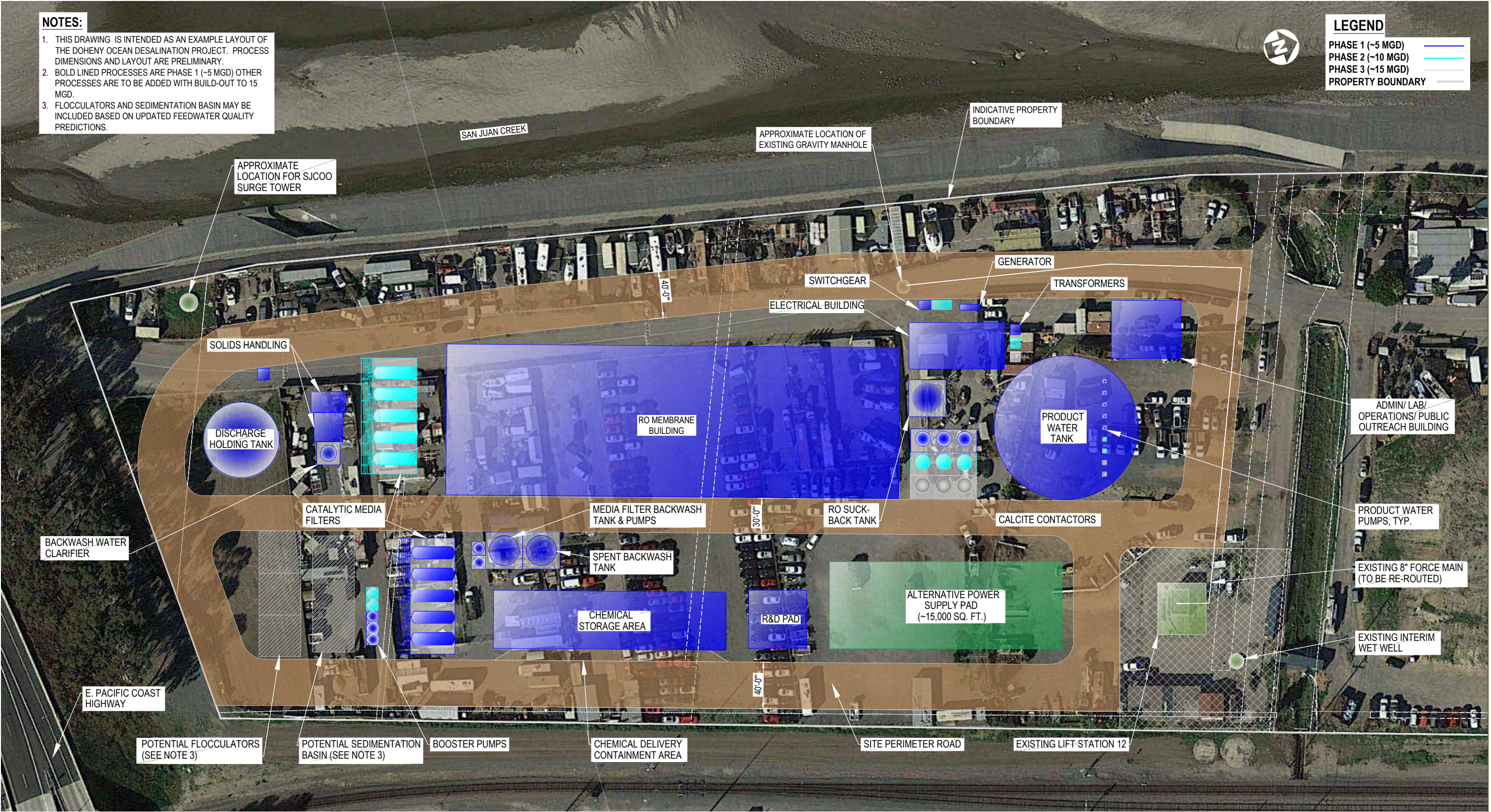
Source: Appendix 10.1, PDR - Complete Drawing Package, Page 13.





Source: Appendix 10.1, PDR - Complete Drawing Package, Page. 12.





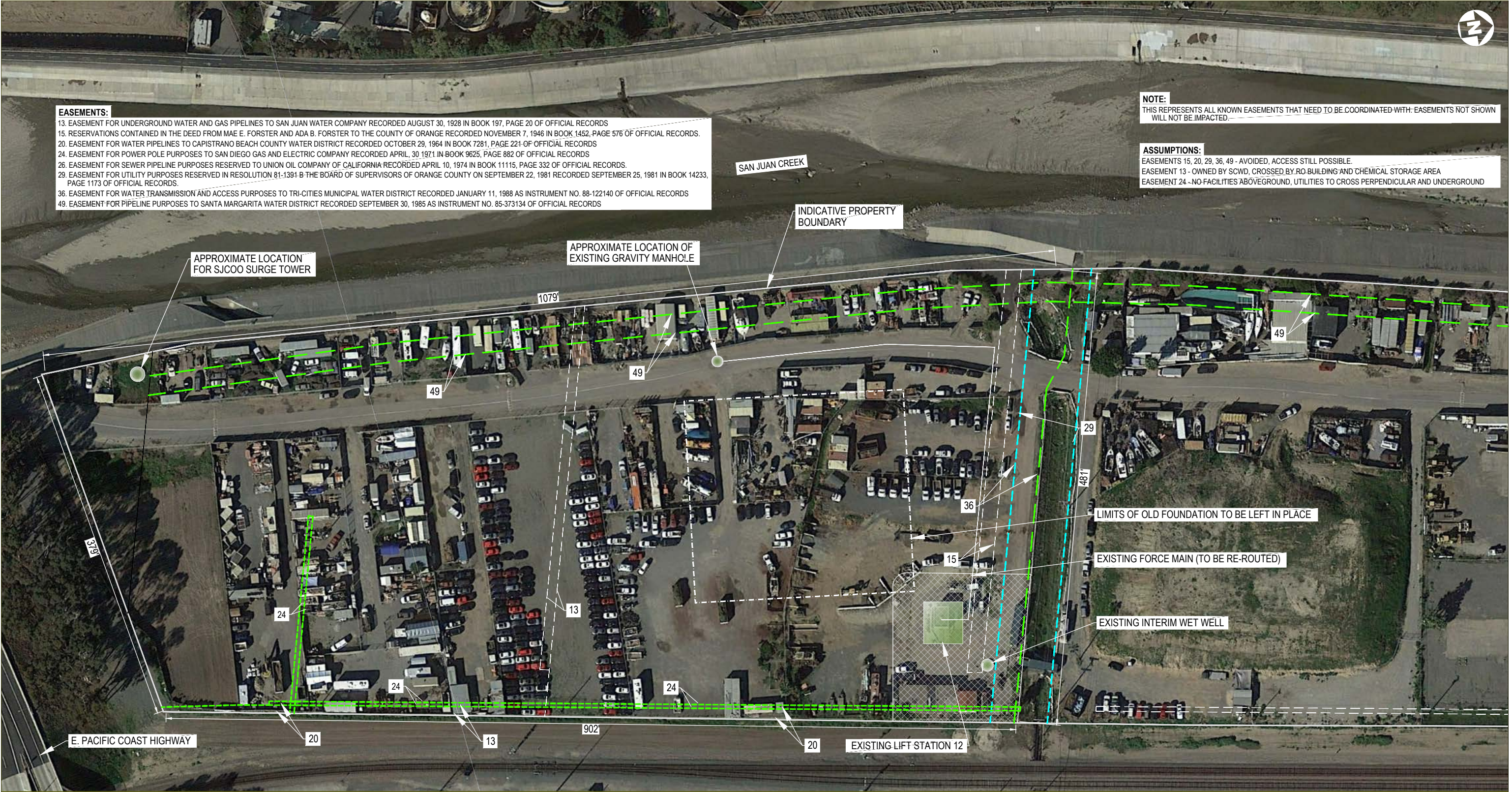
Source: Appendix 10.1, PDR - Complete Drawing Package, Page 6.

EXHIBIT 3-6: Desalination Facility-Conceptual Site Plan

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn



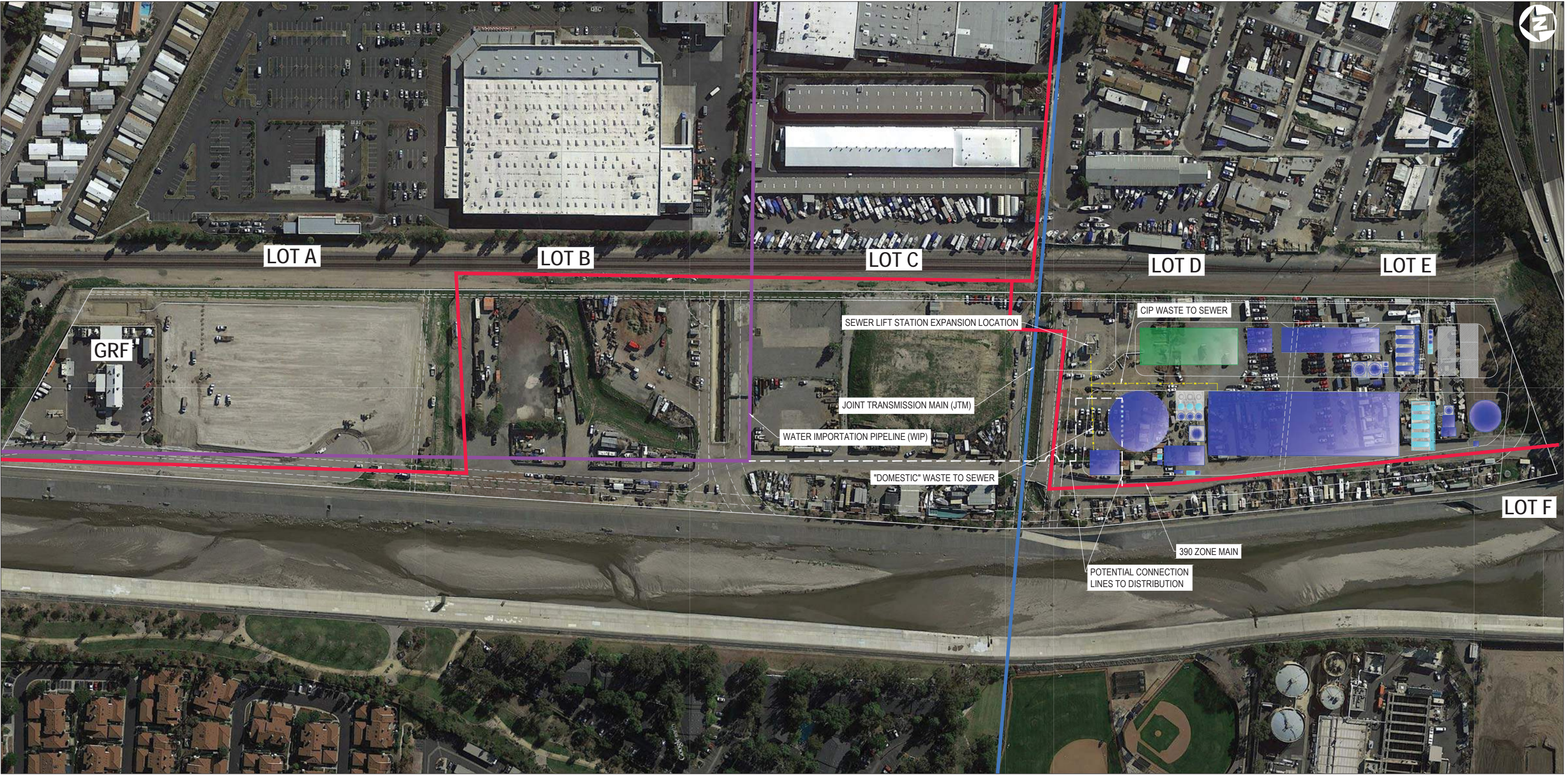
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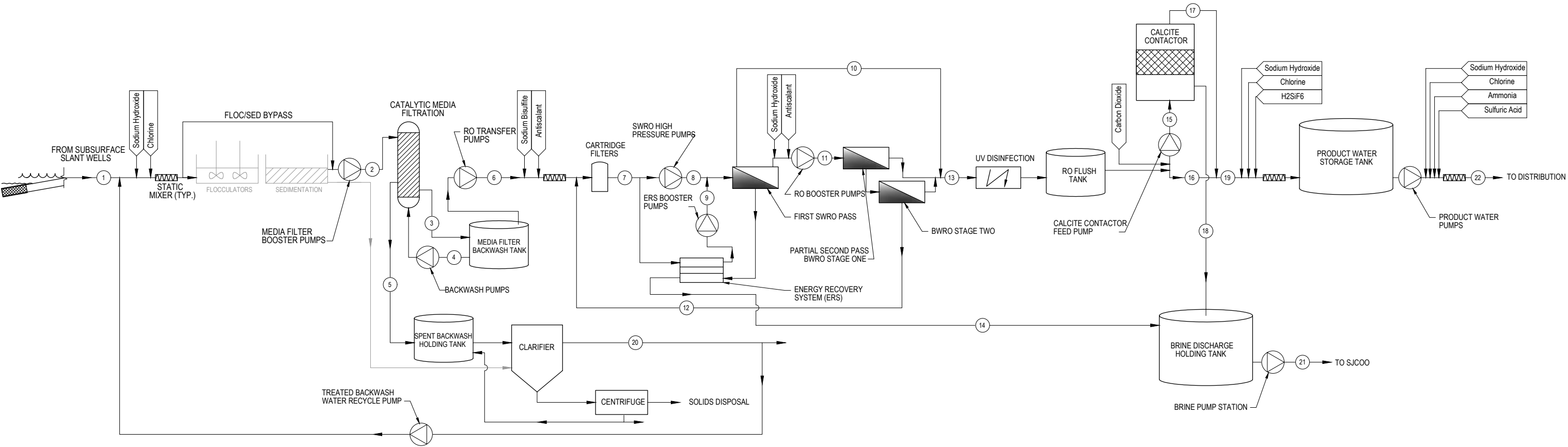


Source: Appendix 10.1, PDR - Complete Drawing Package, Page 8.





Source: Appendix 10.1, PDR - Complete Drawing Package, Page 9.



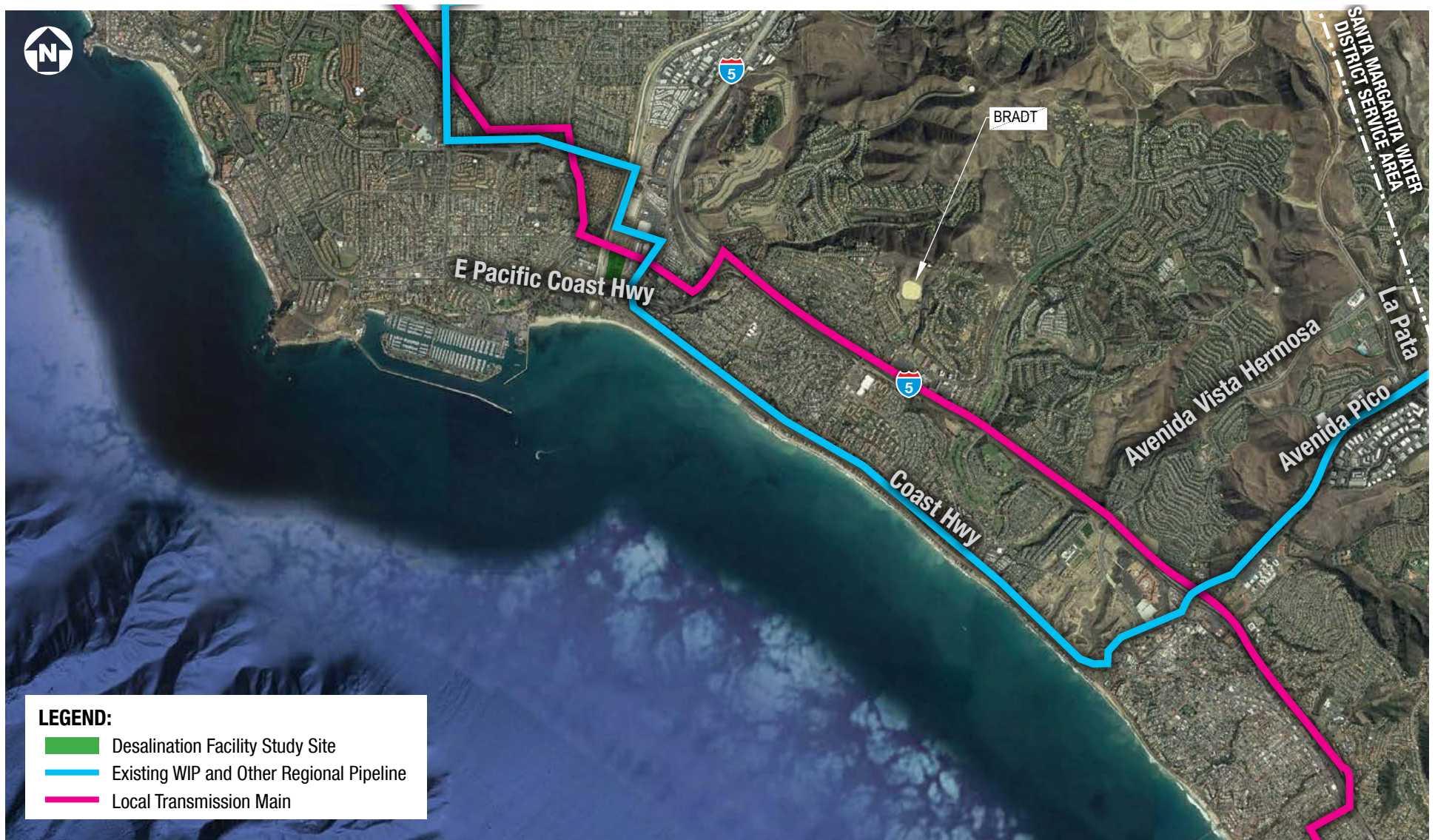
Source: Appendix 10.1, PDR - Complete Drawing Package, Page 5.

EXHIBIT 3-10: Conceptual Process Flow Diagram for Seawater Desalination

South Coast Water District
Doheny Ocean Desalination Project



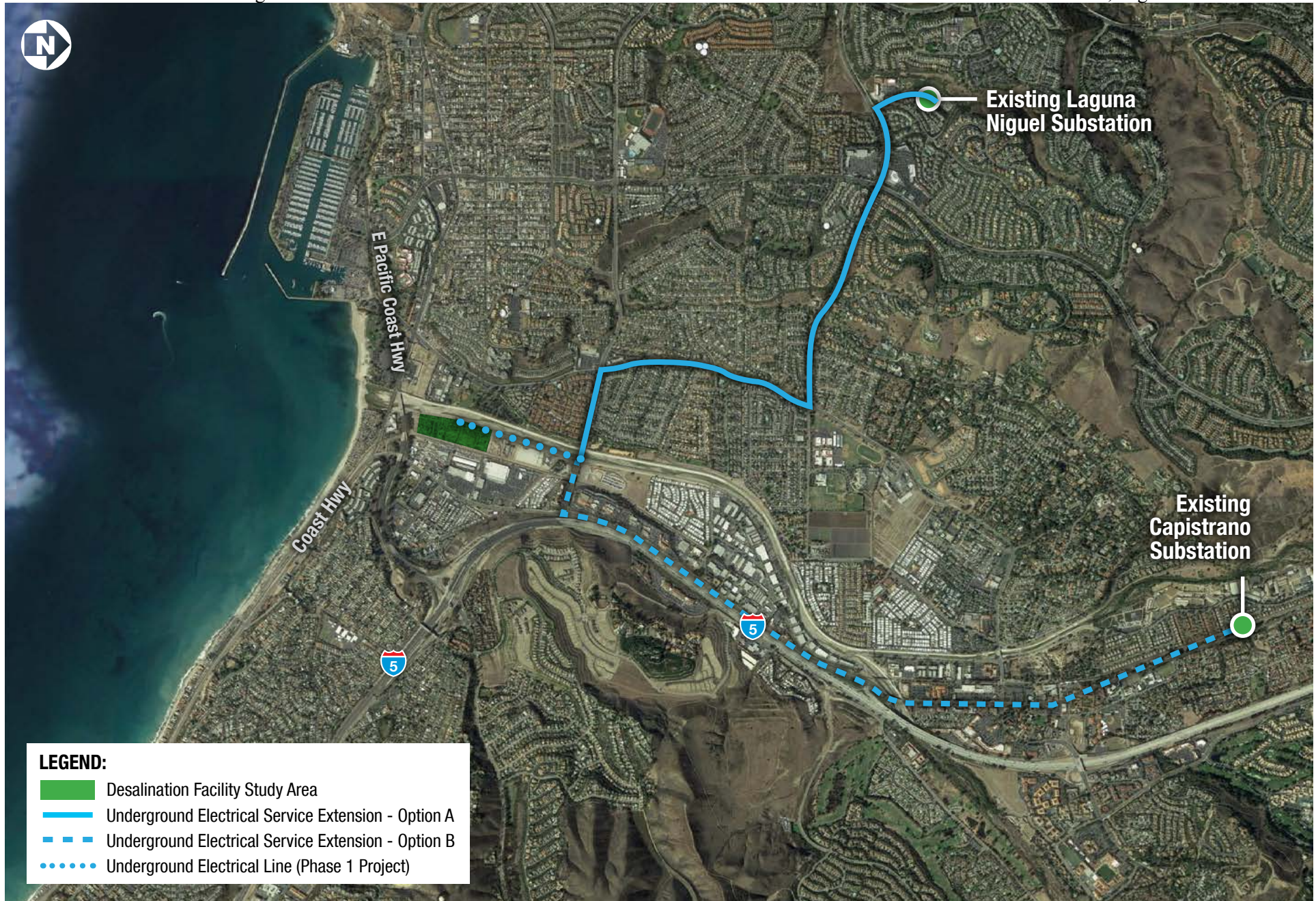
Kimley»Horn

**EXHIBIT 3-11: Local and Regional Water Pipelines**

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn

**EXHIBIT 3-12: Underground Electrical Line Extensions**

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn

4.0 Environmental Impact Analysis

Organized by environmental resource category, Section 4.0, Environmental Impact Analysis, provides an integrated discussion of the affected environment including regulatory and environmental settings and environmental impacts and mitigation measures to reduce or avoid potentially significant impacts associated with implementation of the Project. Section 6.0, Other CEQA Considerations, discusses mandatory findings of significance and other required CEQA topics.

4.0.1 APPROACH TO THE ENVIRONMENTAL ANALYSIS

As discussed in Section 2, Introduction, South Coast Water District (SCWD) intends to apply to the State Revolving Fund (SRF) Program to finance the Project. The State Water Resources Control Board (SWRCB) administers the SRF Loan Program, which is partially funded by the United States Environmental Protection Agency (USEPA) and is a low-interest loan funding source for large water and sanitation projects. To receive a State Revolving Fund loan, a Project applicant must demonstrate compliance with several federal regulations, including the Endangered Species Act (ESA), National Historic Preservation Act (NHPA), and the General Conformity Rule for the Clean Air Act (CAA). Rather than utilizing a separate document to comply with the National Environmental Policy Act for the SRF distribution, USEPA uses CEQA as the compliance base for the SRF Program, in addition to compliance with ESA, NHPA and CAA. Collectively, these requirements are known as “CEQA-Plus.” The CEQA-Plus requirements are set forth in the applicable EIR sections, including: Section 4.2, Air Quality (CAA), Section 4.3, Biological Resources (ESA), Biological Resources - Terrestrial (ESA), Section 4.4, Cultural Resources (NHPA), Section 4.8, Hydrology and Water Quality, and Section 4.9, Land Use and Planning.

4.0.2 SECTION CONTENT AND DEFINITION OF TERMS

The environmental setting, impacts, and mitigation measures related to each environmental impact area are described in Sections 4.1 through 4.15. Section 4.0 is organized into the following environmental topic areas:

- Section 4.1, Aesthetics
- Section 4.2, Air Quality
- Section 4.3, Biological Resources
- Section 4.4, Cultural Resources
- Section 4.5, Geology and Soils
- Section 4.6, Greenhouse Gases
- Section 4.7, Hazards and Hazardous Materials
- Section 4.8, Hydrology and Water Quality
- Section 4.9, Land Use and Planning
- Section 4.10, Noise
- Section 4.11, Public Services
- Section 4.12, Recreation
- Section 4.13, Transportation and Traffic



- Section 4.14, Tribal Cultural Resources
- Section 4.15, Utilities and Service Systems

Each potentially significant environmental issue area is addressed in a separate EIR Section (4.1 through 4.15) and is organized into the following Subsections:

- **“Affected Environment”** consists of two subsections: Regulatory Setting and Environmental Setting, which include the following information:
- **“Regulatory Framework”** identifies the plans, policies, laws, and regulations that are relevant to each resource area and describes permits and other approvals necessary to implement the Project. As noted above, the EIR needs to address possible conflicts between the Project and the requirements of federal, State, regional, or local agencies, including consistency with adopted land use plans, policies, or other regulations for the area. Therefore, this subsection summarizes or lists the potentially relevant policies and objectives, such as from the applicable *City of Dana Point General Plan* and *Municipal Code*.
- **“Environmental Setting”** provides an overview of the existing physical environmental conditions in the study area that could be affected by implementation of the Project (i.e., the “affected environment”).
- **“Significance Criteria”** provides the criteria used in this document to define the level at which an impact would be considered significant in accordance with CEQA. Significance criteria used in this EIR are based on the checklist presented in Appendix G of the State CEQA Guidelines, factual or scientific information and data, and regulatory standards of federal, State, and local agencies.
- **“Impacts and Mitigation”** are listed numerically and sequentially throughout each section, for each Project component. A bold font impact statement precedes the discussion of each impact and provides a summary of each impact and its level of significance. The discussion that follows the impact statement includes the analysis on which a conclusion is based regarding the level of impact.
- **“Cumulative Impacts”** identifies potential environmental impacts of past, present and reasonably foreseeable future projects, in combination with the proposed Project;
- **“Significant Unavoidable Impacts”** identifies environmental impacts that may remain significant even with implementation of reasonable and feasible mitigation measures.

“Mitigation Measures” are recommended where feasible to avoid, minimize, offset, or otherwise compensate for significant and potentially significant impacts of the Project, in accordance with the State CEQA Guidelines (§ 15126.4). Each mitigation measure is identified by resource area, numerically, and sequentially. For example, mitigation measures in Section 4.1, Aesthetics, are numbered AES-1, AES-2, AES-3 and so on. Pursuant to CEQA, the EIR provides a brief discussion of potential significant impacts of a given mitigation measure, if applicable.

The level of impact of the Project is determined by comparing estimated effects with baseline conditions, in light of the thresholds of significance identified in the EIR. Under CEQA, the existing environmental setting normally represents baseline conditions against which impacts are compared to determine significance. The environmental baseline is typically set as the date of Notice of Preparation distribution, unless more recent data is determined appropriate for utilization in the EIR. Project component-specific



analyses are conducted to evaluate each potential impact on the existing environment. This assessment also specifies why impacts are found to be significant, potentially significant, or less than significant, or why there is no environmental impact.

A significant effect on the environment is defined for CEQA purposes as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the Project. A potentially significant impact is one that, if it were to occur, would be considered a significant impact; however, the occurrence of the impact is uncertain. A “potentially significant” impact and “significant” impact are treated the same under CEQA in terms of procedural requirements and the need to identify feasible mitigation. A “less than significant” impact is one that would not result in a substantial adverse change in the physical environment (applicable significance thresholds would not be exceeded in consideration of Project Design Features and existing laws, ordinances, standards or regulations).

Both direct and indirect effects of the Project are evaluated for each environmental resource area. Direct effects are those that are caused by the action and occur at the same time and place. Indirect effects are reasonably foreseeable consequences that may occur at a later time or at a distance that is removed from the Project area, such as growth-inducing effects and other effects related to changes in land use patterns, population density, or growth rate, and related effects on the physical environment.

Cumulative impacts are discussed below and throughout Section 4.0, at the end of each individual resource section.

There are no mitigation measures proposed when there is no impact or the impact is determined to be “less than significant” prior to mitigation. Where sufficient feasible mitigation is not available to reduce impacts to a less than significant level, the impacts are identified as remaining “significant and unavoidable.” No unavoidable significant impacts have been identified by the District.

4.0.3 REGIONAL PROJECT ANALYSIS

At this time, the District intends to only implement the local Phase I Project (up to 5 MGD), which the EIR addresses at a “project-level” for permitting and construction. The Regional Project (up to 15 MGD) will be addressed at a “programmatic” level, which means the District would prepare supplemental CEQA documentation and obtain associated additional regulatory agency approvals once a specific Regional Project concept is developed. The District has no Regional Project partners at this time. The Regional Project, if constructed in the future following subsequent CEQA review and permitting, would require various on-site and off-site infrastructure improvements including the following (see further details in Project Description, Section 3.5 [Regional Project Components]):

- Additional subsurface intake slant wells (at locations within the Study Area)
- Additional raw water conveyance collector pipelines between individual slant wells and the existing conveyance system (at locations within the Study Area)
- Additional reverse osmosis membranes and associated pre-treatment and post-treatment storage facilities (within the desalination facility site)
- Additional product water conveyance, pumping and storage facilities (exact nature/location undetermined due to lack of current specific regional partners or end users)
- Additional employees for construction, operation, and maintenance



Regional Project – Potential Impacts

The District is only proposing to approve the Phase I Project and pursue required permits and approval. Possible future pursuit of a Regional Project would only occur through a separate CEQA process with appropriate public review and stakeholder involvement. The following is a programmatic discussion of potential future Regional Project facility impacts. Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential impacts of a potential future Regional Project. In addition, Regional Project slant well siting has not been identified, as these wells would be sited following operation of the Phase I Project, to allow slant well siting that minimizes potential impacts while meeting raw water production requirements. Finally, the Regional Project product water conveyance facilities are not known, as these would depend on which partner(s) participate, if any, and what method(s) is used to convey the desalinated product water into the regional transmission system, likely requiring considerable regional transmission pipelines, pump stations and/or storage tanks and related facilities. Therefore, analysis of a Regional Project is speculative at this time, and would be subject to separate CEQA review at such time a specific Regional Project is proposed.

Slant wells – Construction and operational impacts associated with Regional Project slant wells would generally be similar to impacts described for the Phase I Project, but with an estimated twice as many wells (depending on well siting and production capacities), the total duration of construction would be roughly double (likely over a four-year period rather than a two-year period with Phase I). Some new slant wells could be installed through existing vaults which would limit the physical footprint of the Regional Project. Monitoring during Phase I slant well construction and operation will help in the siting and operation of future slant wells.

Raw Water Conveyance – Construction and operational impacts associated with raw water conveyance pipelines would generally be slightly less than that described for the Phase I Project, since portions of the raw water conveyance system would be constructed during Phase I, especially at sensitive crossings such as the San Juan Creek Lagoon, San Juan Creek, MetroLink railroad and major intersections.

Desalination Facility Site – Construction impacts for the Regional Project would be relatively minimal for the desalination facility, since the desalination facility site would have already been graded and the major structures already in place with capacity to accommodate additional equipment or storage. The additional RO membranes and related equipment would be roughly equivalent to triple the energy demand and brine discharge associated with the Phase I Project, which is quantified in the respective EIR sections. From both an energy demand and brine discharge perspective, the Regional Project impacts are estimated to less than significant with mitigation.

Regional Project Product Water Conveyance Facilities – It would be speculative to identify potential Regional Project product water conveyance facilities at this time, as they would depend on the location of the potential future partner(s), the volume of water for each partner(s) and the conveyance system(s).

Concentrate (Brine) Disposal System – The Regional Project would utilize SOCWA's SJCOO, with no new facilities anticipated. The Regional Project brine discharge has been modeled ([Appendix 10.11](#)), which shows the Regional Project brine discharge can meet Ocean Plan Amendment requirements in all reasonably foreseeable scenarios.



Offsite Underground Electrical Line Extensions - A subcomponent of the desalination facility includes electrical line connections and extensions. At this time, SDG&E has indicated that electrical service would be provided to the Phase I project using existing facilities, with a short connection from the desalination site to underground electrical lines in Stonehill Drive. For the Regional Project, electrical line construction (lines would be installed belowground, in existing roads) would occur within 0.25 miles of the Dana Point Montessori, Del Obispo Elementary School and Marco Forster Middle School (see [Table 4.7-2](#)). However, these electrical lines would be installed using typical trenching methods by SDG&E and its contractors, and would be belowground. No unusual circumstances are anticipated to suggest this construction presents a significant health hazard. Therefore, with implementation of standard construction practices and compliance with applicable regulations, no significant impacts are anticipated.

4.0.4 CUMULATIVE IMPACTS ANALYSIS

CEQA REQUIREMENTS

Under the CEQA Guidelines, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts” (14 CCR § 15130(a)(1)). According to CEQA, an EIR must discuss cumulative impacts if the incremental effect of a project, combined with the effects of other projects is “cumulatively considerable” (14 CCR § 15130(a)). Together, these projects compose the cumulative scenario which forms the basis of the cumulative impact analysis.

Cumulative impacts analysis should highlight past actions that are closely related either in time or location to the project being considered, catalogue past projects, and discuss how they have harmed the environment and discuss past actions even if they were undertaken by another agency or another person. Both the severity of impacts and the likelihood of their occurrence are to be reflected in the discussion, “but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact” (14 CCR § 15130(b)).

For purposes of this EIR, the proposed Project would cause a cumulatively considerable and therefore significant cumulative impact if:

- The cumulative effects of other past, current, and probable future projects without the Project are not significant and the Project’s incremental impact is substantial enough, when added to the cumulative effects, to result in a significant impact.
- The cumulative effects of other past, current, and probable future projects without the Project are already significant and the Project would result in a cumulatively considerable contribution to the already significant effect. The standards used herein to determine whether the contribution is cumulatively considerable include the existing baseline environmental conditions, and whether the Project would cause a substantial increase in impacts, or otherwise exceed an established threshold of significance.

The approach and geographic scope of the cumulative impact evaluation vary depending on the environmental topic area being analyzed. The individual “Cumulative Impacts” subsections within each environmental topic present impacts and mitigation measures for the proposed Project. Each section of



the DEIR begins with a summary of the approach and the geographic area relevant to that environmental topic area. For most environmental topic areas, the list approach is used. The list of potentially relevant projects as well as methodology and relevant planning documents are discussed in each impact section's discussion of "Cumulative Impacts."

The cumulative analysis must be in sufficient detail to be useful to the decision maker in deciding whether, or how, to alter the Project to lessen cumulative impacts. Table 4-1, Cumulative Projects List provides a list of projects that were used in assessing the potential for cumulative impacts from the proposed Project. Most of the projects included in the cumulative analysis are undergoing, or will be required to undergo, their own independent environmental review under CEQA. Significant adverse impacts of the cumulative projects would be required to be reduced, avoided, or minimized through the application and implementation of mitigation measures. The net effect of these mitigation measures is assumed to be a general lessening of contribution to cumulative impacts. This discussion, found at the end of each impact section, provides an analysis of overall cumulative effects of the Project taken together with other past, present, and reasonably foreseeable probable future projects.

GEOGRAPHIC SCOPE

In respect to this EIR analysis, cumulative effects can generally be geographically classified as localized, site-specific resource issues, regional, watershed level resource issues and global resource issues. At the localized, site-specific resource scale, the Project's cumulative impacts have been analyzed for all 14 resource topics.

Each of the cumulative impact categories (EIR Section 4.0) is analyzed and regulated by different agencies and associated regulatory or policy documents, in order to best protect the resource in question. The analysis of cumulative effects considers a number of variables, including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. The geographic scope of each analysis is based on the topography surrounding the Project site and the natural boundaries of the resource affected, rather than jurisdictional boundaries. The geographic scope of cumulative effects will often extend beyond the scope of the direct effects, but not beyond the scope of the direct and indirect effects of the proposed Project. The EIR addresses the Project's potentially significant impacts, recommends Project-specific mitigation measures, and then also identifies existing or recommended measures to address potential cumulative impacts.

PROJECT APPROACH

There are two commonly used approaches, or methodologies, for establishing the cumulative impact setting or scenario. One approach is to use a "list of past, present, and probable future projects producing related or cumulative impacts including, if necessary, those project outside the control of the agency, ..." (14 CCR § 15130(b)(1)(A)). The other is to use a "summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect" (14 CCR § 15130(b)(1)(B)).

This EIR uses the list-based approach plus the "previously certified EIR" approach ("hybrid approach") to provide a tangible understanding and context for analyzing the cumulative effects of a project. Table 4-1, Cumulative Projects List, provides information pertaining to relevant projects within Dana Point that are in the vicinity of the Project site. The City's General Plan, Doheny State Beach General Plan EIR,



and other planning documents (such as recent SCWD CEQA documents, recent City of Dana Point CEQA documents, and SCAG's RTP/SCS EIR) were used as additional reference points in establishing the cumulative scenario for the analysis. Taken together, the projects identified in Table 4-1 provide context as to the nature of potential cumulative projects, and the previous CEQA documents provide further context as to cumulative impacts considered for prior projects. The intent of the cumulative impact discussions is to provide sufficient information to inform decision-makers and the public, rather than "tiering" off of prior CEQA documents for cumulative impacts.

TYPES OF PROJECTS CONSIDERED

Impacts associated with implementation of the Project would be near- and long-term as the proposed Project would include the proposed Phase I components as well as potential future construction and operational activities associated with the Regional Project. The following project summaries represent past, present and probable future projects that could result in cumulative impacts when combined with the Doheny Ocean Desalination Project, focusing on the local onshore cumulative environment as well as the regional offshore environment. Related onshore projects and other possible development in the Project area determined as having the potential to interact with the proposed Project to the extent that a significant cumulative effect may occur are outlined in Table 4-1, Cumulative Projects.

Table 4-1: Cumulative Projects

Project Name	Project Summary
Cumulative Local Projects	
City of Dana Point General Plan EIR	The General Plan EIR concluded that the following areas were found not to pose a significant environmental impact: Natural Resources, Libraries, Hospitals, Telecommunications, and Fiscal Resources. The primary long-term effect of the implementation of the General Plan is the conversion of remaining vacant land to developed uses. Most of the vacant land that presently exists in the planning area is designated for industrial and open space uses along San Juan Creek. The General Plan would also result in the development of over 3 million square feet of commercial, industrial and public facilities, which represents a 35 percent increase over existing conditions. These increases in land use intensity will create long-term effects such as increased energy use, loss of nonrenewable resources, and increased vehicular traffic on roadways. Some are considered to be irreversible, especially impacts to air quality.
San Juan Creek Property	The District's San Juan Creek Property currently contains the Groundwater Reclamation Facility, and numerous individual tenants. The District is currently pursuing a boatyard storage facility on Lot B. The District's San Juan Creek Property EIR (2002) identifies a number of potential future uses. The District has identified the need to prepare a comprehensive Development Plan for the San Juan Creek Property.
Doheny Village ¹	The City is currently pursuing redevelopment of the "Doheny Village" area, located immediately east of the San Juan Creek Property along Doheny Park Road. The CEQA process was initiated in 2016, although a Draft EIR has yet to be released.

¹ <http://www.danapoint.org/businesses/doheny-village> (accessed May 3, 2018).



Project Name	Project Summary
Dana Point Harbor Revitalization Project ²	This is an approved project by the County of Orange within the City of Dana Point, immediately north of Doheny State Beach. This 278-acre marina commercial area is planned for comprehensive redevelopment over the next several years or more, with construction planned to start by late 2018. The project includes reconstruction of the marina, boat storage, new hotels, new restaurant and retail areas, and additional parking.
Doheny State Beach General Plan EIR	Evaluates environmental impacts associated with development of the General Plan. The initial evaluation of potentially significant environmental effects resulted in a determination that the following issues would not be potentially significant: Agricultural Resources, Air Quality, Geology and Soils, Mineral Resources, Population and Housing, Recreation, and Transportation/Traffic.
SCWD CIP MND ¹	The Infrastructure Master Plan (IMP) Update for Capital Improvement Program (CIP) includes the entire South Coast Water District (SCWD) service areas. The IMP Update details water supply, water distribution, wastewater, and recycled water infrastructure in the District and identifies existing and potential system inefficiencies that would need to be addressed. Nearly all the capital improvement projects identified in the IMP Update are located within urbanized areas, usually within paved roads that do not contain sensitive biological resources. Projects located close to areas where vegetation and associated habitats are possible have been mitigated to a less than significant level. The SCWD CIP MND concluded that no cumulatively considerable impacts would result from the effects of existing or future proposed projects (page 50).
Cumulative Regional Projects	
Southern California Association of Governments 2016 RTP/SCS EIR	The 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) contains regional transportation investments and integrated land use strategies. The 2016 RTP/SCS includes a vision, goals, guiding policies and performance measures developed through extensive outreach to the general public and stakeholders across the region. The 2016 RTP/SCS is intended to build upon the progress made since the 2012 RTP/SCS while recognizing the current conditions of land use and transportation throughout the region as well as developments and technologies since the adoption of the 2012 RTP/SCS.
California Ocean Desalination Projects	The following ocean desalination projects are in the vicinity of the proposed Project. All are subject to the Ocean Plan Amendment and other applicable regulations. Each facility's approximate p <ul style="list-style-type: none"> ▪ Carlsbad – 50 MGD (Operational) ▪ Oceanside – 4.5 MGD (Feasibility Study – currently not planned for implementation) ▪ Camp Pendleton – 50 to 150 MGD (Feasibility Study/Pilot Project – currently on hold) ▪ Santa Catalina Island – 0.325 MGD (Operational) ▪ Huntington Beach – 50 MGD (Entitlement)

² <http://www.danapoint.org/Home/ShowDocument/12553> (accessed May 3, 2018).



Project Name	Project Summary
San Juan Creek Watershed Cumulative Effects	
San Juan Watershed Project ³	Santa Margarita Water District (SMWD) has proposed the San Juan Watershed Project (SJWP), with a Final EIR and project approval planned for SMWD Board of Director's consideration sometime this Summer. The SJWP proposes several rubber dams upstream of the Doheny Ocean Desalination Project, in San Juan Creek and Trabuco Creek. The SJWP would impact downstream flows into San Juan Creek Lagoon.
San Juan Creek Levee Improvement Project ²	Led by Orange County Public Works (OCPW), the San Juan Creek Levee Improvements project aims to enhance flood protection and safety for neighboring communities in San Juan Capistrano and Dana Point. Levee improvements would be made along a 1-mile segment of the San Juan Creek flood control channel. This stretch extends between Stonehill Drive to the south and approximately Mariner Drive (west side of channel) in Dana Point and Alipaz Street (east side of channel) in San Juan Capistrano.
Final EIS for San Juan Creek Watershed Special Area Management Plan (SAMP) ³	The San Juan Creek and Western San Mateo Creek Watersheds SAMP provides a framework for permit coverage for the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed.
South OC WMA Integrated Regional Water Management Plan ⁴	The South Orange County Water Management Area Integrated Regional Water Management (SOC WMA IRWMP) identifies potential future San Juan watershed projects from the various agencies such as the City of Dana Point's San Juan Creek Storm Drain L01S02. The proposed San Juan Creek Storm Drain L01S02 best management practices would remove trash from runoff and infiltrate and/or divert nuisance dry weather flows for treatment from the L01S02 storm drain before entering San Juan Creek, which directly discharges to the Pacific Ocean at Doheny State Beach. This project would further help support impaired beneficial uses by reducing watershed priority pollutant loadings. It also includes an Arundo removal component to further improve the watershed and habitat.
Dana Point Offshore Cumulative Effects	
San Juan Creek Ocean Outfall (SJCOO) (Order NO. R9-2012-0012 as Amended by Order No. R9-2014-0105) NPDES No. CA0107417	The NPDES permit covers waste discharge requirements for the South Orange County Wastewater Authority (SOCWA) discharge to the Pacific Ocean through the San Juan Creek Ocean Outfall. The SOCWA J.B. Latham Wastewater Plant is a conventionally activated sludge treatment facility. All effluent from the SOCWA J.B. Latham WP is discharged to the Pacific Ocean through the SJCOO.
¹ South Coast Water District, 2017 Update to Infrastructure Master Plan, Available at https://www.scwd.org/about/plansanddocs/infrastructure.asp , (accessed January 26, 2018). ² Orange County Public Works Flood Division, San Juan Creek Levee Improvement Project, Available at http://www.ocflood.com/nfc/projects_a/sjcleveeimp#overview , (accessed January 26, 2018). ³ US Army Corps of Engineers Los Angeles District, Draft Environmental Impact Statement San Juan Creek and Western San Mateo Creek Watershed Special Area Management Plan (SAMP) December 2006	

³ <http://sanjuanwatershed.com/> (accessed May 3, 2018).

⁴ http://www.ocwatersheds.com/programs/ourws/wmaareas/wmasouthoc/soc_wma_irwmp (accessed May 3, 2018).



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4.1 AESTHETICS, LIGHT, AND GLARE

This section describes the visual and other aesthetic resources existing on and around the Doheny Ocean Desalination Project site, and evaluates whether the proposed Project would result in adverse effects to such resources. Information given in this section is based on resource information obtained from available public resources including, but not limited to, the *Doheny State Beach General Plan* and the *City of Dana Point General Plan*. Visual and other aesthetic resources include the natural and built-up environment directly on and surrounding the Project site. Existing visual quality can be impacted due to substantial light pollution, degradation of the visual character of the site, or by damaging scenic resources. In addition, views from a scenic highway or public space may have the potential of being adversely impacted. The analysis for this section is based on a site visits by Kimley-Horn staff in April 2017 and January 2018.

Visual Resource Terminology and Concepts

When viewing the same landscape, people may have different responses to that landscape and any proposed visual changes, based upon their values, familiarity, concern, or expectations for that landscape and its scenic quality. Because each person's attachment to and value for a landscape is unique, visual changes to that landscape inherently affect viewers differently. However, generalizations can be made about viewer sensitivity to scenic quality and visual changes. Recreational users (e.g., hikers, equestrians, tourists, and people driving for pleasure) are expected to have high concern for scenery and landscape character. People who are commuting daily through the same landscape generally have a moderate concern for scenery, while people working at industrial sites generally have a lower concern for scenic quality or changes to existing landscape character. The visual sensitivity of a landscape is affected by the viewing distances at which it is seen, such as close-up or far away. The visual sensitivity of a landscape also is affected by the travel speed at which a person is viewing the landscape (high speeds on a highway, low speeds on a hiking trail, or stationary at a residence).

The same feature of a Project can be perceived differently by people depending on the distance between the observer and the viewed object. When a viewer is closer to a viewed object in the landscape, more detail can be seen, and there is greater potential influence of the object on visual quality because of its form or scale (relative size of the object in relation to the viewer). When the same object is viewed at background distances, details may be imperceptible but overall forms of terrain and vegetation are evident, and the horizon and skyline are dominant. In the middle ground, some detail is evident (e.g., the foreground), and landscape elements are seen in context with landforms and vegetation patterns (e.g., the background).

The following terms and concepts are used in the discussion below to describe and assess the aesthetic setting and impacts from the proposed Project.

Scenic vista. An area that is designated, signed, and accessible to the public for the express purposes of viewing and sightseeing. This includes any such areas designated by a Federal, State, or local agency.

Scenic highway. Any stretch of public roadway that is designated as a scenic corridor by a Federal, State, or local agency.

Sensitive receptors. Viewer responses to visual settings are inferred from a variety of factors, including distance and viewing angle, types of viewers, number of viewers, duration of view, and viewer activities.



The viewer type and associated viewer sensitivity are distinguished among Project viewers in recreational, residential, commercial, military, and industrial areas. Viewer activities can range from a circumstance that encourages a viewer to observe the surroundings more closely (such as recreational activities) to one that discourages close observation (such as commuting in heavy traffic). Viewers in recreational areas are considered to have high sensitivity to visual resources. Residential viewers generally have moderate sensitivity but extended viewing periods. Viewers in commercial, military, and industrial areas are considered to have low sensitivity.

Viewshed. The viewshed for a Project is defined as the surrounding geographic area from which the Project is likely to be seen, based on topography, atmospheric conditions, land use patterns, and roadway orientations. “Project viewshed” is used to describe the area surrounding a Project site where a person standing on the ground or driving a vehicle can view the Project site.

Visual character typically consists of the landforms, vegetation, water features, and cultural modifications that impart an overall visual impression of an area’s landscape. Scenic areas typically include open space, landscaped corridors, and viewsheds. Visual character is influenced by many different landscape attributes including color contrasts, landform prominence, repetition of geometric forms, and uniqueness of textures among other characteristics.

4.1.1 AFFECTED ENVIRONMENT

Environmental Setting

Natural Setting

The Doheny Ocean Desalination Project is located primarily within the City of Dana Point at elevations ranging from below sea level to nearshore beaches (for the subsurface intake wells), from 0 to 33 feet above mean sea level (amsl) for the desalination facility and conveyance lines, to higher elevations for off-site improvements, discussed further below. Throughout the Project area, PCH is designated on the City of Dana Point General Plan Circulation Element as a “type three” urban landscape corridor, which is defined as “one that traverses an urban area with a defined visual corridor which offers a view of attractive and existing urban scenes, and which has recreational value for its visual relief as a result of nature or the designed efforts of man.”

Subsurface Intake Wells

Doheny State Beach is located in an urbanized area of Dana Point. Retail shops and stores, restaurants, hotels, and other primarily visitor-serving commercial uses are located adjacent to the State Beach. Dana Point Harbor is at the northwest end of the State Beach and provides recreational boating, sport fishing, whale watching trips, and marina facilities. Service commercial, equipment storage and maintenance, and industrial uses are also located nearby on the west side of Doheny Park Road, north of PCH.

The area proposed for subsurface intake wells and related facilities is generally within landscaped or paved parking or circulation areas of the State Beach. The State Beach is an active recreation area, with high visibility to and from the State Beach given its proximity along the Pacific Ocean shoreline (for additional background regarding Doheny State Beach, refer to [Section 4.12, Recreation](#)). Refer to [Exhibit 3-3, Project Facility Locations](#) and [Exhibit 4.1-1, Desalination Facility](#), [Exhibit 4.1-2, Doheny State Beach Intake A](#), [Exhibit 4.1-3, Doheny State Beach Intake B](#), [Exhibit 4.1-4, Doheny State Beach Intake C](#),



Exhibit 4.1-5, Doheny State Beach Intake D, Exhibit 4.1-6, Doheny State Beach Intake E, Exhibit 4.1-7, Capistrano County Beach Intakes F and G, and Exhibit 4.1-8, Capistrano County Beach Intake H, for existing visual conditions.

Southeast Intake Wells

This component of the Project extends southerly beyond Doheny State Beach (DSB) and includes Capistrano Beach Park (while still in the City of Dana Point). Facilities proposed at this location would generally be located within paved parking or circulation areas, with limited construction on the upper beach area. Views of Capistrano Beach Park are available from PCH (eligible as a Caltrans Scenic Highway), as well as residents above the park along Capistrano bluff, including the Palisades Park.

Raw Water Conveyance Alignments

The South Alignment would traverse Doheny Park Road and PCH, accessing the desalination facility through the planned Doheny Village urban area. Surrounding this option are primarily commercial uses and hotels/motels. The North Alignment option would utilize Dana Point Harbor Drive and Del Obispo Street, accessing the desalination facility from the west side of San Juan Creek. The surrounding uses of this option are primarily harbor-related recreation, commercial uses, hotels, and institutional uses along Del Obispo Street.

Desalination Facility

The proposed desalination facility is located at the existing District San Juan Creek Property, which is in an urbanized area of Dana Point, zoned for industrial and business park uses. The District's 28.2-acre San Juan Creek Property site includes a variety of uses, representing over 60 separate tenants engaged in a variety of activity such as vehicle or boat storage, personal storage, and commercial business storage. The area contains sparse landscaping and is otherwise not aesthetically attractive. Refer to Exhibit 3-3, Project Facility Locations, Exhibit 3.7, Desalination Facility Site-Easements, and Exhibits 4.1-1 to 4.1-8, for existing visual conditions.

The proposed desalination site is bounded to the west by San Juan Creek, to the south by PCH, to the east by the MetroLink rail line, and to the north by the L01S02 drainage channel and proposed Staging Area, both located within the District's corporate yard. Offsite areas to the east, within proposed future Doheny Village, have limited views of the desalination facility site due to intervening structures. Areas to the north are within the District's corporate yard. The desalination site has limited visibility from the south, primarily from motorists as they traverse the short stretch of PCH, which crosses San Juan Creek on an elevated bridge, immediately south of the desalination facility site. There are direct views of the desalination facility site from uses located across San Juan Creek to the west, including recreational users of San Juan Creek Trail, visitors to the Dana Point Community Center, and residential areas further north along the west bank of San Juan Creek.

Concentrate (Brine) Disposal System

The brine disposal system would be connected within the desalination facility site to the existing San Juan Creek Ocean Outfall that currently runs through the southwest corner of the plant site.



Regional Project Facilities

Regional Project facilities (as described in Section 3) would be in substantially the same location as the Phase I Project facilities, with the exception of the SDG&E electrical line extensions (which would extend north of the site within existing streets) and the Regional Project product water conveyance, pumping and storage facilities, the location of which is not known at this time.

Scenic Highways

PCH is designated as a Scenic Highway corridor on the Dana Point Circulation Element and a Viewscape Corridor on the Orange County Circulation Element. PCH runs along the coast throughout the City of Dana Point. It traverses the area located between the proposed intake wells and desalination facility and would be traversed by the conveyance system. PCH is also designated as an eligible California State Scenic Highway.

Light and Glare

Light and glare in the Project area are typical of that found in urban environments. Sources of light and glare include security lighting at the State Beach, County Park, along roadways proposed for the raw water conveyance pipelines, and from tenants at the District's corporate yard. The Project area is also influenced by light and glare from vehicle headlights, streetlights, and other sources that are present throughout urbanized Southern California. The coastal portion of the Project area is generally less illuminated, with lighting levels along the coast peaking at the north end of Doheny State Beach adjacent to Dana Point Harbor, and then tapering off to fairly limited lighting along the South Day Use Area and even less at Capistrano Beach Park.

4.1.2 REGULATORY FRAMEWORK

State

California Department of Transportation (Caltrans)

The California Department of Transportation (Caltrans) manages the California Scenic Highway Program, which was created in 1963 by the California legislature to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. The program includes a list of highways that are eligible for designation as scenic highways or have been designated as such. A highway may be designated as scenic based on certain criteria, including how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes on the traveler's enjoyment of the view. State laws governing the Scenic Highway Program are found in the Streets and Highways Code, Sections 260 through 263. PCH is listed as an "eligible" state scenic highway through the Project area, but not yet officially designated.¹

California Coastal Act

The California Coastal Act (CCA) (California PRC Section 30000 et seq.) was enacted by the State Legislature in 1976 to provide long-term protection of California's 1,100-mile coastline for the benefit of current and future generations. The CCA created a partnership between the State (acting through the California

¹ http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm (accessed February 26, 2018).



Coastal Commission) and local county and city governments to manage the conservation and development of coastal resources through a comprehensive planning and regulatory program. The entire Project area is located in the Coastal Zone, under the jurisdiction of the City of Dana Point (for on-shore facilities) and California Coastal Commission (for facilities or activities below the mean high tide). A key objective of the Coastal Commission is to protect the scenic and visual character of the California coast, which states in part:

“Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas.”²

The Coastal Commission applies this standard to its review of applications for coastal development permits.

Local

City of Dana Point General Plan

Conservation and Open Space Element

Goal 2: Conserve significant topographical features, important watershed areas, resources, soils, and beaches.

Policy 2.1: Place restrictions on the development of floodplain areas, beaches, sea cliffs, ecologically sensitive areas, and potentially hazardous areas.

Policy 2.2: Site and architectural design shall respond to the natural landform whenever possible to minimize grading and visual impact.

Policy 2.5: Lessen beach erosion by minimizing any natural changes or man-caused activities that would reduce the replenishment of sand to the beaches. (Coastal Act/30235)

Policy 2.9: Preserve significant natural features as part of new development. Permitted development shall be sited and designed to minimize the alteration of natural landforms. Improvements adjacent to beaches shall protect exiting natural features and be carefully integrated with landforms. (Coastal Act/30240, 30250, 30251)

Goal 6: Encourage open space areas to preserve natural resources.

Policy 6.1: Mitigate the impacts of development on sensitive land such as, but not limited to, steep slopes, wetlands, cultural resources, and environmentally sensitive habitat areas through the development review process. (Coastal Act/30233, 30240, 30244, 30253).

Policy 6.2: Protect and preserve the public views of the Dana Point Harbor.

² Coastal Act Section 30251.



- Policy 6.4:** Preserve and protect the scenic and visual quality of the coastal areas as a resource of public importance as depicted in figure COS-5 “Scenic Overlooks from Public Lands”, of this Element. Permitted development shall be sited and designed to protect public views from identified scenic overlooks on public lands to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. (Coastal Act/30251).
- Policy 6.6:** Concentrate higher intensity uses in areas containing less sensitive landforms and preserve the most sensitive landforms and natural resources as open space.
- Policy 6.8:** Preserve public access to the coastal areas through easement dedications thereby providing marine-oriented recreational uses so that transportation corridors may augment the City’s open space system. (Coastal Act/30210, 30211, 30212).

Urban Design Element

Goal 1: Create Citywide visual linkages and symbols to strengthen Dana Point's identity as a city.

Policy 1.4: Preserve public views from streets and public places.

Dana Point Municipal Code *Title 9 Zoning, Chapter 9.05 General Development Standards*

9.05.170 Coastal Views from Public Areas: To protect the coastal scenic overlooks from public lands identified in the General Plan Urban Design and Conservation/Open Space Elements, a detailed view impact study which includes recommendations to avoid impacts to coastal views from public lands shall be prepared and incorporated into projects where the proposed development impacts such views.

Dana Point Municipal Code

Dana Point Municipal Code (DPMC) Title 9 *Zoning*, regulates new development based on design which includes color and materials, building height and density, landscaping, and light source. Title 9 also calculates population increase due to a proposed project and plans accordingly. Different sections of the zoning code apply directly to this Project and are in detail below:

DPMC Chapter 9.55.050 *Landscape Water Use and Design Standards*, is intended to provide guidelines for proper landscape design and usage for new development projects. The guidelines are stated under Title 9 *Zoning*:

- Landscape design shall illustrate a concern for aesthetic elements such as balance, scale, texture, form, and unity.
- Landscape design shall address the functional aspects of landscaping such as grading, drainage, erosion control, minimal runoff, erosion prevention, wind barriers, provisions for shade and reduction of glare.



- Landscape design shall provide for the planting of all unpaved areas with an effective combination of trees, ground cover, turf, shrubbery, and/or approved dry landscape materials including, but not limited to, accessory decorative outdoor landscape elements such as ponds, fountains, artificial turf, and paved or decorated surfaces, and sculptural elements.

4.1.3 SIGNIFICANCE CRITERIA

Significance Criteria under CEQA

Appendix G of the State CEQA Guidelines contains the Initial Study Checklist form, which includes questions related to aesthetic and scenic resources. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this section. Accordingly, a Project may create a significant environmental impact if one or more of the following occurs:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings;
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Methodology and Assumptions

The proposed Project and associated project design features (PDFs) are evaluated against the aforementioned significance criteria, as the basis for determining the level of impacts related to aesthetics. In addition to PDFs, this analysis considers existing regulations, laws, and standards that serve to avoid or reduce potential environmental impacts. Where significant impacts remain, feasible mitigation measures are recommended, where warranted, to avoid or lessen the Project's significant adverse impacts. Further details regarding methods are provided in [Appendix 10.1](#) of this EIR.

Approach to Analysis

This analysis of impacts on aesthetic resources examines the temporary (i.e., construction) and permanent (i.e., operational) effects of the proposed Project based on application of the significance criteria outlined above. The analysis is divided into two main categories: (1) temporary and permanent scenic resource and visual character impacts, and (2) temporary and permanent lighting and glare impacts. Each set of criteria is discussed in the context of Project components that share similar characteristics and/or geography. The impact conclusions consider the potential for changes in environmental conditions as well as consistency with applicable policies and regulations enacted to protect the environment. The cumulative effects of the proposed Project, when considered together with the effects of other past, present, are discussed at the end of this section.

The impact analysis is based on field observations conducted by Kimley-Horn and Associates in April 2017 and January 2018; review of project maps and drawings; analysis of aerial and ground-level photographs; and review of a variety of data available in public records, including local planning documents. The determination that a project component would or would not result in a "substantial" adverse effect on scenic resources or visual character considers the aesthetic resource value of the site and the Project



component's visual impact severity (e.g., the nature and duration of the impact). For example, a project component with a high impact severity that would be located on a site with a low aesthetic resource value would result in a less-than-significant impact with respect to scenic or visual character. In other words, new conspicuous structures or visual changes in areas with a low aesthetic resource value may not necessarily result in substantial adverse effects on visual resources.

Visual sensitivity can be described as viewer awareness of visual changes in the environment and is based on the viewers' perspective while engaging in activities from public areas near a particular site. Various types of users can currently view the Project site. The sensitivity of those users to changes within the Project site varies with the type of use, the length of time that the viewer would be within the zone of visual influence (ZVI) for the Project site, and the distance of the viewer to the Project site. Viewers of the Project site include residents within and in the vicinity of the Project; and recreational users and travelers and commuters that would be within the ZVI for the Project.

Project Design Features

- The desalination facility is proposed at an existing industrial site, which avoids disturbance to existing natural terrain and is compatible with existing site zoning. In addition, the proposed facility would improve the overall existing visual quality of the site and its surroundings;
- Construction staging and laydown areas utilize existing disturbed or developed sites to avoid disruption to existing sensitive resources;
- Slant well construction would only occur during the "off-peak" recreation season, generally between October 1 and May 1;
- The subsurface slant well vaults have been moved inland, as far as practicable from the active beach recreation areas, to reduce both visual and recreation impacts;
- All components of the Project would be located subsurface, except for the desalination facility and minor appurtenances such as an electrical control box near the intake wells.

4.1.4 IMPACTS AND MITIGATION

Impact 4.1-1: **Would the project have a substantial adverse effect on a scenic vista? *Level of Significance: Less Than Significant Impact with Mitigation.***

Construction

Subsurface Intake Well

The primary construction-related aesthetic impacts would be the construction of the intake wells on Doheny State Beach at the north and south day use area. Construction of these facilities would include mobilization, excavation, vault construction, mechanical piping installation, electrical/controls installation, commissioning, and demobilization. This has the potential to impact views of Doheny State Beach and the Pacific Ocean. The drill rig work area for each well would be approximately 130 feet by 75 feet, or approximately 10,000 square feet (less than 1/4 acre). The District has incorporated a number of design features to minimize temporary construction-related aesthetic impacts:



- **Seasonal Limitations** – slant well construction would only occur during the off-season, from October 1 to May 1, to minimize the duration of impacts from both an aesthetics and recreation perspective;
- **Slant Well Siting** – the slant well vaults have been moved further inland to avoid or minimize temporary construction on the beach. Note that a temporary slant test well was previously constructed on the beach in the vicinity of Pod C without significant impacts;
- **Staging Area Siting and Design** – the Staging Area at the North Day Use Area has been minimized, relying more heavily on staging at the District’s corporate yard property. In addition, the North Day Use Staging Area is sited in the back corner of the parking area, to minimize aesthetic impacts to park visitors.

In addition to these Project Design Features, Mitigation Measure AES-1 requires the slant well rig and related staging area to be screened via curtains and to use directional lighting necessary for construction safety and security, in order to minimize public views of the construction equipment, and to reducing light/glare impacts from slant well construction at night. For aesthetics and noise purposes, the slant well drill rig work area would be screened, with a noise/visual curtain anticipated to be 24 feet tall (examples of slant well drill rig sound curtains are provided below).



24' Sound Curtain Next to Existing Home



Doheny Test Well with Varying Screen Heights

Slant well construction within the North Day Use area (Pods A, B or C) would be set back from the active beach area and mitigated through Project Design Features and Mitigation Measure AES-1 as noted above. In addition, the North Day Use Area closes at 10 PM, further reducing potential for aesthetic and light/glare impacts to scenic vistas.

Slant well construction within the Campground area (Pods D and E) would have a greater potential for temporary aesthetic impacts to scenic vistas, in that visitors would be in closer proximity to the slant well drill rigs, and the light/glare impacts would be more evident for overnight campers. This impact is substantially mitigated through Project Design Features, and Mitigation Measure AES-1 noted above. In addition, for noise purposes, any slant well construction in the campground area would require a noise buffer of approximately 120 feet from the drill rig work area. This area will be enclosed by a sound curtain, estimated at 24 feet tall, which will also minimize light/glare impacts for views across the State Beach and



out toward the Pacific Ocean. Detailed slant well construction protocols would be developed as part of the encroachment permit required from State Parks, and is expected to include temporarily shutting down a portion of the campground such that ocean views from remaining campsites would not be significantly impacted (i.e., campsites behind and adjacent to the drill rig would be unavailable for the temporary construction period).

Should slant well construction occur in the South Day Use Area of Doheny State Beach, the impacts would be similar to those described below for the Capistrano Beach Park. Slant well construction in this area could temporarily block or degrade views across the beach toward the Pacific Ocean, from park visitors, motorists and public viewing places such as Louise Leyden Park (across PCH on the bluff, overlooking the northern portion of the South Day Use Area) or Palisades Gazebo (across PCH on the bluff, overlooking the southern portion of the South Day Use Area). This beachfront location would be highly visible from PCH and beach visitors along this narrow stretch of beach. Although impacts to scenic vistas would be more pronounced from the South Day Use Area, the Project Design Features and Mitigation Measure AES-1 are anticipated to reduce potential scenic vista impacts to less than significant levels. It should also be noted that the South Day Use Area is not presently a preferred location for slant well construction.

Due to the urban nature of the north and south day use areas of Doheny State Beach and the temporary nature of construction, impacts on a scenic vista as a result of slant well construction would be less than significant with mitigation incorporated.

Southeast Intake Wells

The primary construction-related aesthetic impacts would be the construction of the intake wells at Capistrano Beach Park. Construction of these facilities would include mobilization, excavation, vault construction, mechanical piping installation, electrical/controls installation, commissioning, and demobilization. This has the potential to impact views of the Pacific Ocean from Capistrano Beach Park, PCH, MetroLink riders, and public parks across PCH that overlook the park (including Palisades Gazebo and Pines Park). The scale of the temporary slant well construction rig is comparable to other structures along Capistrano Beach, including the park building, pedestrian overcrossing across PCH, and commercial and residential structures along PCH and adjacent to the park along the beachfront. As noted above, one to two slant well pods would be under construction at any given time, representing a total footprint of approximately 1/4 acre per slant well (approximately 10,000 square feet per rig laydown area), with a temporary visual screen approximately 24 feet tall, less than the height of many adjacent structures.

The slant well construction would be temporary (during the off-season), screened, with directional lighting, and pushed as far back from the beach as practicable. At the discretion of County Parks and the Coastal Commission, slant well work area screening could include landscape features in front of or integrated into the screen to further improve aesthetics, such as the “Green Green Screen” shown at right.³



³ <http://www.klein-dytham.com/green-green-screen/> (accessed February 27, 2018).



Following construction, the slant wells would be below ground and would not cause any long-term aesthetic impacts to scenic vistas. Similar to the discussion above for Pods A – C at Doheny State Beach North Day Use Area, construction of Pods F, G or H would be mitigated to less than significant levels through Project Design Features and Mitigation Measure AES-1.

Raw Water Conveyance Alignments – North and South

Raw water conveyance pipeline construction would not cause any significant impacts to scenic vistas. The pipelines would be constructed in urban settings, within existing rights-of-ways, using trenchless construction to traverse sensitive locations including San Juan Creek and its lagoon. The pipeline construction would be temporary, gradually moving down the length of the alignment as the pipeline alignment is trenched, pipeline segments are put in place, and the trench is backfilled, and road resurfaced. Pipeline construction within the State Park and County Park would only occur during the off-season. Mitigation Measure AES-1 requires a Construction Lighting Plan to minimize construction-related light and glare impacts.

In consideration of the temporary nature of construction, Project Design Features and Mitigation Measure AES-1, the raw water conveyance pipeline construction would not result in any significant impact to views of scenic vistas.

Desalination Facility

Construction of the desalination facility at the District San Juan Creek Property would not have any significant aesthetic impacts on scenic vistas. The site has been previously developed and is currently being used as a storage yard and similar commercial/industrial uses. The haphazard nature of the current site tenants would be replaced with construction equipment, for a temporary period during construction. Project construction would not obstruct any scenic vistas. The Project would be in the background of scenic views of San Juan Creek, from the San Juan Creek Trail and residential and park uses along the west bank of San Juan Creek. Project Design Features have minimized impacts to scenic vistas by siting the desalination facility at the District's San Juan Creek Property. Mitigation Measure AES-1 requires construction lighting and screening to minimize aesthetic and light/glare impacts, which will further reduce the potential for significant impacts. As a result, construction activities associated with the desalination facility would not result in significant impacts to scenic vistas to or from the Project site.

Brine Disposal System

The construction of the brine disposal system would be within the desalination facility site (see discussion above) and would be temporary in nature. Therefore, impacts would be less than significant.

Operations

Subsurface Intake Wells/Southeast Intake Wells

The slant wells would be located underground, beneath the State Park and County Park, with slant wells running subsurface beneath the ocean floor. The wellheads on the beach would be buried and not visible. Slant well pumps would be submersible, allowing them to be installed within the slant well casing, below ground. The only visible component, post-construction, would be a small at-grade maintenance panel to access the slant well vault. Periodically, maintenance equipment would be required to service the slant wells, although this would be infrequent, and scheduled off-season pursuant to State Parks and County



Parks requirements. No impacts would occur. Minor appurtenances would be aboveground, such as the electrical control panel, which would be sited away from active recreation areas, with architectural design and landscaping to be compatible with existing park buildings.

Raw Water Conveyance Alignments – North and South

The pipeline system conveying water from the slant wells to the desalination facility would be below ground and would, therefore, have no impacts on scenic vistas during operations. No impact would occur.

Desalination Facility

The desalination facility would be located in an industrial area that would not impact scenic views. The desalination facility is compatible with the site's existing zoning designation of Industrial / Business (I/B) and Community Facility (CF). The Project site is currently surrounded by industrial and commercial uses, and would not be out of character with adjacent uses, which include resort commercial uses south of PCH, such as the four-story Doubletree Hotel, and the proposed Dana Point Harbor Revitalization Project, which allows certain structures up to 60 feet or higher.

Views across San Juan Creek toward the site would be replaced from the current mix of tenant uses, generally unlandscaped and discordant, with a modern state-of-the-art water supply facility. The District has committed to designing the facility to be aesthetically pleasing, and compatible with surrounding uses. Mitigation Measure AES-2 requires a Site Architectural, Landscape and Lighting Plan that demonstrates compatibility with surrounding uses, including special consideration for screening of rooftop mechanical equipment. Refer to Exhibits 4.1-9 through 4.1-12, Project Renderings, which illustrate anticipated "post project" conditions at key visual locations. Note that the renderings are approximate, and exact architectural materials and landscaping may vary as determined appropriate through the final design, regulatory permitting and construction process.

The existing San Juan Creek Property site requires minimal infrastructure improvements, which further reduces the potential impacts to scenic vistas. Electrical service to the site can be provided by connecting to existing SDG&E facilities via relatively short stretches of underground electrical line extensions. The site's drainage solution is the least impactful from an off-site improvement perspective, which minimizes the need for construction of San Juan Creek improvements.

Therefore, in consideration of Project Design Features and Mitigation Measures AES-1 and AES-2, the desalination facility would not have any significant impact on scenic resources.

Brine Disposal System

The brine disposal system would be constructed within the desalination facility site, and would be below ground. No impact would occur.

Mitigation Measures

- AES-1** Prior to the start of construction, SCWD shall prepare a Construction Lighting & Screening Plan. The Construction Lighting & Screening Plan should indicate aesthetic and lighting treatments for all construction work areas, including staging areas, slant well drill rig work area, and the desalination facility. The Plan shall identify methods used to ensure construction lighting is directional (aimed toward work areas, and not



toward nearby sensitive receptors), and limited to sufficient wattage for safety and security. Construction areas visible to sensitive receptors shall be screened via curtains from public view, including the staging and slant well drill rig work area within the State Park and County Park, and the western and southern edges of the desalination facility site and the western edge of the adjacent staging area. Construction screening materials shall be of sufficient height and appropriate color to minimize viewshed impacts, as determined appropriate by the applicable jurisdiction(s). As noted above, for slant well work areas, the construction screening may be open to the ocean for directional sound control and shall include additional aesthetic enhancements such as temporary landscaping in front of the screen.

AES-2

SCWD shall prepare a Site Architectural, Landscape and Lighting Plan Prior to the start of construction, for the purposes of minimizing aesthetic and light/glare impacts from all above-ground facilities, including the electrical control panel near the slant wells, and the desalination facility. Given the desalination facility site's visibility from areas west of San Juan Creek and from PCH, the desalination facility architecture and building elevations shall be designed to create an aesthetically appropriate appearance, as determined by the City of Dana Point and/or California Coastal Commission through the facility's Coastal Development Permit review process. Architectural design shall favor natural appearing materials that blend with the surrounding areas, as well as use of non-reflective glass to minimize glare. A Lighting Plan shall be prepared, demonstrating use of directional lighting and lighting that is limited to intensity needed for site security and safety, in order to minimize light/glare impacts to viewers west of San Juan Creek. All rooftop mechanical and electrical equipment will be screened or placed in areas that are not highly visible from residential and public areas, where feasible. A Landscape Plan shall be prepared, to provide adequate site landscaping for aesthetic enhancement, using non-invasive, drought-tolerant native species.

Impact 4.1-2: Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
Level of Significance: Less than Significant with Mitigation.

Construction and Operation

All Components

Refer to discussion above under Impact 4.1-1. The Project would not impact any scenic resources. No native trees would be impacted (refer to Section 4.3, Biological Resources). There are no rock outcroppings in the Project area that would be affected by Project construction. PCH is an eligible state scenic highway which traverses the Project area from east to west.⁴ However, Project construction will avoid direct impacts to PCH through use of trenchless construction, and views of the desalination facility site (during construction and operation) and slant wells (during construction) from PCH will be mitigated as addressed above, under Impact 4.1-1.

⁴ California Department of Transportation, California Scenic Highway Mapping System, Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/, (accessed February 20 2018).



Mitigation Measures

Refer to Mitigation Measures AES-1 and AES-2.

Impact 4.1-3: **Would the Project substantially degrade the existing visual character or quality of the site and its surroundings? *Level of Significance: Less Than Significant with Mitigation.***

Construction and Operation

All Components

Refer to the discussion above under Impact 4.1-1. Project Design Features have substantially reduced or avoided significant visual character impacts through use of subsurface intakes, trenchless construction for sensitive pipeline crossings, and desalination facility siting at the District's existing San Juan Creek Property, which is zoned for industrial/business park and community facility uses. Slant wells and raw water conveyance pipelines will be underground, so any visual character impact would be temporary, and limited seasonally within the State Park and County Park to further reduce the potential for impacts. The desalination facility will replace existing independent tenant storage facilities with a modern, state-of-the-art water supply facility, compatible with surrounding land uses. Mitigation Measures identified above (AES-1 and AES-2) will further reduce potential visual character impacts to less than significant levels.

Mitigation Measures

Refer to Mitigation Measures AES-1 and AES-2.

Impact 4.1-4: **Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? *Level of Significance: Less Than Significant with Mitigation.***

Yes, the Project would introduce new sources of light and glare, both during construction and operation of the Project. Refer to Impact 4.1-1 above, which provides a discussion of light/glare impacts in the context of potential impacts to views of scenic vistas. The following analysis provides a more detailed discussion of light and glare impacts for each Project component.

Construction

Subsurface Intake Wells

The subsurface intake well construction area and associated staging area would produce light and glare during construction, including nighttime construction for the slant wells. However, as noted in Impact 4.1-1, light and glare impacts would be minimized by screening the slant well drill rig work area and staging area, and by using directional lighting to further reduce light and glare impacts. In addition, slant well construction at the State Park would be temporary and limited to the off-season. Mitigation Measure AES – 1 requires SCWD to develop a Construction Lighting and Screening Plan to further minimize light and glare impacts during construction. Therefore, in consideration of Project Design Features and Mitigation Measure AES-1, impacts would be less than significant in this regard.



Southeast Intake Wells

As discussed above under Impact 4.1-1, temporary light and glare impacts for southeast intake well construction would be more pronounced than at Doheny State Beach, given this area's visibility from Capistrano Beach Park, beachgoers, PCH and public parks located on the bluffs above Capistrano Beach Park. Similar to slant well construction at Doheny State Beach, construction at the County park would be limited to the off-season, and only one slant well pod would be in construction at any one time. The slant well construction footprint would be relatively small and visually screened which will substantially reduce light and glare impacts. Lighting within the slant well construction area (inside the screen) would be directional and limited to that necessary for safety and security. Therefore, in consideration of Project Design Features and Mitigation Measure AES-1, impacts would be less than significant in this regard.

Raw Water Conveyance Alignment – North and South

Within the State and County parks, raw water conveyance pipeline construction would only occur during the off-season, and would only occur during the City's normal construction hours of 7 AM to 8 PM Monday through Saturday, thereby reducing the potential for significant light and glare impacts. Security screening at night for the pipeline construction area would have directional lighting limited to that necessary for safety and security, as required in Mitigation Measure AES-1. Therefore, impacts would be less than significant with mitigation.

Desalination Facility

Construction of the desalination facility would occur during normal City construction hours of 7 AM to 8 PM Monday through Saturday; however, security lighting would be required. In addition, some demolition and materials removal or import may need to occur during the night for oversized loads, pursuant to City and Caltrans requirements. Compliance with Mitigation Measure AES-1 would be required to prepare a Construction Lighting and Screening Plan that demonstrates that all construction-related lighting is directional, aimed away from adjacent residential and public recreational areas, and is limited to lighting necessary for site security and safety. With implementation of Mitigation Measure AES-1 and the temporary nature of construction activities, the desalination facility would not create a new source of substantial light or glare which would adversely affect nighttime views. Impacts would be less than significant with mitigation.

Brine Disposal System

The brine disposal system would be constructed within the desalination facility footprint (see discussion above). Therefore, impacts would be less than significant in this regard.

Operations

Subsurface Intake Wells/Southeast Intake Wells

The subsurface intake wells operation would be below ground, and would therefore not introduce new sources of light or glare to the Project area during operations. The electrical control building would be sited within Doheny State Beach in a developed area of the park, with lighting limited to that needed for security and safety. No impact would occur in this regard.



Raw Water Conveyance Alignments – North and South

The operations of the raw water conveyance alignment would take place subsurface and would not introduce new sources of light or glare. Therefore, no impact would occur.

Desalination Facility

Refer to discussion above for Impact 4.1-1. The desalination facility would operate 24 hours a day, 365 days a year. Routine deliveries of chemicals to the site and hauling of residual materials from the site would be conducted during normal day-shift working hours. Nighttime lighting sources would include security lighting along the site perimeter, parking areas, from employee and delivery vehicles, and as part of desalination buildings. To ensure that light spillover does not occur, a Site Architectural, Landscape and Lighting Plan would be required (Mitigation Measure AES-2). Mitigation Measure AES-2 also requires the Project to include nonreflective facade treatments and would not include unrelieved glass surfaces. Therefore, in consideration of Project Design Features and Mitigation Measure AES-2, impacts would be less than significant in this regard.

Brine Disposal System

Operation of the brine disposal system would be subsurface and would not cause any light impacts. No impact would occur in this regard.

Mitigation Measures

Refer to Mitigation Measures AES-1 and AES-2.

REGIONAL PROJECT

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential aesthetics impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). Expansion at the desalination facility site would have no additional impacts on aesthetic resources since the desalination facility site would have already been graded and the main buildings are proposed to be sized for the Regional Project to minimize potential future construction-related impacts. The Regional Project may require construction of additional regional product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified. Mitigation Measures AES-1 through AES-2 would apply to the Regional Project, in addition to standard practices to avoid pipeline trenching across natural open space lands to minimize visual impacts.

4.1.5 CUMULATIVE IMPACTS

For purposes of cumulative aesthetics impact analysis, cumulative impacts are considered for cumulative development according to the related projects; see [Table 4-1, Cumulative Local and Regional Projects List](#). Aesthetic and light/glare impacts are a localized activity and would only affect sensitive receptors with direct views of the Project facilities.



Within the Project area, the primary sources of cumulative development would be along the PCH corridor west of Del Obispo (in the City's Town Center and Dana Point Specific Plan areas), planned revitalization of Dana Point Harbor, and the proposed Doheny Village, immediately east of the desalination facility site. These cumulative projects, taken together with the Project's proposed desalination facility, will result in substantial changes in the local aesthetics, although the intent of these and similar projects is to revitalize and enhance the City's urban core, creating favorable aesthetic improvements to support the City's General Plan goals and commercial tourism market. These projects individually address site-specific aesthetics and related architectural, landscaping and lighting requirements. Cumulative projects must meet applicable City and Coastal Act requirements related to aesthetics, as determined appropriate through the discretionary review processes of the City of Dana Point, County of Orange and/or California Coastal Commission.

This EIR has incorporated by reference the Dana Point General Plan Final EIR, which address cumulative impacts of City buildout, and the Doheny State Beach General Plan Final EIR, which addresses cumulative development at the State Beach. All Project impacts are mitigated to less than significant levels, and the Project's contribution toward cumulative impacts is not otherwise considered to be "cumulatively considerable."

4.1.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts have been identified.



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EXHIBIT 4.1-1: Desalination Facility
South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn



EXHIBIT 4.1-2: Doheny State Beach Intake A
South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn



EXHIBIT 4.1-3: Doheny State Beach Intake B
South Coast Water District
Doheny Ocean Desalination Project



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EXHIBIT 4.1-4: Doheny State Beach Intake C
South Coast Water District
Doheny Ocean Desalination Project



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EXHIBIT 4.1-5: Doheny State Beach Intake D
South Coast Water District
Doheny Ocean Desalination Project



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EXHIBIT 4.1-7: Capistrano County Beach Intakes F and G
 South Coast Water District
 Doheny Ocean Desalination Project



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EXHIBIT 4.1-8: Capistrano County Beach Intake H
South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn



EXHIBIT 4.1-9: Before/After Aerial View

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn



EXHIBIT 4.1-10: Before/After PCH Bridge View

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn

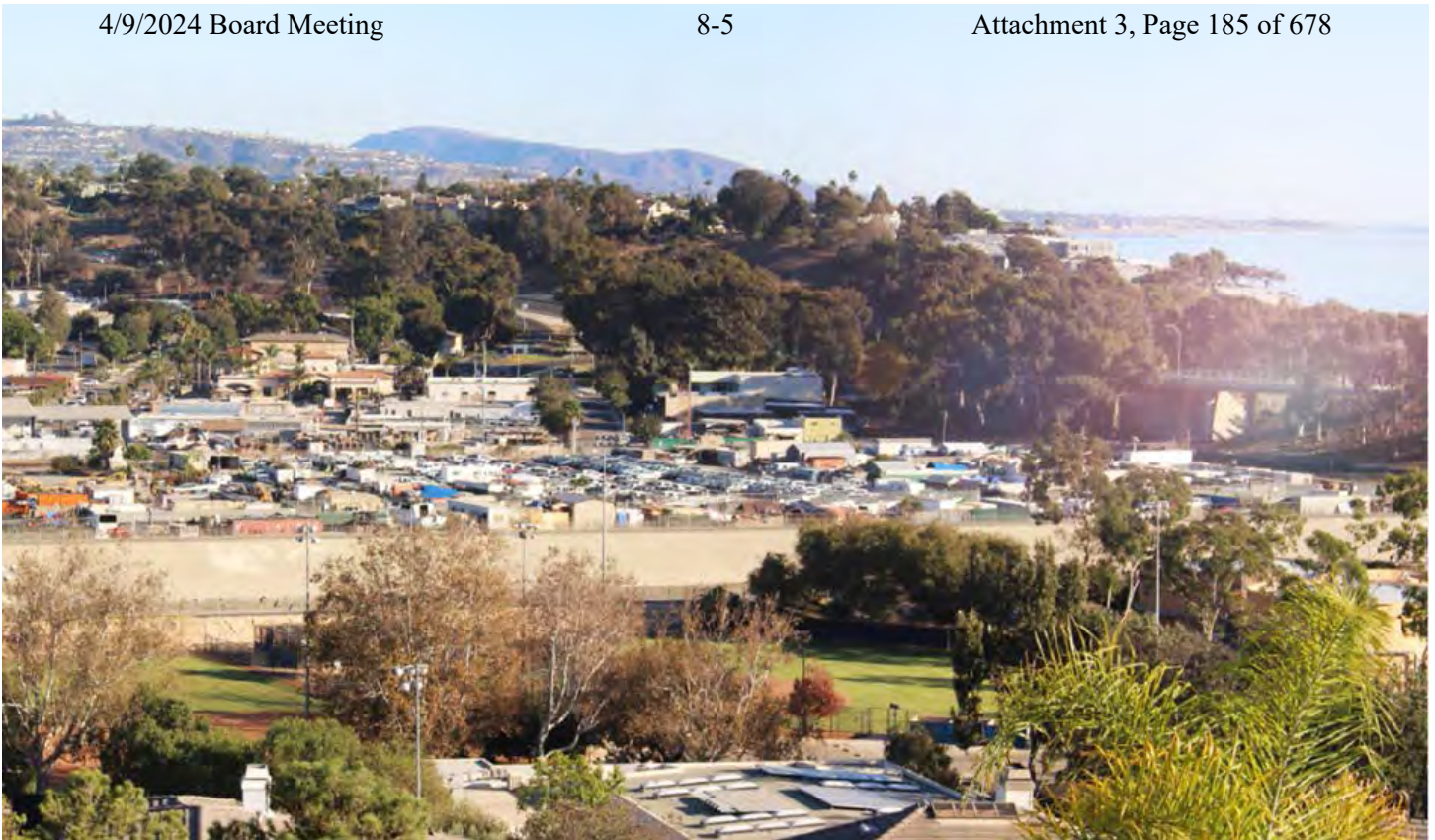


EXHIBIT 4.1-11 Before/After Resident View

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn



DOHENY DESALINATION PROJECT

ARID
GHD/WOODHEAD

EXHIBIT 4.1-12: Before/After Bike Path

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn



EXHIBIT 4.1-13: Train View
South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn

4.2 AIR QUALITY

This section describes the existing air quality setting and evaluates potential impacts on air quality as they relate to the Doheny Ocean Desalination Project. Information given in this section is based on resource information obtained from available public resources including, but not limited to, the *Doheny State Beach General Plan* and the *City of Dana Point General Plan*. The analyses over each Project component is considered by the applicable plan, policy, or regulation of the agency with jurisdiction over that Project component. Most Project components are located in the City of Dana Point, Doheny State Beach, and Capistrano County Beach. Detailed air quality calculations are provided in [Appendix 10.3, Air Quality/GHG Calculations](#).

4.2.1 AFFECTED ENVIRONMENT

Environmental Setting

The Doheny Ocean Desalination Project is located primarily within the City of Dana Point at elevations ranging from below sea level to nearshore beaches (for the subsurface intake wells), from 0 to 33 feet above mean sea level (amsl) for the desalination facility and conveyance lines, to higher elevations for other improvements, discussed further below.

Subsurface Intake Well Area

The intake wells and related facilities would be within Doheny State Beach. Doheny State Beach is located in an urbanized area of Dana Point, with recreational, retail and commercial uses adjacent to the beach. Construction in this area would generally be within developed areas such as beach landscaping and lawn areas, beach access roads, and limited upper beach construction. Slant well construction would also extend below the ocean floor.

Southeast Intake Wells

The southeast intake wells extend southerly beyond Doheny State Beach (DSB), and includes Capistrano Beach Park (while still in the City of Dana Point). As with the intake wells at Doheny State Beach, these potential intake wells would also be constructed within developed areas such as upper beach, parking, and landscaped areas.

Raw Water Conveyance Alignments

The raw water conveyance pipeline would deliver water from the intake wells to the desalination facility. The pipeline alignments are located on beach access roads, maintenance roads, local city streets, and other previously disturbed areas. If the pipelines traverse San Juan Creek (such as with the northern pipeline alignment), this would be done via trenchless construction to avoid direct impacts to San Juan Creek.

Desalination Facility

The proposed desalination facility is within an active District San Juan Creek Property, is occupied by various storage and commercial tenant uses, and has been previously disturbed. The proposed desalination facility is bounded by PCH to the south, San Juan Creek to the west, the SCRRA rail line to the



east, and the existing drainage facility L01S02 to the north. A large stockpile earthen mound is located north of the drainage channel.

Concentrate (Brine) Disposal System

The brine disposal system would utilize the existing San Juan Creek Ocean Outfall to return brine and treated process waste streams to the ocean. The existing ocean outfall also serves the J.B. Latham Wastewater Treatment Plant, which is located on the west side of San Juan Creek.

Regional Project Facilities

Regional Project facilities (as described in Section 3) would be in substantially the same location as the Phase I Project facilities, with the exception of the SDG&E electrical line extensions (which would extend north of the site within existing streets) and the Regional Project product water conveyance, pumping and storage facilities, the location of which is not known at this time.

Air Quality Setting

South Coast Air Basin (SCAB)

The South Coast Air Basin (SCAB) is a 6,600-square mile area bounded by the San Gabriel, San Bernardino, and the San Jacinto Mountains to the north and east, and the Pacific Ocean to the west. The SCAB includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Geronio Pass area of Riverside County. The site elevation is approximately 15 feet above sea level. Small bluffs (approximately 100 feet high) run north to south just east of the Project boundary, with elevated terrain a significant distance from the Project site (approximately 6 miles).

The extent and severity of the air pollution problem in the SCAB is a function of the area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of air pollutants throughout the SCAB.

Climate & Meteorology

The proposed Project would be situated in the City of Dana Point, California, which is located within the SCAB. The climate of the SCAB has been classified as "Mediterranean," implying cool, dry summers and mild winters with moderate rainfall. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The usually mild climatological pattern is infrequently interrupted by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall and topography all affect the accumulation and/or dispersion of pollutants throughout the Basin.

Climate in the SCAB can be described by moderate temperatures, comfortable humidity, and limited winter precipitation. The average annual temperature varies little throughout the Basin, averaging 75 degrees Fahrenheit. December and January are typically the coldest months at all locations while July through September are usually the hottest months of the year. Although the Basin has a semi-arid climate, the air near the surface is moist because of the presence of a shallow marine layer. Except for infrequent



periods when dry, continental air is brought into the Basin by off-shore winds, the ocean effect is dominant. Periods with heavy fog are frequent; and low stratus clouds, occasionally referred to as “high fog” are a characteristic climate feature. Annual average relative humidity is 70 percent at the coast and 57 percent in the eastern part of the Basin. Precipitation is typically 9 to 14 inches annually in the Basin and is rarely in the form of snow or hail due to typically warm weather. The frequency and amount of rainfall is greater in the coastal areas of the Basin.

More precisely, the City of Dana Point is located along the Pacific coast and aligns with the aforementioned characteristics of a typical coastal area. The greatest month of precipitation for Dana Point is February, bringing in a historical rainfall average of 3.4 inches. The coolest month of the year is December with an average low of 43°F. The warmest months of the year are August and September with an average high of 80°F.

Wind

One of the most important climatic factors is the direction and intensity of the prevailing winds. With very light average wind speeds (five to seven miles per hour), the Basin has a limited capability to disperse air contaminants horizontally. Typically, the net transport of air on-shore is greater in the summer, while the net off-shore transport is greater in the winter. Whether there is air movement or stagnation during the morning and evening hours (before these dominant patterns take effect) is one of the critical factors in determining the smog situation on any given day.

Dana Point’s coastal location with respect to these flow patterns and the Pacific Ocean results in relatively good air quality. For the most part, the on-shore winds transport pollutants inland or off shore. The annual average wind speed measured at Dana Point Harbor is 3 miles per hour (mph), with a maximum monthly average wind speed of 5 mph during May.

Sunlight

The presence and intensity of sunlight are essential prerequisites for the creation of photochemical smog. Under the influence of the ultraviolet (UV) radiation of sunlight, certain initial or “primary” pollutants (e.g. reactive hydrocarbons and oxides of nitrogen) react to form “secondary” pollutants (primarily oxidants). Since this process is time-dependent, secondary pollutants can be formed many miles downwind from the emission sources. Due to the prevailing daytime winds and time-delayed nature of photochemical smog, oxidant concentrations are highest in the inland areas of Southern California.

Rainfall

Winter storms that bring rainfall are beneficial in terms of air quality. Rainfall has the ability to “scrub” or remove gaseous or particulate pollutants from the air.

Temperature Inversions

Under ideal meteorological conditions and irrespective of topography, pollutants emitted into the air would be mixed and dispersed into the upper atmosphere. However, the Southern California region frequently experiences temperature inversions in which pollutants are trapped and accumulate close to the ground. The inversion, a layer of warm, dry air overlaying cool, moist marine air, is a normal condition in the southland. Subsidence inversions occur during the warmer months as descending air associated with the Pacific high-pressure cell comes into contact with cool marine air and acts as a lid through which



the marine layer cannot rise. The other type of inversion, a radiation inversion, develops on winter nights when air near the ground cools by heat radiation and air aloft remains warm. The shallow inversion layer formed between these two air masses also can trap pollutants.

The height of the inversion is important in determining pollutant concentration. When the inversion is approximately 2,500 feet above sea level, the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes. At a height of 1,200 feet, the terrain prevents the pollutants from entering the upper atmosphere, resulting in a settlement in the foothill communities. Below 1,200 feet, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal basin. Usually, inversions are lower before sunrise than during the daylight hours. Mixing heights for inversions are lower in the summer and more persistent, being partly responsible for the high levels of ozone observed during summer months in the SCAB. Smog in Southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods of time, allowing them to form secondary pollutants by reacting with sunlight. The SCAB has a limited ability to disperse these pollutants due to typically low wind speeds.

The beachfront area in which the City of Dana Point is located offers clear skies and sunshine, however, it is still susceptible to air inversions.

Ambient Air Quality

The Southern California Air Quality Management District (SCAQMD) monitors air quality at 37 monitoring stations throughout the SCAB. Each monitoring station is located within a Source-Receptor Area (SRA). The City of Dana Point is located in SRA 21.

Air Pollutants of Concern

Criteria Air Pollutants

For the protection of public health and welfare, the Federal Clean Air Act (FCAA) required that the U.S. Environmental Protection Agency (EPA) establish National Ambient Air Quality Standards (NAAQS) for various pollutants. These pollutants are referred to as "criteria" pollutants because the U.S. Environmental Protection Agency (U.S. EPA) publishes criteria documents to justify the choice of standards. These standards define the maximum amount of an air pollutant that can be present in ambient air. An ambient air quality standard is generally specified as a concentration averaged over a specific time period, such as one hour, eight hours, 24 hours, or one year. The different averaging times and concentrations are meant to protect against different exposure effects. Standards established for the protection of human health are referred to as primary standards; whereas, standards established for the prevention of environmental and property damage are called secondary standards. The FCAA allows states to adopt additional or more health-protective standards. The following provides a summary discussion of the criteria air pollutants of primary concern.

Ozone (O₃) is a reactive gas consisting of three atoms of oxygen. In the troposphere, it is a product of the photochemical process involving the sun's energy. It is a secondary pollutant that is formed when NO_x and volatile organic compounds (VOC), also referred to as reactive organic gases (ROG) react in the presence of sunlight. Ozone at the earth's surface causes numerous adverse health effects and is a criteria pollutant. It is a major component of smog. In the stratosphere, ozone exists naturally and shields Earth from harmful incoming ultraviolet radiation.



High concentrations of ground-level ozone can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments. Ozone also damages natural ecosystems such as forests and foothill communities, agricultural crops, and some man-made materials, such as rubber, paint, and plastics.

Reactive Organic Gas (ROG) is a reactive chemical gas, composed of hydrocarbon compounds that may contribute to the formation of smog by their involvement in atmospheric chemical reactions. No separate health standards exist for ROG as a group. Because some compounds that makeup ROG are also toxic, like the carcinogen benzene, they are often evaluated as part of a toxic risk assessment. Total Organic Gases (TOGs) includes all of the ROG, in addition to low reactivity organic compounds like methane and acetone. ROG and VOC are subsets of TOG.

Volatile Organic Compounds (VOC) are hydrocarbon compounds that exist in the ambient air. VOCs contribute to the formation of smog and may also be toxic. VOC emissions are a major precursor to the formation of ozone. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints.

Oxides of Nitrogen (NO_x) are a family of gaseous nitrogen compounds and is a precursor to the formation of ozone and particulate matter. Nitrogen dioxide (NO₂), a major component of NO_x, is a reddish-brown gas that is toxic at high concentrations. NO_x results primarily from the combustion of fossil fuels under high temperature and pressure. On-road and off-road motor vehicles and fuel combustion are the major sources of this air pollutant.

Particulate Matter (PM), also known as particle pollution, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health problems. U.S. EPA is concerned about particles that are 10 micrometers in diameter or smaller because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. U.S. EPA groups particle pollution into three categories based on their size and where they are deposited:

- "Inhalable coarse particles (PM_{2.5-10})," such as those found near roadways and dusty industries, are between 2.5 and 10 micrometers in diameter. PM_{2.5-10} are deposited in the thoracic region of the lungs.
- "Fine particles (PM_{2.5})," such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller. These particles can be directly emitted from sources such as forest fires, or they can form when gases emitted from power plants, industries and automobiles react in the air. They penetrate deeply into the thoracic and alveolar regions of the lungs.
- "Ultrafine particles (UFP)," are very small particles less than 0.1 micrometers in diameter largely resulting from the combustion of fossil fuels, meat, wood and other hydrocarbons. While UFP mass is a small portion of PM_{2.5}, its high surface area, deep lung penetration, and transfer into the bloodstream can result in disproportionate health impacts relative to their mass.

PM₁₀, PM_{2.5}, and UFP include primary pollutants (emitted directly to the atmosphere) as well as secondary pollutants (formed in the atmosphere by chemical reactions among precursors). Generally speaking, PM_{2.5}



and UFP are emitted by combustion sources like vehicles, power generation, industrial processes, and wood burning, while PM₁₀ sources include these same sources plus roads and farming activities. Fugitive windblown dust and other area sources also represent a source of airborne dust.

Numerous scientific studies have linked both long- and short-term particle pollution exposure to a variety of health problems. Long-term exposures, such as those experienced by people living for many years in areas with high particle levels, have been associated with problems such as reduced lung function and the development of chronic bronchitis and even premature death. Short-term exposures to particles (hours or days) can aggravate lung disease, causing asthma attacks and also acute (short-term) bronchitis, and may also increase susceptibility to respiratory infections. In people with heart disease, short-term exposures have been linked to heart attacks and arrhythmias. Healthy children and adults have not been reported to suffer serious effects from short-term exposures, although they may experience temporary minor irritation when particle levels are elevated.

Carbon Monoxide (CO) is an odorless, colorless gas that is highly toxic. It is formed by the incomplete combustion of fuels and is emitted directly into the air (unlike ozone). The main source of CO is on-road motor vehicles. Other CO sources include other mobile sources, miscellaneous processes, and fuel combustion from stationary sources. Because of the local nature of CO problems, the Air Resources Board (ARB) and U.S. EPA designate urban areas as CO nonattainment areas instead of the entire basin as with ozone and PM₁₀. Motor vehicles are by far the largest source of CO emissions. Emissions from motor vehicles have been declining since 1985, despite increases in vehicle miles traveled, with the introduction of new automotive emission controls and fleet turnover.

Sulfur Dioxide (SO₂) is a colorless, irritating gas with a "rotten egg" smell formed primarily by the combustion of sulfur-containing fossil fuels. However, like airborne NO_x, suspended SO_x particles contribute to the poor visibility. These SO_x particles can also combine with other pollutants to form PM_{2.5}. The prevalence of low-sulfur fuel use has minimized problems from this pollutant.

Lead (Pb) is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. The health effects of lead poisoning include loss of appetite, weakness, apathy, and miscarriage. Lead can also cause lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract. Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels. The use of leaded fuel has been mostly phased out, with the result that ambient concentrations of lead have dropped dramatically.

Hydrogen Sulfide (H₂S) is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. Hydrogen sulfide is extremely hazardous in high concentrations; especially in enclosed spaces (800 ppm can cause death). Occupational Safety and Health Administration (OSHA) regulates workplace exposure to H₂S.

Other Pollutants

The State of California has established air quality standards for some pollutants not addressed by Federal standards. The ARB has established State standards for hydrogen sulfide, sulfates, vinyl chloride, and visibility reducing particles. The following section summarizes these pollutants and provides a description of the pollutants' physical properties, health and other effects, sources, and the extent of the problems.



Sulfates (SO_4^{2-}) are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

The ARB sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilator function, aggravation of asthmatic symptoms, and an increased risk of cardiopulmonary disease. Sulfates are particularly effective in degrading visibility, and, due to the fact that they are usually acidic, can harm ecosystems and damage materials and property.

Visibility Reducing Particles: Are a mixture of suspended particulate matter consisting of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. The standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Vinyl Chloride ($\text{C}_2\text{H}_3\text{Cl}$ or VCM) is a colorless gas that does not occur naturally. It is formed when other substances such as trichloroethane, trichloroethylene, and tetrachloro-ethylene are broken down. Vinyl chloride is used to make polyvinyl chloride which is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

Odors

Typically, odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from the psychological (i.e., irritation, anger, or anxiety) to the physiological, including circulatory and respiratory effects, nausea, vomiting, and headache.

The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor and in fact an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word strong to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant



reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Toxic Air Contaminants

Toxic air contaminants (TACs) are air pollutants that may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air, but due to their high toxicity, they may pose a threat to public health even at very low concentrations. Because there is no threshold level below which adverse health impacts are not expected to occur, TACs differ from criteria pollutants for which acceptable levels of exposure can be determined and for which state and federal governments have set ambient air quality standards. TACs, therefore, are not considered “criteria pollutants” under either the FCAA or the California Clean Air Act (CCAA) and are thus not subject to National or State AAQS. TACs are not considered criteria pollutants in that the federal and California Clean Air Acts do not address them specifically through the setting of National or State AAQS. Instead, the U.S. EPA and ARB regulate Hazardous Air Pollutants (HAPs) and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology to limit emissions. In conjunction with District rules, these federal and state statutes and regulations establish the regulatory framework for TACs. At the national levels, the U.S. EPA has established National Emission Standards for HAPs (NESHAPs), in accordance with the requirements of the FCAA and subsequent amendments. These are technology-based source-specific regulations that limit allowable emissions of HAPs.

Within California, TACs are regulated primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB designates a substance as a TAC. Existing sources of TACs that are subject to the Air Toxics Hot Spots Information and Assessment Act are required to: (1) prepare a toxic emissions inventory; (2) prepare a risk assessment if emissions are significant; (3) notify the public of significant risk levels; and (4) prepare and implement risk reduction measures.

At the state level, the ARB has authority for the regulation of emissions from motor vehicles, fuels, and consumer products. Most recently, Diesel-exhaust particulate matter (DPM) was added to the ARB list of TACs. DPM is the primary TACs of concern for mobile sources. Of all controlled TACs, emissions of DPM are estimated to be responsible for about 70 percent of the total ambient TAC risk. The ARB has made the reduction of the public’s exposure to DPM one of its highest priorities, with an aggressive plan to require cleaner diesel fuel and cleaner diesel engines and vehicles.

At the local level, air districts have the authority over stationary or industrial sources. All projects that require air quality permits from the SCAQMD are evaluated for TAC emissions. The SCAQMD limits emissions and public exposure to TACs through a number of programs. The SCAQMD prioritizes TAC-emitting stationary sources, based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. The SCAQMD requires a comprehensive health risk assessment for facilities that are classified in the significant-risk category, pursuant to AB 2588.



Land Use Compatibility with TAC Emission Sources

The ARB published an informational guide entitled: *Air Quality and Land Use Handbook: A Community Health Perspective (Handbook)* in 2005. The purpose of this guide is to provide information to aid local jurisdictions in addressing issues, and concerns related to the placement of sensitive land uses near major sources of air pollution. The ARB's Handbook includes recommended separation distances for various land uses that are based on relatively conservative estimations of emissions based on the source-specific information. However, these recommendations are not site-specific and should not be interpreted as defined "buffer zones." It is also important to note that the recommendations of the Handbook are advisory and need to be balanced with other State and local policies. Depending on site and project-specific conditions, an assessment of potential increases in exposure to TACs may be warranted for proposed development projects located within the distances identified.

Sensitive Receptors

One of the most important reasons for air quality standards is the protection of those members of the population who are most sensitive to the adverse health effects of air pollution, termed "sensitive receptors." The term "sensitive receptors" refers to specific population groups, as well as the land uses where individuals would reside for long periods. Commonly identified sensitive population groups are children, the elderly, the acutely ill, and the chronically ill. Commonly identified sensitive land uses would include facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Residential dwellings, schools, parks, playgrounds, childcare centers, convalescent homes, and hospitals are examples of sensitive land uses. Sensitive land uses within the City of Dana Point consist predominantly of residential land uses, schools, and community parks.

4.2.2 REGULATORY FRAMEWORK

Air quality within the Project area is regulated by several jurisdictions including the U.S. EPA, ARB, and the SCAQMD. Each of these jurisdictions develops rules, regulations, and policies to attain the goals or directives imposed upon them through legislation. Although U.S. EPA regulations may not be superseded, both state and local regulations may be more stringent.

Federal

U.S. Environmental Protection Agency

At the federal level, the U.S. EPA has been charged with implementing national air quality programs. The U.S. EPA's air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA), which was signed into law in 1970. Congress substantially amended the FCAA in 1977 and again in 1990.

Federal Clean Air Act

The FCAA required the U.S. EPA to establish NAAQS, and also set deadlines for their attainment. Two types of NAAQS have been established: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility restrictions. NAAQS identify levels of air quality for "criteria" pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. The criteria pollutants are ozone (O₃), carbon monoxide (CO),



nitrogen dioxide (NO₂ is a form of NO_x), sulfur oxides (SO₂ is a form of SO_x), particulate matter less than 10 and 2.5 microns in diameter (PM₁₀ and PM_{2.5}, respectively) and lead (Pb). NAAQS are summarized in Table 4.2-1, Summary of Ambient Air Quality Standards and Attainment Designations.

The General Conformity Rule of the Federal Clean Air Act (42 USC 7401) implements § 176(c) of the Clean Air Act. The purpose of the General Conformity Rule is to:

- Ensure that federal activities do not cause or contribute to new violations of the national ambient air quality standards;
- Ensure that actions do not cause additional or worsen existing violation of, or contribute to new violations of, the national ambient air quality standards; and
- Ensure that attainment of the national ambient air quality standards is not delayed.

The regulations apply to a proposed federal action that would cause emissions of criteria air pollutants or ozone precursors in locations designated as nonattainment or maintenance areas for the emitted pollutants. A federal agency must make a determination that a federal action conforms to the applicable implementation plan before the action is taken. The Project may be subject to the General Conformity Rule because the State Revolving Fund (SRF) Program, which may be used to finance the Project, is partially funded by the U.S. Environmental Protection Agency (EPA).

The General Conformity analysis applies only to projects in a nonattainment area or an attainment area subject to a maintenance plan and is required for each criteria pollutant for which an area has been designated nonattainment or maintenance. If a project's emissions are below the "de minimis" level and are less than 10 percent of the area's inventory specified for each criteria pollutant in a nonattainment or maintenance area, further general conformity analysis is not required. A conformity determination must be made if emissions from project facilities are above "de minimis" thresholds established for the area. A conformity determination can still be made if facilities are sized to meet only the needs of current population projections that are used in the approved SIP for air quality. The conformity determination must include detailed descriptions of the proposed capacity increase calculations. If it is determined that project emissions are below "de minimis" levels and result in less than 10 percent of the nonattainment or maintenance area emissions inventory, a general conformity analysis is not needed.

Toxic Substances Control Act

The Toxic Substances Control Act first authorized the U.S. EPA to regulate asbestos in schools and Public and Commercial buildings under Title II of the law, which is also known as the Asbestos Hazard Emergency Response Act (AHERA). AHERA requires Local Education Agencies to inspect their schools for asbestos-containing building materials (ACBM) and to prepare management plans to reduce the asbestos hazard. The Act also established a program for the training and accreditation of individuals performing certain types of asbestos work.

National Emission Standards for Hazardous Air Pollutants

Pursuant to the FCAA of 1970, the U.S. EPA established the National Emission Standards for Hazardous Air Pollutants (NESHAPs). These are technology-based source-specific regulations that limit allowable emissions of HAPs. Among these sources include ACBM. NESHAPs include requirements pertaining to the



inspection, notification, handling, and disposal of ACBM associated with the demolition and renovation of structures.

State and Regional

California Air Resources Board

The California ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA) of 1988. Other ARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control districts and air quality management districts), establishing the California Ambient Air Quality Standards (CAAQS), which in many cases are more stringent than the NAAQS, and setting emissions standards for new motor vehicles. The CAAQS are summarized in Table 4.2-1, Summary of Ambient Air Quality Standards and Attainment Designations. The emission standards established for motor vehicles differ depending on various factors including the model year, and the type of vehicle, fuel, and engine used.

California Clean Air Act

The CCAA requires that all air districts in the state endeavor to achieve and maintain CAAQS for Ozone, CO, SO₂, and NO₂ by the earliest practical date. The CCAA specifies that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources, and the act provides districts with authority to regulate indirect sources. Each district plan is required to either (1) achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each non-attainment pollutant or its precursors, or (2) to provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both state and federal planning requirements.

Under the CCAA, the ARB is required to designate areas of the state as attainment, nonattainment, or unclassified with respect to applicable standards. An “attainment” designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A “nonattainment” designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An “unclassified” designation signifies that the data does not support either attainment or nonattainment designation. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The U.S. EPA designates areas for ozone, CO, and NO₂ as “does not meet the primary standards,” “cannot be classified,” or “better than national standards.” For SO₂, areas are designated as “does not meet the primary standards,” “does not meet the secondary standards,” “cannot be classified,” or “better than national standards.” However, the ARB terminology of attainment, nonattainment, and unclassified is more frequently used. The U.S. EPA uses the same sub-categories for nonattainment status: serious, severe, and extreme.



Table 4.2-1: Summary of Ambient Air Quality Standards and Attainment Designations

Pollutant	Averaging Time	California Standards		National Standards	
		Concentration	Attainment Status	Primary	Attainment Status
Ozone (O ₃)	1-hour	0.09 ppm	Non-Attainment		Non-Attainment
	8-hour	0.070 ppm		0.070 ppm	
Particulate Matter (PM ₁₀)	AAM	20 µg/m3	Non-Attainment	–	Attainment/Maintenance
	24-hour	50 µg/m3		150 µg/m3	
Fine Particulate Matter (PM _{2.5})	AAM	12 µg/m3	Non-Attainment	12 µg/m3	Non-Attainment
	24-hour	No Standard		35 µg/m3	
Carbon Monoxide (CO)	1-hour	20 ppm	Attainment	35 ppm	Attainment/Maintenance
	8-hour	9 ppm		9 ppm	
Nitrogen Dioxide (NO ₂)	AAM	0.030 ppm	Attainment	0.053 ppm	Unclassified/Attainment
	1-hour	0.18 ppm		0.100 ppb ^b	
Sulfur Dioxide (SO ₂)	AAM	–	Attainment	0.03 ppm	Unclassified/Attainment
	24-hour	0.04 ppm		0.14 ppm	
	3-hour	–		--	
	1-hour	0.25 ppm		75 ppb	
Lead	30-day Average	1.5 µg/m3	Attainment	–	Non-Attainment (Partial)
	Calendar Quarter	–		1.5 µg/m3	
	Rolling 3-Month Average	–		0.15 µg/m3	
Sulfates	24-hour	25 µg/m3	Attainment	No Federal Standards	
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m3)	Unclassified		
Vinyl Chloride	24-hour	0.01 ppm (26 µg/m3)	Attainment		
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient: 0.23/kilometer-visibility of 10 miles or more (0.07-30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent	Unclassified		

- a. No federal 1-hour standard.
b. To attain this standard, the 3-year average of the 98th percentile daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).
c. 1 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect public health. Most recent standard for each averaging time listed.
d. For more information visit <https://www.epa.gov/criteria-air-pollutants/naaqs-table>
e. For more information visit <https://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm>
f. ppm = parts per million
g. µg/m³ = micrograms per cubic meter

Source: ARB 2016



Assembly Bills 1807 & 2588 - Toxic Air Contaminants

Within California, TACs are regulated primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics Hot Spots Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB designates a substance as a TAC. Existing sources of TACs that are subject to the Air Toxics Hot Spots Information and Assessment Act are required to: (1) prepare a toxic emissions inventory; (2) prepare a risk assessment if emissions are significant; (3) notify the public of significant risk levels; and (4) prepare and implement risk reduction measures.

In-Use Off-Road Diesel Vehicle Regulation

On July 26, 2007, the ARB adopted a regulation to reduce Diesel Particulate Matter (DPM) and NO_x emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. The regulation applies to self-propelled diesel-fueled vehicles that cannot be registered and licensed to drive on-road, as well as two-engine vehicles that drive on the road, with the limited exception of two-engine sweepers. Examples include loaders, crawler tractors, skid steers, backhoes, forklifts, airport ground support equipment, water well drilling rigs, and two-engine cranes. Such vehicles are used in construction, mining, and industrial operations. The regulation does not apply to stationary equipment or portable equipment such as generators. The off-road vehicle regulation, establishes emissions performance requirements, establishes reporting, disclosure, and labeling requirements for off-road vehicles, and limits unnecessary idling.

South Coast Air Quality Management District (SCAQMD)

Because Southern California has one of the worst air quality problems in the nation, the SCAQMD was created by the 1977 Lewis Air Quality Management Act. Four county air pollution control agencies were merged into one regional district to better address the issue of improving air quality in Southern California. Under the act, revised and renamed the Lewis-Presley Air Quality Management Act in 1988, the SCAQMD is the agency principally responsible for comprehensive air pollution control in the SCAB. Specifically, the SCAQMD is responsible for monitoring air quality and planning, implementing, and enforcing programs designed to attain and maintain state and federal ambient air quality standards in the district. Programs developed include air quality rules and regulations that regulate stationary source emissions, including area and point sources and certain mobile source emissions. The SCAQMD is also responsible for establishing permitting requirements and issuing permits for stationary sources and ensuring that new, modified, or relocated stationary sources do not create net emissions increases. The SCAQMD enforces air quality rules and regulations through a variety of means, including inspections, educational and training programs, and fines.

The SCAQMD is also the lead agency in charge of developing the Air Quality Management Plan (AQMP), with input from the Southern California Association of Governments (SCAG) and ARB. The AQMP is a comprehensive plan that includes control strategies for stationary and area sources, as well as for on-road and off-road mobile sources. SCAG has the primary responsibility for providing future growth projections and the development and implementation of transportation control measures. ARB in coordination with federal agencies provides the control element for mobile sources.

The state and national attainment status designations for the SCAB are summarized in Table 4.2-2, South Coast Air Basin Attainment Statuses. The SCAB is currently designated as a nonattainment area with



respect to the state ozone, PM₁₀, and PM_{2.5} standards, as well as the national 8-hour ozone and PM_{2.5} standards. The Basin is designated attainment or unclassified for the remaining State and federal standards.

Air Quality Management Plan

The 2012 AQMP was adopted by the SCAQMD Governing Board on December 7, 2012. The purpose of the AQMP is to set forth a comprehensive and integrated program that would lead the SCAB into compliance with the federal 24-hour PM_{2.5} air quality standard, and to provide an update to the Basin's commitments towards meeting the federal 8-hour ozone standards. The AQMP incorporates the latest scientific and technological information and planning assumptions, including the 2012 Regional Transportation Plan/Sustainable Communities Strategy and updated emission inventory methodologies for various source categories. SCAQMD staff is currently in the process of developing the 2016 AQMP.

Land Use Planning Guidance

The SCAQMD has published the CEQA Air Quality Handbook (approved by the SCAQMD Governing Board in 1993 and augmented with guidance for Local Significance Thresholds in 2008). The SCAQMD guidance assists local government agencies and consultants in developing environmental documents required by CEQA including providing identification of suggested thresholds of significance for criteria pollutants for both construction and operation (see discussion of thresholds below). With the help of the CEQA Air Quality Handbook and associated guidance, local land use planners and consultants are able to analyze and document how proposed, and existing projects affect air quality in order to meet the requirements of the CEQA review process. The SCAQMD is in the process of developing an Air Quality Analysis Guidance Handbook to replace the current CEQA Air Quality Handbook.

Southern California Association of Governments

The SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. Under federal law, SCAG is designated as a Metropolitan Planning Organization (MPO) and under state law as a Regional Transportation Planning Agency and a Council of Governments.

In 2012, SCAG adopted the *2012-2035 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS). The RTP is a long-range transportation plan that provides a vision for regional transportation investments over a period of 20 years or more. The SCS is a new element of the RTP that demonstrates the integration of land use, transportation strategies, and transportation investments within the Plan. This new requirement was put in place by the passage of SB 375, with the goal of ensuring that the SCAG region can meet its regional GHG reduction targets set by the ARB. SCAG adopted the 2016-2040 RTP/SCS on April 7, 2016. The SCS exceeds the targets issued by ARB (8 percent reduction by 2020 and 13 percent reduction by 2035), resulting in an eight percent reduction by 2020 and 18 percent by 2035, and 21 percent by 2040.



Table 4.2-2: South Coast Air Basin Attainment Statuses

Pollutant	Federal	State
Ozone (O ₃) (1 Hour Standard)	Non-Attainment (Extreme)	Non-Attainment
Ozone (O ₃) (8 Hour Standard)	Non-Attainment (Extreme)*	Non-Attainment
Particulate Matter (PM _{2.5}) (24 Hour Standard)	Non-Attainment (Serious)	--
Particulate Matter (PM _{2.5}) (Annual Standard)	Non-Attainment (Moderate)	Non-Attainment
Particulate Matter (PM ₁₀) (24 Hour Standard)	Attainment (Maintenance)	Non-Attainment
Particulate Matter (PM ₁₀) (Annual Standard)	--	Non-Attainment
Carbon Monoxide (CO) (1 Hour Standard)	Attainment (Maintenance)	Attainment
Carbon Monoxide (CO) (8 Hour Standard)	Attainment (Maintenance)	Attainment
Nitrogen Dioxide (NO ₂) (1 Hour Standard)	Unclassifiable/Attainment	Attainment
Nitrogen Dioxide (NO ₂) (Annual Standard)	Attainment (Maintenance)	Attainment
Sulfur Dioxide (SO ₂) (1 Hour Standard)	Unclassifiable/Attainment*	Attainment
Sulfur Dioxide (SO ₂) (24 Hour Standard)	--	Attainment
Lead (Pb) (30 Day Standard)	Unclassifiable/Attainment	--
Lead (Pb) (3 Month Standard)	--	Attainment
Sulfates (SO ₄ ²⁻) (24 Hour Standard)	--	Attainment
Hydrogen Sulfide (H ₂ S) (1 Hour Standard)	--	Unclassified

Source: SCAQMD 2016 Air Quality Management Plan (SCAQMD, 2016)

* Pending final classification, expected result is listed



Local

City of Dana Point General Plan

Conservation Element

Goal 5: Reduce air pollution through land use, transportation and energy use planning.

- Policy 5.1:** Design safe and efficient vehicular access to streets to ensure efficient vehicular ingress and egress. (Coastal Act/30252)
- Policy 5.2:** Locate multiple family developments close to commercial areas to encourage pedestrian rather than vehicular travel.
- Policy 5.3:** Encourage neighborhood parks close to concentrations of residents to encourage pedestrian travel to public recreation facilities.
- Policy 5.4:** Provide commercial areas that are conducive to pedestrian and bicycle circulation.
- Policy 5.5:** Actively participate in regional discussions regarding new regional airport facilities and analyze and evaluate potential impacts on the City.
- Policy 5.6:** Encourage bicycle/trail systems to reduce air pollution.
- Policy 5.7:** Consider the development of shuttle systems, train or transit facilities, to help reduce vehicular trips and air pollution.

4.2.3 SIGNIFICANCE CRITERIA

Significance Thresholds and Criteria

SCAQMD Air Quality Significance Thresholds

Under CEQA, the SCAQMD is an expert commenting agency on air quality and related matters within its jurisdiction or impacting its jurisdiction. Under the FCAA, the SCAQMD is in charge of enforcing the regional component of the State Implementation Plans (SIPs) to reach attainment for O₃ and PM_{2.5}.

The SCAQMD reviews projects to ensure that they would not:

- 1) Cause or contribute to any new violation of any air quality standard;
- 2) Increase the frequency or severity of any existing violation of any air quality standard; or
- 3) Delay timely attainment of any air quality standard or any required interim emission reductions or other milestones of any federal attainment plan.

The SCAQMD CEQA Air Quality Handbook provides significance thresholds for both construction and operation of projects within the SCAQMD jurisdictional boundaries. Exceedance of the SCAQMD thresholds could result in a potentially significant impact. However, ultimately the lead agency determines the thresholds of significance for impacts.



If the Project results in emissions in excess of the established thresholds shown in [Table 4.2-3, South Coast Air Quality Management District Air Quality Significance Thresholds](#), a significant air quality impact may occur. Additional analysis is warranted to fully assess the significance of impacts and potential mitigation measures may be necessary.

The quantifiable thresholds shown below are currently recommended by the SCAQMD and are used to determine the significance of air quality impacts associated with implementation of the Doheny Ocean Desalination Project.

Table 4.2-3: South Coast Air Quality Management District Air Quality Significance Thresholds

Mass Daily Thresholds ^a		
Pollutant	Construction (lb/day)	Operation (lb/day)
NO _x	100	55
VOC	75	55
PM ₁₀	150	150
PM _{2.5}	55	55
SO _x	150	150
CO	550	550
Lead	3	3

Source: SCAQMD CEQA Handbook (SCAQMD, 1993)

SCAQMD Localized Significance Thresholds

Local Significance Thresholds (LSTs) were developed in response to the SCAQMD Governing Board's environmental justice (EJ) initiatives (EJ initiative I-4) in recognition of the fact that criteria pollutants such as CO, NO_x, and PM₁₀ and PM_{2.5} in particular, can have local impacts as well as regional impacts. The goal of significance thresholds is to ensure that no source creates, or receptor endures, a significant adverse impact from any project. The evaluation of localized air quality impacts determines the potential of the Project to violate any air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. LSTs represent the maximum emissions or air concentrations from a project that would not cause or contribute to an exceedance of the most stringent applicable federal or State ambient air quality standard, at any nearby sensitive or worker receptor. LSTs are defined separately for construction and operational activities. The Project is located in SRA 21 (Capistrano Valley). Therefore, the LSTs for this SRA were selected for the LST assessment. The applicable LSTs from the SCAQMD's lookup tables are provided in [Table 4.2-4, SCAQMD Localized Significance Thresholds for Construction](#). The project size is generally represented as the maximum area disturbed during a day from which emissions are calculated. Only some pieces of equipment generate fugitive dust in CalEEMod. The CalEEMod manual identifies various equipment and the acreage disturbed in an 8-hour day:

- Crawler tractors, graders, and rubber-tired dozers: 0.5 acres per 8-hour day
- Scrapers: 1 acre per 8-hour day

The acreages below do not reflect project-footprint, but instead show a calculation based on the number and use of certain types of equipment. SCAQMD's LST methodology bases the acreage disturbed on the



crawler tractors, graders, rubber-tired dozers, and scrapers. A summary of the LST calculated acreages and LST look up tables can be found in [Appendix 10.3, Air Quality/GHG Calculations](#).

Table 4.2-4: SCAQMD Localized Significance Thresholds for Construction

Look-up Table Parameters	Daily Emission Limit (pounds per day)			
	NO _x	CO	PM ₁₀	PM _{2.5}
1 acre site, Receptor at 25 meters	91	707	4	3
1 acre site, Receptor at 90 meters ^a	105	1,154	21	7
2 acre site, Receptor at 90 meters ^a	137	1,602	28	9

a. LST Thresholds for 90 meters interpolated using 50-meter and 100-meter values.

Source: SCAQMD 2008

SCAQMD Localized CO

CO Hotspots are localized violations of the State or federal CO standard, and are related to increases in on-road vehicle congestion. These potential impacts are localized in nature, occurring near the emissions source. The CO hotspot thresholds are represented by the most restricted state or federal CO ambient air quality standards:

- 1-hour CO standard: 20 ppm; and
- 8-hour CO standard: 9 ppm.

SCAQMD recommends a screening analysis to determine if a Project has the potential to contribute to a CO hotspot. The screening criteria identify when site-specific CO dispersion modeling is not necessary. The largest contributor of CO emissions during project operations is typically from motor vehicles. A CO hotspot represents a condition wherein high concentrations of CO may be produced by motor vehicles accessing a congested traffic intersection under heavy traffic volume conditions. If the CO contributed by the Project in combination with CO produced by non-project traffic exceeds the above standards, then the Project would have a significant impact.

SCAQMD Odor-Based Significance Thresholds

Projects that produce objectionable odors could constitute a significant air quality impact to existing uses. The SCAQMD cites District Rule 402 as the determinant for odor-related issues in a CEQA context. It states that, “A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.”

General Conformity De Minimis Levels

The General Conformity Rule specifies de minimis levels, which are based on the severity of an area’s nonattainment with the federal ambient air quality standards. If a project’s construction and operational air pollutant generation is less than the de minimis levels, additional analysis is not required. The de minimis levels for Orange County are provided in [Table 4.2-5, Orange County De Minimis Levels](#) below. As shown in the table, the Project area is in nonattainment for the federal ozone and PM_{2.5} standards.



Therefore, de minimis levels are applicable for ozone precursors and PM_{2.5}. Ozone precursors NO_x and reactive organic gases that are also known as VOCs. Conformity determinations are not required for pollutants for which the Project area is designated attainment. Therefore, conformity determinations are not required for CO₂, NO₂, SO₂, PM₁₀, and lead.

Table 4.2-5: Orange County De Minimis Levels

Pollutant	Federal Ambient Air Quality Standard Attainment Status	De Minimis Level (tons per year)
Ozone (O ₃) a,b	Nonattainment (Extreme)	10 - NO _x 10 - ROG
Carbon monoxide (CO)	Attainment (Maintenance)	100
Nitrogen dioxide (NO ₂)	Non-Attainment (Serious)	N/A
Sulfur dioxide (SO ₂)	Unclassified/Attainment (N/A)	N/A
PM ₁₀	Attainment (Maintenance)	100
PM _{2.5}	Non-Attainment (Serious)	70
Lead	Attainment	N/A
Notes: N/A = Not Applicable ^a There are no de minimis thresholds for O ₃ . NO _x and VOC, although not criteria pollutants themselves, are the principal precursors of O ₃ . Therefore, NO _x and VOC thresholds are applicable to O ₃ conformity. ^b NO _x and VOC thresholds based on marginal nonattainment inside an ozone transport region.		

Sources: SCAQMD, 2016 - National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) Attainment Status for South Coast Air Basin. Website: <http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf>. EPA, 2017 -General Conformity: De Minimis Tables. Website: <https://www.epa.gov/general-conformity/de-minimis-tables> (accessed September 1, 2017).

CEQA Significance Thresholds

CEQA Guidelines Appendix G, Environmental Checklist Form, includes questions pertaining to air quality. The issues presented in the Environmental Checklist have been utilized as thresholds of significance in this section. Accordingly, the Project would have a significant adverse environmental impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.



Methodology and Assumptions

The above standards of significance are assessed as the basis for determining the significance of impacts related to air quality. Additional detail about the implementation of the above standards of significance and specific calculation methodology for each portion of the evaluation is provided in the appropriate subsection. If necessary, mitigation measures are proposed to reduce impacts to less than significant levels. Additional Project information and air quality analysis assumptions are provided in [Section 3.0, Project Description](#) and in [Appendix 10.3, Air Quality/GHG Calculations](#).

SRF CEQA-Plus Analysis

This EIR section also includes an evaluation of Clean Air Act conformity, as required by the SWRCB for SRF loan applications (this discussion is provided under Impact 4.2-2, [Tables 4.2-11](#) and [4.2-12](#)).

Project Design Features

- The Project utilizes an existing developed District San Juan Creek Property site, existing streets for conveyance pipelines, and disturbed or developed sites for construction and laydown areas, all of which serves to reduce construction-related emissions;
- The desalination facility site is ideally located, close to the source water, an existing ocean outfall, and product water conveyance facilities, which serves to reduce construction-related emissions for pipeline trenching and operational emissions associated with pumping;
- The Project proposes use of solar photovoltaic (solar PV) on facility rooftops where feasible, to reduce operational energy demand and associated energy-related air emissions;
- The Project incorporates state-of-the-art energy recovery devices (ERDs) which reduce operational air emissions by reducing the overall project energy demands by approximately 35 percent;
- The Project would use High-Density Polyethylene pipe (HDPE) where practical to reduce on-site water conveyance friction with associated reductions in pumping-related air emissions; and
- The District has committed to a “carbon neutral” Project, whereby the incremental additional energy consumption of the Project (in comparison to the District’s current water supply portfolio energy demand) is offset by the District through a comprehensive Energy Conservation and Greenhouse Gas Reduction Plan.

4.2.4 IMPACTS AND MITIGATION

Impact 4.2-1: Would the Project conflict with or obstruct implementation of the applicable air quality plan? *Level of Significance: Less than Significant with Mitigation.*

Construction and Operations

All Components

The Project site is located within the SCAB, which is under the jurisdiction of the SCAQMD. The SCAQMD is required, pursuant to the federal Clean Air Act, to reduce emissions of criteria pollutants for which SCAB is in nonattainment. In order to reduce such emissions, the SCAQMD prepared the 2016 AQMP. The 2016



AQMP establishes a program of rules and regulations directed at reducing air pollutant emissions and achieving State and federal air quality standards. The 2016 AQMP is a regional and multi-agency effort including the SCAQMD, the ARB, SCAG, and the USEPA. The 2016 AQMP's pollutant control strategies are based on the latest scientific and technical information and planning assumptions, including SCAG's 2016 RTP/SCS; updated emission inventory methodologies for various source categories; and SCAG's latest growth forecasts.

The SCAQMD's CEQA Handbook identifies two key indicators of consistency with the AQMP:

- 1) Whether the project would result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.
- 2) Whether the project would exceed the assumptions in the AQMP based on the year of project buildout and phase.

According to the SCAQMD's *CEQA Air Quality Handbook*, the purpose of the consistency finding is to determine if a project is inconsistent with the assumptions and objectives of the regional air quality plans, and thus if it would interfere with the region's ability to comply with federal and state AAQS.

With respect to the first criterion, based on the air quality modeling analysis conducted for the proposed Project summarized later in this EIR section and provided in [Appendix 10.3, Air Quality/GHG Calculations](#), the Project would not result in emissions of pollutants exceeding the SCAQMD's regional significance thresholds during construction in 2030 or 2031. However, during construction in 2019 and 2020, unmitigated NO_x emissions are projected to exceed the significance threshold of 100 pounds per day. To meet the SCAQMD threshold, the Project would implement Mitigation Measures AQ-1 through AQ-3. Implementation of Mitigation Measures AQ-1 through AQ-3 would allow the Project to meet this criterion (refer to the discussion under Threshold 4.2-2). Operation of the Project would not result in significant impacts based on the SCAQMD thresholds of significance. Therefore, Project operation would not increase the frequency or severity of existing air quality violations.

Concerning the second criterion, the 2016 AQMP contains air pollutant reduction strategies based on SCAG's latest growth forecasts, and SCAG's growth forecasts are defined in consultation with local governments and with reference to local general plans. Projections for achieving air quality goals are based on assumptions regarding population, housing, and growth trends. Therefore, the SCAQMD's second criterion for determining project consistency focuses on whether the proposed Project exceeds the assumptions used in preparing the forecasts presented in the 2016 AQMP.

In the case of the 2016 AQMP, several sources of data form the basis for the projections of air pollutant emissions including the *City of Dana Point General Plan* (General Plan), SCAG's *Growth Management Chapter of the Regional Comprehensive Plan* (RCP), and SCAG's RTP/SCS. The RTP/SCS also provides socioeconomic forecast projections of regional population growth. The City's General Plan Land Use Map designates the Project site as Industrial/Business Park. The Industrial/Business Park designation includes parcels of land with mixtures of industrial and commercial uses that may include marine/auto supplies and service, home furnishings and appliances, wholesale businesses, light manufacturing, distribution and sales, storage, research and development laboratories and service commercial business and community facilities. The Project site is zoned industrial business. Under this zoning designation, heavy industrial uses are permitted on a conditional use. The proposed Project is an ocean desalination facility and consistent



with the General Plan and Zoning designations, therefore no land use changes are required for the proposed Project.

The proposed Project is generally consistent with the types, intensity, and patterns of land use envisioned for the area in the RCP. The population, housing, and employment forecasts, which are adopted by SCAG's Regional Council, are based on the local plans and policies applicable to the cities; SCAG uses these in all phases of implementation and review. Additionally, as SCAQMD incorporated these same projections into the 2016 AQMP, it can be concluded that the proposed Project would be consistent with the projections. Moreover, the Phase I Project (up to 5 MGD), would expressly be intended to meet District water supply obligations consistent with its Urban Water Management Plan and local retailer growth plans. The Regional Project (up to 15 MGD), if implemented in the future, is similarly intended to meet the water supply reliability needs of local water agencies and retailers, and as such is not anticipated to create any conflict with AQMD growth plans. Detailed evaluation of a potential future Regional Project is not possible at this time and would be speculative, given the lack of Regional Project partners and lack of any specific facility designs or specific end users. At such time a specific Regional Project is identified and proposed, the District and/or others would prepare appropriate supplemental CEQA documentation to evaluate potential impacts.

This is discussed in greater detail under Impact 4.2-2 below (for FCAA General Conformity) and in Section 6.1, Growth-inducing Impacts. Therefore, the Project is considered consistent with the 2016 AQMP and would not conflict with the second criterion. The proposed Project would result in less than significant impacts related to consistency with the AQMP. Refer to detailed discussion in Impact AQ 4.2-2 below.

Mitigation Measures

No mitigation measures are required.

Impact 4.2-2: **Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation? *Level of Significance: Less than Significant with Mitigation.***

Construction

Construction Emissions Methodology

Construction criteria pollutant emissions were calculated by using a combination of emission models and emission factors. These models and factors sources included CalEEMod 2016.3.2, ARB Offroad 2011, and EMFAC 2014. Each model calculates emissions for a different type of source. Details regarding the source types and models used, equipment inventory, assumptions, and all data used to calculate construction-related air quality emissions are available in Appendix 10.3, Air Quality/GHG Calculations.

Construction emissions for the desalination facility and the various components of the Project were calculated individually and separated into on-site and off-site categories. On-site emissions are defined as the exhaust and fugitive emissions generated by stationary, mobile, and area sources at the various construction sites. Off-site emissions are referred to as the emissions from mobile sources that travel to/from the various construction sites.



In general, due to the distances that separate each construction activity, it is unlikely that potential impacts from each area of construction would combine to cause a localized significant impact. However, to be conservative, the emissions from each area of overlapping construction were combined, and compared to the appropriate construction significance thresholds.

In addition, since the Project is still in the design phase, conservative parameters and default estimates were utilized. As noted above, all assumptions are provided in Appendix 10.3, Air Quality/GHG Calculations.

Construction Emissions

As shown in Table 4.2-6, Construction Emissions Results (Unmitigated) below, the Project would not result in emissions of pollutants exceeding the SCAQMD's regional significance thresholds during construction in 2030 or 2032.¹ However, during construction in 2019, 2020, 2021 (for the Phase I Project) and 2031 (for the Regional Project), unmitigated NO_x emissions are projected to exceed the significance threshold of 100 pounds per day. To meet the SCAQMD threshold, the Project would implement Mitigation Measures AQ-1 through AQ-3. The Mitigation Measures include the use of Tier 4 certified engines during construction, idling restrictions, and a construction fugitive dust control plan. Implementation of Mitigation Measures AQ-1 through AQ-3 would reduce NO_x emissions to below the significance threshold of 100 pounds per day, as shown in Table 4.2-7, Construction Emissions Results (Mitigated).

Table 4.2-6: Construction Emissions Results (Unmitigated)¹

Project Phase (Construction Year)	Maximum Daily Emissions (pounds/day)					
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}	SO _x
5 MGD 2019	19.91	192.50	115.44	16.44	10.60	0.41
5 MGD 2020	33.60	310.27	229.85	24.19	17.58	0.77
5 MGD 2021	38.50	323.75	252.56	23.27	16.69	0.90
15 MGD 2030	23.02	74.67	163.54	0.73	23.82	12.66
15 MGD 2031	34.06	107.45	238.85	1.10	4.60	3.82
15 MGD 2032	22.10	65.59	150.71	0.73	2.70	2.37
SCAQMD Threshold	75	100	550	150	55	150
Is Threshold Exceeded	NO	YES	NO	NO	NO	NO

¹ As described in Section 3.0, Project Description, this EIR addresses the potential future Regional Project at a programmatic level. For conceptual analysis purposes, the programmatic air quality analysis for the Regional Project has assumed an operational year of 2030 (see Appendix 10.3, Air Quality/GHG Calculations for detailed assumptions). Actual construction and opening year for the Regional Project will vary depending on future details yet to be developed, which would be the subject of a separate CEQA document.

NOTE: Regional Project construction emissions do NOT include any regional product water conveyance pipelines and related facilities, which are not known at this time, but could involve major facility construction and potentially significant construction air quality impacts.



Table 4.2-7: Construction Emissions Results (Mitigated)¹

Project Phase (Construction Year)	Maximum Daily Emissions (pounds/day)					
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}	SO _x
5 MGD 2019	5.53	23.46	185.27	4.81	2.40	0.41
5 MGD 2020	11.11	70.05	342.82	7.09	3.99	0.77
5 MGD 2021	14.77	70.29	406.62	7.14	4.00	0.90
15 MGD 2030	9.15	47.10	318.64	11.13	5.73	0.73
15 MGD 2031	13.45	60.29	476.05	2.45	1.99	1.10
15 MGD 2032	8.64	37.72	314.91	1.45	1.25	0.73
SCAQMD Threshold	75	100	550	150	55	150
Is Threshold Exceeded	NO	NO	NO	NO	NO	NO

Construction Localized Emissions Summary

As shown in Table 4.2-8, On-site Construction Emissions Results (Unmitigated) below, the Project would result in unmitigated emissions of pollutants that exceed the SCAQMD's localized significance thresholds (LSTs) project-wide pipework in 2020 and 2021, as well as for estimated construction that would occur for a potential future Regional Project, assumed to occur in 2030. Unmitigated PM₁₀ and PM_{2.5} emissions are projected to exceed the applicable LSTs. However, implementation of Mitigation Measure AQ-3 would reduce fugitive dust generation during project construction. Since the construction of the proposed Project with Mitigation Measure AQ-1 through AQ-3 would not exceed SCAQMD localized significance thresholds, impacts would be less than significant, as shown in Table 4.2-9, On-site Construction Emissions Results (Mitigated).

Table 4.2-8: On-site Construction Emissions Results (Unmitigated)

Project Phase (Construction Year) Activity	Maximum Daily On-site Emissions (pounds/day)			
	NO _x	CO	PM ₁₀	PM _{2.5}
5 MGD 2019 Preliminary Site Work	35.8	22.1	1.8	1.7
SCAQMD LST Threshold ¹	105	1,154	21	7
Is Threshold Exceeded	No	No	No	No
5 MGD 2019 Preliminary Site Work 2	54.5	33.4	11.1	5.8
SCAQMD LST Threshold ²	137	1,602	28	9
Is Threshold Exceeded	No	No	No	No
5 MGD 2020-2021 Project-Wide Pipework Excavation	13.4	6.4	6.7	3.9
SCAQMD LST Threshold ³	91	707	4	3
Is Threshold Exceeded	No	No	Yes	Yes
15 MGD 2030 Expansion Site Prep ¹	13.7	16.3	18.7	10.4



Project Phase (Construction Year) Activity	Maximum Daily On-site Emissions (pounds/day)			
	NO _x	CO	PM ₁₀	PM _{2.5}
SCAQMD LST Threshold ¹	105	1,154	21	7
Is Threshold Exceeded	No	No	No	Yes
Notes: 1. LST based on 1-acre site with receptor at 90 meters 2. LST based on 2-acre site with receptor at 90 meters 3. LST based on 1-acre site with receptor at 25 meters 4. The acreage does not reflect project-footprint, but a calculation based on the number and use of certain types of equipment. SCAQMD's LST methodology bases the acreage disturbed on the crawler tractors, graders, rubber-tired dozers, and scrapers. More details on calculations and LST lookup tables are found in Appendix 10.3, Air Quality/GHG Calculations .				

Table 4.2-9: On-site Construction Emissions Results (Mitigated)

Project Phase (Construction Year) Activity	Maximum Daily On-site Emissions (pounds/day)			
	NO _x	CO	PM ₁₀	PM _{2.5}
5 MGD 2020-2021 Project-Wide Pipework Excavation	0.6	6.2	2.6	1.4
SCAQMD LST Threshold ¹	91	707	4	3
Is Threshold Exceeded	No	No	No	No
15 MGD 2030 Expansion Site Prep ²	2.0	20.9	7.9	4.3
SCAQMD LST Threshold ²	105	1,154	21	7
Is Threshold Exceeded	No	No	No	No
Notes: 1. LST based on 1-acre site with receptor at 25 meters 2. LST based on 1-acre site with receptor at 90 meters				

Operations

Operational Emissions Methodology

Similar to the Construction Emissions methodology, operational criteria pollutant emissions were calculated by using a combination of emission models and emission factors. These models and factors sources included CalEEMod 2013.2.2, ARB Offroad 2011, EMFAC 2014, and USEPA Tier IV emission factors for emergency generators. Detailed assumptions are provided in [Appendix 10.3, Air Quality/GHG Calculations](#).

Direct emissions of criteria pollutants come from testing the emergency generators, area sources such as heating, and on-site mobile sources such as worker vehicles, delivery trucks, and forklifts. Indirect emissions come from the commuter vehicles, visitors, and maintenance trucks.

Operational Emissions Summary

As shown in [Table 4.2-10, Operational Emissions Results \(Unmitigated 2021 Summer\)](#) below, Project operations would not result in emissions of any pollutants exceeding the SCAQMD's significance thresholds. The largest sources of NO_x, CO, and PM emissions result from indirect mobile emissions due



to worker commutes and scheduled deliveries, as well as periodic testing of an on-site diesel-fired emergency generator (that would not exceed 200 hours of operation per year). The largest source of VOC emissions comes from the infrequent re-application of corrosion protection and architectural coatings at the facility. Since the operation of the proposed Project would not exceed SCAQMD significance thresholds, the Project would not significantly impact air quality standards. Therefore, the air quality impact related to operations would be less than significant.

Table 4.2-10: Operational Emissions Results (Unmitigated 2021 Summer)

Emissions Source	Maximum Daily Emissions (pounds/day)					
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}	SO _x
Area	0.06	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.01	0.01	0.00	0.00	0.00
Mobile	0.05	0.23	0.71	0.25	0.07	0.00
Stationary	0.82	2.30	2.09	0.12	0.12	0.00
Total	0.93	2.53	2.85	0.37	0.19	<0.01
SCAQMD Threshold	55	55	550	150	55	150
Is Threshold Exceeded?	NO	NO	NO	NO	NO	NO

General Conformity Emissions Summary (Construction and Operations)

If a project's emissions are below de minimis level and are less than 10 percent of the area's inventory specified for each criteria pollutant in a nonattainment or maintenance area, further general conformity analysis is not required. A conformity determination must be made if emissions from project facilities are above the applicable de minimis levels established for the area. A conformity determination can be made if facilities are sized to meet only the needs of current population projections that are used in the approved SIP for air quality. Applicants to the State Water Resources Control Board (SWRCB) State Revolving Fund (SRF) program must quantitatively indicate how the proposed capacity increase was calculated using population projections.

As shown in Table 4.2-11, Annual Unmitigated Emissions Results below, the Project would not result in emissions of pollutants exceeding the applicable de minimis levels during estimated Regional Project operations or construction in 2030, 2031, or 2032. However, during Phase I Project construction in 2020 and 2021, unmitigated NO_x emissions are projected to exceed the de minimis levels of 10 tons per year.

Table 4.2-11: Annual Unmitigated Emissions Results

Project Phase (Activity) Year	Annual Emissions (unmitigated tons per year)				
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}
5 MGD Construction 2019	0.86	8.16	4.88	0.56	0.38
5 MGD Construction 2020	4.02	37.76	27.41	3.30	2.28
Operations at 2021 + 5 MGD Construction 2021	2.56	20.24	16.86	1.55	1.09
Operations + 15 MGD Construction 2030	0.65	2.24	4.28	0.25	0.14



Project Phase (Activity) Year	Annual Emissions (unmitigated tons per year)				
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}
Operations + 15 MGD Construction 2031	2.6	8.36	17.96	0.41	0.31
Operations + 15 MGD Construction 2032	1.02	3.04	6.55	0.17	0.13
De Minimis Level	10	10	100	100	70
Is De Minimis Level Exceeded in Any Year?	No	Yes	No	No	No

As discussed previously, construction projects typically result in high NO_x levels due to the use of heavy construction equipment and hauling trucks. However, construction equipment and worker vehicle exhaust emissions can be rendered less than significant with appropriate mitigation techniques. Since the construction of the proposed Project with implementation of Mitigation Measures AQ-1 through AQ-3 would not exceed applicable de minimis levels, the additional general conformity analysis is not required for project construction. The results are reflected in [Table 4.2-12, Annual Mitigated Emissions Results](#).

As stated above, the Project would not exceed the applicable de minimis levels during project operations. Certain operational emissions would occur within the SCAB, such as mobile emissions and area emissions. However, emissions associated with energy consumption occur where the energy is generated. Since power plants are located throughout (and outside) the state, criteria pollutant emissions associated with electricity demand cannot be ascribed to a specific air basin or air district and it cannot be determined whether the air pollutant emissions associated with electricity generation would degrade air quality in a specific air basin or air district; consequently, impacts relating to electricity consumption through a comparison to local thresholds or general conformity de minimis thresholds, which are established to manage emission sources under the jurisdiction of individual air districts, is not appropriate.

The Project does not involve any land uses that would increase population beyond that considered in the 2016 RTP/SCS or the 2016 AQMP. The Project does not include residential or commercial land uses. The Project is sized to meet the current and future population in the service area, as identified in the South Coast Water District's 2015 *Urban Water Management Plan* (UWMP). Refer to discussion above under Impact 4.2-1, in addition to discussion in [Section 6.1, Growth-inducing Impacts](#).

Table 4.2-12: Annual Mitigated Emissions Results

Emissions Source	Annual Emissions (mitigated tons per year)				
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}
5 MGD Construction 2020	1.31	8.33	37.27	1.02	0.55
Operations at 2021 + 5 MGD Construction 2021	1.09	5.00	2.92	0.51	0.27
De Minimis Level	10	10	100	100	70
Is De Minimis Level Exceeded in Any Year?	No	No	No	No	No



Mitigation Measures

- AQ-1** During Project construction, all internal combustion engines/construction, equipment operating on the Project site shall meet EPA-Certified Tier 4 emissions standards, or higher according to the following:
- All off-road diesel-powered construction equipment greater than 50 horsepower shall meet Tier 4 off-road emissions standards. In addition, all construction equipment shall be outfitted with BACT devices certified by ARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by ARB regulations.
 - A copy of each unit's certified tier specification, BACT documentation, and ARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit of equipment.
- AQ-2** On-road vehicle idling time shall be minimized and shall not exceed a five-minute maximum. Additionally, off-road engines shall not idle for longer than five minutes per § 2449(d)(3) of Title 13, Article 4.10, Chapter 9 of the California Code of Regulations. Clear signage of this requirement shall be provided for construction workers at all access points to construction areas.
- AQ-3** Although the Project's construction emissions are not projected to exceed the PM₁₀ or PM_{2.5} significance threshold; the District is committed to reducing levels of particulate matter emissions. This includes the implementation of a fugitive dust control plan that is in accordance with techniques prescribed by SCAQMD's Fugitive Dust Mitigation Measure Tables XI-A through XI-E. Actions would include the following:
- Water all active construction areas at least twice daily;
 - Cover all trucks hauling soil, sand, and other loose materials and require trucks to maintain at least 2 feet of freeboard;
 - Apply water three times daily, or apply (non-toxic) soil stabilizers, on unpaved access roads, parking areas, and staging areas at construction sites;
 - Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites;
 - Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets;
 - Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 4 days or more);
 - Enclose, cover, or water twice daily exposed stockpiles (dirt, sand, etc.);
 - Limit traffic speeds on unpaved roads to 15 miles per hour;



- Install sandbags or other erosion control measures to prevent silt runoff to public roadways;
- Replant vegetation in disturbed areas as quickly as possible;
- Wheel washers shall be installed and used by truck operators at the exits of the construction sites.

Impact 4.2-3: Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? *Level of Significance: Less than Significant with Mitigation.*

A significant impact to air quality would occur if a project would result in a cumulative considerable net increase of any criteria pollutant for which the region is nonattainment under applicable national or State ambient air quality standards. To determine whether a project would result in a cumulatively considerable increase in nonattainment criteria pollutants or exceed the quantitative thresholds for ozone precursors, project emissions may be evaluated based on the quantitative emission thresholds established by the SCAQMD in its CEQA Air Quality Handbook (SCAQMD 1993, as amended). The SCAQMD has established quantitative thresholds against which a project's emissions could be evaluated to determine if there is a potential for a significant impact. The SCAQMD's approach to assessing cumulative impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and California Clean Air Acts. As such, the analysis of cumulative impacts focuses on determining whether the Project is consistent with the growth assumptions upon which the SCAQMD's AQMP is based. If the Project is consistent with the growth assumptions, then future development would not impede the attainment of NAAQS and a significant cumulative air quality impact would not occur.

Construction

All Components

The SCAB, which includes the Project area, is classified as an extreme non-attainment area of the federal 8-hour NAAQS for ozone (O_3), a maintenance area for the 24-hour NAAQS for PM_{10} , and a serious non-attainment area for the NAAQS annual arithmetic mean for $PM_{2.5}$ and nonattainment for the NAAQS 24 hour $PM_{2.5}$. Because O_3 is not directly emitted to the atmosphere, the SCAQMD has adopted thresholds of significance for ozone precursors rather than for ozone (ROG and NO_x). Therefore, with respect to this CEQA significance threshold, the question is whether or not the Project represents a cumulatively considerable impact to SCAB non-attainment of ozone (through its precursors ROG and NO_x), PM_{10} and $PM_{2.5}$ standards.

With respect to the proposed Project's construction-related air quality emissions and cumulative basin-wide conditions, the SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the 2016 AQMP pursuant to federal Clean Air Act mandates. As such, the Project would comply with SCAQMD Rule 403 requirements. In addition, the Project would comply with adopted 2016 AQMP emissions control measures. Per SCAQMD rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., Rule 403 compliance, the implementation of all feasible mitigation measures, and compliance with adopted AQMP



emissions control measures) would also be imposed on construction projects throughout the air basin, which would include related projects.

As discussed under Impact AQ 4.2-2, Project construction would comply with SCAQMD rules and AQMP emissions control measures. Implementation of Mitigation Measures AQ-1 through AQ-3 would also minimize construction emissions. With implementation of these mitigation measures, construction emissions (including PM₁₀, PM_{2.5}, NO_x and ROG) would be reduced to a less than significant level (refer to [Table 4.2-6, Construction Emissions Results \(Unmitigated\)](#) and [Table 4.2-7, Construction Emissions Results \(Mitigated\)](#)).

Operations

All Components

The Project would not result in significant operational air quality impacts because emissions would not exceed the SCAQMD-adopted operational thresholds and the Project's contribution is not a significant proportion of the cumulative total basin emissions. Because the operational emissions calculated for the Project do not exceed the applicable SCAQMD daily significance thresholds that are designed to assist the region in attaining the applicable ambient air quality standards, the Project would not represent a cumulatively considerable net increase of any nonattainment criteria pollutant. Since cumulative projects would be required to reduce their emissions per SCAQMD rules and mandates, cumulative emissions are not anticipated to contribute to an exceedance of the federal or California ambient air quality standards and would, therefore, comply with the goals of the 2016 AQMP. Therefore, it can be reasonably inferred that the Project-related emissions, in combination with those from other projects in the area, would not deteriorate the local air quality and would not result in cumulative operational impacts. Therefore, the Project's contribution to regional pollutant concentrations would not be cumulatively considerable.

As discussed under Impact AQ 4.2-2, Project operations would not exceed SCAQMD adopted operational thresholds and would not result in significant operational air quality impacts (refer to [Table 4.2-11, Annual Unmitigated Emissions Results](#)). Therefore, Project operational emission impacts would be less than significant.

Mitigation Measures

Refer to Mitigation Measures AQ-1 through AQ-3 above.

Impact 4.2-4: **Would the Project expose sensitive receptors to substantial pollutant concentrations? *Level of Significance: Less than Significant with Mitigation.***

Construction

All Components

Toxic Air Contaminants

Particulate exhaust emissions from diesel-fueled engines (i.e., DPM) were identified as a TAC known to contain carcinogenic compounds by ARB in 1998. Construction of the Project would result in the short-term generation of DPM emissions from the use of off-road diesel equipment and from construction material deliveries using on-road heavy-duty diesel trucks.



The dose to which receptors are exposed is the primary factor affecting health risk from TACs. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the health risk relative to exposure of sensitive receptors to TAC emissions, should be based on a 24 hour a day, 7 days per week, 365 days per year, 30-year exposure period (i.e., chronic lifetime) when assessing TACs (such as DPM) that have cancer or chronic non-cancer health effects.²

The construction of the Phase I Project (up to 5 MGD) and Regional Project (up to 15 MGD) are expected to last about 20 months and 18 months, respectively, and would occur during working hours (8 to 10 hours per day), except for slant well construction, which would occur 24/7 for approximately six months out of the year. The construction equipment would also be required to comply with ARB's airborne toxic control measures and off-road equipment rules, which reduces emissions of DPM. Sensitive receptors in proximity to the Project construction sites would have temporary, limited exposure to TAC emissions during construction that is well below the conditions needed for possible adverse long-term impacts associated with DPM. Therefore, the toxics impact related to construction would be less than significant.

Localized Significance Thresholds

The localized construction impact analysis uses thresholds that represent the maximum emissions for a project that would not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard (SCAQMD 2008). These thresholds are established to protect the health of sensitive individuals and are based on the ambient pollutant concentrations for each source-receptor area and the location(s) of sensitive receptors. If project emissions would not exceed the thresholds, it follows that the Project would not cause or contribute to an exceedance of the standard. If the standards are not exceeded at the sensitive receptor locations, it follows that the sensitive receptors would not be exposed to substantial pollutant concentrations. Existing sensitive receptors near the Project are identified in [Table 4.2-13, Locations of Nearest Sensitive Receptors](#).

Table 4.2-13: Locations of Nearest Sensitive Receptors

Project Component	Location Relative to Project Component	Type of Receptor
Preliminary Site Work	90 meters west	Del Obispo Community Park
Preliminary Site Work 2	90 meters west	Del Obispo Community Park
Project-Wide Pipework Excavation	<25 meters throughout route of pipeline	Residential units
Expansion Site Prep	90 meters west	Del Obispo Community Park

Source: Google Earth 2017

As shown in [Table 4.2-8, On-site Construction Emissions Results \(Unmitigated\)](#), the Project would not exceed the LSTs for CO or NO_x. However, unmitigated Project construction emissions would exceed the LSTs for PM₁₀ and PM_{2.5}. Implementation of Mitigation Measure AQ-3 would reduce fugitive dust

² California Office of Environmental Health Hazard Assessment (OEHHA), *Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments*, February 2015



generation during Project construction. Because the construction of the proposed Project with Mitigation Measure AQ-3 would not exceed SCAQMD localized significance thresholds, the Project would not significantly impact sensitive receptors. Therefore, the LST impact related to construction would be less than significant with appropriate mitigation.

Operations

All Components

Toxic Air Contaminants

Operational emissions of TACs would be limited to monthly testing of the emergency generators and worker and delivery vehicle emissions. Monthly testing procedures for the proposed diesel generator system would generally consist of running the generator system for approximately 30 to 60 minutes per month. Due to the short duration, small size of the proposed generator, and standard air filtering equipment for such units, potential emissions of TACs would be low. Chemicals stored at the plant site and used in plant operations would be stored, handled, and used in accordance with all applicable regulations. There would be no direct sources of TACs such as stacks or fume hoods. Therefore, the toxics impact related to operations would be less than significant.

Localized Significance Thresholds

The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways. For Project operations, the LST operational assessment was accomplished by qualitatively identifying the sources and location of operational emissions. Local Project operations would involve equipment that uses electricity. Emissions would occur indirectly from the associated electrical generation. Electrical emissions would occur within and outside of the region, at various power plants, and would not have local emissions or localized impacts. Therefore, impacts are less than significant.

Mitigation Measures

Refer to Mitigation Measure AQ-3.

Impact 4.2-5: **Would the Project create objectionable odors affecting a substantial number of people? *Level of Significance: Less than Significant Impact.***

Construction

All Components

The primary source of odor anticipated from the construction of the proposed Project would be exhaust emissions from the diesel equipment and haul (soil import/export) trucks. However, as noted in the Impact 4.2-4 discussion above, emissions from diesel construction equipment and vehicles would be temporary and would not be expected to cause any odor issues that would affect a substantial number of people. Therefore, the odors impact related to construction would be less than significant.



Operations

All Components

Due to the nature of other Project components (slant wells and below-ground pipelines and minor appurtenances like electrical vault), only the desalination facility has the potential to generate significant odors during normal operations. The possible odor concerns during desalination facility operation would be attributable to solids generated by the proposed Project. Solids from the proposed desalination facility would consist primarily of inorganic constituents (e.g., silt and iron compounds from the coagulant); therefore, the anticipated solids are not anticipated to produce significant odors, and is not otherwise anticipated to create objectionable odors affecting a substantial number of people. Therefore, operational odor impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

REGIONAL PROJECT

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential air quality impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). The impact analysis above includes estimates for Regional Project construction and operational emissions with respect to local facility improvements for slant wells, raw water conveyance and the desalination site. However, the Regional Project may require construction of additional Regional Project product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified. Depending on the nature and extent of proposed Regional Project conveyance facilities, construction-related air quality impacts could be significant even with mitigation. Mitigation Measures AQ-1 through AQ-3 would apply to the Regional Project, in addition to standard practices to avoid pipeline trenching across natural open space lands to minimize grading, erosion and associated potential impacts.

4.2.5 CUMULATIVE IMPACTS

Planned or future projects in the area could consist of many types of development projects ranging from residential/commercial/industrial developments to projects related to the proposed desalination project. This EIR incorporates by reference the City of Dana Point General Plan Final EIR, which addresses cumulative impacts of City buildout, as well as SCAG's 2016 RTP/SCS Program and Final EIR. All proposed Project impacts, including construction and operation, would be mitigated to less than significant levels, and the Project's contribution toward cumulative impacts is not considered to be cumulatively considerable.

Similarly, all future development with the potential to impact air quality would be required to demonstrate compliance with applicable federal and State regulatory requirements, including General Plan goals and policies of the affected jurisdiction, intended to reduce and/or avoid potential adverse environmental effects. This is consistent with the findings of the General Plan Final EIR. As such,



cumulative impacts to air quality would be mitigated on a project-by-project level, and in accordance with the established regulatory framework, through the established regulatory review process.

4.2.6 SIGNIFICANT UNAVOIDABLE IMPACTS

None have been identified.



4.3 BIOLOGICAL RESOURCES

This section describes effects on biological resources that would result from implementation of the Doheny Ocean Desalination Project. The following discussion addresses existing environmental conditions in the affected area, identifies and analyzes environmental impacts for the Project, and recommends measures to reduce or avoid significant impacts anticipated from project construction and operation. In addition, existing laws and regulations relevant to biological resources are described. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the Project.

The setting, context, and impact analysis in this section are based primarily on the Biological Resource Studies that are contained in Appendix 10.4, Biological Resources Reports, including: 1) South Coast Water District Doheny Desalination Project, May 2018, prepared by MBC Applied Environmental Science, and 2) Lower San Juan Creek and Seasonal Coastal Lagoon Habitat Assessment, Orange County, California, July 2016, prepared by Chambers Group, Inc. The Chambers Group study focuses on lower San Juan Creek and San Juan Creek Lagoon, including extensive baseline environmental monitoring. The MBC study utilizes the Chambers Group study for terrestrial biology, particularly for the Lagoon, but primarily focuses on the marine biological resource issues associated with brine discharge. Both studies are in Appendix 10.4, and include biological and habitat surveys and research of existing data pertaining to the study area, and evaluate the Project site as well as the vicinity of the Project (study area) including off-site infrastructure improvement impact areas, to develop a baseline for current conditions of the study area.

All field surveys were conducted in conformance with existing protocols for species of interest to identify any plant communities, listed plant species, listed wildlife species, and wildlife habitat present on the Project site. In addition to the field surveys, literature reviews were conducted to determine if any recent records of sensitive biological resources have been recorded on or in the vicinity of the Project site. The natural inventories included resources identified in the California Natural Diversity Database (CNDDB), California Department of Fish and Wildlife (CDFW) Special Animals List, and California Native Plant Society (CNPS) Electronic Inventory. The findings of the field survey and literature review are provided below.

Information from the literature reviews and databases was used to generate a list of special-status plant and animal species that may have the potential to occur within the Project site and adjacent areas. For the purposes of this assessment, special-status species are defined as plants or animals that:

- Have been designated as either rare, threatened, or endangered by CDFW or the U.S. Fish and Wildlife Service (USFWS), and are protected under either the California or Federal Endangered Species Act (ESA);
- Are candidate species being considered or proposed for listing under these same acts;
- Are considered Species of Special Concern by CDFW;
- Are fully protected by the California State Fish and Game Code, Sections 3511, 4700, 5050, or 5515; or
- Are classified as List 1, 2, 3, or 4 by CNPS.



4.3.1 AFFECTED ENVIRONMENT

Environmental Setting

Regional Context

The Project is located mostly within the San Juan Creek Watershed, which is an approximately 176 square mile portion of southern Orange County, extending from the Cleveland National Forest in the Santa Ana Mountains to the Pacific Ocean at Doheny State Beach just south of Dana Point Harbor. San Juan Creek is approximately 27 miles long, with its highest point at an elevation of 5,700 feet above mean sea level (amsl) and flows downstream to its outfall at Pacific Ocean. The upper portion of the watershed is largely undeveloped and includes Casper's Regional Park, O'Neill Regional Park, and the northern areas of the Cleveland National Forest. Three primary creeks (i.e., San Juan Creek, Oso Creek, and Trabuco Creek) and their tributaries flow from steep canyons in the Santa Ana Mountains to the Pacific Ocean, joining together into San Juan Creek approximately 2.5 miles east of the ocean. Tributaries to San Juan Creek include Hot Springs Creek, Cold Springs Creek, Bell Canyon Creek, Cañada Chiquita, Cañada Gobernadora, Verdugo Canyon Creek, Oso Creek, and Trabuco Creek.

The lower reaches of San Juan Creek flow through the City of San Juan Capistrano, approximately 3 miles north of the Project site, and through the City of Dana Point and ultimately to the Pacific Ocean. The areas surrounding the creek in these cities are almost completely developed with a mix of commercial, industrial, and residential land uses.

Subsurface Intake Wells

The seawater intake system would originate from subsurface intake well "pods" (or clusters) located within Doheny State Beach (DSB) and Capistrano Beach Park. The subsurface intake wells would be "slant wells," installed in below-ground vaults located away from the beach, on developed lawn, parking, campground and similar areas. The slant well pods could be located anywhere within the Study Area, which extends from the DSB North Day Use Area adjacent to Dana Point Harbor, along the coast southeasterly to Capistrano Beach Park.

Both DSB and Capistrano Beach Park are urban recreational settings that have been highly modified to accommodate recreational uses, generally consisting of sandy beach areas backed by developed areas including ornamental landscaping, parking lots, park walkways and roads, light poles, accessory structures, campground, and grass and picnic areas. Besides shorebirds that frequent the coastline, the DSB portion of the Project includes San Juan Creek, San Juan Creek Lagoon, and areas within DSB designated for its biological value. These areas include a variety of sensitive biological resources described further below in the Terrestrial Environment discussion.

Raw Water Conveyance System

The conveyance system would be largely constructed under existing developed areas and existing rights of way. Either alignment (the North or South) could require traversing San Juan Creek and/or San Juan Creek Lagoon (via trenchless construction). Any alignment would require pipeline trenching within DSB or Capistrano Beach Park, and construction along local roadways, where mature trees exist as landscaping, providing nesting and foraging perches for local birds.



Desalination Facility Site

The desalination facility site would be located on the District's San Juan Creek Property, which is an urban area developed with various commercial, institutional and related uses. The desalination facility site generally lacks natural habitat, except for a small stretch of earthen flood control channel that runs between the desalination facility site and the proposed staging area. The primary sensitive biological resources in this area are San Juan Creek, which borders the desalination facility to the immediate west, and the Pacific Ocean (and San Juan Creek Lagoon), which the site drains into.

Similar to the desalination facility site, the Project would require relatively minor utility extension beyond the desalination facility site, within existing disturbed areas (roads), including connections for electrical line extensions and potable water conveyance lines (both of which would be underground).

Concentrate (Brine) Disposal System

The offshore coastal area is within the Southern California Bight,¹ within the Oceanside littoral cell, which extends from Dana Point south to the submarine canyon in La Jolla just north of San Diego. The dominant longshore current within the Oceanside cell is southward, and therefore, the general direction of sediment transport is to the south. The main sediment inputs to the system are episodic river input and coastal bluff erosion, along with natural sediment transport from north to south around Dana Point.

The proposed offshore benthic environments are characterized as predominately soft-bottomed, open-coast habitat with discontinuous cobble, and low-relief rocky reef and some high-relief, tidally emergent reefs nearshore. The brine discharge would occur at the South Orange County Wastewater Authority's (SOCWA) existing San Juan Creek Ocean Outfall (SJCOO), the terminus of which is approximately 10,500 feet offshore at a depth of approximately 100 feet, south of Dana Point Harbor. The ocean floor in this location largely consists of soft sediments and lacks a hard-rocky substrate as would be seen nearer the coastline. Sixteen diffuser ports are located along the last 216 feet of the main SJCOO pipeline, and 109 ports are spaced along a perpendicular 1,272 foot, "L" shaped pipe.

Terrestrial Environment

San Juan Creek Flow Regime

San Juan Creek is characterized by a highly-varied flow regime largely determined by rain events and associated runoff. San Juan Creek does not always flow to the Pacific Ocean due to the buildup of sediments that can create a sandbar that crosses the mouth of the creek and creates a lagoon. Under larger rainfall events, the lagoon may breach the sandbar and become open to the ocean in winter and spring months. During the summer and fall, and times with reduced rainfall, the lagoon is often closed to the ocean and tides. When there are no storms to recharge the lagoon, surface flows in San Juan Creek are predominantly from dry-weather urban runoff and rising groundwater. The lagoon is rather prominent between 40 to 75 percent of the year, and typically the southwest corner of the lagoon, against the jetty, maintains a small pool of water even during the driest years. Due to the fluctuating downstream flows, however, the beach berm blocks the mouth of the San Juan Creek outfall to the Pacific Ocean most of the time.

¹ The Southern California Bight (a bend in the coastline) is a unique oceanographic environment extending from Point Conception south to just south of Ensenada, Mexico.



Along the lower reaches of the creek, the system naturally transitions from one with an erosional to a more depositional character. Coarse cobble and sand are typically deposited in the upstream areas, while finer materials are carried further downstream toward the mouth of the creek. The large amount of sediment deposited within the study area, along with high-velocity water flows during episodic storm events, prevents establishment of riparian vegetation. In addition, surrounding development contributes to culturally accelerated sources of sediment input and a highly modified hydrologic regime. This leads the concrete-lined portion of San Juan Creek to be nearly devoid of vegetation because trees, shrubs, and saplings are prevented from a consistent water source and good soils in which to root. In turn, the lack of riparian vegetation results in negligible amounts of soil organic matter, detrital layer, and coarse and fine woody debris. This leaves few refuges in the creek for resident aquatic species during large storm events and these species can often suffer significant population declines from such events.

Riparian Habitat

Although the water flow and modified banks of San Juan Creek limit vegetation, riparian habitat is evident especially at the downstream locations. Riparian habitats are the vegetative communities that occur along the margins of a stream or river. Vegetation within riparian habitats are reliant on the water and nutrients provided by streams and rivers, and are generally more lush and green than the adjacent upland areas.²

As part of the July 2016 Chambers Group biological resource surveys, the riparian habitat was evaluated, including native and non-native plant species within the biological study area, from Stonehill Drive south to the San Juan Creek outfall. The dominant native plant species documented within the overall study area during the spring were mule fat (*Baccharis salicifolia subsp. salicifolia*), California buckwheat (*Eriogonum fasciculatum*), and salt grass (*Distichlis spicata*). The dominant native plant species documented at the study area during the fall were mule fat, California buckwheat, and black willow (*Salix gooddingii*).

Non-native plants are most common outside the margins of San Juan Creek and in the spring, were dominated by myoporum (*Myoporum laetum*), ripgut brome (*Bromus diandrus*) and sweet clover (*Melilotus sp.*). The dominant non-native plant species documented during the fall were myoporum, Bermuda grass (*Cynodon dactylon*), perennial pepperweed (*Lepidium latifolium*), and Mexican sprangletop (*Leptochloa uninervia*).

Non-native species cover was low overall had a combined average of 12.7 percent for both the spring and fall survey. Areas with no plant cover was higher in the spring than in the fall and the percentage of unvegetated cover is thought to fluctuate due to scouring in the streambed or during drought conditions when vegetation dies back due to lack of water.

The riparian vegetation within San Juan Creek is the thickest, downstream of PCH, especially on the west bank. In this area, the creek is wider and less prone to scouring which allows the vegetation to become more established. Additionally, the water that is captured upstream of the sandbar at the mouth of San Juan Creek provides a more stable water source for vegetation and allows plants to become more established. Because of this, vegetative patterns are the thickest of anywhere in the study area during times when water inundates the area, the conditions can provide the opportunity, although limited, for

² "Riparian" vegetation is a general term for hydrophilic vegetation associated with streams and lakes. As described under Regulatory Framework below, a "wetland" is a specific ecosystem defined by regulations, generally requiring suitable vegetation, soils and hydrology. Not all riparian areas are wetlands.



wetland habitats to develop. The characteristics required for an area to be classified as a wetland are described below. Immediately following the Wetlands discussion below is a discussion regarding the different plant species, some being indicative of wetlands that were observed on the lowermost banks of San Juan Creek.

Lagoon Habitat

As discussed above, the lagoon is reliant on storm water flows from upstream areas and stormwater runoff, which greatly contribute to the hydrologic conditions and vegetation in the downstream areas. Spring and fall biological surveys included a vegetation survey of the lagoon at a time when the lagoon width ranged from 154 meters (168.4 yards) just upstream of the beach to 134.75 meters (147.4 yards) closer to the bridge. In the fall, the dominant substrates were sand and silt, but depositions of gravel and cobble occurred, especially near and in the lowest points of the creek. During the spring, the dominant substrate was sand, but depositions of gravel and cobble and pockets of fines (fine-grained sands, silts and other matter) and decomposing organic matter were also observed. Vegetative cover at these times generally consists of filamentous algae, *Ulva intestinalis*, marsh jaumea (*Jaumea carnosa*), seashore saltgrass (*Distichlis spicata*), organic debris, and decayed and unidentifiable materials. Vegetative cover varied from approximately 54 to 64 percent of the bottom of the lagoon with relatively shallow water ranging from approximately 73 centimeters (28.7 inches) to approximately 24 centimeters (9.4 inches) near the bridge.

During summer months, salinities within the lagoon at the mouth of the creek are strongly influenced by the tidal range through the semi-permeable sand berm, from groundwater outflow from the alluvial basin, and from surface water runoff. As a result, lagoon waters during summer display typically brackish salinities. During winter months, the sand berm at the mouth of the lagoon breaches periodically allowing ocean water intrusion. During these breach periods, the salinity in the lagoon becomes stratified, with marine salinities in bottom waters and lower salinity waters riding along the lagoon surface. Due to the general lack of freshwater input, the dissolved oxygen within the lagoon waters are highly variable throughout the year and on a short-term basis. This hydrologic system also creates a varied water temperature which is also strongly influenced by sunlight.

The amount of water in the lagoon also affects the salinity, which displays patterns typical of estuarine systems. During the study period, brackish salinities between 3.9 to 7.4 parts per thousand (ppt) occurred and increased as water level in the lagoon was reduced as a result of evaporation. Salinities near ambient seawater levels of 30 to 33 ppt were reported when the lagoon was open or when waves overtopped the berm. Dissolved oxygen (DO) within the lagoon also was highly variable throughout the year and throughout the day, which is a pattern typical of estuarine systems in part due to photosynthesizing algae. Eutrophic³ conditions were reported during the summer when water temperatures were high and the lagoon was closed from the ocean. Dissolved oxygen peaked between 2:00 p.m. and 5:00 p.m. each day but at night the water became anoxic (oxygen-depleted) due to the biochemical oxygen demands of respiring and decaying algae dropping to nearly 0 mg/L each night, with the lagoon even becoming anoxic for a one-week period in late summer. During cooler periods and periods of freshwater or tidal flow, anoxic conditions were not observed; although DO was still variable throughout the day, levels did not fall below 3.3 mg/L at night.

³ A nutrient rich body of water where aquatic plant growth deprives the water body of oxygen.



Upland Areas

Other than San Juan Creek and isolated man-made drainage channels, upland vegetation exists within landscaped areas that have been highly modified from their native vegetative growth patterns and habitats. The desalination facility site does not contain any substantial vegetation, is located in a highly-disturbed area, is covered with dirt and hardscape, and is used for industrial purposes. Vegetation within the developed areas of DSB and Capistrano Beach Park consist of landscaped areas between hardscaped parking lots, roads, and other built facilities adjacent to the beach.

Wildlife

Two hundred terrestrial wildlife species are known to occur within Doheny State Beach, including insects, amphibians, reptiles, birds, and mammals. Of these, 44 species (four insects, one amphibian, one reptile, 26 birds and 12 mammals) are considered common in DSB. No sensitive insects or reptiles are known to occur in Doheny State Beach, but tadpoles of one amphibian species, Arroyo toad (*Anaxyrus californicus*; FE, SSC), 30 sensitive bird species, and one sensitive mammal species, Pacific pocket mouse (*Perognathus longimembris pacificus*; FE, SSC), have been reported in the park.

Birds

Sixty-one water-associated bird species have been reported at Doheny State Beach. Water-associated species include those that would forage on the beach and shores of the lagoon, along the creek edges, as well as birds that require water-supported communities like salt marsh and riparian habitats. Common shore birds to the San Juan Creek mouth include willet (*Catoptrophorus semipalmatus*), marbled godwit (*Limosa fedoa*), black-bellied plover (*Pluvialis squatarola*), and sanderling (*Calidris alba*). Other birds common to the coastal environment include the herring gull (*Larus argentatus*), California gull (*L. californicus*), ring-billed gull (*L. delawarensis*), glaucous-winged gull (*L. glaucescens*), Heermann's gull (*L. heermanni*), western gull (*L. occidentalis*), Bonaparte's gull (*L. philadelphia*), mew gull (*L. canus*), Caspian tern (*Sterna caspia*), elegant tern (*Sterna elegans*), Forster's tern (*S. forsteri*), brown pelican (*Pelecanus occidentalis*), double-crested cormorant (*Phalacrocorax auritus*), and western grebe (*Aechmophorus occidentalis*).

Of the sixty-one species, twenty species are listed as threatened or endangered by the Federal government, the State of California, or are otherwise are considered sensitive by the U.S. Fish and Wildlife Service (USFWS) or by California Department of Fish and Wildlife (CDFW). At least seven of these bird species are known to nest in Doheny State Beach and these species include: great blue heron (*Ardea herodias*), black-crowned night-heron (*Nycticorax nycticorax*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), killdeer (*Charadrius vociferous*), black-necked stilt (*Himantopus mexicanus*), and common yellowthroat (*Geothlypis trichas*). All Threatened and Endangered as well as Sensitive Marine Species are combined and listed in Table 4.3-1, Threatened, Endangered and Sensitive Marine Species, further below.

The Project site area at DSB provides habitat for terrestrial birds and a variety of birds that use this portion of the Project site for nesting and migration. Birds that may be found in this area and that have become adapted to the urban environment include the American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottus*), Brewer's blackbird (*Euphagus cyanocephalus*), rock dove (*Columba livia*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), black-crowned night herons (*Nycticorax nycticorax*).



Common overwintering species at DSB include black-necked stilt (*Himantopus mexicanus*), American avocet (*Recurvirostra americana*), long-billed curlew (*Numenius americanus*; USFWS Bird of Conservation Concern [BCC], CDFW Watch List [WL]), black-bellied plover (*Pluvialis squatarola*), sanderling and sandpipers (*Calidris* spp.). Other species such as willet (*Catoptrophorus semipalmata*), killdeer and western snowy plover (*Charadrius alexandrius nivosus*) may also be present.

Birds typical of a lagoon environment but that are not common offshore include the mallard (*Anas platyrhynchos*), American coot (*Fulica americana*), snowy egret (*Egretta thula*), great blue heron (*Ardea herodias*), and great egret (*Casmerodius albus*). When present, the wetlands and riparian vegetation at the upper end of the lagoon may support species such as red-winged blackbird (*Agelaius phoeniceus*), common yellowthroat (*Geothlypis trichas*), and song sparrow (*Melospiza melodia*).

Seabirds known to occur at DSB include California least tern (*Sternula antillarum browni*; SE, FE) and other terns (*Sternidae*), California brown pelican (*Pelecanus occidentalis californicus*); Federally Delisted [FD], State Delisted [SD], CDFW Fully Protected [FP]) cormorants (*Phalacrocorax* spp), gulls (*Laridae*), loons (*Gavia* spp) and grebes (*Podicipedidae*).

Marine Mammals

There are a variety of marine mammals that occur in the southern California region and that are likely to occur in the Project vicinity. All marine mammals are protected under the Marine Mammal Protection Act of 1972. While some of these species are year-round residents, others are present seasonally or are transient through the area. Two pinnipeds, the California sea lion (*Zalophus californianus*) and the harbor seal (*Phoca vitulina richardii*), are abundant along the southern California coast and can be seen on rocky shores, open water, or manmade objects including piers and buoys. Other marine mammals that could occur within the Project site include the northern elephant seal (*Mirounga angustirostris*), which could potentially occur in the area. Common dolphin (*Delphinus delphis*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), bottlenose dolphin (*Tursiops truncatus truncatus*), the sperm whale (*Physeter macrocephalus*) and killer whale (*Orcinus orca*) may occasionally occur. Other whale species that migrate annually offshore include including humpback whale (*Megaptera novaeangliae*), blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), sei whale (*Balaenoptera borealis*) and the California gray whale (*Eschrichtius robustus*).

Of the whale species that may occur in the Project vicinity, the California gray whale (*Eschrichtius robustus*) is the most frequently observed. Northward migration of the California gray whale through the Southern California Bight (SCB) occurs February through May, with peak occurrence in March. Northbound migration paths tend to be similar to the southbound path through the SCB; however, most mother-calf pairs tend to remain fairly close to land. Baleen whales, including the gray whale, do not have teeth, but instead have a series of plates in the roof of their mouths containing bristles that are used like a sieve or mat for feeding.

Blue and fin whales are becoming increasingly common in Southern California ocean waters and are commonly observed offshore of Dana Point Harbor, with fin whales reported year-round and blue whales in spring through summer. Although commonly reported offshore of Dana Point, observations likely represent multiple sightings of a relatively low number of individuals that reside in the area for extended periods. For both blue and fin whales, ship strikes and increased anthropogenic noise are current concerns.



Humpback whales occur worldwide, and in the north Pacific during the summer, they range from Arctic waters south to Japan and Central California; in winter they range from Mexico, Central America, Hawaii, southern Japan, and the Philippines. Humpbacks were hunted commercially in the north Pacific until 1987. While generally present in Southern California from March through June and from September through December, like fin whales, humpbacks are reported year-round with some frequency offshore of Dana Point. Ship strikes, entanglement in fishing gear, and increased anthropogenic noise are current concerns.

Reptiles

Sea turtles are air-breathing reptiles that inhabit tropical and subtropical ocean waters throughout the world. There are seven species of sea turtles, six of which are found in United States (U.S.) waters, and all are afforded protection under the Endangered Species Act (ESA) of 1973. Of the six species in U.S. waters, four species are known to occur in the nearshore waters off southern California. These four species have broad geographic ranges and are highly migratory. They include the green turtle (*Chelonia mydas*), loggerhead turtle (*Caretta caretta*), and leatherback turtle (*Dermochelys coriacea*), which are the most common, while the olive ridley sea turtle (*Lepidochelys olivacea*) has been observed offshore of San Diego. Of these, the green turtle is the most commonly encountered nearshore in the SCB. Sea turtles are reported occasionally in the Project vicinity by whale watch charters operated out of Dana Point Harbor. When observations can be identified, green turtle is the most commonly observed species, and loggerhead turtle has been reported on occasion.

Ichthyoplankton

Planktonic organisms tend to be extremely abundant and widespread in the nearshore environment of southern California. Ichthyoplankton are the eggs and larvae of fish and can be an important indicator of ocean ecosystem health. At least 100 taxa of fish larva and eggs were identified in surveys conducted between Huntington Beach and Oceanside Harbor in nearshore habitats similar to that found in the Project site. Egg counts are typically dominated by unidentified fish eggs, although unidentified anchovies (*Engraulidae*), northern anchovy and croaker (*Sciaenidae*) eggs were occasionally very abundant. Anchovies, including both unidentified larvae and northern anchovy are also the most commonly collected larval species. Silversides (*Atherinopsidae*), which includes Topsmelt, Jacksmelt (*Atherinopsis californiensis*) and California grunion, croakers, including white croaker and queenfish among others, blennies (*Blenniidae*), and gobies (*Gobiidae*) are all commonly reported in nearshore surveys. Sampling showed consistently greater concentrations of fish larvae at a deeper location than at a shallower location closer to shore. At the shallower station, 649 fish larvae in 33 taxonomic groups (including unidentified larvae) were collected with an overall average concentration of 262 larvae per 1,000 m³. At the deeper station, there were 1,731 fish larvae in 32 taxonomic groups (including unidentified larvae) with an overall average concentration of 617 larvae per 1,000 m³ collected in the samples from the 60- to 90-ft depth strata. The five most abundant larval fish taxa at the deep station were northern anchovy, sanddabs (*Citharychthys* spp), California halibut, larval/post-larval fish and turbot.

Lagoon Fish

Numerous species of fish also are associated with the lagoon within the Project site. In May 2015, San Juan Creek Lagoon was closed and ponded with no connection to the ocean, had primarily freshwater conditions, and was supporting primarily non-native fishes. A total of 396 fish were observed with the mosquitofish (*Gambusia affinis*) being the most prevalent of the fish observed.. Other non-native species



included fathead minnows (*Pimephales promelas*), gold shiner (*Notemigonus crysoleucas*), red shiner (*Cyprinella lutrensis*), and Largemouth Bass (*Micropetrus salmoides*). Another indicator of the primarily freshwater conditions was the presence of thousands of freshwater insects, water boatman (*Corixidae*), unidentified dragonfly nymphs, and non-native red swamp crayfish (*Procambarus clarkii*).

Native fish included the arroyo chub (*Gila orcuttii*) and long-jawed mudsuckers (*Gillichthys mirabilis*). A few small (less than 3 cm) juveniles that were potentially California killifish (*Fundulus parvipinnis*) were collected, but not confirmed due to size and may have been juvenile largemouth bass. No tidewater goby (*Eucyclogobius newberryi*) or southern steelhead trout (*Oncorhynchus mykiss irideus*) were observed in the lagoon.

In October 2015, the lagoon was disconnected from the ocean by a sand berm but had breached with overwash the previous night. At that time a total of 83 fish were captured with the dominant species being topsmelt (*Atherinops affinis*). Non-native mosquitofish were the second most abundant fish, and a single anchovy juvenile (*Anchoa sp.*) and a single striped mullet (*Mugil cephalus*) were found. No tidewater goby or southern steelhead trout were observed in the lagoon. Photographs of the sampling sites and vouchers of species are found in Appendix B of [Appendix 10.4](#).

Although they were not located during the above surveys, the following four additional fish species may be found in the lagoon when proper conditions exist: staghorn sculpin (*Leptocottus armatus*), deep-bodied anchovy (*Anchoa compressa*), mosquito fish (*Gambusia affinis*), yellowfin goby (*Acanthogobius flavimanus*).

Lagoon Invertebrates

In areas with highly variable flow regimes and transient presence of water, such as San Juan Creek, invertebrates can be difficult to locate due to the lack of water. During Spring 2015, thousands of the freshwater insect water boatman (*Corixidae*) were taken during seine sampling, as well as unidentified dragonfly nymphs, and non-native red swamp crayfish (*Procambarus clarkii*) were collected during the fish surveys. In the water column, freshwater invertebrate organisms were dominated by arthropods including larval insects, aquatic beetles and their larva (Family Hydrophilidae), flies (Order Diptera), and a small number of ants (Family Formicidae). The second most abundant organisms were annelid worms consisting of both polychaetes and oligochaetes.

During Fall 2015, hundreds of water boatman were found in every seine haul, but not counted. Otherwise the survey showed that the majority of organisms captured in the fall were annelid worms, entirely consisting of oligochaetes, which accounted for 81 percent of total organisms captured, and a total of only 14 arthropods were noted.

Marine Communities

The offshore biological habitats and communities in the vicinity of the Project site are characterized primarily by soft and hardbottom seafloor (benthic), near-bottom (demersal), and open water (pelagic) habitats, as described further below. At least 25 species of marine fish have been reported at Doheny State Beach, most associated with shallow soft and hard-bottomed habitats, but numerous others are known to exist in the deeper waters. Because the components of the Project exist in all these ocean environments, all are discussed in additional detail below.



Benthic Community

The benthic community refers to the vegetative, substrate, and animals, that make up the bed of a body of water. The benthic characteristics of the biological habitats and communities in the vicinity of the Project are characterized primarily by soft- and hard-bottom seafloor. These environments include the softer near-shore sandy beach environment, as well as intermittent cobble and reefs nearshore and the riprap rock armoring of the SJCOO pipeline further offshore.

The sandy intertidal zone (beaches) are highly dynamic environments, subject to intense wave-related energy, exposure to air and sun on low tide, constant reworking, and large-scale seasonal substrate variations. Within these environments, benthic infauna are the macroscopic animals that live in the top layers of sediment of the ocean floor. Their distribution depends on interacting sediment and environmental variability. Among those living in the sandy intertidal community are those organisms that live in the soft substrate such as polychaetes, bivalves, and crustaceans. Other species include the sand crab (*Emerita analoga*), blood worm (*Hemipodus borealis*). Bivalves include Gould bean clams (*Donax gouldi*), pismo clam (*Tivela stultorum*), and the Pacific littleneck (*Protothaca staminea*).

The rocky intertidal in Doheny State Beach consists of low-lying rock and cobble and riprap of the Dana Point Harbor breakwater on the west side of the park. Discontinuous cobble and low-relief rocky reef, and some high-relief, tidally emergent reefs are located nearshore. Hard-bottom substrates support communities typical of similar habitats throughout southern California. Nearly 30 marine invertebrates are known to occur in the intertidal and shallow hard bottom communities including sea anemones, turban snails, chitons, mussels, sea urchins, sea stars, barnacles and crabs.

The hardbottom community may also include areas with low-growing algae and foliose macroalgae such as giant kelp, which can provide additional habitat for various species. Fish species common to these rocky benthic environments further off-shore include black surfperch (*Embiotoca jacksoni*), painted greenling (*Oxylebius pictus*), barred sand bass (*Paralabrax nebulifer*), blackeye goby (*Coryphopterus nicholsi*), California scorpionfish (*Scorpaena guttate*), California moray (*Gymnothorax mordax*), garibaldi (*Hypsypops rubicunda*), opaleye (*OpaleyeGirella nigricans*), and treefish (*Sebastes serriceps*).

Demersal Community

The demersal community includes groundfish and macroinvertebrates that live in close proximity to the seafloor. Because the ocean environment is dynamic and the fish tend to be highly mobile, numerous fish species are found transitioning between the benthic and pelagic communities. This results in some species found in both bottom habitats as well as the pelagic environment, as they are using the overlapping area within the demersal zone. Some of the non-fish animals that live in this zone include annelids (worms), arthropods (animals such as crabs and shrimp), mollusks (shell fish), and echinoderms (animals such as sea stars).

Based on the different benthic environments, food items, and changing habitat within the off-shore environment, a variety of demersal fish and invertebrates can be found. These species include speckled sanddab (*Citharichthys stigmaeus*) and sea pens (*Stylatula elongate*). White croaker and queenfish (*Seriphus politus*) will generally be found in shallower water, while California lizardfish (*Synodus lucioceps*), longspine combfish (*Zaniolepis latipinnis*) and speckled sanddab dominate the deeper areas. Other fish found in the deeper waters, and known to occur offshore from Doheny State Beach, include diamond



turbot (*Pleuronichthys guttulatus*), horn shark (*Heterodontus francisci*), leopard shark (*Triakis semifasciata*), shovelnose guitarfish (*Rhinobatos productus*), California halibut (*Paralichthys californicus*), round stingray (*Urobatis halleri*), sablefish (*Anoplopoma fimbria*), a shortspine thornyhead (*Sebastolobus alascanus*), and seniorita fish (*Oxyjulis californica*). Non-fish species include swimming crab (*Portunus xantusii*), blackspotted bay shrimp, (*Crangon nigromaculata*), spiny sand star, and spot prawn (*Pandalus platyceros*).

Pelagic Community

The pelagic community is the open water habitat within the ocean. Species within the pelagic community vary considerably in abundance and size from tiny phytoplankton to blue whales (*Balaenoptera musculus*). Phytoplankton are free-floating plants that form the base of the marine food chain. They are photosynthetic, and are responsible for perhaps 95 percent of all marine primary productivity.

Schooling fish such as northern anchovy (*Engraulis mordax*) and Pacific sardine (*Sardinops sagax*) are common in nearshore waters of the Project site, and ichthyoplankton (eggs and early larval stages) of both demersal and pelagic fish species are dispersed throughout the water column. Pelagic invertebrates are also common, such as market squid (*Doryteuthis opalescens*), which is fished commercially in the Project area, the pelagic red crab (*Pleuroncodes planipes*), and salps (planktonic tunicate), as well as jellyfish, ctenophores (comb jellies) and pyrosomes (non-salp pelagic tunicates). Other pelagic fish species common within the surfzone include topsmelt, a pelagic schooling northern anchovy, queenfish, and white croaker.

Other fish and other marine animals known to occur in other ocean areas similar to that of the Project area include the dolphinfish (Mahi Mahi, *Coryphaena hippurus*), Pacific (Chub) mackerel (*Scomber japonicus*), jack mackerel (*Trachurus symmetricus*), shortfin mako shark (*Isurus oxyrinchus*), thresher shark (*Alopias vulpinus*), bluefin tuna (*Thunnus thynnus*), yellowfin tuna (*Thunnus albacares*) and yellowtail (*Seriola lalandi*). Other species that are likely present in the area that were in habitats similar to that of the Project area include croaker (SCIAENIDAE), Silversides (ATHERINOPSIDAE), California grunion, blennies (BLENNIIDAE), and gobies (GOBIIDAE).

Two Federally-listed Endangered abalone species are included on the species list for the Doheny State Beach (DSB) including black abalone (*Haliotis cracherodii*), which is an intertidal and a shallow subtidal species, and white abalone (*Haliotis sorenseni*) which is found at depths of greater than 80 ft.

Connectivity and Migration Corridors

California gray whales (*Eschrichtius robustus*) pass offshore of southern California annually during their migration between the Bering Sea and birthing lagoons in Baja California, and are the most frequently observed northward migrating whale in the Project vicinity. Traditional southbound paths during the winter months are well offshore of the Project site, and northbound migration paths tend to be similar to the southbound path through the SCB; however, most mother-calf pairs tend to remain fairly close to land. Northward migration through Southern California occurs from February through May, with peak occurrence in March.

Blue whales (*Balaenoptera musculus*) also pass offshore of Southern California annually during their migration. They are most frequently observed in Southern California during the months of June to



September. Blue whales are known to be slightly further from shore than gray whales, but do still tend to remain fairly close to land during their migration.

Special-Status Freshwater Fish and Wildlife

Three sensitive freshwater species could potentially occur within the park that are considered to be sensitive: arroyo chub, southern steelhead trout, and tidewater goby. Arroyo chub is known to occur in the San Juan Creek lagoon (see above). Southern steelhead trout is not expected to occur within Doheny State Beach due to lack of suitable habitat, and the tidewater goby has not been reported in San Juan Creek in many years and its probability of occurrence is low.

Seven freshwater fish and wildlife species listed as threatened or endangered, including one species of special concern (arroyo chub), have the potential to occur or do occur within the lagoon area. Of the seven sensitive animal species, three, including the tidewater goby, California gnatcatcher (*Polioptila californica*), and Pacific pocket mouse, were found to have a low potential to occur due to lack of proper habitat. Four species were considered to have a moderate to high potential to occur on or adjacent to the lagoon. Those species include southern steelhead, western snowy plover, least Bell's vireo (*Vireo bellii pusillus*), and California least tern, and are discussed as follows:

Southern steelhead - The Southern steelhead are born in fresh water and spend a portion of their lives in the ocean before returning to fresh water to spawn. San Juan Creek is designated Critical Habitat for the Southern California Steelhead Evolutionarily Significant Unit as shown on the United States Geological Survey Fish Wildlife Service Critical Habitat map for Steelhead (USGS, 2017). Although no observations of southern steelhead within lower San Juan Creek have been recorded since 2008 (including recent surveys conducted by Chambers Group in 2016, as summarized in [Appendix 10.4](#)), southern steelhead may pass through the mouth, when open, of San Juan Creek and may use the creek for foraging. The seasonal coastal lagoon potentially could be used by smolt on their downstream migration before they enter the ocean. However, current conditions in the lagoon including, high water temperature, variable dissolved oxygen levels with occasional anoxic periods, presence of avian and non-native fish predators and lack of cover to provide refuge for the smolts from predators, result in a lack of suitable habitat for smolt in the lagoon.

Western snowy plover - The Pacific Coast population of western snowy plovers includes both resident and migratory birds. Their preference for nesting habitat includes sand spits, dune-backed beaches, beaches at creek and river mouths, and saltpans at lagoons and estuaries. The breeding season extends from March through September; while the wintering season is generally from October to February, with some overlap occurring between the seasons (Chambers 2016), snowy plovers have the potential to occur on-site. Recent snowy plover surveys identified 11 birds wintering at DSB in 2015 and 2017.⁴ No Special Protection Zones or critical habitat is listed for western snowy plover at DSB or Capistrano Beach Park.

Least Bell's vireo - The Least Bell's vireo occurs in moist thickets and riparian areas that are predominantly composed of willow and mule fat. Although the Project site does not support robust willow or mule fat

⁴ Table 2, *The Western Snowy Plover in Los Angeles and Orange Counties, California: September 2014 to February 2017*, dated February 24, 2017, Sea and Sage Audubon Society - http://www.seaandsageaudubon.org/Conservation/SNPLsurvey/FinalReport2014_2017.pdf (accessed April 11, 2018).



habitat and does not provide suitable nesting habitat, least Bell's vireos potentially could pass through the area in migration.

California Least Tern – California least terns nest colonially, often in multi-species assemblages, on sandy beaches and prefer to forage in quiet bays and lagoons and feed primarily on small fish such as northern anchovy, topsmelt, jacksmelt, and California grunion.

Special Status Marine Fish and Invertebrates

Some marine fish and invertebrate species in Southern California are protected under California Department of Fish and Wildlife (CDFW) and/or the U.S. Fish and Wildlife Service (USFWS) regulations, although few marine species are listed as either threatened or endangered. Due to the large number of marine animals potentially occurring within the Pacific Ocean close to the Project site, the individual species including their likelihood of occurrence are presented in tabular format in Table 4.3-1, Threatened, Endangered and Sensitive Marine Species, below.

Significant Ecological Areas

Habitat Areas of Particular Concern

Habitat Areas of Particular Concern (HAPCs) have been identified as: estuaries, giant kelp, seagrass, rocky reefs, and other specific areas (such as seamounts). Estuary, giant kelp and rocky reef habitats are known to occur in the areas offshore of DSB in the Project site vicinity.

Areas of Special Biological Significance

Areas of Special Biological Significance (ASBS) are those areas designated by the SWRCB as requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable (SWRCB 2015). In the Project region, the Heisler Park ASBS, located about 8.5 miles up coast (northwest), is the closest ASBS to the Project area.

Marine Protected Areas

The Marine Life Protection Act (MLPA) was passed into law in 1999 to protect the natural diversity and abundance of marine life and marine ecosystems. The law directed the state to redesign the system of marine protected areas (MPAs) to function as a network with the goal of increasing its effectiveness in protecting the state's marine life and habitats, marine ecosystems, and marine natural heritage, as well as to improve recreational, educational, and study opportunities provided by marine ecosystems subject to minimal human disturbance. Marine protected areas are separate geographic marine or estuarine areas designed to protect or conserve marine life and habitat. There are three types of MPAs designated (or recognized) in California: state marine reserves (SMRs), state marine parks (SMPs) and state marine conservation areas (SMCAs).



Table 4.3-1: Threatened, Endangered and Sensitive Marine Species

Common Name	Scientific Name	Status	Likelihood of Occurrence
Invertebrates			
black abalone	<i>Haliotis cracherodii</i>	FE	Rare
white abalone	<i>Haliotis sorenseni</i>	FE	Unlikely
Fish			
Tidewater Goby	<i>Eucyclogobius newberryi</i>	FE, SSC	Unlikely
Southern Steelhead - southern California ESU	<i>Oncorhynchus mykiss irideus</i>	FE	Unlikely
Sea Turtles			
loggerhead sea turtle	<i>Caretta caretta</i>	FT	Uncommon
green sea turtle	<i>Chelonia mydas</i>	FT	Uncommon
leatherback sea turtle	<i>Dermochelys coriacea</i>	FE	Uncommon
Pacific olive Ridley sea turtle	<i>Lepidochelys olivacea</i>	FT	Uncommon
Birds			
rhinoceros auklet	<i>Cerorhinca monocerata</i>	WL	Rare
western snowy plover	<i>Charadrius alexandrinus nivosus</i>	FT, SSC, BCC	Common
common loon	<i>Gavia immer</i>	SSC	Rare
Caspian tern	<i>Hydroprogne caspia</i>	BCC	Uncommon
California gull	<i>Larus californicus</i>	WL	Common
long-billed curlew	<i>Numenius americanus</i>	WL, BCC	Rare
California brown pelican	<i>Pelecanus occidentalis californicus</i>	FD, SD, FP	Common
double-crested cormorant	<i>Phalacrocorax auritus</i>	WL	Common
California clapper rail	<i>Rallus longirostris obsoletus</i>	FE, SE, FP	Unlikely
black skimmer	<i>Rynchops niger</i>	SSC	Rare
California least tern	<i>Sternula antillarum browni</i>	FE, SE	Uncommon
elegant tern	<i>Thalasseus elegans</i>	WL	Common
Marine-Mammals			
Guadalupe fur seal	<i>Arctocephalus townsendi</i>	FT, ST	Rare
right whale	<i>Balaena glacialis</i>	FE	Rare
sei whale	<i>Balaenoptera borealis</i>	FE	Rare
blue whale	<i>Balaenoptera musculus</i>	FE	Common
fin whale	<i>Balaenoptera physalus</i>	FE	Common
southern sea otter	<i>Enhydra lutris nereis</i>	FT	Rare
gray whale	<i>Eschrichtius robustus</i>	FD	Common
Steller's sea lion	<i>Eumetopias jubatus</i>	FT	Rare
killer whale southern resident DPS	<i>Orcinus orca</i>	FE	Uncommon
humpback whale	<i>Megaptera novaeangliae</i>	FE	Common
sperm whale	<i>Physeter macrocephalus</i>	FE	Rare
FE – Federal Endangered, FT- Federal Threatened, FC – Federal Candidate, FD – Federal Delisted SE – California State Endangered, ST – California State Threatened, SD – California State Delisted SSC – CDFW Species of Special Concern, BCC - USFWS Birds of Conservation Concern FP – CDFW Fully Protected, WL – CDFW Watch List			

Source: MBC Applied Environmental Sciences. 2017

There are four MPAs along coastal Orange County up coast of Doheny State Beach. The nearest, the Dana Point SMCA, is located approximately one mile west from the DSB portion of the Project site.



Special-Status Species and Habitats

Critical Habitat

San Juan Creek is designated Critical Habitat for the federally listed endangered southern steelhead. Steelhead may pass through the seasonal lagoon on their way to and from the ocean. Coastal lagoons also may be important as feeding and saltwater transition areas before smolts enter the ocean. In addition, the seasonal lagoon has the potential to provide summer rearing habitat for smolts before they enter the ocean. Smolts that spend the summer in the estuary at Scott Creek in Central California were shown to grow much more rapidly than smolts reared upstream. These lagoon-reared smolts enter the ocean at a larger size than smolts that migrated directly from the upper watershed to the ocean and, most likely, had a greater chance of survival. Studies of steelhead on the Santa Clara River, the Santa Ynez River, and Topanga Creek indicated that smolts generally spent no more than a few days in the lagoons before passing to the ocean.

Fish surveys conducted in spring and fall of 2015 did not find southern steelhead trout in the San Juan Creek lagoon. Current conditions in the lagoon contribute to a lack of suitable habitat for smolts in the lagoon. These include:

- Variable water level, with periods of very little water in lower San Juan Creek,
- Periods of high water temperature,
- Periods of variable dissolved oxygen levels, including occasional anoxic periods,
- Presence of avian and non-native fish predators, and
- Lack of cover to provide refuge for the smolts from predators.

Essential Fish Habitat

The Project is located within an area designated as Essential Fish Habitat (EFH) for both the Coastal Pelagic and Pacific Groundfish Fisheries Management Plans (FMPs). One-hundred and seven fish species, eight fish species groups, one invertebrate species and two invertebrate groups are listed as managed or as ecosystem component (EC) species in the FMPs. [Table 4.3-2, Managed Fish Species Found in the Project Site](#), shows the 23 species known or likely to occur as larvae, juveniles, or adults in the Project site based on their occurrence in trawl or seine surveys.

Regional Project Facilities

Regional Project facilities (as described in Section 3) would be in substantially the same location as the Phase I Project facilities, with the exception of the SDG&E electrical line extensions (which would extend north of the site within existing streets) and the Regional Project product water conveyance, pumping and storage facilities, the location of which is not known at this time.



4.3.2 REGULATORY FRAMEWORK

Federal

Federal Endangered Species Act of 1973

The Federal Endangered Species Act (FESA) and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. The FESA defines species as “threatened” or “endangered” and provides regulatory protection for listed species. The FESA provides a program for conservation and recovery of threatened and endangered species, and conservation of designated critical habitat that the USFWS has determined is required for the survival and recovery of these listed species.

Section 4 requires Federal agencies to, among other things, prepare recovery plans for newly listed species unless USFWS determines such a plan would not promote the conservation of the species.

Section 7 requires Federal agencies, in consultation with, and with the assistance of the Secretary of the Interior or the Secretary of Commerce, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. The USFWS and National Marine Fisheries Service (NMFS) share responsibilities for administering FESA. Regulations governing interagency cooperation under Section 7 are found at 50 Code of Federal Regulations (CFR) Part 402. The opinion issued at the conclusion of consultation will include a statement authorizing a take that may occur incidental to an otherwise legal activity.

Section 9 lists those actions that are prohibited under FESA. Take of a species listed in accordance with FESA is prohibited. Section 9 of FESA prohibits take (i.e., to harass, harm, pursue, hunt, wound, kill, etc.) of listed species of fish, wildlife, and plants without special exemption. “Harm” is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or shelter. “Harass” is further defined as actions that create the likelihood of injury to listed species, resulting in significantly disrupting normal behavior patterns which include, but are not limited to, breeding, feeding, and shelter.

Section 10 provides a means whereby a non-Federal action with a potential to result in the take of a listed species could be allowed under an incidental take permit. Application procedures are found at 50 CFR Parts 13 and 17 for species under the jurisdiction of USFWS and 50 CFR Parts 217, 220, and 222 for species under the jurisdiction of NMFS.

Clean Water Act / Rivers and Harbors Act

Section 401 requires that a project proponent for a Federal license or permit that allows activities resulting in a discharge to waters of the United States must obtain a State certification that the discharge complies with other provisions of CWA. The Regional Water Quality Control Boards (RWQCBs) administer the certification program in California.

Section 402 establishes a permitting system for the discharge of any pollutant (except dredge or fill material) into waters of the United States, commonly referred to as the National Pollutant Discharge Elimination System (NPDES) Permit process, described further below.



Table 4.3-2: Managed Fish Species Found in the Project site

Common Name	Species	Potential Habitat Use
Coastal-Pelagic Management Species		
Northern Anchovy	(<i>Engraulis mordax</i>)	Open water.
Pacific Sardine	(<i>Sardinops sagax</i>)	Open water.
Pacific (Chub) Mackerel	(<i>Scomber japonicus</i>)	Open water, juveniles off sandy beaches and around kelp beds.
Jack Mackerel	(<i>Trachurus symmetricus</i>)	Open water, young fish over shallow banks and juveniles around kelp beds.
Market Squid	(<i>Doryteuthis opalescens</i>)	Open water, living in coastal waters but returning to shallow inshore waters to spawn.
Coastal Pelagic Ecosystem Component Species		
Jacksmelt*	(<i>Atherinopsis californiensis</i>)	Open water in estuaries, near kelp beds, and along sandy beaches.
Pacific Herring*	(<i>Clupea pallasii</i>)	Open water.
Coastal Pelagic and Pacific Groundfish Shared Ecosystem Component Species		
Round Herring	(<i>Etrumeus teres</i>)	Open water, inshore.
Mesopelagic Fishes Myctophidae and Bathylagidae		Deep, open water during the day, migrate toward the surface at night.
Pacific Saury	(<i>Cololabis saira</i>)	Open water, common offshore.
Silversides*	Atherinopsidae	Open water in estuaries and along sandy beaches.
Pacific Groundfish Managed Species		
Curlfin Sole	(<i>Pleuronichthys decurrens</i>)	Soft bottom habitats.
English Sole	(<i>Parophrys vetulus</i>)	Soft bottom habitats.
Pacific Sanddab*	(<i>Citharichthys sordidus</i>)	Soft bottom habitats.
Blackgill Rockfish*	(<i>Sebastes melanostomus</i>)	Deep living associated with reefs, hard bottom and steep drop offs.
California Scorpionfish*	(<i>Scorpaena guttata</i>)	Benthic, on soft and hard bottoms, as well as around structures.
Shortspine Thornyhead	(<i>Sebastolobus alascanus</i>)	On soft bottoms.
Treefish	(<i>Sebastes serripes</i>)	Associated with hard substrate.
Kelp Greenling	(<i>Hexagrammos decagrammus</i>)	Hard substrata and rocky interfaces with algae.
Cabezon	(<i>Scorpaenichthys marmoratus</i>)	Multiple habitat associations but prefer hard substrata and rocky interfaces.
Leopard Shark	(<i>Triakis semifasciata</i>)	Multiple habitat associations, including soft bottoms, and near structure, kelp, and eelgrass.
Pacific Hake	(<i>Merluccius productus</i>)	Open water.
Sablefish	(<i>Anoplopoma fimbria</i>)	Deep bottom-associated habitat.
Sources: a: Love 2011; Miller and Lea 1972; Eschmeyer et al. 1983 b: MBC and Tenera 2005; MBC 2007, 2013 c: CDFW 2016; Weston 2011, 2015; MBC 2013; Tetra Tech 2010, CSP 2003; Allen and DeMartini 1983. X = known to occur, - = unknown from sources * larvae not identifiable to species. N/A = Not applicable, internal fertilization.		



Section 404 establishes a permit program, administered by the USACE, regulating the discharge of dredged or fill material into waters of the United States, including wetlands. The extent of waters of the United States is generally defined as the portion that falls within the limits of the Ordinary High Water Mark, which typically corresponds to the two-year flood event. Wetlands, including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas are defined by USACE as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3(c)(4); 40 CFR 230.3(o)(iv)).⁵ Implementing regulations by USACE are found at 33 CFR Parts 320-330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines and were developed by the U.S. Environmental Protection Agency (EPA) in conjunction with USACE (40 CFR Parts 230). The Guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

The Rivers and Harbors Act regulates placement of obstacles or structures within navigable water ways, including the area vertically beneath the ocean floor, such as the case with the Project.

Migratory Bird Treaty Act (16 U.S.C. 701 through 719(c))

The Migratory Bird Treaty Act (MBTA) is the domestic law that affirms, or implements, the United States’ commitment to four international conventions (with Canada, Mexico, Japan, and Russia) for the protection of a shared migratory bird resource. The MBTA makes it unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, or kill migratory birds. The law also applies to the removal of nests occupied by migratory birds during the breeding season. The MBTA makes it unlawful to take, pursue, molest, or disturb these species, their nests, or their eggs anywhere in the United States.

State

California Environmental Quality Act (CEQA) (Pub. Res. Code §21000 et seq.) (14 Cal.Code Regs. §15000 et seq. [“CEQA Guidelines”])

Section 15380. Although threatened and endangered species are protected by specific federal and State statutes, CEQA Guidelines §15380(b) provides that a species not listed on the federal or State list of protected species may be considered endangered, rare or threatened if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the FESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals. This section was included in CEQA primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example, a candidate species that has not been listed by either USFWS or CDFW. Thus, CEQA provides an agency with the ability to protect a species from the potential impacts of a project until the respective government agencies have an opportunity to designate the species as protected, if warranted. CEQA also calls for the protection of other locally or regionally significant resources, including natural communities. Although natural communities do not at present have legal protection of any kind, CEQA calls for an assessment of whether any such resources would be affected, and requires findings of significance if there would be substantial losses. Natural communities listed by CNDDDB as sensitive are considered by CDFW to be significant resources and fall under the CEQA Guidelines

⁵ http://resources.ca.gov/wetlands/introduction/defining_wetlands.html (accessed May 7, 2018).



for addressing impacts. Local planning documents such as general plans often identify these resources as well.

California Endangered Species Act (California State Fish and Game Code §2050 et seq.)

The California Endangered Species Act (CESA) establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The CESA mandates that State agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no State agency consultation procedures under the CESA. For projects that affect both a State and Federal listed species, compliance with FESA will satisfy the CESA if the CDFW determines that the Federal incidental take authorization is “consistent” with the CESA under California State Fish and Game Code §2080.1. For projects that will result in a take of a State-only listed species, the Project proponent must apply for a take permit under §2081(b).

Section 2080. Section 2080 of the California State Fish and Game Code states, “No person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission [State Fish and Game Commission] determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided in this chapter, the Native Plant Protection Act [citation omitted], or the California Desert Native Plants Act [citation omitted].” Pursuant to §2081 of the California State Fish and Game Code, the CDFW may authorize individuals or public agencies to import, export, take, or possess, any State-listed endangered, threatened, or candidate species as long as they do not have state Fully Protected status. These otherwise prohibited acts may be authorized through permits or a memorandum of understanding (MOU) if: (1) the take is incidental to an otherwise lawful activity; (2) impacts of the authorized take are minimized and fully mitigated; (3) the permit is consistent with any regulations adopted pursuant to any recovery plan for the species; and, (4) the Project proponent ensures adequate funding to implement the measures required by the CDFW. The CDFW makes this determination based on available scientific information and considers the ability of the species to survive and reproduce.

Fully Protected Species. The State of California first began to designate species as “Fully Protected” prior to the creation of the CESA. Lists of Fully Protected species were initially developed to provide protection to those animals that were rare or faced possible extinction, and included fish, mammals, amphibians and reptiles, birds, and mammals. Most Fully Protected species have since been listed as threatened or endangered under the CESA and/or ESA. The regulations that implement the Fully Protected species Statute (Fish and Game Code §3511, 4700, 5050, 5515) provide that Fully Protected species may not be taken or possessed at any time. Furthermore, the statute prohibits any state agency from issuing incidental take permits for Fully Protected species, except for scientific research or relocation of the bird species for the protection of livestock pursuant to Section 670.7 of Title 14 of the California Code of Regulations or Section 2835 of the Fish and Game Code.

Sections 1600 through 1617. Under these sections of the California State Fish and Game Code, the Project proponent is required to notify CDFW prior to any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Pursuant to the California State Fish and Game Code, a “stream” is defined as a body of water that flows at least periodically, or intermittently, through a bed or channel having banks and supporting fish or other aquatic life. Based on this definition, a watercourse with surface or subsurface flows that supports or has supported riparian vegetation is a



stream and is subject to CDFW jurisdiction. Altered or artificial watercourses valuable to fish and wildlife are subject to CDFW jurisdiction. The CDFW also has jurisdiction over dry washes that carry water ephemerally during storm events.

Preliminary notification and project review generally occur during the environmental review process. When an existing fish or wildlife resource may be substantially adversely affected, CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the Project.

Sections 3503 and 3503.5. Under these sections of the California State Fish and Game Code, the Project proponent is not allowed to conduct activities that would result in the taking, possessing, or destroying of any birds-of-prey, taking or possessing of any migratory non-game bird as designated in the MBTA or the taking, possessing, or needlessly destroying of the nest or eggs of any raptors or non-game birds protected by the MBTA, or the taking of any non-game bird pursuant to California State Fish and Game Code Section 3800.

Sections 3511, 4700, 5050, and 5515. Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California State Fish and Game Code provide that designated fully protected species may not be taken or possessed without a permit. Incidental takes of these species are not authorized by law.

Native Plant Protection Act (California State Fish and Game Code 1900 through 1913)

California's Native Plant Protection Act (NPPA) requires all State agencies to utilize their authority to carry out programs to conserve endangered and rare native plants. Provisions of the NPPA prohibit the taking of listed plants from the wild and require notification of the CDFW at least 10 days in advance of any change in land use. This allows CDFW to salvage listed plant species that would otherwise be destroyed. The Project proponent is required to conduct botanical inventories and consult with CDFW during project planning to comply with the provisions of this Act and sections of CEQA that apply to rare or endangered plants.

Regional Water Quality Control Board

Under Section 401 of the CWA, the RWQCB must certify that actions receiving authorization under Section 404 of the CWA also meet State water quality standards. The RWQCB also regulates waters of the State under the Porter-Cologne Act Water Quality Control Act (Porter-Cologne Act) (see below). The RWQCB requires projects to avoid impacts to wetlands if feasible and requires that projects do not result in a net loss of wetland acreage or a net loss of wetland function and values. The RWQCB typically requires compensatory mitigation for impacts on wetlands and/or waters of the State. The RWQCB also has jurisdiction over waters deemed isolated or not subject to Section 404 jurisdiction under the *Solid Waste Agency of Northern Cook County v. Army Corps of Engineers* decision. Dredging, filling, or excavation of isolated waters constitutes a discharge of waste to waters of the State and prospective dischargers are required to obtain authorization through an Order of Waste Discharge or waiver thereof from the RWQCB and comply with other requirements of Porter-Cologne Act.

San Juan Creek is under the jurisdiction of the San Diego RWQCB. The RWQCB sets water quality objectives and beneficial uses for surface and ground water in the Water Quality Control Plan for the San Diego Basin



(RWQCB 1994). Designated uses of San Juan Creek are Agricultural Water Supply (AGR), Industrial Process Supply (IND), Contact Water Recreation (REC 1), Non-contact Water Recreation (REC 2), Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD), and Wildlife Habitat (WILD). Designated beneficial uses of the San Juan Creek mouth are REC1; REC 2; WILD; Rare, Threatened or Endangered Species (RARE); Marine Habitat (MAR); Migration of Aquatic Organisms (MIGR); and Shellfish Harvesting (SHELL).

California Ocean Plan

The Ocean Plan (OPA) was designed to protect the quality of ocean waters through the control of waste discharges. The Ocean Plan was last updated in 2015, and it is reviewed every three years. The Ocean Plan establishes beneficial uses for nearshore and offshore waters, and establishes water quality objectives and effluent limitations to ensure the reasonable protection of beneficial uses and the prevention of nuisance.

On May 6th, 2015, SWRCB approved an amendment to the state's Ocean Plan (Ocean Plan Amendment, or "OPA") to address effects associated with the construction and operation of seawater desalination facilities. The amendment supports the use of ocean water as a reliable supplement to traditional water supplies while protecting marine life and water quality. The desalination amendment provides specific implementation and monitoring and reporting requirements. The OPA's requirements include, but are not limited to the following:

- Use of subsurface intakes (intake structures located beneath the seafloor), unless subsurface intakes are determined to be infeasible by the RWQCB. If subsurface intakes are not feasible, then screened ocean intakes may be considered. The intake screens must have slot sizes ≤ 1 mm (0.04 inches), and the intake velocity must be ≤ 0.015 m/sec (0.5 fps).
- Alternatives to subsurface intakes and screened intakes can be considered, but the alternative(s) must achieve the same level of entrainment reduction as a screened intake.
- If feasible, brine discharge should be commingled with wastewater. If this is not feasible, use of multiport diffusers is the preferred method of discharge.
- Alternatives to wastewater commingling and multiport diffusers can be considered, but the alternative(s) must achieve a comparable level of entrainment/discharge impacts as wastewater commingling or multiport diffusers.
- Discharges shall not exceed a daily maximum of 2.0 ppt above natural background salinity measured no farther than 100 meters (328 ft) horizontally from each discharge point, which is defined as the Brine Mixing Zone (BMZ). There is no vertical limit to this zone.
- Mitigation is required for the replacement of all forms of marine life or habitat that is lost due to the construction and operation of the desalination facility after minimizing intake and mortality of all forms of marine life through best available site, design, and technology.

Surface and Submerged Lands Lease

Public and private entities must apply to the California State Lands Commission for leases or permits on state lands. Applications must include an outline of the Project, supporting environmental data, and payment of appropriate fees. Commission leases of sovereign lands generally fall into several categories: recreational, commercial, industrial, right-of-way, and salvage. Specific examples of such leases include



private recreational piers, commercial marinas, yacht clubs, marine terminals, industrial wharves, oil and gas pipelines, fiber optic cables, outfalls, bank stabilization, and wetlands and habitat management projects.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, waters of the State fall under the jurisdiction of the appropriate RWQCB. Under the act, the RWQCB must prepare and periodically update basin plans. Each basin plan sets forth water quality standards for surface water and groundwater as well as actions to control nonpoint and point sources of pollution, thereby achieving and maintaining these standards. Projects that affect wetlands or waters must meet waste discharge requirements of the RWQCB, which may be issued in addition to water quality certification or a waiver under Section 401 of the CWA.

Doheny State Beach Park General Plan

The Doheny State Beach General Plan (DSBGP) serves as a framework to guide the park's day-to-day decisions on park operations and improvements and also serves as the EIR. The DSBGP notes that preservation and management to maximize natural habitat conditions are the primary land use objectives in considering any development in the park and plans and activities. Park development must also account for potential effects to the Core Habitat Zones. The Core Habitat Zones include San Juan Creek, North Creek, the riparian wetland areas associated with these creeks, the ocean, and the small dune restoration site on the beach near North Creek. The DSBGP also accounts for Native Plant Resource Zones within these areas and gives preference to those areas of native or ornamental landscaping where picnicking and other forms of recreational use occur. This would include landscaped areas adjacent to the two creeks, a butterfly garden, and other pockets of vegetation separating use areas or providing visual screening where existing ornamental vegetation could be replaced with native plants. The non-native landscaped areas, however, are intended to provide supplemental habitat to allow roosting and potential nesting of birds, as well as habitat for terrestrial species (DSBGP, 2003).

To implement the overall framework listed above, the DSBGP has broad-based policies that provide implementing the diverse missions of resource stewardship, interpretation, and visitor use and services. Accordingly, as part of the General Plan and EIR, goals and policies pertaining to natural resources including biological resources are considered. Applicable goals and policies from the DSBGP are listed below:

Goal NR 1: The habitat quality and size of natural resource areas within the park are not reduced for the purpose of increased recreational use, and opportunities to improve and enlarge natural resource areas are evaluated for inclusion in the design and construction of all park improvement projects.

Guideline NR 1.1: Provide special protection for federal and state listed species, as well as other exceptional natural resources, including species of special concern as designated by the CDFG and protected by federal law.

Guideline NR 1.2: Collaborate with local, state, and federal agencies involved with habitat management in the southern Orange County region to assure that habitat management at Doheny State Beach is consistent with these efforts. Resource specialists should be used to document the park's natural resources and monitor changes in the number of species



commonly present, habitat quality, and distribution of resources, for the purpose of recommending methods to improve the health of the park's ecosystems. This would include use of native landscape specialists to recommend plant materials suitable for improving terrestrial wildlife habitats within the park.

Guideline NR 1.3: Aquatic habitats within the creeks and offshore area should be further evaluated to determine baseline habitat conditions, provide recommendations for enhancing habitat for aquatic species and birds that are dependent on aquatic environments, and to establish a program for monitoring habitat changes.

Guideline NR 1.4: Opportunities to enhance nesting, roosting, and foraging opportunities for sensitive wildlife species shall be considered as a part of park management and maintenance activities and improvement projects.

Goal FAC 3: The siting, design, and materials used for park improvements demonstrates sensitivity to natural site conditions and the Earth's diminishing resources.

Guideline FAC 3.1: Considerations during design of park improvement projects should include evaluation of environmentally preferred options to traditional building materials and techniques. Where feasible, park projects should reduce both the natural resource impacts that result from construction, as well as the energy and other resources that would be consumed in maintaining park buildings and grounds.

Goal COR 1: Park creeks and the ocean are protected, rehabilitated where feasible, and managed to improve habitat conditions for native wildlife and fish.

Guideline COR 1.1: Aquatic habitats within the creeks and offshore area should be further evaluated to determine baseline habitat conditions, provide recommendations for enhancing habitat for aquatic species and birds that are dependent on aquatic environments, and establish a program for monitoring and documenting habitat changes.

Goal COR 2: The natural habitat value of the park's creeks and ocean resources continues to be a principal interpretive theme in educating park users regarding the sensitivity of these resources to human impact.

Guideline COR 2.1: Provide an expanded Visitor Center with additional multi-media resources for visitors to better understand their role in protecting local water quality. This could include computer terminals linked to local water quality agencies and organizations.

Local

City of Dana Point General Plan

The City of Dana Point General Plan provides a framework for development within the City and includes goals and policies pertaining to the preservation of biological and natural resources. The General Plan recognizes that portions of the City consist of fragile coastal beaches, bluffs, hillsides, and canyons which are sensitive to land development. Additionally, the General Plan calls attention to conservation of the shoreline areas from north of Dana Point Harbor and extending along Doheny State Beach, which provide a habitat for a wide variety of marine animals and plants and have been designated by the State of



California as Marine Life Refuges. Accordingly, the preservation of these area is important to the City as is reflected in the General Plan which states that one of its purposes is, "Preservation of developed and undeveloped portions of the City which have cultural, social and natural resource value to the City and its citizens." The General Plan also contains goals and policies to further this purpose, which are listed below:

CONSERVATION AND OPEN SPACE ELEMENT

Goal 3: Conserve significant plant and animal communities

- Policy 3.1:** Environmentally sensitive habitat areas, including important plant communities, wildlife habitats, marine refuge areas, riparian areas, wildlife movement corridors, wetlands, and significant tree stands shall be preserved. Development in areas adjacent to environmentally sensitive habitat areas shall be sited and designed to prevent impacts which would significantly degrade those areas through such methods as, the practice of creative site planning, revegetation, and open space easement/dedications, and shall be compatible with the continuance of those habitat areas. A definitive determination of the existence of environmentally sensitive habitat areas on a specific site shall be made through the coastal development permitting process.
- Policy 3.2:** Require development proposals in areas expected to contain important plant and animal communities and environmentally sensitive habitat areas, such as but not limited to marine refuge areas, riparian areas, wildlife movement corridors, wetlands, and significant tree stands, to include biological assessments and identify affected habitats.
- Policy 3.3:** Encourage retention of natural vegetation and require revegetation of graded areas.
- Policy 3.7:** Environmentally sensitive habitat areas (ESHA) shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.
- Policy 3.8:** Development in areas adjacent to parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas through, among other methods, creative site planning and minimizing visual impacts, and shall be compatible with the continuance of those parks and recreation areas.
- Policy 3.9:** Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Goal 4: Encourage the preservation of the natural environmental resources of the City of Dana Point.



Policy 4.4: Preserve, maintain and, where feasible, enhance and restore marine resource areas and coastal water. Special protection shall be given to areas and species of special biological or economic significance.

Policy 4.9: Encourage preservation of significant natural areas as cohesive open space.

City of Dana Point Local Coastal Program

Local Coastal Programs (LCPs) are used by local governments to guide development within the coastal zone, in partnership with the Coastal Commission. LCPs contain the ground rules for future development and protection of coastal resources in the 76 coastal cities and counties. The LCPs specify appropriate location, type, and scale of new or changed uses of land and water. Each LCP includes a land use plan and measures to implement the plan (such as zoning ordinances). Prepared by local government, these programs govern decisions that determine the short- and long-term conservation and use of coastal resources. While each LCP reflects unique characteristics of individual local coastal communities, regional and statewide interests and concerns must also be addressed in conformity with Coastal Acts and policies. Following adoption by a city council or county board of supervisors, an LCP is submitted to the Coastal Commission for review for consistency with Coastal Act requirements (California Coastal Commission, 2017). The City of Dana Point as adopted an LCP which has been certified by the California Coastal Commission.

4.3.3 SIGNIFICANCE CRITERIA

Significance Criteria under CEQA

Appendix G of the State CEQA Guidelines contains the Initial Study Checklist form, which includes questions related to biological resources. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this Section. Accordingly, a project may create a significant environmental impact if one or more of the following occurs:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;



- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Methodology and Assumptions

The proposed Project and associated project design features (PDFs) are evaluated against the aforementioned significance criteria, as the basis for determining the level of impacts related to biological resources. In addition to PDFs, this analysis considers existing regulations, laws and standards that serve to avoid or reduce potential environmental impacts. Where significant impacts remain, feasible mitigation measures are recommended, where warranted, to avoid or lessen the Project's significant adverse impacts. Further details regarding methods are provided in [Appendix 10.4](#) of this EIR.

Project Design Features

The Project's potential impacts concerning biological resources would be avoided or reduced through the following PDFs:

- The subsurface intakes are the preferred ocean water intake method by the SWRCB's Ocean Plan Amendment, as they avoid marine life impingement impacts;
- The Project's brine discharge will utilize an existing ocean outfall, rather than a new ocean outfall, which reduces construction and operational impacts, as well as allows for the brine to be blended with existing outfall wastewater discharge, which is the preferred method of brine discharge by the SWRCB's Ocean Plan Amendment;
- Project facilities are sited at existing developed or disturbed sites, avoiding impacts to sensitive natural habitat;
- Pipeline installation will utilize trenchless construction to avoid potential impacts to San Juan Creek and San Juan Creek Lagoon; and
- Slant well construction drill rig work areas are set back from the beach to minimize potential conflicts with shorebirds.

4.3.4 CONSTRUCTION AND OPERATIONAL IMPACTS TO BIOLOGICAL RESOURCES

Impact 4.3-1: **Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? *Level of Significance: Less Than Significant Impact with Mitigation.***

Construction

Subsurface Intake Wells

The Project has been specifically designed to avoid or minimize potential impacts to biological resources, including construction and operation. From a construction perspective, the seawater intake system (consisting of subsurface intake slant wells launched from a centralized below-ground vault, referred to as a "pod" or "cluster") has been designed to avoid marine wildlife impacts by using subsurface intake



technology (slant wells), that draw ocean water from below the ocean floor, avoiding direct impacts to marine life during construction and operation. The slant wells are installed at a shallow angle to horizontal, extending out beneath the ocean floor. The onshore launch point (the pod, or cluster) has been moved off the beachfront at DSB, onto the developed landscaped picnic areas (for Pods A, B and C) and developed campground areas (for slant well pods D and E). There are no sensitive habitats or species anticipated to be affected by slant well construction in these locations, other than western snowy plover, discussed further below.

Western Snowy Plover

As noted above, no Special Protection Zones or critical habitat is listed for western snowy plover (WSP) at DSB or Capistrano Beach Park. However, WSP is known to occasionally forage and roost at DSB. Project construction will include Section 7 consultation with USFWS to determine appropriate minimization and avoidance measures. If WSP forage or roost at DSB during the off-season during slant well construction, the birds will typically adapt to local conditions and relocate if needed. DSB is an active public recreation area, and given that the slant well drill rig work areas have been set back away from the beach, there are no significant impacts anticipated to WSP during construction. The area will be monitored during construction (see Mitigation Measure BIO-1) for wintering birds, as well as nesting pairs, with appropriate measures taken as determined by CDFW and USFWS. The drill rig work areas will be screened for noise and light attenuation (as discussed in [Section 4.10, Noise and Vibration](#), and [Section 4.1, Aesthetics, Light & Glare](#)).

Slant Well Vibration Effects Upon Marine Mammals

As discussed in [Section 4.10, Noise](#), the slant well drilling process generates a nominal amount of vibration. The vibration occurs beneath the ocean floor, and the drilling process itself is relatively quiet through the dual rotary drilling process. Similar slant well drilling vibration was evaluated for the proposed slant wells in Marina, California, which found that the slant well construction does not generate significant marine noise or vibration and would not have any significant impacts on marine mammals.⁶

Construction of DSB Electrical Control Building

Slant wells at DSB would require an electrical control building, to be sited as part of final design and permitting with State Parks and applicable regulatory agencies. The building could be located anywhere in the DSB, either North Day Use Area or DSB campground. State Parks staff have indicated a preference for siting the electrical control building at the northwest corner of the DSB campground, in an area that is already disturbed and developed with ancillary DSB uses, including the



General Location of Electrical Control Building and SOCWA Vault

⁶ Detailed analysis of potential slant well hydro-acoustic vibration for a similar project in Marina, California CA concluded that “any of the drilling noise reaching overlying ocean waters is expected to be below background underwater noise levels and would have no effect on any marine organisms including special-status species” (CalAm Monterey Peninsula Water Supply Project Draft EIR/EIS, January 2017, page 4.5-48).



amphitheater, restrooms, campground host and an existing SOCWA vault providing access to the SJCOO. This area is adjacent to the DSB “Environmental Enhancement Area” located along the south bank of San Juan Creek Lagoon. This area would be avoided for siting any new project facilities, as part of final design and regulatory permitting (see Mitigation Measure BIO-2).

Well Development

Prior to full operation and pumping of raw seawater to the desalination facility, the well heads would require well development. This is the process in which drilling material is cleared from the well casing and remaining loose sediments are flushed and disposed of offsite. Some of the clarified water used to flush the well casing would be pumped back to the Ocean. Within the rip-rap jetty between Doheny Beach State Park and San Juan Creek, there is an existing 40-foot diffuser pipe that was used for testing a previously developed well. The pipe is still in place and could be used to develop the wells within this area of the park. However, the District’s preferred method for well development discharge would be to tie into the existing SJCOO connection located at the DSB campground, which would then allow well development water to discharge through the existing SJCOO diffusers. This location (the existing SJCOO vault) is in the same area as the proposed electrical building for the DSB slant wells, in an existing disturbed/developed portion of the DSB campground. Pre-construction surveys and siting would ensure that facilities at this location avoid sensitive habitat along the banks of San Juan Creek lagoon, consistent with the requirements of State Parks and applicable regulatory agencies (see BIO-2).

If the SJCOO connection is not feasible, then the existing jetty diffuser would be used with appropriate measures pursuant to RWQCB permitting requirements, including using a baker tank to settle out solids before discharge. Alternately, if these solutions cannot be implemented in a manner consistent with regulatory requirements, the District has designed the desalination facility site to accommodate temporary Fe/Mn treatment, as described in [Appendix 10.1, Preliminary Design Report](#). Please see [Section 4.8, Hydrology and Water Quality](#) for additional information.

Accidental Release of Hazardous Materials

Accidents resulting in spills of fuel, lubricants, or hydraulic fluid from equipment could occur during proposed drilling operations. Based on the history for this type of work, accidental leaks and spills of large volumes of hazardous materials or wastes containing contaminants during onshore construction activities have a very low probability of occurring because large volumes of these materials would not be used or stored at the drilling locations. Additionally, compliance with SWPPP and BMP requirements during construction will further reduce the likelihood of direct or downstream impacts to any sensitive habitat or sensitive species. Please see [Section 4.8, Hydrology and Water Quality](#) for additional information.

Southeast Intake Wells

Refer to discussion above for the subsurface intake wells at DSB. Similarly, there is no sensitive habitat or species known to occupy Capistrano Beach Park, other than migratory birds, for which the Project would comply with MBTA requirements (see Mitigation Measure BIO-1). Western snowy plover is not known to winter or nest at Capistrano Beach Park, which has a very narrow beach section in this area.

Well development in this location (for pods F, G or H) would require installation of an approximate 40-foot diffuser pipe within the rip-rap structure between the ocean and the Capistrano Beach Park property. Installation of the pipe would result in temporary impacts to some of the invertebrate species that may



live within the rip-rip habitat including sea anemones, turban snails, chitons, mussels, sea urchins, sea stars, barnacles, and crab habitat. Rip-rap also could be used by the black abalone which is a Federally-listed Endangered species; however, the likelihood of this species occurring is rare. Upon completion of construction activities, disturbances would cease and the pipe would be left in place. The pipeline would also serve as additional habitat within the rip-rap and could be used by intertidal species. Therefore, impacts in this regard would be less than significant.

Prior to construction of any slant wells at Capistrano Beach Park, the District will obtain groundwater samples via nearshore (onshore and/or offshore) geotechnical borings to refine anticipated slant well water quality to assist in final engineering of the desalination facility pretreatment processes. In addition, this pre-construction raw water quality analysis will determine the extent to which slant wells at Capistrano Beach Park would draw in “ancient” marine water with elevated iron and manganese, similar to that found offshore at San Juan Creek. If found to have elevated levels, the District’s preference would be, similar to slant wells at DSB, to provide sufficient wellhead treatment via Baker tanks (to allow solids to settle), and then discharge the well development water through the new diffuser along the shoreward side of Capistrano Beach Park. Alternately, if the diffuser with Baker tanks cannot meet regulatory requirements, the District could run a temporary discharge line to convey the well development water to the existing SJCOO connection at DSB campground (along Park Lane Road, potentially concurrent with trenching for the raw water conveyance line that would run within Park Land Road, discussed below). If neither of these solutions can satisfy applicable regulatory requirements, the District will convey the well development water to the desalination facility via the raw water conveyance pipeline and use interim modular pretreatment units to remove the elevated levels of iron and manganese (refer to Mitigation Measure BIO-3). In consideration of Project Design Features, existing regulatory programs and EIR mitigation measures, impacts will be reduced to less than significant levels.

Raw Water Conveyance Alignments – North and South

All surface disturbances needed for the construction of the raw water conveyance system that would conduct the seawater to the desalination facility would occur in previously disturbed urban areas and existing right of ways. These areas do not contain sensitive habitat, and do not support any sensitive species. Where the raw water conveyance pipeline traverses sensitive habitat, such as San Juan Creek Lagoon (within DSB) or San Juan Creek (for the Northern conveyance alignment), the District will utilize trenchless construction to avoid significant impacts. No significant impacts are anticipated in this regard.

Desalination Facility

The desalination facility site has been highly modified and is currently developed with limited landscaped areas, hardscape, dirt lots, parking lots, and buildings. The adjacent South Drainage Swale, a dirt channel with limited vegetation, would be traversed in the existing access road or via trenchless construction. No significant impacts to biological resources are anticipated due to desalination facility construction.

Construction of the desalination facility would use some equipment that use fuels and solvents and would use other lubricants and chemicals commonly used for construction activities. If such materials are spilled they could have an effect on sensitive species and habitat in downstream areas. Construction-related water quality and accidental spills are discussed in Section 4.8, Hydrology and Water Quality, and were found to be reduced to less than significant levels with mitigation incorporated. Therefore, impacts would be less than significant and no additional mitigation is required.



Brine Disposal System

The Project would use the existing SJCOO for brine disposal, which is currently used for the discharge of treated effluent. No modifications are anticipated to be necessary to the existing SJCOO diffusers, and no marine construction is otherwise anticipated. The existing SJCOO runs beneath the site, with a proposed tie-in located within the desalination facility site (see discussion above). Therefore, the impact would be less than significant and mitigation is not required.

Operations

Subsurface Intake Wells

As discussed above, the seawater intake system would be located under the offshore alluvial channel extension of San Juan Creek and fully buried within the subsurface of the ocean floor. This is the preferred method for ocean water intake by regulatory agencies and the environmental community, and is consistent with the OPA, avoiding marine life impingement and entrainment associated with screened ocean intakes. The feedwater would infiltrate to the seawater intake systems through the overlying material without any disturbance to the substrate habitats. Therefore, operation of the seawater intake system would not result in impacts to candidate, sensitive, or special-status species (see discussion below regarding San Juan Creek Lagoon water levels).

The slant well vaults will be buried, below ground, with an access cover, and will not generate substantial noise or otherwise affect potentially nearby sensitive species such as shorebirds. Periodic maintenance would be scheduled during off-season for bird nesting, if sensitive bird species are nesting near the slant well vaults. If emergency maintenance is necessary, the District would follow standard protocols for coordinating maintenance work with State Parks and other agencies as applicable (including compliance with lease/encroachment permit conditions from State Parks, and compliance with MBTA requirements). Since all slant well vaults within DSB are set back from the beach and avoid sensitive habitat, potential long-term operations and maintenance impacts are avoided. In consideration of the foregoing, potential impacts will be reduced to less than significant levels.

Lagoon Water Levels

The Phase I slant well pumping, if all slant wells are located at DSB, could result in lowering the San Juan Creek Lagoon water level by approximately 0.14 to 0.26 feet (1.68 inches to 3.12 inches), as discussed further in [Section 4.8, Hydrology and Water Quality](#), and [Appendix 10.1](#). This variation is within normal lagoon water level variations as shown in [Appendix 10.4.2](#).⁷ Lagoon levels would be unaffected by the Project during periods where the lagoon berm is breached by storm events and the lagoon is open to the ocean (in which case tidal influences affect and elevate lagoon water levels). [Appendix 10.10.1](#), Figure 9 shows that the Phase I slant well-pumping approaches equilibrium (the point at which raw water intake salinity is consistent and therefore the percentage of inland groundwater intake is also consistent, at an estimated 6.6%) after approximately 10 months, and then achieves full equilibrium after approximately

⁷ Initial slant well pumping until salinity stabilizes will draw a higher percentage of inland groundwater, as shown in Figures 9 and 10 of [Appendix 10.10.1](#). Even if initial slant well pumping should cause a temporary greater drop in local groundwater levels, and if the groundwater level drops below the bottom of the lagoon, the lagoon water levels then are controlled by upstream flows into the lagoon and lagoon seepage rates, and would be unaffected by further drops in local groundwater. Portions of the lagoon with fine silts and clays would limit seepage, and in any case would be unaffected by slant well pumping.



four years of pumping. Therefore, this impact is not considered significant for lagoon habitat, or for the southern steelhead and its upstream spawning patterns.

The District will monitor lagoon levels using existing monitoring wells after the first slant well is installed and begins pumping. During this period, prior to installing the subsequent slant wells for Phase I (up to 5 MGD of product water), the District will utilize slant well construction and groundwater monitoring data to refine the groundwater model to assist in siting and phasing of future slant wells (which could be launched from the same vault/pod, or from a new vault/pod, as determined by the District). This groundwater monitoring and well phasing will enable the District and regulatory agencies to monitor well siting and phasing to ensure that lagoon water levels are not significantly impacted relative to the southern steelhead (refer to Mitigation Measure BIO-4).

Southeast Intake Wells

Refer to impact analysis above. Operation of slant wells at Capistrano Beach Park will not have any impacts upon San Juan Creek Lagoon, since this area is hydrologically discontinuous with the San Juan Basin.

Raw Water Conveyance Alignments – North and South

After completion of construction and during operation, the raw water conveyance system would not result in any impacts to any sensitive habitat or sensitive species because it would be located underground. The conveyance structure may require routine maintenance, but these activities would be consistent with standard District facility maintenance needed to keep the existing utility running. Routine maintenance would not typically require the use of heavy equipment, and because the conveyance system would be located within existing right-of-ways and previously disturbed areas, it would not result in the disturbance of any sensitive animals. Impacts would be less than significant and mitigation is not required.

Desalination Facility

Operation of the desalination facility would not have an effect on sensitive animals or their habitat. As discussed above, the Project site and immediately surrounding areas do not contain any sensitive animals and do not contain native habitat that would be used by such species. Additionally, all uses associated with the desalination facility would be contained within the desalination facility site, and aside from the brine disposal system, discussed below, the desalination facility does not include any off-site operations that would affect sensitive habitats or species. Therefore, impacts would be less than significant and mitigation would not be required.

Concentrate (Brine) Disposal System

There would be no operational impacts associated with ongoing maintenance or repair associated with the Project's brine disposal system, as the Project would use the existing SOCWA SJCOO for brine disposal. The Project's concentrate discharge would be blended with the existing treated wastewater discharged through the SJCOO, which is the preferred method for desalination brine disposal pursuant to the OPA and the broader environmental regulatory community.

Tables 4.3-1 above indicates potential presence of sensitive marine species in the Project area. Some of these species may be present in the vicinity of the brine discharge from the existing SJCOO diffusers. However, as discussed further below, in Appendix 10.4.1, Appendix 10.11, and in Section 4.8, Hydrology and Water Quality, the Project's brine discharge will meet Ocean Plan Amendment water quality



requirements, meaning that within 100m (328 feet) of any diffuser, the brine discharge will be within 2 ppt of ambient ocean water, which is well within the normal variation of ocean salinity, and is therefore not anticipated to have any significant impact on sensitive marine species.

Appendix 10.11 includes detailed brine modeling for the Project under various scenarios, with the Phase I Project generating up to approximately 5 MGD of brine.⁸ The resultant brine discharge would meet the strict OPA requirements of no more than a 2 ppt increase at 100m. Based on modeling, the most likely project discharge scenarios would result in a buoyant discharge (per Mitigation Measure HWQ-3, the District commits to a minimum SJCOO wastewater flow of at least 0.35 MGD to ensure OPA compliance (Mitigation Measure HWQ-3), and it is only in this rare condition of minimal wastewater flow that the combined discharge of Project plus SJCOO flows would be dense, as detailed in Table 4.8-4 of Section 4.8, Hydrology and Water Quality). In most cases, the buoyant plume will be trapped below the sea surface and spread horizontally below the thermocline⁹ and become further diluted as it spreads. Occasionally the partially diluted discharge plume may reach the sea surface. It is unlikely that locally increased salinity below the sea surface, or on rare occasion at the surface, would directly affect any of the threatened, endangered or special-status species identified in the Project site, in the lagoon, on the beach, or the offshore environment. If the plume reaches the surface, the discharge could displace forage fish in the immediate vicinity of the discharge. However, some fish species such as topsmelt are adapted to variable salinity, and are unlikely to be negatively affected by the discharge. Those candidate, sensitive, or special-status species that may currently use the Project site for foraging, such as California brown pelican or California least tern could continue to do so in the nearby marine environment. Elevated surface salinity may shift the location of adult and juvenile forage fish, but would not result in a reduction of the food source in the area.

Dense (negatively buoyant) discharges would sink, and therefore could result in exposure of seafloor habitat to higher-than-ambient salinities, with the size of the BMZ dependent on the discharge mixing scenarios. For the likely scenarios evaluated in Appendix 10. 4.1 and Appendix 10.11 as summarized in Table 4.8-4 in Section 4.8, the plume would be buoyant with no impact to the benthic environment; in the highly unlikely worst-case scenario¹⁰ of severely limited wastewater flows of 0.35 MGD available for blending, an estimated 22.53 acres of ocean floor could be affected by elevated salinity levels. As shown in Table 11 of Appendix 10.4.1, the buoyant plumes (most likely scenarios) would have no acute toxicity impact to the benthic environment. The highly unlikely scenario of minimum wastewater flow of 0.35 MGD yields an estimated benthic area exposed to acute toxicity of only 0.96 acres. However, no candidate, sensitive, or special-status species associated with the seafloor habitat were identified in the vicinity of the SJCOO. In addition, this “minimum wastewater” scenario (identified as Scenario 2 in Table 4.3-3 below), is even less likely to persist for long, as even a small increase in wastewater flow would further dilute the salinity, and more typical flows would cause the discharge to be buoyant.

⁸ The actual operational capacity may be less depending on final design and other operational considerations. In addition, 5 MGD is the projected average annual daily production, with actual daily production varying by an estimated 10%, up to 5.5 MGD (to account for down time), with annual production averaging no more than 5MGD. The EIR has modeled production capacities up to 15 MGD, showing that even at higher capacities, the Project would be consistent with the Ocean Plan Amendment.

⁹ The “thermocline” is an abrupt change in water temperature between warmer surface water and cooler deeper waters, creating a physical mixing barrier to water moving vertically through the water column.

¹⁰ 0.35 MGD is considered a “highly unlikely” and worst-case scenario, given that current wastewater flows through the SJCOO range from 7.05 to 39.7 MGD over the last 8 years, and the District’s contribution of over 1.5 MGD (on an average basis), exceed its UWMP recycled water demand forecast of 1,300 AFY.



As discussed further below in Ocean Plan Compliance, the Project's brine discharge would create "turbulence mortality" (physical damage to ichthyoplankton organisms due to the discharge velocity creating "shearing stress"). Using available nearby ichthyoplankton data, the "likely" and "most likely" discharge scenarios (assuming existing SJCOO diffusers) would result in zero additional marine life impacts, and the "less likely" and "rare" discharge scenarios would result in a slight ichthyoplankton impact, represented by "entraining"¹¹ an additional 3.9 to 7.75 MGD of ocean water in the immediate vicinity of the existing SJCOO diffusers. The organisms entrained (affected) by this nominal turbulence mortality are larval and eggs of various marine species. Even if this ichthyoplankton includes larvae or eggs of sensitive marine species, this is not considered a significant environmental impact and is not anticipated to impact sensitive marine species populations ([Appendix 10.4.1](#), page 36).

Therefore, although the brine discharge would elevate salinity in the immediate vicinity of the SJCOO diffusers, and may (in one highly unlikely discharge scenario) create a temporary increase in benthic salinity, the impacts would not result in a significant impact to threatened, endangered, or special-status species. Because there is no sensitive habitat at the outfall location and due to the mobility of the marine animals, candidate, sensitive, or special-status species would be able to move out of, or avoid the area. Therefore, operation impacts associated with brine disposal and sensitive species identified by CDFW, USFWS or NMFS, would be less than significant and mitigation is not required.

Ocean Plan Compliance

In addition to water quality requirements, the Ocean Plan Amendment (OPA) requires that a Project address the potential impacts it has on "all forms of marine life" due to the potential adverse effects from elevated salinity or turbulence mortality. As noted above, typical Project scenarios will not impact benthic salinity levels nor create incremental additional turbulence mortality. The "less likely" scenario (Scenario 5 from Table 12 in [Appendix 10.4.1](#)) shows that the turbulence mortality could produce as high as 6.93 acres of equivalent open ocean habitat needed to produce the entrained larva (this is referred to as the "Area of Production Foregone," being the acreage of marine habitat needed to produce sufficient habitat to sustain a representative range of marine species that produces equivalent quantity of entrained larva). However, the OPA allows for mitigation scaling, which generally allows for 1 acre of higher production coastal habitat to offset 10 acres of open ocean larval impact (see [Appendix 10.4.1](#), page 43). Therefore, the conservative (high) estimate of turbulence mortality impact of 6.93 acres, with scaling applied, would result in a coastal habitat mitigation requirement of 0.693 acres. Even if the benthic area associated with acute toxicity were to be included in OPA habitat calculations, the worst-case (highly unlikely condition) of 22.53 acres would translate to only 2.253 acres of equivalent coastal acreage. Furthermore, it is not clear if the OPA habitat mitigation policies apply to projects that comply with the OPA "technology forcing" preference for subsurface intakes and commingled brine discharge, as is the case with the Project. The ultimate OPA compliance decision will be rendered by the RWQCB and Regional Board in consultation with the Coastal Commission and State Lands Commission. The District will meet applicable OPA

¹¹ Water "entrained" by a diffuser is different than an open ocean intake which "entrains" marine life by drawing the marine life into the screened ocean intake. With turbulence mortality, water that is "entrained" by the diffuser jets refers to ocean water in the immediate vicinity of the diffuser jets whereby ichthyoplankton would be subject to mortality due to the diffuser jet velocity. Mortality here is defined by the value of LC10, being the critical threshold above which sub-lethal or greater injury may occur to marine organisms, generally defined as 75 dynes/cm². A "dyne" is defined as the standard centimeter-gram-second unit of force, equal to the force that produces an acceleration of one centimeter per second per second on a mass of one gram. See [Appendix 10.11](#), pages 79-93 for detailed discussion.



requirements as determined by the respective regulatory agencies. Should this involve providing OPA habitat mitigation, the District would do so (see Measure OPA-1, below).

With implementation of Project Design Features, relevant regulatory requirements, and mitigation measures, no significant impacts are anticipated with respect to candidate, sensitive, or special status species in local or regional plans, policies, or regulations.

Table 4.3-3. Area of Production Foregone (APF) estimates

Scenario	Area to Exposed to Acute Toxicity (acres)	Entertainment Rate (mgd) with Diffuser Shear Stress >LC-10	Larval Duration (days)				
			5	10	20	30	38
			Area of Production Foregone (acres)				
1	1.17	0	-	-	-	-	-
2	0.96	0	-	-	-	-	-
3	0	0	NA	NA	NA	NA	NA
4	0	0	NA	NA	NA	NA	NA
5	0	3.90*	0.91	1.82	3.65	5.47	6.93
6	0	7.75*	1.81	3.62	7.25	10.87	13.77
7	0.8	0	-	-	-	-	-
8	0.55	0	-	-	-	-	-
9	0	6.07	1.42	2.84	5.68	8.52	10.79
10	0	0.56	0.13	0.26	0.52	0.79	1.00
11	0	21.00*	4.91	9.82	19.64	29.46	37.32
12	0	34.50*	8.07	16.13	32.26	48.39	61.30

* = incremental increase in shear stress as a result of commingling brine in a buoyant discharge.
Note: APF calculated as the product of Probability of Mortality (PM) and the source water area, based on an alongshore current of 0.2 ft/s (Jenkins 2016). Note: For negatively buoyant discharges “—” indicates the APF value is equal to the area of exposure to acute toxicity. For scenarios 3 and 4, “NA” indicates that neither shear stress nor salinity exposure will result in loss to ichthyoplankton species. Value used for APF evaluation presented in red.

Mitigation Measures

BIO-1

Preconstruction Nesting Bird Survey. All construction activities shall comply with the federal MBTA of 1918, and California Fish and Game Code Sections 3503, 3503.5, 3511 and 3513. The MBTA governs the taking and killing of migratory birds, their eggs, parts, and nests and prohibits the take of any migratory bird, their eggs, parts, and nests. Compliance with the MBTA shall be accomplished by following the guidelines contained therein. Construction-related tree removal, if any, shall be conducted between September 1 and December 31. If construction occurs inside the nesting season between January 15 and August 31 (this time frame includes both the passerine and raptor nesting season), the Designated Biologist (DB) [to be approved by the District subject to confirmation by State Parks and CDFW] shall conduct a pre-construction nesting avian species clearance survey in accordance with the following guidelines:

- At least one pre-construction survey shall be conducted within 72 hours preceding initiation of vegetation removal and construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed



three weeks in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.

- b) The survey shall cover all potential nesting habitat and substrate, including the beach, on the Project site and within 500 feet of its perimeter.
- c) If the DB does not find any active nests, the construction work shall be allowed to proceed. The DB conducting the clearance survey shall document a negative survey with a report indicating that no impacts to active avian nests would occur.
- d) If the DB finds an active nest during the survey and determines that the nest may be impacted, the DB shall establish a no-disturbance buffer zone (protected areas around the nest). The size of the buffer shall be determined by the DB in consultation with the District or its designee (in coordination with CDFW and USFWS), and shall be based on the nesting species, its sensitivity to disturbance, and expected types of disturbance. These buffers are typically 300 feet from the nests of non-listed passerine species and 500 feet from the nests of raptors and listed species.
- e) Any active nests observed during the survey shall be mapped on an aerial photograph using GPS.
- f) If active nests are detected during the survey, the Designated Biologist (DB) shall monitor all nests with buffers at least once per week, to determine whether birds are being disturbed (distress or other disruption of nesting activity). Activities that might, in the opinion of the DB, disturb nesting activities (e.g., excessive noise, exposure to exhaust), shall be prohibited within the buffer zone. If signs of disturbance are observed, the DB shall immediately implement adaptive measures to reduce disturbance. These measures may include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity, reducing speed limits, replacing and updating noisy equipment, queuing trucks to distribute idling noise, locating vehicle access points and loading and shipping facilities away from noise-sensitive receptors, reducing the number of noisy construction activities occurring simultaneously, placing noisy stationary construction equipment in acoustically engineered enclosures and/or relocating them away from noise-sensitive receptors, and/or reorienting and/or relocating construction equipment to minimize noise at noise-sensitive receptors. The DB shall implement these or other appropriate measures to ensure that no significant impacts occur to nesting birds pursuant to requirements of the MBTA.
- g) If active nests are detected during the survey, the DB shall monitor the nest until it is determined that nestlings have fledged and dispersed or the nest is no longer active.
- h) Only vegetation removal and construction activities (if any) that have been approved by a Biological Monitor (BM) shall take place within the buffer zone



until the nest is no longer considered active, consistent with MBTA requirements, such that nesting birds are not disturbed.

- i) The DB shall serve as a construction monitor when construction activities take place near active nest areas to ensure that no significant indirect impacts on these nests occur, through enforcing measures noted above.
- j) Prior to the start of any pre-construction site mobilization, the District shall provide applicable regulatory agencies with a letter-report describing the findings of any preconstruction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor(s); and a list of species observed. If active nests are detected during the survey, the report shall include a map or aerial photo identifying the location of the nest and shall depict the boundaries of the proposed no disturbance buffer zone around the nest. All impact avoidance and minimization measures related to nesting birds shall be included in the monitoring plan.

BIO-2 DSB Facility Siting. Any facilities sited within DSB shall be reviewed and approved by State Parks and applicable regulatory agencies prior to construction, demonstrating avoidance of sensitive habitat, particularly with respect to the potential well development discharge connection to the existing SOCWA SJCOO vault and the proposed electrical control building.

BIO-3 Preconstruction Groundwater Quality Data. Prior to construction of any slant wells at Capistrano Beach Park, the District or its designee shall obtain additional nearshore groundwater quality data (whether onshore or offshore) to refine the anticipated sourcewater quality for the purpose of pretreatment and characterization of well development discharge water quality. Should the water quality data indicate elevated levels of iron or manganese such that the well development water would not meet applicable water quality requirements, the District will either provide suitable onsite treatment (such as use of Baker tanks to settle out solids), convey the well development water to the existing SOCWA vault at DSB campground, or convey the raw water to the desalination facility for supplemental pretreatment via temporary modular treatment units or equivalent (Capistrano Beach Park wells only).

BIO-4 DSB Groundwater Monitoring (for SJC Lagoon). The District shall monitor San Juan Creek Lagoon water levels following commencement of pumping for the first slant well installed at DSB. The monitoring reports shall be submitted monthly to the Coastal Commission and NOAA NMFS (at minimum), and shall be used to site any future slant wells at DSB, in consultation with the Coastal Commission and NOAA NMFS, such that Phase I slant wells at DSB do not create a significant impact to San Juan Creek Lagoon water levels relative to southern steelhead trout, as determined by NOAA NMFS.

OPA-1 OPA Compliance. Prior to issuance of an NPDES Permit, the Project will require an OPA compliance determination from the SDRWQCB and SWRCB in consultation with the State Lands Commission and California Coastal Commission. Should these agencies determine that marine life “mitigation” is required for the Project, the



District shall implement required mitigation. One such potential mitigation site would be the San Juan Creek Lagoon, as part of the San Juan Creek Restoration Project outlined in SDRWQCB Resolution NO. R9-2015-0041, adopted June 24, 2015.

Impact 4.3-2: Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service? *Level of Significance: Less Than Significant Impact with Mitigation.*

The Project would not directly impact any riparian habitat or sensitive natural community. The Project site is adjacent to San Juan Creek, which contains riparian habitat and is designated Critical Habitat for the southern steelhead trout (*Oncorhynchus mykiss irideus*). The southern steelhead trout is federally listed as endangered and is a California Species of Special Concern. Additionally, as discussed above, the nearby offshore areas are known to contain “Habitat Areas of Particular Concern,” including kelp beds and rocky reef habitat. The nearest Marine Protected Area is the Dana Point State Marine Conservation Area (SMCA) located immediately north of Dana Point Harbor, approximately 1 mile up the coast from the SJCOO discharge. Although these protected habitats are identified, the Project has been designed to eliminate impacts to all sensitive habitat areas, as discussed further below. Refer to Impact 4.3-1 above for additional discussion regarding the Project’s construction-related and operational impacts to biological resources.

Construction

Subsurface Intake Wells

There is no riparian habitat or sensitive natural community directly affected by slant well construction at DSB. As discussed above under Impact 4.3-1, construction of appurtenant facilities such as the SJCOO vault connection and the electrical control building would be sited to avoid the sensitive habitat along the south bank of San Juan Creek (see Mitigation Measure BIO-2). Refer to discussion above under Impact 4.3-1 regarding construction-related water quality.

Southeast Intake Wells

Refer to Subsurface Intake Wells discussion above. No riparian habitat or other sensitive natural community would be affected by slant well construction at Capistrano Beach Park.

Raw Water Conveyance Alignments – North and South

Construction of the raw water conveyance system would avoid direct impacts to San Juan Creek and San Juan Creek Lagoon through trenchless construction. The pipelines would be constructed in heavily disturbed areas in existing rights-of-way and developed areas. As such, no riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS would be affected during construction of the conveyance system. No mitigation is required.

Desalination Facility Site

The desalination facility site does not contain any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS. The Project site has been highly modified and is currently developed with hardscape, a few dirt lots largely void of vegetation,



metal storage containers, and buildings. The area is used for storage and as a light industrial park and contains numerous vehicles and heavy equipment. The Project would be constructed within these same heavily disturbed areas, regardless if it is constructed to the local 5 MGD capacity size, or the 15 MGD regional capacity size. The Project site is adjacent to an area of San Juan Creek, which drains to the San Juan Creek Lagoon and Pacific Ocean (refer to Impact 4.3-1 and [Section 4.8, Hydrology and Water Quality](#) for a detailed discussion regarding the lack of significant Project impacts related to water quality). Project facilities (such as the connection to existing potable water transmission facilities, and use of the adjacent Staging Area) will not disturb the adjacent earthen South Drainage Swale and associated vegetation. Therefore, construction would not result in substantial adverse impacts on any riparian habitat or other sensitive natural community. Therefore, the impact would be less than significant.

Concentrate (Brine) Disposal System

The outfall structure has already been constructed and is used as an outfall for treated effluent. No in-water or over-water construction activities are anticipated to occur as part of the Project. Connection to the existing SJCOO will occur within the desalination facility site (see discussion above). Therefore, no substantial adverse effect on a riparian habitat or other sensitive natural community will occur in this regard. Therefore, the impact would be less than significant and mitigation is not required.

Operations

Subsurface Intake Wells

The seawater intake points would be located entirely under the seafloor and the feedwater would flow down through the ocean sediments to the intake. Because of this design feature, there are no anticipated intake related biological resource impacts to surface waters that would result because the intake would be located below the seafloor.

Lagoon Water Levels

As discussed in Impact 4.3-1 above, the Project will not significantly impact San Juan Creek Lagoon water levels and its associated riparian vegetation and other sensitive habitat. San Juan Creek is critical habitat for the southern steelhead and migrating smolts may pass through the coastal lagoon to the ocean. Generally, summer rearing in lagoons adds to increased growth, which potentially increases survival when the smolts enter the ocean. However, the seasonal lagoon in San Juan Creek is presently poor habitat for steelhead smolts because of variable water level, with periods of very little water in lower San Juan Creek, periods of high water temperature, periods of variable dissolved oxygen levels, including occasional anoxic periods, presence of avian and non-native fish predators, and lack of cover to provide refuge for the smolts from predators.

Four sensitive natural wetland/riparian vegetation communities occur along the banks of San Juan Creek within Doheny State Beach: coastal brackish marsh, southern willow scrub, southern sycamore riparian woodland, and mulefat scrub. Water level and quality throughout the impounded lagoon was found to be highly variable and dependent on freshwater flow, season, time of day and muted influence by tidal level. Drawdown of lagoon water as a result of slant well operations is unlikely to result in water level characteristics outside of conditions currently found naturally in the lagoon. The District will monitor Lagoon levels following installation of the first slant well, to refine the Project's groundwater modeling and facilitate siting decisions related to subsequent slant well installation and operation (see detailed



discussion above and Mitigation Measure BIO-4, with further technical analysis provided in Appendix 10.10.1). Therefore, no substantial adverse effects on critical habitat, EFH, or other sensitive habitats associated with San Juan Creek as a result of slant well operations are expected.

Southeast Intake Wells

Refer to impact analysis above. Operations of slant wells at Capistrano Beach Park will not have any significant impacts on riparian habitat or other sensitive natural communities.

Raw Water Conveyance Alignments – North and South

Refer to above discussion under Impact 4.3-1. Operation of the raw water conveyance system improvements would not have an effect on riparian habitat or other sensitive natural community. The conveyance system would require routine maintenance for upkeep, although this is typical of District pipeline maintenance activities and would occur within existing developed areas and rights-of-way. No significant impacts would occur and no mitigation is required in this regard.

Desalination Facility

Operation of the desalination facility would not have an effect on sensitive animals or their habitat. As discussed above, the Project site and immediately surrounding areas do not contain any sensitive animals and do not contain native habitat that would be used by such species. Additionally, all uses associated with the desalination facility would be contained to the Project site and aside from the brine disposal system, discussed below, the desalination facility does not include any off-site operations that would affect sensitive habitats or species in the vicinity. Therefore, impacts would be less than significant and mitigation would not be required.

Concentrate (Brine) Disposal System

As discussed under Impact 4.3-1 above, the Project's brine discharge would not have any significant impacts on the marine environment, and would comply with OPA requirements. There would be no operational maintenance requirements for the brine disposal system since the Project would utilize SOCWA's existing SJCOO and associated diffusers. Although there are nearby sensitive habitats, including the Dana Point SMCA, this area is over a mile from the SJCOO diffusers, and the Project's discharge is required to be reduced to within 2 ppt of ambient ocean water within 100m of the diffusers, a substantial distance from the nearest sensitive habitat.

Mitigation Measures

Refer to Mitigation Measure BIO-4.

Impact 4.3-3: **Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? *Level of Significance: Less Than Significant Impact with Mitigation.***



Construction

Subsurface Intake Wells

No federally-protected wetlands¹² would be affected by slant well construction. The slant wells would be drilled from previously disturbed locations within DSB at on-shore locations (well removed from Clean Water Act regulated portions of DSB below the mean high tide), including landscaped parking lots, other existing hardscaped areas, and areas with non-native landscaping such as trees at the DSB campground. Appurtenant facilities would avoid San Juan Creek Lagoon and its associated jurisdictional waters. No impacts would occur in this regard.

Southeast Intake Wells

Refer to impact analysis above. No federally-protected wetlands exist at Capistrano Beach Park, as the slant wells would be drilled from onshore locations above the mean high tide, predominantly within the hardscape portions of the parking lot.

Raw Water Conveyance Alignments – North and South

Construction of the raw water conveyance system would avoid sensitive habitat including San Juan Creek and San Juan Creek Lagoon by using trenchless construction. Therefore, construction impacts to wetlands would not occur and mitigation is not required.

Desalination Facility Site

The desalination facility site is on a developed site and avoids direct effects to the adjacent San Juan Creek, and avoids direct impacts to the earthen South Drainage Swale. The Project grading would not impact federally-protected wetlands due to changes in hydrology or other causes, since no wetlands are present on-site (see discussion above regarding the San Juan Creek Lagoon, under Impact 4.3-2, Lagoon Water Levels). Therefore, impacts would be less than significant and no mitigation is required.

Concentrate (Brine) Disposal System

The Project utilizes the existing SJCOO structure and diffusers, and therefore does not require any marine construction. Connection to the existing SJCOO vault would occur within the desalination facility site, which would not impact any federally protected wetlands (see discussion above). Therefore, impacts would not occur and mitigation is not required.

Operations

Subsurface Intake Wells

Vegetation on the banks of the seasonal coastal lagoon, including wetland species, fluctuates based on water conditions and the volume of water within the lagoon. Four sensitive natural wetland/riparian vegetation communities occur along the banks of San Juan Creek within Doheny State Beach: coastal brackish marsh, southern willow scrub, southern sycamore riparian woodland, and mulefat scrub. Water level and water quality in the impounded lagoon was found to be highly variable and dependent on

¹² Under the Clean Water Act, wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.



freshwater flow, season, time of day and muted influence by tidal level. Obligate wetland plants that had been previously observed in the lagoon in 2006, and would be sensitive to water drawdowns, include cattails and bulrushes as well as fleshy jaumea. However, because the existing hydrology within the lagoon is highly variable and vegetation on the banks fluctuates based on water conditions and water volume within the lagoon, drawdown of lagoon water as a result of slant well operations is unlikely to result in water level characteristics outside of conditions currently found naturally in the lagoon. The District will monitor lagoon levels to refine the groundwater modeling and facilitate siting of subsequent slant wells, in order to ensure that no significant impacts occur. See Mitigation Measure BIO-4 and detailed discussion above under Impact 4.3-1 and [Appendix 10.10.1](#). Therefore, impacts would be less than significant with mitigation measure BIO-4.

Southeast Intake Wells

Refer to impact analysis above. No impacts to federally-protected wetlands would occur. Slant wells operating at the Capistrano Beach Park area would not affect the San Juan Basin or San Juan Creek Lagoon, as described above in Impact 4.3-1, with detailed discussion in [Appendix 10.10.1](#).

Raw Water Conveyance Alignments – North and South

As discussed above, wetlands would be avoided during construction of the proposed raw water conveyance system, using trenchless construction for crossing of San Juan Creek Lagoon and San Juan Creek. Therefore, impacts would not occur and mitigation is not required.

Desalination Facility

As discussed above under Impact 4.3-1, the desalination facility would occur within the District's San Juan Creek Property and would not impact any area containing a wetland. Therefore, impacts would not occur and mitigation is not required.

Brine Disposal System

Brine discharge through the existing SJCOO diffusers would not affect any federally-regulated wetlands, as the discharge occurs over 10,000 feet offshore in the Pacific Ocean.

Mitigation Measures

Refer to Mitigation Measure BIO-4.

Impact 4.3-4: **Would the project 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? *Level of Significance: Less Than Significant With Mitigation.***

Construction

Subsurface Intake Wells

Slant well construction would not affect any wildlife corridors or nursery sites, nor would it affect any migratory fish. Potential slant well drilling impacts are not anticipated to adversely affect migratory marine mammals such as the grey whale, which are known to frequent the Project area coastlines during



the slant well construction period. At a length of 800 feet, the end of a 10-degree angled slant well would be approximately 140 feet below the launch elevation, or approximately 120 feet below the ocean floor, still within the shoaling area of DSB wave action. The offshore area is influenced by coastal recreation users, recreational and commercial boating associated with adjacent Dana Point Harbor, and coastal wave-energy related noise and vibration as waves approach the shoreline. As discussed in Impact 4.3-1 above, the slant well construction-related noise and vibration is not anticipated to significantly impact marine mammals.

The slant wells at DSB would be constructed in an area adjacent to sandy beaches (for pods A, B or C) and any of the slant well pods would be in close proximity to various non-native trees in the landscaped portion of the North Day Use Area and in the DSB campground. As discussed above in Impact 4.3-1, western snowy plover has been known to forage and roost in the winter at the beach portion of the North Day Use Area, although nesting has not been reported. In addition, other bird species utilize San Juan Creek Lagoon for foraging and nesting, in trees that line both banks of the Lagoon (the banks of San Juan Creek Lagoon are identified as an "Environmental Enhancement Area" in the DSB General Plan). Although slant well construction is not expected to require the removal of any nesting habitat, due to the proximity to mature trees and potential beach areas where western snowy plover may forage. Disturbances associated with construction could reduce the availability of nesting habitat or cause young to prematurely fledge the nest. The slant well drill rig work area has already been shifted away from the beaches based on initial consultation with State Parks and regulatory agencies. The drill rig work areas will be screened, which will reduce construction-related noise and lighting effects on migratory species. Implementation of Mitigation Measure BIO-1 would require preconstruction nesting bird surveys, including surveys for ground-nesting species such as western snowy plover, be conducted prior to initiation of vegetation removal and construction activity. With implementation of Mitigation Measure BIO-1, impacts would be reduced to a less than significant level.

Southeast Intake Wells

Refer to impact analysis above. Slant well construction in this area would not affect sensitive or migratory species at DSB or San Juan Creek Lagoon.

Raw Water Conveyance Alignments – North and South

Construction of the raw water conveyance system would not substantially interfere 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. These alignments would be in existing streets and rights-of-way, and would use trenchless construction to avoid direct impacts to sensitive habitat utilized by migratory species. Impacts would be less than significant and no mitigation is required.

Desalination Facility Site

The desalination facility construction would not affect any wildlife corridors or nursery sites, nor would it affect any migratory fish. The site is highly disturbed and contains limited vegetation, so there is limited potential for disturbing any migratory bird species. Electrical line trenches and connection to nearby potable water conveyance systems would be within existing access roads, and would avoid open trenching across the South Drainage Swale (an earthen channel with limited vegetation). Nonetheless, MBTA protocols will apply to the desalination facility site as noted in BIO-1.



Bordering the Project site to the south is a small stand of approximately 5 trees adjacent to PCH. Although the trees would be considered poor habitat due to the surrounding built environment and lack of foraging habitat, the trees could be used by nesting birds and serve as a temporary rest area for some migrating avian species. Mitigation Measure BIO-1 would reduce any potential impacts to nesting birds to less than significant levels.

The Project site is located adjacent to an area of San Juan Creek that is highly channelized, covered by sandy sediments with little to no vegetation. San Juan Creek in this area would not be considered valuable habitat to migratory bird species.¹³ However, it is likely used by species to travel between more hospitable areas. Construction of the proposed Project would occur only within the Project site, which is outside of the concrete lined channels (in this location) of San Juan Creek. Construction activities would generally occur during day time (thereby minimizing potential indirect effects from night-time construction lights) and would not otherwise affect the creek or an animal species' abilities to use it as a corridor from south to north and vice versa.

Thus, with implementation of mitigation, construction of the desalination facility would not substantially interfere 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. Therefore, the impact would be less than significant.

Concentrate (Brine) Disposal System

The brine disposal system would utilize the existing treated effluent outfall and would not require any construction activities in the marine environment or within a migration corridor. The SJCOO vault connection would occur within the desalination facility site (see discussion above). Therefore, impacts would not occur and mitigation is not required.

Operations

Subsurface Intake Wells

The seawater intake would be located beneath the subsurface of the ocean floor and would not substantially interfere with the movement of any native resident or migratory fish or wildlife species or with any established native resident or migratory wildlife in the ocean. As discussed above under Impact 4.3-1, the slant well operation will not significantly impact migratory marine mammals such as the grey whale, as the wells are subsurface and located well beneath the ocean floor. The minimal effect on lagoon water levels (discussed below and above in Impact 4.3-1) would not have a significant effect on riparian vegetation along the banks of San Juan Creek Lagoon that may be used by migrating birds.

Also discussed in Impact 4.3-1, San Juan Creek is designated as Critical Habitat for Southern Steelhead, and the Steelhead Recovery Plan calls for the removal of barriers to steelhead passage, which would allow steelhead access to upstream spawning habitat. The Project has no effect on steelhead migrating upstream, which only occurs when the San Juan Creek Lagoon berm has been breached by major storm events (on which the Project has no effect), and is a function of upstream barriers to migration and adequate water depths in the creek to allow fish passage (the Project has no effect on upstream hydrology

¹³ "The lower reaches of San Juan mainstem are barren of any significant amounts of vegetation that assist in improving water quality, reducing water temperatures, and providing forage areas for migratory fish and birds", San Juan Creek Watershed Management Study, August 2002, page viii. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=10176> (accessed April 18, 2018).



or barriers to steelhead migration). “Upstream of the PCH bridge, channels are typically dry; and more persistent surface water is limited to locations immediately adjacent to culverts and storm drains. During storm events, surface waters upstream of PCH show a short spike in water level as storm waters flow down the concrete-lined Lower San Juan Creek; however, these intervals are short, representing only a period of days to weeks before the surface again becomes dry.”¹⁴

Migrating smolts¹⁵ returning to the ocean may pass through the San Juan Creek Lagoon. However, the seasonal coastal lagoon presently is poor habitat for steelhead smolts because of variable water level, with periods of very little water in lower San Juan Creek, periods of high water temperature, periods of variable dissolved oxygen levels, including occasional anoxic periods, presence of avian and non-native fish predators, and lack of cover to provide refuge for the smolts from predators.¹⁶ Overall, lagoon water levels are predicted to be reduced by about 0.14 to 0.26 feet during dry periods, based on operational conditions for a 5 MGD Phase 1 Project. This fluctuation is minor and well within normal lagoon water level variations, and is not considered significant. As discussed in Impact 4.3-1, the District will monitor lagoon water levels following installation of the first slant well (at least two to three wells will be required to generate 10 MGD of raw ocean water to produce 5 MGD of potable water). This will help siting and operational decisions for future slant well installation, to ensure no significant impacts to the lagoon (refer to Mitigation Measure BIO-4). During periods when the berm is open, water level in the lagoon is primarily affected by tidal conditions and no change in water level related to pumping is expected. Therefore, slant well operation would not negatively impact migration corridors in the Project site. No impact would occur.

Southeast Intake Wells

Refer to impact analysis above regarding general effects related to marine mammals. Slant well operation at Capistrano Beach Park would have no effect on San Juan Creek Lagoon.

Raw Water Conveyance Alignments – North and South

The subsurface nature of the project component would have no impacts related to the movement of native resident and migratory fish or wildlife species. Therefore, impacts would not occur and mitigation is not required.

Desalination Facility Site

Once constructed, operation of the proposed desalination facility would not impede the movement of wildlife species or interfere with migration corridors. Desalination facility operations are contained within the site or via vehicular access on existing roads. Operation of the desalination facility would result in less than significant impacts in this regard.

Brine Disposal System

As discussed above in Impact 4.3-1 (and in further detail below, in Impact 4.3-6), the Project’s brine discharge would meet OPA requirements, achieving near background salinity levels within 100m of the

¹⁴ *Appendix 10.4.2, page 87.*

¹⁵ *A smolt is a young salmon or sea trout about two years old that is at the stage of development when it assumes the silvery color of the adult and is ready to migrate to the sea.*

¹⁶ *Appendix 10.4.2, page 86.*



diffusers. The relatively small area affected would not impact migratory fish or other wildlife species. The brine discharge has no effect on migratory birds.

Mitigation Measures

Refer to Mitigation Measures BIO-1 and BIO-4.

Impact 4.3-5: **Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? *Level of Significance: Less Than Significant with Mitigation.***

Construction

Subsurface Intake Wells

Slant wells at DSB would be under the jurisdiction of State Parks, which has adopted the DSB General Plan to provide policy guidance on all development and activities at DSB. The Project requires a lease and/or encroachment permit from State Parks, and as such will need to demonstrate consistency with the DSB General Plan and other applicable State policies. The DSB General Plan Goal COR 1 is that “Park creeks and the ocean are protected, rehabilitated where feasible, and managed to improve habitat conditions for native wildlife and fish.” The slant wells have been sited, through discussion with State Parks staff, to avoid beach impacts, minimize recreational impacts through seasonal restriction and siting, and avoid direct impacts to San Juan Creek Lagoon by using trenchless construction (refer to [Section 4.12, Recreation](#), for a detailed discussion). The DSB General Plan identifies “Environmental Enhancement Areas” along the banks of San Juan Creek, as well as “Core Habitat Zones” for San Juan Creek Lagoon and the Pacific Ocean.

In addition, as noted in Regulatory Framework, above, the City’s LCP requires avoidance of direct impacts or degradation of any ESHA, stating that “*Environmentally sensitive habitat areas, including important plant communities, wildlife habitats, marine refuge areas, riparian areas, wildlife movement corridors, wetlands, and significant tree stands shall be preserved. Development in areas adjacent to environmentally sensitive habitat areas shall be sited and designed to prevent impacts which would significantly degrade those areas through such methods as, the practice of creative site planning, revegetation, and open space easement/dedications, and shall be compatible with the continuance of those habitat areas. A definitive determination of the existence of environmentally sensitive habitat areas on a specific site shall be made through the coastal development permitting process*” (Conservation Open Space Policy 3.1).

These areas are avoided through use of subsurface intakes to avoid marine construction, use of trenchless construction to avoid San Juan Creek Lagoon impacts, and avoiding the Environmental Enhancement Areas through appropriate facility siting, as set forth in Mitigation Measure BIO-3. Therefore, construction of the seawater intakes would be consistent with applicable local plans, impacts would be less than significant, and no additional mitigation is required other than BIO-3.

Southeast Intake Wells

The Southeast Intake Wells at Capistrano Beach Park would be under the jurisdiction of the County of Orange as landowner. Project construction would be within the parking lot, which is an active recreation use with no ESHA or other biologically sensitive habitat. This park does not have any site-specific resource



preservation plans or policies in place, other than County-wide requirements such as those related to water quality. The District would require a lease and/or encroachment permit from Orange County Parks, and would need to demonstrate consistency with applicable plans and policies. Facility siting at this location, in consultation with Orange County Parks staff, has been modified to eliminate Pod F (due to impacts to the bike trail and potential beach construction required) and Pod G has been shifted south to south of the basketball court (to reduce temporary impacts to the parking lot). In addition, construction would only occur during the offseason, to further reduce potential park impacts (refer to Section 4.12, Recreation for a detailed discussion).

Raw Water Conveyance Alignments – North and South

The raw water conveyance lines would traverse portions of Capistrano Beach Park (if Pods G or H are developed), DSB (if Pods A through E are developed), and the City of Dana Point. The construction activities in the areas in which this work would occur, would not conflict with any policies or ordinances protecting biological resources as detailed in the listed planning documents. Pipeline construction avoids sensitive habitat, would occur within existing roads and rights-of-way, and will utilize trenchless construction to avoid San Juan Creek Lagoon and San Juan Creek. Therefore, impacts would be less than significant, and no mitigation is required.

Desalination Facility

The desalination facility site is zoned for industrial and business park uses, is highly urbanized and disturbed, with no sensitive environmental resources on the site. Desalination facility construction will not conflict with any City policies protecting biological resources. Therefore, impacts would be less than significant, and no mitigation is required.

Brine Disposal System

The brine disposal system would utilize the existing SJCOO and would not require any construction activities in the marine environment. The SJCOO vault connection would occur within the desalination facility site (see discussion above). Therefore, impacts would not occur and mitigation is not required.

Operations

Subsurface Intake Wells

Operation of the seawater intakes would not result in any impacts to any marine or terrestrial environment, or any sensitive biological areas or species such that it conflicts with a local policy or ordinance protecting biological resources. The slant wells would operate from non-sensitive on-shore locations and operate under ground and under the seafloor. Slant well operation is not anticipated to have any significant impact on San Juan Creek Lagoon levels or associated habitat. In addition, no conflicts with any applicable plan or policy is anticipated with any routine maintenance of the seawater intake system. Therefore, impacts would be less than significant and no further mitigation is required other than BIO-1 through BIO-4.

Southeast Intake Wells

Refer to impact analysis above.



Raw Water Conveyance Alignments – North and South

Operation of the conveyance system would occur completely underground from on-shore locations and would not result in any impacts to any marine or terrestrial environment, or any sensitive biological areas or species, such that conflicts with a local policy or ordinance protecting biological resources would occur. In addition, no conflicts with any applicable plan or policy is anticipated with any routine maintenance of the seawater intake system. Therefore, impacts would be less than significant and mitigation is not required.

Desalination Facility

Operation of the desalination facility will not result in any impacts to any marine or terrestrial environment, or any sensitive biological areas or species such that it conflicts with a local policy or ordinance protecting biological resources. The desalination facility will operate from a non-sensitive on-shore location, which is not located adjacent to any sensitive habitats. The desalination facility would be located adjacent to San Juan Creek, but in this area, the creek is highly channelized and lacks any sensitive vegetation or habitat that is protected by any applicable local plan or policy. Therefore, no conflicts with any applicable plan or policy is anticipated with operation of the desalination facility. Therefore, impacts would be less than significant and mitigation is not required.

Brine Disposal System

There are no local plans or policies for protecting biological resources that are relevant to ocean discharge, other than general policies set forth in the DSB General Plan and Dana Point General Plan for protecting and enhancing the ocean environment (including DSB Goal COR-1 noted above, Dana Point GP Policy 3.1, 3.9, and 4.4). As discussed above in Impact 4.3-1, the Project has been designed to avoid and minimize impacts to sensitive resources, completely avoids direct impingement and entrainment impacts associated with screened ocean intakes, and will meet strict OPA requirements for brine discharge. Furthermore, the Project will provide a new drought-proof water supply for the District, which reduces pressure on imported water supplies and local constrained freshwater and groundwater supplies, thereby reducing regional impacts to sensitive biological resources that depend on these constrained water supplies (refer to Section 5, Alternatives, for additional discussion).

Mitigation Measures

Refer to Mitigation Measures BIO-1 through BIO-4.

Impact 4.3-6: **Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? *Level of Significance: Less Than Significant.***

Construction and Operation – All Facilities

The Project facilities are not within any adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved habitat conservation plan. Project consistency with the Ocean Plan Amendment is discussed in Impact 4.3-1, and in detail within Appendix 10.11.



Mitigation Measures

No mitigation measures are required.

REGIONAL PROJECT

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential biological resource impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). Expansion at the desalination facility site would have no additional impacts on biological resources, since the desalination facility site would have already been graded. Section 4.8, Hydrology and Water Quality includes analysis of potential future Regional Project impacts related to brine discharge, lagoon water levels and turbulence mortality. The Regional Project may require construction of additional regional product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified. Mitigation Measures above would apply to the Regional Project, in addition to standard practices to avoid pipeline trenching across natural open space lands to minimize grading, erosion and associated potential impacts.

4.3.5 CUMULATIVE IMPACTS

As discussed above, the Project would not result in any significant impacts to biological resources, in consideration of Project Design Features, existing regulations and requirements, and mitigation measures. Locally, cumulative impacts have also been addressed as part of the City of Dana Point General Plan (for City-wide buildout impacts), and the Doheny State Beach General Plan (for cumulative impacts associated with DSB).

On a local level, terrestrial biological resource impacts are not significant on a project level, nor are Project impacts cumulatively considerable. The Project has been designed to avoid sensitive terrestrial biological resources, through siting the desalination facility at an existing developed industrial site (the District's San Juan Creek Property), use of trenchless construction to avoid direct impacts to San Juan Creek and San Juan Creek Lagoon, and siting facilities away from the beach and avoiding DSB's Environmental Enhancement Area. The Project may affect migratory birds during construction, but this effect has been minimized by siting slant wells away from the beach, complying with the MBTA requirements (Mitigation Measure BIO-1), and limiting the total duration of construction activities. Indirect effects to biological resources (such as water quality, lighting, and noise) are mitigated on a project by project basis through compliance with applicable local, state and federal regulations, as discussed further in the applicable EIR sections.

On a regional level, terrestrial and marine biological resource impacts are not significant on a project level, nor are Project impacts cumulatively considerable. The Project has been designed to avoid sensitive terrestrial and marine biological resources, primarily through compliance with the OPA, including use of subsurface intake wells (which avoids direct impingement and entrainment impacts to marine life associated with screened ocean intakes), using an existing permitted ocean outfall for brine discharge, and blending Project brine discharge with an existing permitted wastewater treatment plant discharge. The Project also minimizes, individually and cumulatively, biological resource impacts by siting slant wells



away from the beach where shorebirds are more prevalent, and by siting the desalination facility in close proximity to the source water (slant wells), which reduces construction-related impacts of the raw water conveyance pipeline. The Project may have an “effect” on the San Juan Creek Lagoon, due to potential nominal reduction in Lagoon water levels during periods when the Lagoon is closed, although the Project effects are within the normal range of lagoon water level variation. The lagoon nonetheless is at the crossroads of potential influence by upstream activities (relative to reduction in base flow or changes in water quality or system hydrology) and local actions (relative to adjacent activities that may directly or indirectly affect lagoon water quality or hydrology). Although the Project’s impacts are neither individually or cumulatively considerable, to the extent feasible, the District will participate in programs related to enhancing the long-term biological function of the San Juan Creek Lagoon.

Cumulative impacts to biological resources are addressed through a number of regional and state planning programs. In addition to County and City programs and regulations aimed at protecting biological resources, SJBA also manages the San Juan Basin, through its Groundwater Facilities and Management Plan. Terrestrial biological resource impacts are regulated by local agencies within the San Juan Creek watershed, as part of the development review process. At the State level, the RWQCB regulates point discharges into San Juan Creek and its tributaries, as well as regulates point discharges into the Pacific Ocean from wastewater treatment plants and other outfalls. In the Project area, the primary point discharge is SOCWA’s SJCOO, which is regulated by the RWQCB pursuant to its existing NPDES Permit. There are numerous other discharge points into the Pacific Ocean, affecting local offshore water quality, also regulated by the RWQCB. The SWRCB and RWQCB regulate non-point discharges within the San Juan Creek Watershed through the San Diego County MS4 Permit, which governs discharges into the municipal stormwater drainage system, which local co-permittee agencies are responsible for implementing, including the City of Dana Point and County of Orange. Specifically, the County of Orange and other stakeholders submitted a Water Quality Improvement Plan (WQIP) for the South Orange County Watershed Management Area, pursuant to the San Diego County MS4 Permit, including commitments for monitoring and remedial measures to achieve water quality objectives.¹⁷ The WQIP is an integral component of the MS4 Permit and associated regional multi-agency efforts to achieve state and federal water quality objectives for the basin.

The Coastal Commission, State Lands Commission and U.S Army Corps of Engineers also regulate impacts to terrestrial and marine biological resources on both a project-level and programmatic regulatory level through enacting and enforcing applicable regulations and policies, and working with local municipal stakeholders. Cumulative impacts to Pacific Ocean marine biological resources are specifically regulated by the SWRCB, RWQCB, Coastal Commission and U.S. Army Corps of Engineers, pursuant to the Coastal Act, Ocean Plan Amendment, and Clean Water Act, among other regulations. Although several other ocean desalination projects in the region are either operating (Carlsbad and Santa Barbara) or are at

¹⁷ *San Diego Regional Municipal Separate Storm Sewer Systems (MS4) Permit (Order R9-2013-0001 as amended by Order No. R9-2015-001 and Order No. R9- 2015-0100) requires the development of a Water Quality Improvement Plan (WQIP, the “Plan”) for the South Orange County Watershed Management Area (San Juan Hydrologic Unit), which includes the San Juan Creek watershed. “Chapter B.3 of this Plan describes water quality improvement goals for each of the HPWQCs and describes the strategies and schedules for achieving these goals. This Chapter has been divided into planning “tracks” based on each HPWQC [Highest Priority Water Quality Conditions]. Each planning track describes overall goals, specific numeric goals, strategies, and schedules to meet the requirements of the MS4 Permit. This Plan also demonstrates within each track that implementation of the Plan elements as described will reasonably achieve the goals, both interim and final.”*
https://www.waterboards.ca.gov/sandiego/water_issues/programs/stormwater/docs/wqip/south_orange_county/APRIL2017_COMPLET_ESOCWQIP.pdf (accessed April 4, 2018).



various stages of conceptual planning or entitlement (Camp Pendleton, Huntington Beach, and West Basin Municipal Water District), these are regulated on an individual basis pursuant to the Ocean Plan Amendment, Porter-Cologne Water Quality Control Act and Clean Water Act, among other regulations. Given the requirement to achieve Ocean Plan Amendment water quality standards within 100 meters (328 feet) of the outfall diffuser, these ocean desalination projects are not anticipated to represent a significant cumulative marine biological resource impact to the Pacific Ocean (the nearest operating ocean desalination facility to the Project is in Carlsbad, nearly 30 miles southeast, and the nearest proposed ocean desalination facility that is actively pursuing approvals is in Huntington Beach, over 20 miles to the northwest). The Project's brine discharge, when added to the existing SJCOO, will be required to demonstrate compliance with the Ocean Plan and other applicable regulations. As discussed above in Impact 4.3-1, the Project will not have any significant biological resource impacts.

All future development with the potential to impact biological resources would be required to demonstrate compliance with applicable local, State and federal regulatory requirements, including General Plan goals and policies of the affected jurisdiction, intended to reduce and/or avoid potential adverse environmental effects. As such, cumulative impacts to biological resources would be mitigated on a project-by-project level, and in accordance with the established regulatory framework, through the established regulatory review process.

4.3.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts to biological resources have been identified following compliance with the specified plans, policies and regulation, and with implementation of Measures BIO-1 through BIO-4, and in consideration of compliance with the OPA as set forth in OPA-1.



4.4 CULTURAL RESOURCES

This section describes the environmental and regulatory settings of cultural resources, based primarily on cultural resource information obtained from available public resources including, but not limited to, the *Doheny Desalination Project Cultural Resources Report* (Appendix 10.5).¹ The cultural evaluations were conducted in compliance with California Public Resources Code (PRC) § 5024.1 to identify archaeological or historical resources in the area of potential effect (APE), and analyze the Project site impact areas. Due to the confidential nature of the location of cultural resources, these reports do not include maps or location descriptions.

For the purposes of the California Environmental Quality Act (CEQA), “historical resources” generally refer to cultural resources that have been determined to be significant, either by eligibility for listing in state or local registers of historical resources, or by determination of a lead agency (see definitions below). Historical resources can also include areas determined to be important to Native Americans that qualify as tribal cultural resources (see Section 4.14, Tribal Cultural Resources) as defined in PRC § 21074 (sites, landscapes, historical, or archeological resources). Paleontological resources are also considered in Section 4.4.

4.4.1 CULTURAL RESOURCE TERMINOLOGY

Below are definitions of key cultural resources terms used in this section:

- **Alluvium:** a fine-grained sedimentary unit of soil consisting of mud, silt, and sand deposited by flowing water on floodplains, in river beds, and in estuaries.
- **Archaeological Site:** A site is defined by the National Register of Historic Places (NRHP) as the place or places where the remnants of a past culture survive in a physical context that allows for the interpretation of these remains. Archaeological remains usually take the form of artifacts (e.g., fragments of tools, vestiges of utilitarian or non-utilitarian objects), features (e.g., remnants of walls, cooking hearths, or midden deposits), and ecological evidence (e.g., pollen remaining from plants that were in the area when the activities occurred). **Prehistoric archaeological sites** generally represent the material remains of Native American groups and their activities dating to the period before European contact. In some cases, prehistoric sites may contain evidence of trade contact with Europeans. **Ethnohistoric archaeological sites** are defined as Native American settlements occupied after the arrival of European settlers in California. **Historic archaeological sites** reflect the activities of non-native populations during the Historic period.
- **Artifact:** An object that has been made, modified, or used by a human being.
- **Cultural Resource:** A cultural resource is a location of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources include archaeological resources and built environment resources (sometimes known as historic architectural resources), and may include sites, structures, buildings, objects, artifacts, works of art, architecture, and natural features that were important in past human events. They may consist of physical remains or areas where significant human events occurred, even though

¹ Note that the cultural resources report references a desalination plant site option (the “northern site”) that is no longer under consideration, and also evaluates multiple conveyance pipeline alignments (which are now reduced to the “northern” and “southern” alignments).



evidence of the events no longer remains. Cultural resources also include places that are considered to be of traditional cultural or religious importance to social or cultural groups.

- **Cultural resources study area (or study area):** All areas of potential permanent and temporary impacts for a reasonable worst-case development within a project site and off-site impact areas, including a fifteen-foot buffer around construction areas.
- **Ecofact:** An object found at an archaeological site that has archaeological significance but has not been technologically altered, such as seeds, pollens, or shells.
- **Ethnographic:** Relating to the study of human cultures. “Ethnographic resources” represent the heritage resource of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, or ethnic neighborhoods and structures.
- **Historic period:** The period that begins with the arrival of the first non-native population and thus varies by area.
- **Historical resource:** This term is used for the purposes of CEQA and is defined in the CEQA Guidelines (14 California Code of Regulations [CCR] § 15064.5) as: (1) a resource listed in, or determined to be eligible for listing in the California Register of Historical Resources (CRHR); (2) a resource included in a local register of historical resources, as defined in Public Resources Code (PRC) § 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC § 5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency’s determination is supported by substantial evidence in light of the whole record. Historical resources may also include Tribal Cultural Resources including sites, features, places, cultural landscapes, sacred places, objects, and/or archeological resources with value to a California Native American Tribe per PRC § 21074.
- **Holocene:** Of, denoting, or formed in the second and most recent epoch of the Quaternary period, which began 10,000 years ago at the end of the Pleistocene.
- **Isolate:** An isolated artifact or small group of artifacts that appear to reflect a single event, loci, or activity. Isolates typically lack identifiable context and thus have little interpretive or research value. Isolates are not considered to be significant under CEQA and do not require avoidance mitigation (CEQA Statute § 21083.2 and CEQA Guidelines § 15064.5). All isolates located during the field effort, however, are recorded and the data are transmitted to the appropriate California Historical Resources Information System (CHRIS) Information Center.
- **Lithic:** Of or pertaining to stone. Specifically, in archaeology, lithic artifacts are chipped or flaked stone tools, and the stone debris resulting from their manufacture.
- **Native American sacred site:** An area that has been, or continues to be, of religious significance to Native American peoples, such as an area where religious ceremonies are practiced or an area that is central to their origins as a people.



- **Paleontological resources (fossils):** The physical remains of plants and animals preserved in soils and sedimentary rock units/formations. Paleontological resources contribute to the understanding of past environments, environmental change, and the evolution of life.
- **Pleistocene (Ice Age):** An epoch in the Quaternary period of geologic history lasting from 1.8 million to 10,000 years ago. The Pleistocene was an epoch of multiple glaciations, during which continental glaciers covered nearly one-fifth of the earth's land.
- **Prehistoric period:** The era prior to 1772. The later part of the prehistoric period (post-1542) is also referred to as the protohistoric period in some areas, which marks a transitional period during which native populations began to be influenced by European presence resulting in gradual changes to their lifeways.
- **Quaternary Age:** The most recent of the three periods of the Cenozoic Era in the geologic time scale of the International Commission on Stratigraphy (ICS). It follows the Tertiary Period, spanning 2.588 ± 0.005 million years ago to the present. The Quaternary includes two geologic epochs: the Pleistocene and the Holocene Epochs.
- **Stratigraphy:** The natural and cultural layers of soil that make up an archaeological deposit, and the order in which they were deposited relative to other layers.
- **Tribal Cultural Resource:** This term refers to a site, feature, place, cultural landscape, sacred place, object, or archeological resource with cultural value to a California Native American Tribe that is listed or eligible for listing in the national, California, or local registers. A lead agency also has the discretion to determine that a resource is a Tribal Cultural Resource if the determination is supported by substantial evidence.
- **Unique Archaeological Resource:** This term is used for the purposes of CEQA and is defined in Public Resources Code § 21083.2(g) 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 either contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information; has a special and particular quality such as being the oldest of its type or the best available example of its type; or, is directly associated with a scientifically recognized important prehistoric or historic event or person.
- **Unique Paleontological Resource:** This term is defined as a fossil that meets one or more of the following criteria: (1) it provides information on the evolutionary relationships and developmental trends among organisms, living or extinct; (2) it provides data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein; (3) it provides data regarding the development of biological communities or interaction between plant and animal communities; (4) it demonstrates unusual or spectacular circumstances in the history of life; or (5) the fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.



Area of Potential Effect (APE)

The APE of an undertaking (a “project”) is defined in 36 Code of Federal Regulations (CFR) 800.16(d) as the “geographic area or areas within which an undertaking may directly or indirectly cause alterations, in the character or use of historic properties, if any such properties exist.” Additionally, the APE must be considered as a three-dimensional space (depth, length, and width). The APE, shown on Exhibit 4.4-1, Area of Potential Effect is located on the Dana Point, California United States Geological Survey (USGS) 7.5-minute topographic quadrangles.

The vertical APE (depth) is limited to the depth of disturbance needed for the construction of the proposed subsurface intake wells, desalination facility, pipelines, and related facilities. The maximum depth of disturbance estimated for the undertaking is 30 feet below the surface. The indirect APE for the proposed Project covers the same area as the direct APE because of the minimal potential of the Project to impact/affect adjacent resources.

4.4.2 AFFECTED ENVIRONMENT

Environmental Setting

Natural Setting

The Doheny Ocean Desalination Project site is located primarily within the City of Dana Point at elevations ranging from below sea level to nearshore beaches and adjacent areas (for the subsurface intake wells), to 0 to 33 feet above mean sea level (amsl) for the desalination facility and conveyance lines, to higher elevations for offsite improvements, discussed further below.

Subsurface Intake Well Area

The intake wells and related facilities would be within Doheny State Beach. Doheny State Beach is located in an urbanized area of Dana Point, with recreational, retail and commercial uses adjacent to the beach. Construction in this area would generally be within developed areas such as beach landscaping and lawn areas, beach access roads, and limited upper beach construction. Slant well construction will also extend below the ocean floor, although this construction will not affect any known or potential cultural resources.

Southeast Intake Wells

The southeast intake wells study area extends southerly beyond Doheny State Beach (DSB), and includes Capistrano Beach Park (while still in the City of Dana Point). As with the intake wells at Doheny State Beach, these potential intake wells would also be constructed within developed areas such as upper beach, parking, and landscaped areas.

Raw Water Conveyance Alignments

The raw water conveyance pipeline would deliver water from the intake wells to the desalination facility. The pipeline alignments are located on beach access roads, maintenance roads, local city streets, and other previously disturbed areas. If the pipelines traverse San Juan Creek (such as with the northern pipeline alignment), this would be done via trenchless construction to avoid direct impacts to San Juan Creek.



Desalination Facility

The proposed desalination facility site is within an active District San Juan Creek Property, is occupied by various storage and commercial tenant uses, and has been previously disturbed. The proposed desalination facility site is bounded by Pacific Coast Highway (PCH) to the south, San Juan Creek to the west, the SCRRA rail line to the east, and the existing county drainage facility L01S02 to the north. A large stockpile earthen mound is located north of the drainage channel.

Concentrate (Brine) Disposal System

The brine disposal system would utilize the existing San Juan Creek Ocean Outfall (SJCOO) to return brine and treated process waste streams to the ocean. The existing ocean outfall also serves the J.B. Latham Wastewater Treatment Plant, which is located on the west side of San Juan Creek.

Regional Project Facilities

Regional Project facilities (as described in [Section 3](#)) would be in substantially the same location as the Phase I Project facilities, with the exception of the SDG&E electrical line extensions (which would extend north of the site within existing streets) and the Regional Project product water conveyance, pumping and storage facilities, the location of which is not known at this time.

Paleontological Setting

The Project area is located in the middle of the Peninsular Ranges Geomorphic Province, one of 11 major provinces in the state. The Peninsular Ranges province is characterized by its northwest trending valleys and faults that branch from the San Andreas Fault.

The Peninsular Ranges comprise rocks that range in age from the Paleozoic to the Quaternary, with the majority of rocks being a Jurassic to Cretaceous batholith that intrudes a Triassic to Jurassic metasedimentary sequence. This batholith was emplaced across the North American and Pacific plate boundary in the Mesozoic and is composed of an older, western portion of tonalite, gabbro, and granodiorite and a younger, eastern portion of less mafic granitics.

The proposed Project area includes six geologic units mapped at the surface. From youngest to oldest, these are Quaternary wash deposits (late Holocene: Qw); Quaternary marine beach deposits (late Holocene: Qmb); Quaternary younger alluvium (late Pleistocene to Holocene: Qya); Quaternary older alluvium (middle to late Pleistocene: Qoa); Quaternary older paralic (terrace) deposits (middle to late Pleistocene: Qop1-2); and the Capistrano Formation (late Miocene to early Pliocene: Tcs).

Most of the proposed Project area overlies Holocene-aged alluvial, beach, and wash deposits (Qya, Qmb, Qw). Small areas of Pleistocene-aged older alluvium (Qoa) and terrace deposits (Qop1-2) are mapped along the western edges of the Project area and a very small area of Capistrano Formation is mapped within the eastern portion of the Project area. In addition, a sizable portion of the Project area is mapped within offshore waters.² Additional details are provided in [Appendix 10.5, Doheny Desalination Project Cultural Resources Report](#).

² [Appendix 10.5, Doheny Desalination Project Cultural Resources Report](#), Rincon Consultants, Inc., April 2018, Appendix A, pages 3-4.



Ethnographic, Archaeological, and Historic Contexts

Prehistoric Context

During the 20th century, many archaeologists developed chronological sequences to explain prehistoric cultural changes within all or portions of Southern California. A prehistoric chronology was devised for the Southern California coastal region based on early studies and focus on data synthesis that included four horizons: Early Man, Milling Stone, Intermediate, and Late Prehistoric.

The Early Man Horizon (ca. 10,000-6,000 B.C.) is generally associated with a greater emphasis on hunting than later horizons. The Milling Stone Horizon (6,000-3,000 B.C.) is characterized by a subsistence strategy oriented around plant foods and small animals. The Intermediate Horizon (3,000 B.C.-A.D. 500) is characterized by a shift toward a hunting and maritime subsistence strategy and greater use of plant foods. The Late Prehistoric Horizon (A.D. 500-historic contact) is associated with an increased diversity of plant food resources and land and sea mammal hunting, and larger, more permanent villages supported an increased population size and social structure.³

Ethnography

The Project's APE is within an area historically occupied by the Juaneño, people who were associated with Mission San Juan Capistrano during the Spanish Period in California. While some scholars distinguished the Juaneño from their southern neighbors, the Luiseño, based on the fact that the Luiseño were administered by the Mission San Luis Rey, the two groups are hypothesized to be one ethnic group. Today, many of the Juaneño and Luiseño prefer to identify themselves as descendants of the Acjachemen Nation. In the remainder of this section, the term Luiseño is used to refer to both groups for consistency in nomenclature with previous cultural resource reports.

The Luiseño occupied territory along the coast between Aliso Creek and Agua Hedionda Creek that extended inland to Santiago Peak on the north and the east side of Palomar Mountain on the south, including Lake Elsinore and the Valley of San Jose. The Luiseño language belongs to the Cupan group of the Takic subfamily of languages (previously known as Southern California Shoshonean), along with their northern and eastern neighbors, the Gabrielino and Cahuilla.

Luiseño social structure was more rigid than other Takic-speaking groups, possibly in part because of a higher population density. They were strongly patrilineal and resided in permanent villages with a few dozen to several hundred people. Each village was politically independent and claimed its own territory, including seasonal camps. Ties between villages were maintained through various economic, religious, and social networks.

Plant foods were by far the largest part of the traditional inland diet, with acorns representing the most important staple item. Villages were located near reliable water sources, as large quantities of water were necessary to process acorn products. The Luiseño ate a wide variety of other plant foods, including grasses, seeds, cactus fruits, yucca, bulbs, roots, tubers, mushrooms, and other items. The Luiseño also hunted and trapped game animals such as deer, rabbit, and birds. The sea was a very important source of

³ *Appendix 10.5, Doheny Desalination Project Cultural Resources Report, Rincon Consultants, Inc., April 2018, pages 10-12.*



protein, possibly providing up to 60 percent of protein for coastal villages. The Luiseño caught sea mammals and fish and gathered shellfish such as abalone, mussels, clams, and scallops.⁴

History

The post-contact history of California is generally divided into three separate time spans: the Spanish period (1769–1822), the Mexican period (1822–1848), and the American period (1848–present). Each of these periods is described below, followed by a discussion of the history of Dana Point.

The Spanish Period: Spanish exploration of California began when Juan Rodriguez Cabrillo led the first European expedition into the region in 1542. For more than 200 years after his initial expedition, Spanish, Portuguese, British, and Russian explorers sailed the California coast and made limited inland expeditions, but they did not establish permanent settlements. In 1769, Gaspar de Portolá and Franciscan Father Junipero Serra established the first Spanish settlement in what was then known as Alta (upper) California at Mission San Diego de Alcalá. This was the first of 21 missions erected by the Spanish between 1769 and 1823. It was during this time that initial Spanish settlement of the Project vicinity began. Mission San Juan Capistrano was first founded in 1775, was the seventh mission to be established in California, and is located approximately 4 kilometers (2.5 miles) northeast of the APE. Mission San Juan Capistrano grew for 30 years and reached a population of 1,000 by 1806. By 1812, the mission began to decline following an earthquake that caused the collapse of the Great Stone Church. Additional factors influencing the decline of the mission included European diseases and a decline in birth rate.

The Mexican Period: The Mexican Period commenced when news of the success of the Mexican War of Independence (1810-1821) against the Spanish crown reached California in 1822. This period saw the privatization of mission lands in California with the passage of the Secularization Act of 1833. This act federalized mission lands and enabled Mexican governors in California to distribute former mission lands to individuals in the form of land grants. Successive Mexican governors made more than 700 land grants between 1822 and 1846, putting most of the state's lands into private ownership for the first time. Rancho Boca de la Playa was granted to Emigdio Vejar by Mexican Governor Pio Pico in 1846 following the Mexican-American War and includes a portion of the current APE.

The Mexican Period for the Orange County region ended in early January 1847. Mexican forces fought and lost to combined U.S. Army and Navy forces in the Battle of the San Gabriel River on January 8, 1847 and in the Battle of La Mesa on January 9. On January 10, 1847 leaders of the pueblo of Los Angeles surrendered peacefully after Mexican General Jose Maria Flores withdrew his forces. Shortly thereafter, newly appointed Mexican Military Commander of California Andrés Pico surrendered all of Alta California to U.S. Army Lieutenant Colonel John C. Fremont in the Treaty of Cahuenga.

The American Period: The American Period officially began with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico \$15 million for conquered territory including California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. Settlement of the Los Angeles region increased dramatically in the early American Period.

The discovery of gold in northern California in 1848 led to the California Gold Rush, though the first significant amount of California gold was previously discovered in Placerita Canyon in Los Angeles County in 1842. By 1853, the population of California exceeded 300,000. Thousands of settlers and immigrants

⁴ *Appendix 10.5, Doheny Desalination Project Cultural Resources Report, Rincon Consultants, Inc., April 2018, page 12.*



continued to immigrate to the state, particularly after the completion of the First Transcontinental Railroad in 1869. The U.S. Congress in 1854 agreed to let San Pedro in Los Angeles County become an official port of entry. By the 1880s, the railroads had established networks from the port and throughout Los Angeles and Orange Counties, resulting in fast and affordable shipment of goods, as well as a means to transport new residents to the booming region. New residents included many health-seekers drawn to the area by the fabled climate in the 1870s–1880s.

Many ranchos in Orange County were sold or otherwise acquired by Americans in the mid-1800s, and most were subdivided into agricultural parcels or towns. Emigdio Vejar sold Rancho Boca de la Playa to Juan Avila. In 1878, the rancho was acquired by Marcus Forster.

As populations increased, Orange County was created from the southern portion of Los Angeles County. Agriculture remained the primary economic activity until the 1950s, when the county's agricultural land was replaced with tract housing developments. In the mid-20th century, aerospace and manufacturing began expanding, and the opening of Disneyland created an international tourism industry.

Dana Point: Dana Point began as a resort community called "San Juan by-the-Sea," which was developed in the area of present-day Doheny Village after Marcus Forster sold land to the Atchison, Topeka and Santa Fe Railroad in 1886. However, the speculative town struggled through an economic slump and essentially dwindled away. Agriculture replaced real estate development, and the community was renamed, Serra. In the early 1920s the San Juan Point Corporation subdivided 900 acres into a new community called Dana Point, but financial difficulties led to foreclosure. The tract was acquired in 1926 by a group of investors including Harry Chandler, publisher of the Los Angeles Times, and Sidney Woodruff, developer of the Hollywoodland tract. Woodruff planned Dana Point to be a Mediterranean-themed community oriented around tourism, recreation, and leisure. Simultaneously, the community of Capistrano Beach was being planned slightly to the south. A new coastal highway (the antecedent of PCH) supported the two communities' development. However, both were slow to develop, and in 1929 the Capistrano Beach tract was sold to the Petroleum Securities Company, a corporation owned by the Doheny family. Various improvements were made to the town-site, but development was meager. The Great Depression halted growth through most of the 1930s and 1940s.

Dana Point, like many other communities in the region, experienced extensive growth following World War II. The Capistrano Bay area was affected by the construction of Interstate 5 during the late 1950s. Lots that had been created in Dana Point and Capistrano Beach in the 1920s but had remained unimproved for decades began to be developed with housing, businesses, and public and private institutions. A fully operational harbor was constructed during the late 1960s. When the City of Dana Point was formally incorporated in 1989, it included portions of three communities: Dana Point, Capistrano Beach, and Monarch Beach, giving its built environment an eclectic character.⁵

Underwater Cultural Resources

California's paleoenvironmental history includes sea level rise over the last 20,000 years, resulting in the inundation of formerly terrestrial archaeological sites that would have been present along estuary boundaries and marine terraces. Very little systematic survey for submerged archaeological resources has occurred along California's coastline and, as such, the number and location of submerged sites is

⁵ *Appendix 10.5, Doheny Desalination Project Cultural Resources Report, Rincon Consultants, Inc., April 2018, pages 13-15.*



unknown. Most underwater archaeological resources that have been recorded along the coast were identified inadvertently by divers and primarily include isolated groundstone artifacts such as mortars, pestles, and net weights.

No submerged archaeological resources are known to exist within the Project APE. Submerged historical resources, primarily shipwrecks, are also known to exist along California's coast. The nearest known shipwreck to the Project APE is that of the *New Saturnia*, which foundered in 1955 approximately 2.5 miles (4 km) west of the Project APE.⁶

In terms of paleontological resources in the Project vicinity, unnamed Miocene marine sediments have been mapped offshore in the shallow sub-surface. These sediments are not known to contain fossils, but that may have as much to do with their offshore, inaccessible location as actual fossil content. These sediments should be considered to have low to no paleontological sensitivity but would be monitored closely if construction activities bring them to the surface for inspection.⁷

Existing Cultural Resources

Methods Used to Identify Known Cultural Resources

To identify known cultural resources, Rincon Consultants, Inc. completed an assessment that included a records search and field survey. Consultation with Native American tribes (see [Section 4.15, Tribal Cultural Resources](#)) and local historical groups was also conducted. The methodology for each is described below.

Records Search

A search was conducted of cultural resource records housed at the California Historical Resources Information System (CHRIS), South Central Coastal Information Center (SCCIC) located at California State University, Fullerton. The search included a review of the NRHP, the CRHR, the California Points of Historical Interest list, the California Historical Landmarks list, the Archaeological Determinations of Eligibility list, and the California State Historic Resources Inventory list. The records search also included a review of all available historic United States Geological Survey (USGS) 7.5-minute and 15-minute quadrangle maps.

Field Survey

A pedestrian survey of the APE was conducted by Rincon Consultants, Inc. on November 11, 2016.

Survey of the proposed raw water conveyance pipeline study area consisted of a windshield survey for portions that follow existing roads and a pedestrian survey for portions through Doheny State Beach.

The desalination facility site was surveyed using transects spaced 15 meters apart (approximately 49 feet) when possible; however, much of the site was not accessible due to fencing and/or restricted ground visibility because of the area's use as a storage yard. Although access was limited, these methods were adequate based on the ground visibility within the inaccessible areas, which was poor, and the survey of a representative sample of areas within the desalination facility site. Orientation of the transects varied based on surface visibility.

⁶ [Appendix 10.5, Doheny Desalination Project Cultural Resources Report](#), Rincon Consultants, Inc., April 2018, page 15.

⁷ [Appendix 10.5, Doheny Desalination Project Cultural Resources Report](#), Rincon Consultants, Inc., April 2018, Appendix A, page 8.



Exposed ground surfaces were examined for artifacts, soil discoloration that might indicate the presence of a cultural midden, soil depressions, and features indicative of the former presence of structures of buildings or historic debris. Ground disturbances, such as animal burrows and drainages, were visually inspected as these areas can expose subsurface deposits.

Local Historical Group Consultation

Letters were sent to the Dana Point Historical Society and the Orange County Historical Society in September 2016 to request any information they may have on historical properties within the Project APE. As of April 2018, no responses had been received.

Cultural Resources Results

Records Search

Within a 0.5-mile radius of the APE, the SCCIC records search identified 61 previous studies, 21 of which included a portion of the APE (see [Table 4.4-1](#)), and 31 previously recorded cultural resources, 11 of which are within or adjacent (directly sharing a border) to the APE (see [Table 4.4-2](#)).

Table 4.4-1: Summary of Cultural Resource Reports Identified in the SCCIC Records Search

SCCIC Report Number	Proximity to APE
OR-00061	Within
OR-00076	Within
OR-00102	Outside
OR-00122	Outside
OR-00150	Outside
OR-00166	Outside
OR-00248	Outside
OR-00499	Adjacent
OR-00512	Within
OR-00535	Outside
OR-00536	Within
OR-00625	Outside
OR-00626	Adjacent
OR-00636	Outside
OR-00833	Adjacent
OR-00873	Within
OR-00947	Outside
OR-00958	Outside
OR-00973	Outside
OR-00995	Outside



SCCIC Report Number	Proximity to APE
OR-01011	Outside
OR-01062	Outside
OR-01090	Outside
OR-01172	Within
OR-01178	Within
OR-01204	Within
OR-01260	Outside
OR-01261	Outside
OR-01264	Adjacent
OR-01298	Outside
OR-01336	Outside
OR-01434	Within
OR-01506	Outside
OR-01604	Outside
OR-01616	Outside
OR-01684	Outside
OR-01695	Within
OR-01739	Within
OR-01850	Outside
OR-01869	Outside
OR-02054	Outside
OR-02055	Outside
OR-02214	Outside
OR-02317	Outside
OR-02527	Within
OR-02529	Outside
OR-02872	Within
OR-02873	Outside
OR-02924	Outside
OR-03367	Outside
OR-03373	Outside
OR-03390	Within
OR-03765	Within
OR-03826	Within



SCCIC Report Number	Proximity to APE
OR-03832	Within
OR-03969	Outside
OR-04193	Within
OR-04223	Outside
OR-04309	Within
OR-04331	Within
OR-04413	Within

Source: [Appendix 10.5, Doheny Desalination Project Cultural Resources Report](#), Rincon Consultants, Inc. April 2018. Table 1.

Table 4.4-2: Summary of Previously Recorded Cultural Resources Identified in the SCCIC Records Search

Primary Number	Trinomial	Description	Relationship to APE
P-30-000021	CA-ORA-21	Burial ground	Outside
P-30-000188	CA-ORA-188	Shell midden with numerous artifacts	Within Southern Alignment
P-30-000484	CA-ORA-484	Shell midden	Outside
P-30-000837	CA-ORA-837	Lithic scatter	Outside
P-30-000838	CA-ORA-838	Lithic scatter	Outside
P-30-001107	CA-ORA-1107/H	Shell midden	Outside
P-30-001337	CA-ORA-1337H	Serra Railroad Depot	Adjacent to DesalSite
P-30-156534	N/A	Brown House; Single family residence	Outside
P-30-156535	N/A	Casa Dana/Hagan House; Single family residence	Outside
P-30-176486	N/A	Vejar-Pryor Adobe	Outside
P-30-176663	N/A	Burlington Northern Santa Fe Railway (formerly Atchison, Topeka, and Santa Fe Railway)	Within Southern Alignment
P-30-177047	N/A	26375 Via Canon; single-family Residence	Outside
P-30-177499	N/A	34000 Capistrano by the Sea; single-family residence	Outside
P-30-177553	N/A	Garage building	Outside
P-30-177554	N/A	Single-family residence	Outside
P-30-177555	N/A	26545 Via Sacramento; single-family residence	Outside
P-30-177570	N/A	Lee House; single-family residence	Outside



Primary Number	Trinomial	Description	Relationship to APE
P-30-177586	N/A	Post office	Outside
P-30-177587	N/A	Commercial office building	Outside
P-30-177588	N/A	Commercial office building	Outside
P-30-177589	N/A	Commercial storefront building	Outside
P-30-177590	N/A	Commercial storefront building	Outside
P-30-177591	N/A	Commercial storefront building	Outside
P-30-177593	N/A	Commercial storefront building	Outside
P-30-177594	N/A	34248 Via Santa Rosa; single-family residence	Outside
P-30-177596	N/A	34311 Pacific Coast Highway; motel complex	Demolished but recorded adjacent to the Northern Alignment
P-30-177597	N/A	34352 Pacific Coast Highway; single-family residence	Outside
P-30-177598	N/A	34365 Via San Juan; single-family Residence	Outside
P-30-177599	N/A	34506 Via Verde; single-family Residence	Outside
P-30-177600	N/A	34532 Camino Capistrano; single-family residence	Outside
P-30-177603	N/A	34812 Pacific Coast Highway; motel complex	Outside
N/A	N/A	Adobe wall and arched entry portal to Doheny State Beach	Outside
N/A	N/A	Thor's Hammer	Outside but near the Northern Alignment
Note: The Southern Alignment is referred to as Alignment 6 in <u>Appendix 10.5</u> and the <u>Preliminary Design Report</u> (Appendix 10.1)			

Source: Appendix 10.5, Doheny Desalination Project Cultural Resources Report. Rincon Consultants, Inc. April 2018. Table 2.

Field Survey

The pedestrian survey of the APE did not result in the identification of any newly recorded resources. The 11 cultural resources identified within or adjacent to the APE are discussed below.

CA-ORA-188. One prehistoric archaeological site was previously recorded within the Project APE (CA-ORA-188) in the vicinity of the raw water conveyance alignments, but the resources was not observed during the survey. The site was recorded as a large, deep shell midden on the south side of San Juan Creek on a bluff above Doheny Beach State Park with small fragments of oyster, mussel, pecten, abalone, and chiton, as well as ground stone and both utilitarian and ceremonial chipped stone lithic artifacts. CA-ORA-188 was completely destroyed during the development of the Dana Bluffs circa 1973. Although the site is mapped within the path of the Southern Raw Water Alignment, its written description places it upslope on the bluffs and any overlap with the proposed project appears to be a map scale error (i.e., if the map was



smaller scale the refined boundary would place the site at a higher elevation and north and east of the alignment). Therefore, CA-ORA-188 is not within the Project APE.

Resource **CA-ORA-1337** is a historical site consisting of the remnants of a railroad siding, including concrete pads and a sign. The sign was missing when the site was updated in 1998 and was not observed during the survey, but the concrete pads are still present. Much of the recorded area of CA-ORA-1337 has been paved over and disturbed. The remaining portions of the site are within the railroad alignment adjacent to the desalination facility site.

Resource **P-30-177596** consists of the location of the Dana Villa Inn. However, the inn was recommended ineligible for listing in the NRHP and has been demolished.

The Burlington Northern Santa Fe Railroad (**P-40-176663**) is located adjacent to the desalination facility site and is crossed by the Southern Alignment. The railroad, however, has been recommended ineligible for listing in the NRHP, CRHR and for local listing because its current construction does not reflect its historical origins. Thus, impacts to the resource would not be significant.

Two other resources (**Thor's Hammer**, and the **arched entry** to Doheny State Beach) are located within the north day use area of Doheny State Beach where the subsurface intake wells would be constructed. Thor's Hammer and the arched entry to Doheny State Beach (primary numbers pending) have been recommended eligible for listing in the NRHP. Each of these resources appeared to be in a similar condition to when they were originally recorded.

Existing Paleontological Resources

Methods Used to Identify Known Paleontological Resources

Rincon Consultants, Inc. conducted a paleontological resources assessment of the APE which includes the proposed locations of: the desalination facility site, the raw water conveyance alignment, the brine intake system, and the subsurface/southeast intake wells. The assessment consisted of a fossil locality record search at the San Diego Natural History Museum, review of existing geologic maps, and a review of primary literature and online fossil collections databases (specifically University of California Museum of Paleontology [UCMP] and Neogene Mammal Mapping Portal [NEOMAP]) regarding fossiliferous geologic units within the proposed Project vicinity and region.

Rincon evaluated the paleontological sensitivity of the proposed Project site according to the following categories defined by the Society for Vertebrate Paleontology:

- **High Potential:** Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered are considered to have a high potential for containing significant non-renewable fossiliferous resources. These units include, but are not limited to, sedimentary formations and some volcanic formations that contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils.
- **Low Potential:** Sedimentary rock units that are potentially fossiliferous but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well documented and understood taphonomic, phylogenetic species and habitat ecology.



- **Undetermined Potential:** Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potential. Field surveys by a qualified vertebrate paleontologist to specifically determine the potential of the rock units are required before programs of impact mitigation for such areas may be developed.
- **No Potential:** Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.⁸

Paleontological Resources Results

Paleontological Sensitivities of Mapped Geologic Units

The relative sensitivity of the various geologic units in the Project area is discussed below from youngest to oldest. Geologic units with high paleontological sensitivity are shown on Exhibit 4.4-2, Paleontological Sensitivity Area.

- **Quaternary Wash Deposits:** Late Holocene Quaternary wash deposits occur within the drainage channel in the middle of the proposed Project area. These deposits have low to no potential to yield significant fossil resources.
- **Quaternary Marine Beach Deposits:** Late Holocene marine beach deposits crop out along the shoreline in the Project area. These deposits have low to no potential to yield significant fossil resources.
- **Quaternary Younger Alluvium:** Late Pleistocene to Holocene younger alluvium occurs east and west of the wash channel. At the surface, these sediments have low to no potential to yield significant fossil resources. At depths exceeding five feet below the surface, there is a high potential to yield significant fossil resources.
- **Quaternary Older Alluvium:** Middle to late Pleistocene older alluvium crops out discontinuously along the western boundary of the Project area. Pleistocene older alluvium has a record of abundant and diverse vertebrate fauna throughout California and is generally considered to have high paleontological sensitivity wherever it occurs.
- **Quaternary Older Paralic Deposits:** Middle to late Pleistocene older paralic (terrace) deposits crop out in a small area along the western boundary of the Project area, just east of Lantern Bay Park. Pleistocene older paralic (terrace) deposits have a record of abundant and diverse vertebrate fauna throughout California and are generally considered to have high paleontological sensitivity wherever they occur.
- **Capistrano Formation:** The late Miocene to early Pliocene Capistrano Formation underlies the Project area just north of PCH. The Capistrano is known to produce a diverse assortment of fossil plants (e.g., algae impressions), trace fossils, invertebrates, and marine vertebrates (e.g., fish, sea birds, whales, sea cows, seals, and walruses) and is considered to have high paleontological sensitivity.⁹

⁸ Appendix 10.5, Doheny Desalination Project Cultural Resources Report, Rincon Consultants, Inc., April 2018, Appendix A, page 5.

⁹ Appendix 10.5, Doheny Desalination Project Cultural Resources Report, Rincon Consultants, Inc., April 2018, Appendix A, pages 6-7.



Record Search Results

The San Diego Natural History Museum record search did not reveal any previously discovered fossils within the APE. However, seven fossil localities are in the vicinity of the Project and are in the same sedimentary deposits as those found at the Project site. These localities have yielded diverse late Pleistocene vertebrate taxa including fish, reptiles, birds, rodents, mammoths, bison, horses, camels, whales, sea cows, seals, and walruses.

An online search of the University of California Museum of Paleontology collections recorded 1,106 fossil localities in Orange County. Of these localities, 122 are from Pleistocene sediments and 23 are from the Capistrano Formation. Most of these contain only microfossils and marine invertebrates, though seven (four from the Pleistocene and three from the Capistrano) contain terrestrial and marine vertebrates including fish, birds, rodents, horses, and whales.

The NEOMAP online database records 54 fossil localities in Orange County. Of these, three are from Pleistocene sediments and all contain vertebrates including rodents, antelopes, bovids, horses, cats, dogs, tapirs, mammoths, camels, deer, and pig relatives.

Potential for Unknown Buried Cultural Resources

Ground disturbing activities associated with implementing the Project could unearth previously unknown historic resources, including historic infrastructure or buried resources.

4.4.3 REGULATORY FRAMEWORK

Federal

Section 106 of the National Historic Preservation Act (NHPA)

Archaeological resources are protected through the National Historic Preservation Act (NHPA) of 1966, as amended (54 United States Code [USC] 300101 et seq.), and its implementing regulations, Protection of Historic Properties (36 CFR Part 800); the Archaeological and Historic Preservation Act of 1974; and the Archaeological Resources Protection Act of 1979. The NHPA authorized the expansion and maintenance of the NRHP, established the position of State Historic Preservation Officer (SHPO), provided for the designation of State Review Boards, set up a mechanism to certify local governments to carry out the purposes of the NHPA, assisted Native American tribes in preserving their cultural heritage, and created the Advisory Council on Historic Preservation (ACHP). Prior to implementing an “undertaking” (e.g., issuing a federal permit), § 106 of the NHPA requires federal agencies to consider the effects of the undertaking on historic properties and to afford the ACHP and the SHPO a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing in the NRHP. As indicated in § 101(d)(6)(A) of the NHPA, properties of traditional religious and cultural importance to a tribe are eligible for inclusion in the NRHP. Under the NHPA, a resource is considered significant if it meets the NRHP listing criteria at 36 CFR 60.4.

National Register of Historic Places (NRHP)

The NRHP was established by the NHPA as “an authoritative guide to be used by Federal, State, and local governments, private groups and citizens to identify the Nation’s cultural resources and to indicate what properties should be considered for protection from destruction or impairment” (36 CFR 60.2). The NRHP



recognizes both historic-period and prehistoric archaeological properties that are significant at the national, state, and local levels.

To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. A property (districts, sites, buildings, structures, and objects of potential significance) is eligible for the NRHP if it is significant under one or more of the following four established criteria:

- **Criterion A:** It is associated with events that have made a significant contribution to the broad patterns of our history.
- **Criterion B:** It is associated with the lives of persons who are significant in our past.
- **Criterion C:** It embodies the distinctive characteristics of a type, period, or method of construction; represents the work of a master; possesses high artistic values; or represents a significant and distinguishable entity whose components may lack individual distinction.
- **Criterion D:** It has yielded, or may be likely to yield, information important in prehistory or history.

Cemeteries, birthplaces, or graves of historic figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; and properties that are primarily commemorative in nature are not considered eligible for the NRHP unless they satisfy certain conditions. In general, a resource must be at least 50 years of age to be considered for the NRHP, unless it satisfies a standard of exceptional importance.

In addition to meeting the criteria of significance, a property must have *integrity*. Integrity is defined as “the ability of a property to convey its significance.”¹⁰ The NRHP recognizes seven qualities that, in various combinations, define integrity. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association.

Coastal Zone Management Act

Several sections of the Coastal Zone Management Act address the protection of cultural resources. This includes 16 USC § 1452, which states that it is a national policy to encourage the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and aesthetic values.

Archaeological and Paleontological Salvage (23 USC 305)

23 USC 305 amends the Antiquities Act of 1906 and allows funding for mitigation of paleontological resources recovered pursuant to federal-aid highway projects, provided that “excavated objects and information are to be used for public purposes without private gain to any individual or organization.”¹¹

¹⁰ National Parks Service. National Register Publications. https://www.nps.gov/nr/publications/bulletins/nrb15/nrb15_8.htm. (accessed October 2, 2017).

¹¹ California Department of Transportation. Paleontology Laws, Regulations, and Guidance. <http://www.dot.ca.gov/ser/vol1/sec3/physical/Ch08Paleo/chap08paleo.htm> (accessed October 2, 2017).



National Environmental Policy Act (NEPA) of 1969

NEPA (USC § 4321 *et seq.*; 40 CFR § 1500 *set seq.*), as amended, directs federal agencies to “preserve important historic, cultural, and natural aspects of our national heritage” (§ 101(b)(4), Congressional declaration of national environmental policy).

State

California Environmental Quality Act (CEQA)

CEQA is the principal statute governing environmental review of projects occurring in the state and is codified in Public Resources Code § 21000 *et seq.* CEQA requires lead agencies to determine if a proposed project would have a significant effect on the environment, including significant effects on historical or archaeological resources.

Under CEQA (PRC § 21084.1), a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment. The CEQA Guidelines § 15064.5 recognizes that historical resources include:

1. A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR;
2. A resource included in a local register of historical resources, as defined in PRC § 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC § 5024.1(g); and
3. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency’s determination is supported by substantial evidence in light of the whole record.

The fact that a resource does not meet the three criteria outlined above does not preclude the lead agency from determining that the resource may be a historical resource as defined in PRC § 5020.1(j) or 5024.1.

If a lead agency determines that an archaeological site is a historical resource, the provisions of CEQA § 21084.1 and CEQA Guidelines § 15064.4 apply. If a project may cause a substantial adverse change (defined as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired) in the significance of a historical resource, the lead agency must identify potentially feasible measures to mitigate these effects (14 CCR 15064.5(b)(1), 15064.5(b)(4)).

If an archaeological site does not meet the historical resource criteria contained in the CEQA Guidelines, then the site may be treated as a unique archaeological resource in accordance with the provisions of PRC § 21083.2. As defined in PRC § 21083.2(g) of CEQA, a unique archaeological resource is 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 meets any of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;



- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or,
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If an archaeological site meets the criteria for a unique archaeological resource as defined in PRC § 21083.2, then the site is to be treated in accordance with the provisions of PRC § 21083.2, which state that if the lead agency determines that a project would have a significant effect on unique archaeological resources, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place (PRC § 21083.2(a)). If preservation in place is not feasible, mitigation measures shall be required.

The CEQA Guidelines note that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment (14 CCR 15064.5(c)(4)).

California Coastal Act

The California Coastal Act (PRC § 30000 et seq.) requires protection of archaeological and paleontological resources. Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required (PRC § 30244).

California Register of Historical Resources (CRHR)

Created in 1992 and implemented in 1998, the CRHR is “an authoritative guide in California to be used by state and local agencies, private groups, and citizens to identify the state’s historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change” (PRC § 5024.1). Certain properties, including those listed in or formally determined eligible for listing in the NRHP and California Historical Landmarks numbered 770 and higher, are automatically included in the CRHR. Other properties recognized under the California Points of Historical Interest program, identified as significant in historical resources surveys or designated by local landmarks programs, may be nominated for inclusion in the CRHR. A resource, either an individual property or a contributor to a historic district, may be listed in the CRHR if the State Historical Resources Commission (SHRC) determines that it meets one or more of the following criteria, which are modeled on NRHP criteria:

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



Furthermore, under PRC § 5024.1 and 14 CCR § 4852(c), a cultural resource must retain integrity to be considered eligible for the CRHR. Specifically, it must retain sufficient character or appearance to be recognizable as a historical resource and convey reasons of significance. Integrity is evaluated with regard to retention of such factors as location, design, setting, materials, workmanship, feeling, and association. Cultural sites that have been affected by ground-disturbing activities, such as grazing and off-road vehicle use (both of which occur within the Project site), often lack integrity because they have been directly damaged or removed from their original location, among other changes.

Typically, a prehistoric archaeological site in California is recommended eligible for listing in the CRHR based on its potential to yield information important in prehistory or history (Criterion 4). Important information includes chronological markers such as projectile point styles or obsidian artifacts that can be subjected to dating methods or undisturbed deposits that retain their stratigraphic integrity. Sites such as these have the ability to address research questions.

California Historical Landmarks (CHLs)

California Historical Landmarks (CHLs) are buildings, structures, sites, or places that have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value and that have been determined to have statewide historical significance by meeting at least one of the criteria listed below. The resource also must be approved for designation by the County Board of Supervisors (or the city or town council in whose jurisdiction it is located); be recommended by the SHRC; and be officially designated by the Director of California State Parks. The specific standards now in use were first applied in the designation of CHL #770. CHLs #770 and above are automatically listed in the CRHR.

To be eligible for designation as a landmark, a resource must meet at least one of the following criteria:

- It is the first, last, only, or most significant of its type in the state or within a large geographic region (Northern, Central, or Southern California);
- It is associated with an individual or group having a profound influence on the history of California; or
- It is a prototype of, or an outstanding example of, a period, style, architectural movement, or construction or is one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder.

California Points of Historical Interest

California Points of Historical Interest are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Points of historical interest designated after December 1997 and recommended by the SHRC are also listed in the CRHR. No historic resource may be designated as both a landmark and a point. If a point is later granted status as a landmark, the point designation will be retired. In practice, the point designation program is most often used in localities that do not have a locally enacted cultural heritage or preservation ordinance.



To be eligible for designation as a point of historical interest, a resource must meet at least one of the following criteria:

- It is the first, last, only, or most significant of its type within the local geographic region (city or county);
- It is associated with an individual or group having a profound influence on the history of the local area; or
- It is a prototype of, or an outstanding example of, a period, style, architectural movement, or construction or is one of the more notable works or the best surviving work in the local region of a pioneer architect, designer, or master builder.

California Health and Safety Code Sections 7050.5, 7051, and 7054

California Health and Safety Code § 7050.5, 7051, and 7054 collectively address the illegality of interference with human burial remains as well as the disposition of Native American burials in archaeological sites. The law protects such remains from disturbance, vandalism, or inadvertent destruction, and establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a proposed Project, including the treatment of remains prior to, during, and after evaluation, and reburial procedures.

California Penal Code, Section 622½

The California Penal Code, § 622½, provides misdemeanor penalties for injuring or destroying objects of historic or archaeological interest located on public or private lands.

Public Resources Code, Section 5097.5

PRC § 5097.5 defines as a misdemeanor the unauthorized disturbance or removal of archaeological, historic, or paleontological resources located on public lands.

Local

Doheny State Beach General Plan

Cultural Resources

The proposed Doheny Ocean Desalination Project APE includes park and nearby areas that were the setting for a variety of cultural activities and historic events from the Native American period to the early Southern California surf culture. The principal remaining cultural resource features at Doheny State Beach are from the Civilian Conservation Corps (CCC) period of the 1940s. The following goals and guidelines are from the Doheny State Beach General Plan; and will be considered by State Parks in evaluating the Project and any required permit or approval conditions.

Goal CR 1: All significant historic features and sites at the park are preserved, protected from damage, and properly interpreted for public appreciation of the park's history.

Guideline CR 1.1: Monitor the condition of the remaining CCC-period features in the park, such as through annual photo documentation, and initiate measures to preserve and/or restore these features if deterioration becomes evident.



Guideline CR 1.2: Interpretive materials and/or methods should be provided to better inform the public of the CCC's role in the park's early development. Improvements should be made to restore the appearance of the remaining adobe walls at the park.

Guideline INT 2.2: An interpretive display of the park's CCC history would be appropriate. The remaining early park CCC features near the Campground entrance are presently an overlooked and generally neglected feature of the park that are worthy of an interpretative display. Future park improvements in this area should include a more prominent role of these historic resources as a park entry feature.

Guideline INT 2.3: New construction should incorporate elements of the park's cultural history as design themes or aesthetic treatments. Examples would include CCC-era architecture or interpretive treatments reflective of the area's maritime and surf culture history.

Guideline INT 2.4: Acquire and maintain collections obtained or housed at the park in accordance with the Department's Collections Management Standards.

Facilities

Guideline FAC 1.2: Prior to construction of any significant new building, a standardized architectural treatment for all new construction should be established and followed for future buildings and accessory facilities.

Sensitive Cultural Resources: Maintenance of the remaining CCC-era park features and protection from deterioration.

4.4.4 SIGNIFICANCE CRITERIA

Significance Criteria under CEQA

CEQA Guidelines Appendix G, Environmental Checklist Form, includes questions pertaining to cultural resources. The issues presented in the Environmental Checklist have been utilized as thresholds of significance in this section. Accordingly, the Project would have a significant adverse environmental impact if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5 (refer to Impact 4.4-1);
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5 (refer to Impact 4.4-2);
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (refer to Impact 4.4-3);
- Disturb any human remains, including those interred outside of formal cemeteries (refer to Impact 4.4-4); or
- Impact tribal cultural resources (refer to Section 4.14, Tribal Cultural Resources).



Methodology and Assumptions

The proposed Project and associated project design features (PDFs) are evaluated against the aforementioned significance criteria, as the basis for determining the level of impacts related to cultural resources. In addition to PDFs, this analysis considers existing regulations, laws and standards that serve to avoid or reduce potential environmental impacts. Where significant impacts remain, feasible mitigation measures are recommended, where warranted, to avoid or lessen the Project's significant adverse impacts. Further details regarding methods are provided in Appendix 10.5 of this EIR.

SRF CEQA-Plus Analysis

This EIR is also intended to satisfy "CEQA-Plus" requirements of the State Water Resource Control Board's Clean Water State Revolving Fund (SRF) program.¹² The SRF CEQA-Plus requirements include, among other things, demonstration of compliance with NHPA § 106 historic resources. In accordance with § 106 of the NHPA, implementation of the proposed Project would have a significant impact related to cultural resources if it would:

- Cause an adverse effect on a historic property when it may alter the characteristics of the property that qualify the property for inclusion in the National Register. For the purpose of determining effect, alteration to features of the property's location, setting, or use may be relevant depending on a property's significant characteristics and should be considered;
- Cause an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:
 - (1) Physical destruction, damage, or alteration of all or part of the property;
 - (2) Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;
 - (3) Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
 - (4) Neglect of a property resulting in its deterioration or destruction; and
 - (5) Transfer, lease, or sale of the property.

For the impact analysis, the CEQA significance criteria and SRF CEQA-Plus criteria have been mutually considered

Project Design Features

- Proposed subsurface intake facilities are located in active urban developed areas in an erosive environment with generally limited archaeological resources along the beaches;
- The desalination facility is proposed at an existing District San Juan Creek Property site, which avoids disturbance to existing natural terrain and is compatible with existing zoning;

¹² http://www.waterboards.ca.gov/water_issues/programs/grants_loans/cwsrf_requirements.shtml (accessed on September 7, 2017).



- The desalination facility is located within one mile of the subsurface intake wells, which minimizes raw water conveyance facility construction;
- Product water conveyance facilities are generally within existing access roads or streets, which avoids construction in undisturbed sensitive locations;
- Construction staging and laydown areas would use existing disturbed or developed sites to avoid disruption to existing sensitive resources; and
- The project has been designed such that the first phase (potable water nominal production capacity of up to 5 million gallons per day) could be constructed and then, subject to future CEQA review and regulatory permitting, the project could be expanded in phases up to 15 million gallons per day with minimal additional construction and grading impacts, thereby reducing the environmental impacts and community disruption.

4.4.5 IMPACTS AND MITIGATION

Impact 4.4-1: **Would the project cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5? *Level of Significance: Less than Significant Impact.***

Construction

Subsurface Intake Wells

No historical resources (including marine resources) were identified in the subsurface intake well area, and the nearest known shipwreck is approximately 2.5 miles west of the Project APE. Therefore, construction of this Project component would not cause a substantial adverse change in the significance of a historical resource.

Southeast Intake Wells

No historical resources were identified in the area of the southeast intake wells, and the nearest known shipwreck is approximately 2.5 miles west of the Project APE. Therefore, construction of the southeast intake wells would not cause a substantial adverse change in the significance of a historical resource.

Raw Water Conveyance Alignments

No potentially significant historical resources have been identified within the raw water conveyance alignments. The Burlington Northern Santa Fe Railway (P-30-176663) is crossed by the Southern Alignment. However, this resource has been recommended ineligible for listing in the NRHP and CRHR and has lost its historical integrity due to continued operation and maintenance. The proposed Project will not significantly impact the resource under CEQA and will not have an adverse effect on the Project under the NHPA.

Desalination Facility

No historical built-environment resources are located on or directly adjacent to the desalination facility. Thus, Project construction at either site would not impact historical built-environment resources under CEQA nor have an effect on historical built-environment resources under the NHPA.



Brine Disposal System

No construction would be required for the ocean discharge because the existing San Juan Creek Ocean Outfall would be used for brine disposal.

Operation

Subsurface Intake Wells

No historical resources (including marine resources) were identified in the subsurface intake well area, and the nearest known shipwreck is approximately 2.5 miles west of the Project APE. Therefore, operation of this Project component would not cause a substantial adverse change in the significance of a historical resource.

Southeast Intake Wells

No historical resources were identified in the area of the southeast intake wells, and the nearest known shipwreck is approximately 2.5 miles west of the Project APE. Therefore, operation of the southeast intake wells would not cause a substantial adverse change in the significance of a historical resource.

Raw Water Conveyance Alignment – North

See impact analysis for Raw Water Conveyance Alignment -South below.

Raw Water Conveyance Alignment -South

The pipeline would be constructed below the ground surface in the existing roadway, and upon completion of construction the APE would be returned to its original condition. Therefore, operations of the raw water conveyance pipeline would not cause a substantial adverse change in the significance of a historical resource.

Desalination Facility

No historical built-environment resources are located on or directly adjacent to the desalination facility. Thus, Project operation at either site would not impact historical built-environment resources under CEQA nor have an effect on historical built-environment resources under the NHPA.

Brine Disposal System

Operation of the ocean discharge system would not involve any activities that would impact historical resources. Therefore, operations of the ocean discharge system would not cause a substantial adverse change in the significance of a historical resource.

Mitigation Measures

No mitigation measures are required.

Impact 4.4-2: **Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5? *Level of Significance: Less than Significant with Mitigation.***



Construction

Subsurface Intake Wells

No archaeological resources were identified in the subsurface intake well area. However, due to the presence of archaeological sites nearby, the entirety of the APE is considered sensitive for archaeological resources. Ground disturbing activities always have the potential to reveal buried deposits not observed on the surface during previous surveys or previously unidentified underwater cultural resources. Prehistoric or historic cultural materials that may be encountered during ground-disturbing activities include:

- Historic artifacts such as glass bottles and fragments, cans, nails, ceramic and pottery fragments, and other metal objects;
- Historic structural or building foundations, walkways, cisterns, pipes, privies, and other structural elements;
- Prehistoric flaked-stone artifacts and debitage (waste material), consisting of obsidian, basalt, and or cryptocrystalline silicates;
- Groundstone artifacts, including mortars, pestles, and grinding slabs;
- Dark, greasy soil that may be associated with charcoal, ash, bone, shell, flaked stone, groundstone, and fire affected rocks.

With implementation of mitigation measures CUL-1 and CUL-2, construction of the subsurface intake wells would not cause a substantial adverse change in the significance of an archaeological resource.

Southeast Intake Wells

No archaeological resources were identified in the area of the southeast intake wells. However, due to the presence of archaeological sites nearby, the entirety of the APE is considered sensitive for archaeological resources, and ground disturbing activities always have the potential to reveal buried deposits not observed on the surface during previous surveys or previously unidentified underwater cultural resources. With implementation of Mitigation Measures CUL-1 and CUL-2, construction of the southeast intake wells would not cause a substantial adverse change in the significance of an archaeological resource.

Raw Water Conveyance Alignment – North

The District has identified several potential raw water conveyance alignments. The Northern Alignment would be preferred if the subsurface intake wells are constructed north of the San Juan Creek lagoon, as this would be a more direct path to the desalination facility. However, the Northern Alignment requires trenchless construction under San Juan Creek, as well as substantial street excavation within Del Obispo Street, which has a repaving moratorium due to recent State grants for street resurfacing. If the Southern Alignment is selected, Mitigation Measures CUL-1 and CUL-2 are anticipated to reduce impacts to less than significant levels.



Raw Water Conveyance Alignment -South

One archaeological resource was identified within the Study Area, within the Southern Alignment - Resource CA-ORA-188; however, the mapped boundary of the site likely exceeds the actual size because the written description of the site place it on the bluff rather than at the lower elevations of the streets and railroad. Further, the site was completely destroyed during the development of the Dana Bluffs project circa 1973. Study OR-2527 describes the site as having been 90% destroyed by past construction activities and the use of the site area as a borrow pit for fill material.

Desalination Facility

No archaeological sites were identified within the north or south sites. However, due to the presence of archaeological sites nearby, the entirety of the APE is considered sensitive for archaeological resources, and ground disturbing activities always have the potential to reveal buried deposits not observed on the surface during previous surveys. Implementation of Mitigation Measures CUL-1 and CUL-2 would reduce this potential impact to less than significant levels.

Brine Disposal System

Construction would not be required for the ocean discharge because the existing San Juan Creek Ocean Outfall would be used for brine disposal. Therefore, construction of the ocean discharge system would not cause a substantial adverse change in the significance of an archaeological resource.

Operation

Subsurface Intake Wells

Operations of the subsurface intake wells would not involve any activities that would impact archaeological resources. Therefore, operations of the intake wells would not cause a substantial adverse change in the significance of an archaeological resource.

Southeast Intake Wells

Operations of the southeast intake wells would not involve any activities that would impact archaeological resources. Therefore, operations of the east intake wells would not cause a substantial adverse change in the significance of an archaeological resource.

Raw Water Conveyance Alignment – North

Operation of the raw water conveyance system would not involve any activities that would impact archaeological resources. Therefore, operations of the raw water conveyance system would not cause a substantial adverse change in the significance of an archaeological resource.

Raw Water Conveyance Alignment -South

Operation of the raw water conveyance system would not involve any activities that would impact archaeological resources. Therefore, operations of the raw water conveyance system would not cause a substantial adverse change in the significance of an archaeological resource.



Desalination Facility

Operation of the desalination facility would not involve any activities that would impact archaeological resources. Therefore, operations of the facility would not cause a substantial adverse change in the significance of an archaeological resource.

Brine Disposal System

Operation of the ocean discharge system would not involve any activities that would impact archaeological resources. Therefore, operations of the ocean discharge system would not cause a substantial adverse change in the significance of an archaeological resource.

Mitigation Measures

CUL-1 Worker Environmental Awareness Training (all components). Prior to ground disturbing activities and ongoing during construction, all contractors shall undergo a Worker Environmental Awareness Program (WEAP). The training, which may be presented in the form of a video, shall include:

- a) A discussion of applicable environmental resource laws and penalties under the law;
- b) Samples or visuals of artifacts that may be found in the Project vicinity;
- c) Information that the Cultural Resource Specialist (CRS) and Construction Manager (CM) have the authority to halt construction to the degree necessary, as determined by the CRS, in the event of a discovery or unanticipated impact to a cultural resource;
- d) Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources find, and shall contact their supervisor and the CRS or CM; redirection of work shall be determined by the construction supervisor and the CRS;
- e) An informational brochure that identifies reporting procedures in the event of a discovery;
- f) An acknowledgment form signed by each worker indicating that they have received the training; and
- g) A sticker that shall be placed on hard hats indicating that environmental training has been completed.

The District (or its designee) shall maintain WEAP Certification of Completion forms of persons who have completed the training.

CUL-2 Construction Monitoring. Prior to construction, the District (or its designee) shall retain a CRS that meets the minimum qualifications of the U.S. Secretary of Interior Guidelines (NPS 1983). The CRS shall be present during initial deep excavations for pipeline trenches, vaults and desalination facility structures that penetrate below



native ground surface. The District shall offer local Native American tribes the opportunity to be present during such initial deep excavations. The CRS and the CM shall have the authority to halt construction if previously unknown cultural resource sites or materials are encountered. Redirection of ground disturbance shall be accomplished under the direction of the construction manager.

If such resources are found or impacts can be anticipated, the halting or redirection of construction shall remain in effect until all of the following have occurred:

- a) The CRS has notified the District (or its designee), and the CM has been notified within 24 hours of the find description and the work stoppage;
- b) The CRS, the District (or its designee), and the CM have conferred and determined what, if any, data recovery or other mitigation is needed and the scope of that mitigation;
- c) Any necessary data recovery and mitigation has been completed.

All archaeological materials collected as a result of the archaeological investigations (survey, testing, and data recovery) shall be curated in accordance with the State Historical Resources Commission's "Guidelines for the Curation of Archaeological Collections," into a retrievable storage collection in a public repository or museum. The public repository or museum must meet the standards and requirements for the curation of cultural resources set forth at Federal Code of Regulations, Part 79, Title 36.

Impact 4.4-3: Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? *Level of Significance: Less than Significant with Mitigation.*

Construction

Subsurface Intake Wells

The subsurface intake wells would be in an area with undetermined paleontological sensitivity. Unnamed Miocene marine sediments are mapped offshore in the shallow sub-surface and are not known to contain fossils but would be inspected if construction activities bring them to the surface. Construction of the subsurface intake wells would not destroy a unique paleontological resource or unique geologic feature with the implementation of CUL-3. Therefore, construction of the subsurface intake wells would not destroy a unique paleontological resource or unique geologic feature and no impact would occur.

Southeast Intake Wells

The southeast intake wells would be in an area with low to no paleontological sensitivity. Unnamed Miocene marine sediments are mapped offshore in the shallow sub-surface and are not known to contain fossils but would be inspected if construction activities bring them to the surface. Construction of the southeast intake wells would not destroy a unique paleontological resource or unique geologic feature



with the implementation of CUL-3. Therefore, construction of the subsurface intake wells would not destroy a unique paleontological resource or unique geologic feature and no impact would occur.

Raw Water Conveyance Alignment – North

Ground disturbance associated with the construction has a high potential to directly disturb one geologic unit with high sensitivity at shallow depths (Quaternary younger alluvium) that is located across most of the study area. Ground disturbance also has a high potential to directly disturb two geologic units with high paleontological sensitivity (Quaternary older alluvium and Quaternary older paralic (terrace) deposits) on the western edge of the raw water conveyance study area. Thus, potential significant effects to paleontological resources are primarily associated with ground-disturbance in Quaternary younger alluvium. Impacts to paleontological resources resulting from ground-disturbing construction activity could include the destruction of fossils.

With implementation of Mitigation Measure CUL-3 (Paleontological Construction Monitoring and Compliance Program), construction of the raw water conveyance pipeline would not destroy a unique paleontological resource or site or unique geologic feature, thereby reducing impacts to a less-than-significant level.

Raw Water Conveyance Alignment -South

See analysis above.

Desalination Facility

Ground disturbance associated with construction has a high potential to directly disturb one geologic unit with high sensitivity at shallow depths (Quaternary younger alluvium) that is located across most of the desalination facility. Mitigation Measure CUL-3 will reduce this potential impact to less than significant levels.

Brine Disposal System

No construction would be required for the ocean discharge because the existing San Juan Creek Ocean Outfall would be used for brine disposal. Therefore, no impact would occur.

Operation

Subsurface Intake Wells

Operation of the subsurface intake wells would not involve any activities that would impact paleontological resources. Therefore, operations of the subsurface intake wells would not destroy a unique paleontological resource or unique geologic feature and no impact would occur.

Southeast Intake Wells

Operation of the subsurface intake wells would not involve any activities that would impact paleontological resources. Therefore, operation of the southeast intake wells would not destroy a unique paleontological resource or unique geologic feature and no impact would occur.



Raw Water Conveyance Alignment – North

Operation of the raw water conveyance would not involve any activities that would impact paleontological resources. Therefore, operation of the raw water conveyance would not destroy a unique paleontological resource or unique geologic feature and no impact would occur.

Raw Water Conveyance Alignment -South

See analysis above.

Desalination Facility

Operation of the desalination facility would not involve any activities that would impact paleontological resources. Therefore, operations of the facility would not destroy a unique paleontological resource or unique geologic feature.

Brine Disposal System

The existing San Juan Creek Ocean Outfall would be used for brine disposal and operation of the ocean discharge system would not involve any activities that would impact paleontological resources. Therefore, operation of the ocean discharge system would not destroy a unique paleontological resource or unique geologic feature and no impact would occur.

Mitigation Measures

- CUL-3** Paleontological Construction Monitoring and Compliance Program. The following measures would be implemented to reduce potential impacts to paleontological resources to less than significant:
- Retain a Qualified Paleontologist. Prior to initial ground disturbance, the South Coast Water District (SCWD) shall retain a project paleontologist, defined as a paleontologist who meets the Society of Vertebrate Paleontology standards for Qualified Professional Paleontologist, to direct all mitigation measures related to paleontological resources.
 - Paleontological Mitigation and Monitoring Program. After project design has been finalized to determine the precise extent and location of planned ground disturbances, and prior to construction activity, a qualified paleontologist will prepare a Paleontological Mitigation and Monitoring Program to be implemented during ground disturbance activity for the proposed project. This program will outline the procedures for construction staff Worker Environmental Awareness Program (WEAP) training, paleontological monitoring extent and duration, salvage and preparation of fossils, the final mitigation and monitoring report, and paleontological staff qualifications. The program will be prepared in accordance with the standards set forth by current Society of Vertebrate Paleontology guidelines (2010) and with proper implementation, will reduce or eliminate potential impacts to paleontological resources.
 - Paleontological Worker Environmental Awareness Program (WEAP). Prior to the start of construction, the project paleontologist or his or her designee shall conduct training for construction personnel regarding the appearance of fossils



and the procedures for notifying paleontological staff should fossils be discovered by construction staff. The WEAP shall be presented at a preconstruction meeting that a qualified paleontologist shall attend. In the event of a fossil discovery by construction personnel, all work in the immediate vicinity of the find shall cease and a qualified paleontologist shall be contacted to evaluate the find before restarting work in the area. If it is determined that the fossil(s) is (are) scientifically significant, the qualified paleontologist shall complete the following conditions to mitigate impacts to significant fossil resources.

- Paleontological Monitoring. Ground disturbing construction activities (including grading, trenching, foundation work, and other excavations) in areas mapped as high paleontological sensitivity (see Exhibit 4.4-2, Paleontological Sensitivity Area) should be monitored on a full-time basis by a qualified paleontological monitor during initial ground disturbance. Areas mapped as low to high paleontological sensitivity should be monitored when ground-disturbing activities exceed five feet in depth, because underlying sensitive sediments could be impacted. Areas considered to have an undetermined paleontological sensitivity should be inspected and further assessed if construction activities bring potentially sensitive geologic deposits to the surface. The Paleontological Mitigation and Monitoring Program shall be supervised by the project paleontologist. Monitoring should be conducted by a qualified paleontological monitor, who is defined as an individual who has experience with collection and salvage of paleontological resources. The duration and timing of the monitoring will be determined by the project paleontologist. If the project paleontologist determines that full-time monitoring is no longer warranted, he or she may recommend that monitoring be reduced to periodic spot-checking or cease entirely. Monitoring would be reinstated if any new or unforeseen deeper ground disturbances are required and reduction or suspension would need to be reconsidered by the Supervising Paleontologist. Ground disturbing activity that does not exceed five feet in depth would not require paleontological monitoring.
- Salvage of Fossils. If fossils are discovered, the project paleontologist or paleontological monitor should recover them. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case, the paleontologist would have the authority to temporarily direct, divert, or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner.
- Preparation and Curation of Recovered Fossils. Once salvaged, the District would ensure that significant fossils would be identified to the lowest possible taxonomic level, prepared to a curation-ready condition, and curated in a scientific institution with a permanent paleontological collection (such as the San Diego County Natural History Museum), along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the project paleontologist. Field collection and preparation of fossil specimens will be



performed by the project paleontologist with further preparation as needed by an accredited museum repository institution at the time of curation.

- Final Paleontological Mitigation Report. Upon completion of ground disturbing activity (and curation of fossils, if necessary) the qualified paleontologist should prepare a final mitigation and monitoring report outlining the results of the mitigation and monitoring program. The report should include discussion of the location, duration, and methods of the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated.

Impact 4.4-4: Would the project disturb any human remains, including those interred outside of formal cemeteries? *Level of Significance: Less than Significant with Mitigation.*

Construction

All Components

The archaeological records search and field survey did not reveal any resources known to contain human remains within or near the Project components. However, the entirety of the APE is considered sensitive for archaeological resources due to the presence of archaeological sites nearby, and ground disturbing activities have the potential to reveal unknown human remains. Therefore, construction of the Project could disturb human remains should any be discovered during ground disturbing activities. If human remains are found, those remains would require proper treatment in accordance with applicable laws, including Health and Safety Code (HSC) § 7050.5-7055 and Public Resources Code (PRC) § 5097.98 and § 5097.99. HSC § 7050.5-7055 describe the general provisions for treatment of human remains. Specifically, HSC § 7050.5 prescribes the requirements for the treatment of any human remains that are accidentally discovered during excavation of a site. HSC § 7050.5 also requires that all activities cease immediately and a qualified archaeologist and Native American monitor be contacted immediately. As required by state law, the procedures set forth in PRC § 5087.98 would be implemented, including evaluation by the County Coroner and notification of the Native American Heritage Commission. The Native American Heritage Commission would then designate the “Most Likely Descendent” of the unearthed human remains. If human remains are found during excavation, excavation would be halted in the vicinity of the find and any area that is reasonably suspected to overlay adjacent remains shall remain undisturbed until the County Coroner has investigated and appropriate recommendations have been made for the treatment and disposition of the remains. Compliance with the established regulatory framework (i.e., HSC § 7050.5-7055 and PRC § 5097.98 and 5097.99) would ensure potential Local Project ocean water desalination facility impacts concerning human remains are reduced to less than significant. Compliance with Mitigation Measures CUL-1 and 2 would further minimize potential impacts to human remains.

Operations

All Components

Operation of the Project would not involve any activities that could impact human remains.



Mitigation Measures

Mitigation Measures CUL-1 and 2 are applicable.

REGIONAL PROJECT

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential cultural resource impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). Expansion at the desalination facility site would have no impacts on cultural resources. The Regional Project may require construction of additional regional product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified. Mitigation Measures CUL-1 through CUL-3 would apply to the Regional Project, in addition to standard practices to avoid pipeline trenching across natural open space lands where the potential for cultural resources is greater.

4.4.6 CUMULATIVE IMPACTS

For purposes of cultural resource impact analysis, cumulative impacts are considered for cumulative development according to the related projects (see [Table 4.0-1](#)).

All Project impacts would be mitigated to less than significant levels, and the Project's contribution toward cumulative impacts is not otherwise considered to be "cumulatively considerable."

As discussed above, the potential exists for undiscovered archaeological and paleontological resources to be adversely impacted during Project construction. With implementation of the specified mitigation measures, construction would not cause a substantial adverse change in the significance of archaeological or paleontological resources; a less than significant impact would occur in this regard.

Additionally, future cumulative development projects could encounter cultural resources. Thus, the potential exists for cumulative development to result in the adverse modification or destruction of historical, archaeological, paleontological resources. Potential cultural resource impacts associated with the individual developments would be specific to each site. As with this Project, all cumulative development in the area would undergo environmental and design review on a project-by-project basis pursuant to CEQA to evaluate potential impacts to cultural resources. All new development would be subject to compliance with the existing federal, state, and local regulatory framework concerning the protection of historical, archaeological, and paleontological resources on a project-by-project basis. Additionally, implementation of site-specific mitigation measures would reduce potential project impacts to as-yet unidentified archaeological/paleontological resources to less than significant levels.

Similarly, all future development with the potential to impact cultural resources would be required to demonstrate compliance with applicable federal and state regulatory requirements, including General Plan goals and policies of the affected jurisdiction, intended to reduce and/or avoid potential adverse environmental effects (refer to [Section 4.0](#) for applicable prior CEQA documents that provide analysis and mitigation for cumulative impacts within the jurisdiction of the affected agency). As such, cumulative impacts to cultural resources would be mitigated on a project-by-project level, and in accordance with the established regulatory framework, through the established regulatory review process.



Therefore, the combined cumulative impacts to cultural resources associated with the Project's incremental effects and those of the cumulative projects would be less than significant with mitigation incorporated.

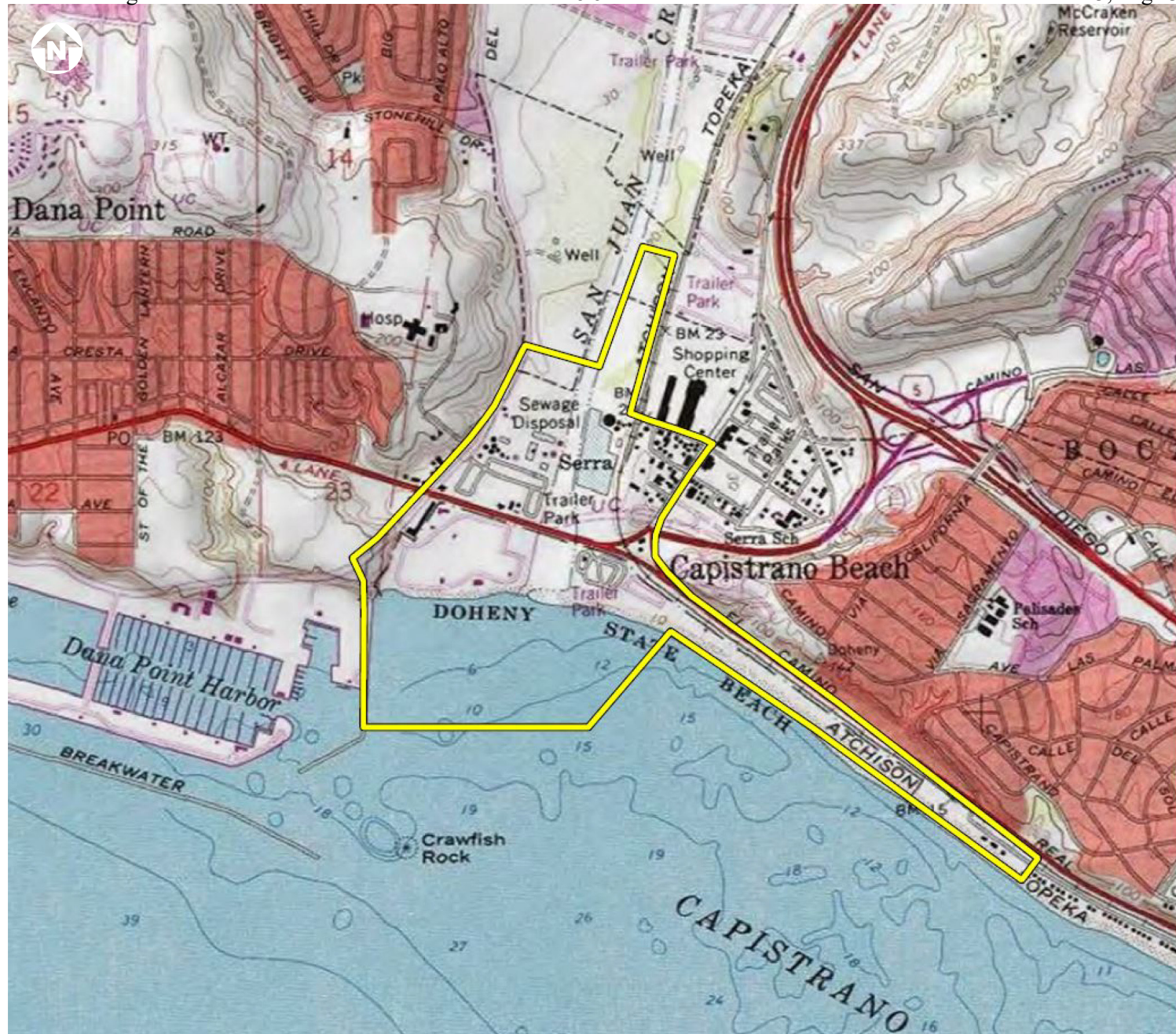
4.4.7 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts related to cultural resources have been identified given the specific Project Design Features and implementation of Mitigation Measures CUL-1 through CUL-3.



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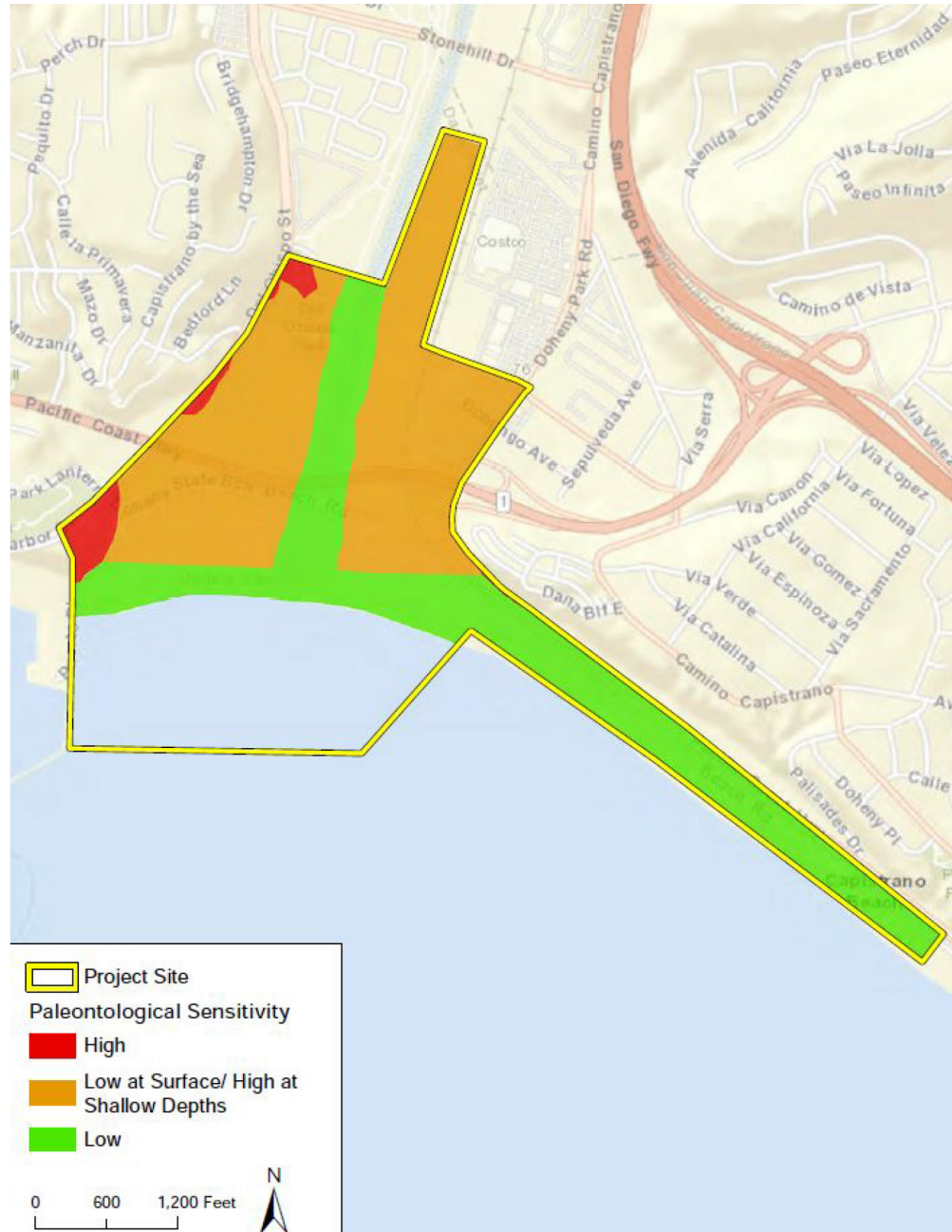
Source: Rincon, Cultural Resources Report, Figure 1 - Page 5.

EXHIBIT 4.4-1: Area of Potential Effect

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn



Source: Rincon, Cultural Resources Report, Attachment A - Figure 2.

EXHIBIT 4.4-2: Paleontological Sensitivity Area

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn

4.5 GEOLOGY AND SOILS

The purpose of this section is to describe the existing regulatory and environmental conditions related to the geologic, soil, and seismic characteristics within the Project area. This section identifies potential impacts that could result from implementation of the Project, and as necessary, recommends mitigation measures to reduce the significance of impacts. The issues addressed in this section are risks associated with faults, strong seismic ground shaking, seismic-related ground failure such as liquefaction, landslides, substantial erosion or the loss of topsoil, and unstable geological units and/or soils.

The environmental setting discussion is based largely on review of the *Geotechnical Evaluation* by Ninyo and Moore (1999 & 2015), *Hydrogeology Investigation Plan* by Geoscience (2004), and *Offshore Geophysical Survey* for the *South Orange Coastal Ocean Desalination Project* by Geoscience (2016), review of aerial photographs and field observations of the area conducted in the summer of 2016, and maps of the proposed Project and its surroundings. Other information in this section, such as regulatory framework, is derived from the various planning documents including the City of Dana Point General Plan, City of Dana Point Zoning Code, Orange County General Plan, and pertinent State of California Building Codes.

4.5.1 AFFECTED ENVIRONMENT

Environmental Setting

Natural Setting

Project facilities would be located on and around Doheny State Beach (located immediately east of Dana Point Harbor), north of PCH, San Juan Creek, and Capistrano Beach Park. San Juan Creek empties into the freshwater San Juan Creek lagoon at this beach, dividing parking and recreational facilities to the west and a recreational vehicle campground to the east.

Subsurface Intake Wells

The subsurface intake wells would be located on Doheny State Beach, which is located in an urbanized area of Dana Point. Retail shops and stores, restaurants, hotels, and other primarily visitor-serving commercial uses are located adjacent to the State Beach. Dana Point Harbor is at the northwest end of the State Beach and provides recreational boating, sport fishing, whale watching trips, and marina facilities. Service commercial, equipment storage and maintenance, and industrial uses are also located nearby on the west side of Doheny Park Road, north of PCH.

Southeast Intake Wells

This component of the Project would be located on Capistrano Beach Park and not Doheny State Beach. Parking lots are situated between the railroad and the beach. Views of Doheny State Beach and Dana Point Harbor are accessed via the beach and PCH directly north of the site.

Raw Water Conveyance Alignments

The Raw Water Conveyance alignments generally follow existing public streets, with associated storm water drainage facilities. Several alignment locations traverse major drainage facilities, including San Juan Creek, and major drainage culverts that convey flows through DSB and Capistrano Beach Park.



Desalination Facility

The desalination facility site is located in an urbanized area of Dana Point. To the east, development includes structures for commercial uses, an active railroad track running parallel to the Project site, multiple asphalt parking lots, and Interstate 5. To the west across the San Juan Creek, development consists of a condominium complex, a sports complex consisting of three baseball fields and tennis courts, the Dana Point Community Center, and the J.B. Latham Wastewater Treatment Plant. To the south, development includes a hotel, PCH, a recreational vehicle park, and Doheny State Beach. To the north, development includes more storage on the District's San Juan Creek Property. The Groundwater Recovery Facility is located on the north end of the SCWD parcel, located at 33750 Stonehill Drive.

Concentrate (Brine) Disposal System

The brine disposal system would be connected from the desalination facility to the existing San Juan Creek Ocean Outfall that currently runs through the southwest corner of the desalination facility site.

Regional Project Facilities

Regional Project facilities (as described in Section 3) would be in substantially the same location as the Phase I Project facilities, with the exception of the SDG&E electrical line extensions (which would extend north of the site within existing streets) and the Regional Project product water conveyance, pumping and storage facilities, the location of which is not known at this time.

Regional Setting

According to the Geotechnical Evaluation prepared by Ninyo & Moore, regionally, the Project area is located in the southern part of Orange County California, which is located in the northwest trending Peninsular Ranges in southern California (1999 & 2015). This province consists of a series of ranges separated by a northwest trending valley, sub-parallel to branches of the San Andreas Fault. The Peninsular Ranges extend southward from the Transverse Ranges Geomorphic Province and the Los Angeles Basin into Baja California and are one of the largest geomorphic units in western North America. It is bound on the west by the Pacific Ocean, on the south by the Gulf of California and on the east by the Colorado Desert Province. The Peninsular Ranges are a series of northwest-southeast oriented fault blocks. Major fault zones and subordinate fault zones found in the Peninsular Ranges Province typically trend in a northwest-southeast direction.

Local Setting

Locally, the City of Dana Point is underlain by the Monterey Formation, the Capistrano Formation, and the San Onofre Breccia Formation and soils in the vicinity are derived from this parent material. The northern and eastern portions of Dana Point are characterized by high bluffs and elevated topography. This marine terrace area is generally flat to rolling and historically was scattered with small sand mounds. From this area, to the south and east, the terrain slopes downward, over steep bluffs in some areas, to the eastern portion of the city. The most notable landform in this part of the City is San Juan Creek, which flows through modified concrete and rip-rap banks. Continuing southeast, the remainder of the City is adjacent to the Pacific Ocean before it rises again over a bluff to the north, and then gently gains elevation to approximately 200 – 300 feet above mean sea level (amsl) (Ninyo & Moore, 1999).



The Project's off-shore components would be located under the seabed of the Pacific Ocean. Although the extent and depth of the alluvial deposits is unknown, the deposits likely extend a considerable distance and is in hydraulic continuity with the ocean water. The alluvium, however, is mixed with cobbles, gravel, silty sand, and clay layers to a distance of approximately 2.3 miles off shore, with bedrock laying at an unknown depth (Geoscience, 2016). For the purposes of subsurface slant well siting and design, the offshore hydrogeology was studied by the District through a series of technical studies prepared by Geoscience. These studies demonstrated that the areas offshore of San Juan Creek Lagoon and Capistrano Beach Park have sufficiently deep ancient alluvial deposits (referred to as "paleo channels") to provide adequate ocean water transmitting into the proposed subsurface intake wells (refer to [Section 3.0, Project Description](#), [Section 4.8, Hydrology and Water Quality](#), [Appendix 10.1, Preliminary Design Report](#), and [Appendix 10.10, Groundwater Modeling Results](#) for more detailed information (Geoscience, 2016).

The desalination facility site is located on a floodplain near the mouth of San Juan Creek. San Juan Creek floodplain is underlain by Holocene era, unconsolidated alluvial sediments. In the vicinity of the proposed Project, the alluvial sediments are estimated to be in excess of 100 feet thick. The ground surface does not appear to be transected by any fault trace. Materials encountered during subsurface exploration consist of fill materials overlying alluvium of the San Juan Creek floodplain. Groundwater levels are reported between 7 to 16 feet amsl. General groundwater flow within the alluvial sediments underlying San Juan Creek is southerly under the ocean floor (Ninyo & Moore, 2015).

Faulting and Seismicity

The City of Dana Point, like all of Southern California, is in a seismically active area; however, no known active faults cross the City (Ninyo & Moore, 2015). A fault is a fracture in the crust of the earth along which land on one side has moved relative to land on the other side. Most faults are the result of repeated displacement over a long period of time. A fault trace is the line on the earth's surface that defines the fault. An "active" fault is defined by the State Mining and Geology Board as one that has had "surface displacement within Holocene times (about the last 11,000 years)" (State Mining and Geology Board, 2017). This definition does not mean that faults that lack evidence of surface displacement within Holocene times are necessarily inactive. A fault may be presumed to be inactive based on satisfactory geologic evidence; however, the evidence necessary to prove inactivity is sometimes difficult to obtain and locally may not exist.

The nearest major active faults to the Project site are the Newport-Inglewood Fault Zone and the San Joaquin Hills and Oceanside Blind Thrust Faults (Ninyo & Moore, 1999). Other major active faults which could affect Dana Point include the Whittier-Elsinore Fault, the San Andreas Fault, the Palos Verdes Fault, the San Clemente Fault and the Rose Canyon Fault (refer to [Exhibit 4.5-1, Regional Fault Map](#)) (Cotton/Beland/Associates, Inc. 1991). Although no known faults cross the City, the Project site could be subjected to future seismic shaking during earthquakes generated by any one of the surrounding active faults. The two closest faults are discussed below.

The Newport-Inglewood Fault Zone is located approximately four miles off shore and under the Pacific Ocean and to the southwest of the Project site (Ninyo & Moore, 1999). This fault merges with the Rose Canyon fault offshore from the Dana Point area (Ninyo & Moore, 2015). The California Department of Conservation (DOC) names the pair together as the Newport-Inglewood-Rose Canyon Fault Zone (2010). The fault extends to the south from Newport Beach to Dana Point.



The San Joaquin Hills and Oceanside Blind Thrust Faults (named Pelican Hill Fault by the Department of Conservation) extend from near Upper Newport Bay, south through the San Joaquin Hills, and stops approximately 12 miles from the northern portion of Laguna Beach (Department of Conservation, 2010). The San Joaquin Hills blind thrust fault is located approximately 9.3 miles northwest of the Project site (Ninyo & Moore, 2015).

Fault Rupture

Fault rupture occurs during a seismic event when the movement of a subsurface fault breaks through the earth's surface creating a rift or crack that can damage buildings and infrastructure. There are no known active faults within the Project area. Southern California's water importation pipeline network is extremely vulnerable to fault rupture from a seismic event, as the region's imported water supply network (including the State Water Project, Colorado River Aqueduct and local conveyance lines such as the South County Pipeline) traverses multiple active faults (refer to Figure 4.5-1, Water Conveyance Systems Crossing the San Andreas Fault).

Strong Seismic Ground Shaking

Strong ground shaking from an earthquake can result in damage associated with landslides, ground lurching, structural damage, and liquefaction. Major faults in the Southern California region that have caused earthquakes and those that could result in earthquakes and ground shaking at the proposed Project site include those mentioned above, as well as the Whittier Fault Zone, Norwalk and El Modena Fault Zone, San Andreas Fault, and the San Jacinto Fault Zone. Potential regional sources for major ground-shaking hazards include the San Andreas, San Jacinto, and Elsinore fault zones.

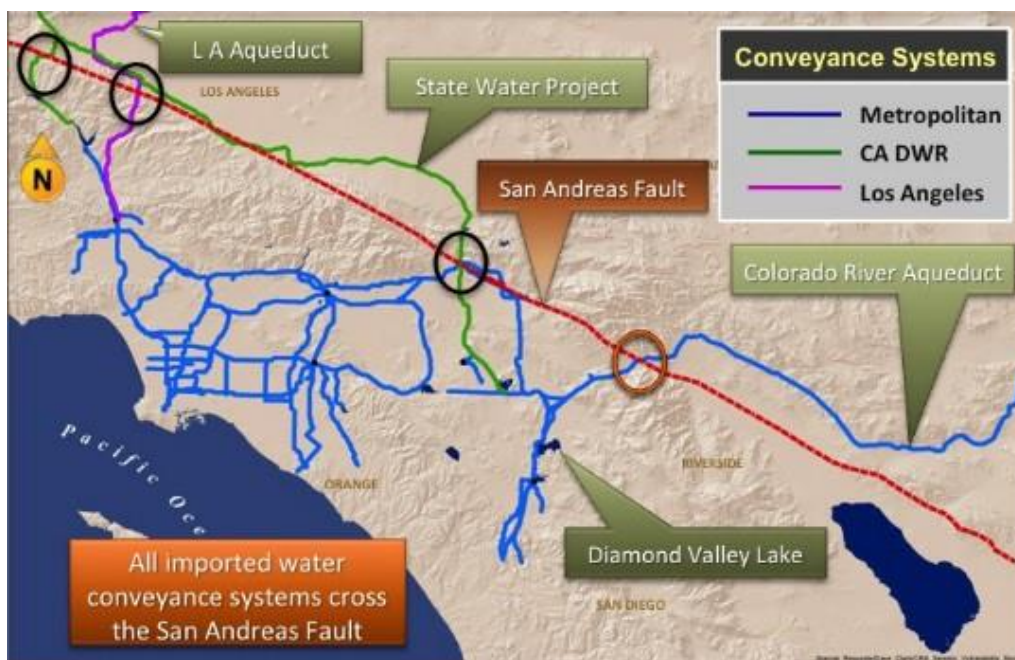
Liquefaction

Based on a review of the California Geologic Survey Seismic Hazard Zones Map for the Project vicinity, the Project area is in an area considered susceptible to liquefaction (California Geologic Survey, 2001). Liquefaction is a phenomenon in which the strength and stiffness of loose, saturated, non-cohesive granular soil is reduced by earthquake shaking or other rapid loading. The loss of cohesion within the soil causes it to temporarily act as a fluid resulting in ground failure and a lack of ability to support structural loads. Liquefaction occurs in saturated soils that are soils in which the space between individual particles is filled with water. This pore water exerts a pressure on the soil particles that influence how tightly the particles themselves are pressed together.

Liquefaction and related phenomena have been responsible for substantial structural damage in historical earthquakes, and are a design concern under certain conditions. Prior to an earthquake, pore water is typically low; however, earthquake motion can cause the pore water pressure to increase to the point where the soil particles can readily move with respect to each other. When liquefaction occurs; the strength of the soil decreases and the ability of a soil deposit to support structural loads are reduced.



Figure 4.5-1, Water Conveyance Systems Crossing the San Andreas Fault



Source: SCWD <http://www.scwd.org/news/displaynews.asp?NewsID=245&TargetID=1>, Accessed January 31, 2018

Subsidence

The subsidence of soils is characterized by sinking or descending soils that occurs as the result of a heavy load being placed on underlying sediments, and may be triggered by seismic events or pumping water, oil, and gas from underground reservoirs. Seismically induced settlement is dependent on the relative density of the subsurface soils. The Project site is not located in an area of known historic subsidence (Ninyo & Moore, 2015).

Landslides

The Project site does not contain any steep slopes that would be subject to hazards from landslides (Ninyo & Moore, 1999). However, adjacent areas contain steep slopes and some of these areas are identified on the California Geologic Survey (CGS) Seismic Hazard Zones Map as being subject to landslide hazards. The CGS defines an earthquake induced landslide zone as an area where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions, indicate a potential for permanent ground displacements such that mitigation would be required (California Geologic Survey, 2001).

Stratigraphy

Stratigraphy is the analysis of the order and position of strata and their relationship to the geologic time scale.

San Onofre Breccia

Initially, during early Miocene extension, extremely coarse clastic (rocks composed of pieces of other rocks) layers representing the San Onofre Breccia were deposited in the rift basin. Catalina Schist detritus, a metamorphic rock derived from a source to the west, was deposited in alluvial fans and fan deltas on a



rapidly subsiding extensional fault block. Exposed in the sea cliffs at Dana Point are predominantly non-marine, alluvial fan facies of the San Onofre Breccia. The thick, tabular, matrix-supported breccia beds, with sharp tops and bottoms and limited scouring, are consistent with subaerial debris flow deposits. Inverse grading at the base with normal grading toward the top is recognized in many beds, leaving the largest clasts near the center of the bed. Sparsely fossiliferous, gray sandy breccia or conglomerate and sandstone deposited in shallow water are found both above and below the debris flow strata (Geoscience, 2017).

Monterey Formation

The Miocene Monterey Formation of California is part of unique facies of biosiliceous sedimentation that took place around the Pacific Rim approximately 17.5 million years ago (Ma) in response to tectonic reorganization and localized subsidence, high eustatic sea level, intensification of coastal upwelling, and establishment of the modern thermohaline oceanic circulation. The Monterey Formation in the San Joaquin Hills to San Onofre area consists of laterally variable exposures of predominantly diatomaceous shale or mudstone, with less common sandstone, diatomite, porcelanite, tuffaceous lithologies, and minor chert and dolomite. The Monterey Formation is the primary oil- and gas- producing formation in Southern California and often referred to as Monterey Shale (Geoscience, 2017).

Capistrano Formation

The Capistrano Formation is late Miocene to Pliocene in age and unconformably (time-gap) overlies diatomaceous shales and mudstones of the middle to late Miocene Monterey Formation. The Capistrano Formation is composed mainly of coarse- to fine-grained, biotite-rich sandstone and thin-bedded siltstone and mudstone. As the structural trough developed in the Capistrano Embayment during late Miocene time, muddy sediments from the basin floor and slope were cut by a submarine canyon and fan system on the west side of the submarine escarpment created by the Cristianitos fault. Biostratigraphy shows that the Lower Pliocene Capistrano turbidite and fan units may have reached water depths of approximately 6,560 feet in the Dana Point area. The deep-water channel-fill turbidites of the Capistrano Formation have been a focus of study with the classic channel complexes exposed in the sea cliffs from Doheny Beach to San Clemente State Park. The San Clemente channels represent one to at least three northwest-trending, migrating channel complexes (Geoscience, 2017). The massive sandstone with lenses of conglomerate and breccia within the Doheny Channel represent late-stage channel filling (fining upward) sequences within the upper fan valley (Geoscience, 2017).

Niguel Formation

The late Pliocene Niguel Formation unconformably overlies the Capistrano, Monterey, and San Onofre Breccia in southern Orange County. The shallow-water marine deposits include fine-grained sandstone interbedded with sandy siltstone, and locally, basal conglomerate. Niguel Formation crops out in Reservoir Canyon, a northeast-trending tributary to San Juan Creek at Capistrano Beach. Uplift of the San Joaquin Hills and Dana Point region since the Pliocene has removed an unknown quantity of middle Pliocene sediments, as shown by the unconformity between the Niguel and Capistrano Formations. While it is uncertain if middle to upper Pliocene rocks exist offshore within the Capistrano Embayment, the



exploratory well MSCH#1 was interpreted to show only upper Miocene Monterey or equivalent rocks above middle Miocene San Onofre Breccia¹ (Geoscience, 2017).

Quaternary – Alluvial and Fluvial Deposits

Quaternary deposits include beach sands, uplifted marine terrace deposits, landslides, and the channel-fill sediments within the Pleistocene channel(s) of San Juan Creek. Stratigraphy from boreholes located on the beach and along the San Juan Creek flood plain² include interbedded gravels, cobbles, sands, silts and clays- representing fluvial and paralic (coastal) deposits of channel filling during transgression (sea level rise). Data for these channel fills are recorded in the logs for the boreholes located on the beach and along the San Juan Creek flood plain. These data are correlated with the sequences identified in the Last Glacial Maximum (LGM) paleochannel, imaged by high-resolution multichannel seismic reflection (MCS) profiles offshore using the character of the seismic reflection sequences and acoustic velocities for more confident interpretation (Geoscience, 2017).

Other Geologic Hazards

Expansion

Soils that expand and contract in volume (“shrink-swell” pattern) are considered to be expansive and may cause damage to aboveground infrastructure as a result of density changes that shift overlying materials. Fine-grain clay sediments are most likely to exhibit shrink-swell patterns in response to changing moisture levels. The natural alluvial soils found on the Project site are predominately sandy and not expansive. The existing fills on site, however, do contain clayey material which is potentially expansive (Ninyo & Moore, 1999). Future imported soil planned for the site may include expansive soil, depending on the availability of better quality material.

Erosion

Soil erosion occurs when surface materials are worn away from the earth’s surface due to land disturbance and/or natural factors such as wind and precipitation. The potential for soil erosion is determined by characteristics including texture and content, surface roughness, vegetation cover, and slope grade and length. Wind erosion typically occurs when fine-grained non-cohesive soils are exposed to high velocity winds, while water erosion tends to occur when loose soils on moderate to steep slopes are exposed to high-intensity storm events. The near-surface soils at the project site are comprised predominantly of sandy soils. Sandy soils have low cohesion and have a relatively higher potential for erosion from surface runoff (Ninyo & Moore, 2015).

4.5.2 REGULATORY FRAMEWORK

Geologic resources and geotechnical hazards are generally governed primarily by local jurisdictions; however, because the Project is adjacent to the Pacific Ocean and associated resources, additional federal and state regulations would apply. Relevant and potentially relevant statutes, regulations, and policies are discussed below.

¹ Figure 2-1 and 2-2 in *Geophysical Survey Results and Revised Preliminary Full-Scale Slant Well Locations, Doheny State Beach and Capistrano Beach, Near Dana Point, California* by Geoscience, March 8, 2017.

² Figure 2-3; Plate 2-1 in *Geophysical Survey Results and Revised Preliminary Full-Scale Slant Well Locations, Doheny State Beach and Capistrano Beach, Near Dana Point, California* by Geoscience, March 8, 2017.



Federal

Federal Occupational Safety and Health Administration Regulations

Code of Federal Regulations (CFR) Title 29, Part 1926, § 1926.650 et seq. details the Occupational Safety and Health Administration's (OSHA) requirements for excavation and trenching operations. OSHA issued its first standards related to excavation and trenching operations in 1971, and has since updated the standards to further reduce risk of injury and accidents. Project-related excavation and trenching activities would be required to demonstrate compliance with CFR Title 29 Part 1926 excavation and trenching standards.

Soil and Water Resources Conservation Act

The purpose of the Soil and Water Resources Conservation Act of 1977 is to protect or restore soil functions on a permanent sustainable basis. Protection and restoration activities include prevention of harmful soil changes, rehabilitation of the soil of contaminated sites and of water contaminated by such sites, and precautions against negative soil impacts. Disruptions of natural soil functions and function as an archive of natural and cultural history should be avoided, as far as practicable. In addition, the Federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) requirements, through the National Pollution Discharge Elimination System (NPDES) permitting process, provide guidance for protection of geologic and soil resources.

Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act of 1977 (Public Law 95-124) established the National Earthquake Hazards Reduction Program which is coordinated through the Federal Emergency Management Agency (FEMA), the U.S. Geological Survey (USGS), the National Science Foundation, and the National Institute of Standards and Technology. The purpose of the Program is to establish measures for earthquake hazards reduction and promote the adoption of earthquake hazards reduction measures by federal, state, and local governments; national standards and model code organizations; architects and engineers; building owners; and others with a role in planning and constructing buildings, structures, and lifelines through (1) grants, contracts, cooperative agreements, and technical assistance; (2) development of standards, guidelines, and voluntary consensus codes for earthquake hazards reduction for buildings, structures, and lifelines; and (3) development and maintenance of a repository of information, including technical data, on seismic risk and hazards reduction. The Program is intended to improve the understanding of earthquakes and their effects on communities, buildings, structures, and lifelines through interdisciplinary research that involves engineering, natural sciences, and social, economic, and decisions sciences.

Disaster Mitigation Act of 2000

The federal Disaster Mitigation Act of 2000 (Federal Emergency Management Agency, 2013; Public Law 106-390) provides the legal basis for FEMA mitigation planning requirements for state, local, and Indian Tribal governments as a condition of mitigation grant assistance. FEMA amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by repealing the previous mitigation planning provisions and replacing them with a new set of requirements that emphasize the need for state, local, and Indian Tribal entities to closely coordinate mitigation planning and implementation efforts. The requirement for a state mitigation plan is continued as a condition of disaster assistance, adding incentives for increased coordination and integration of mitigation activities at the state level through the establishment of



requirements for two different levels of state plans. FEMA also established a new requirement for local mitigation plans and authorized up to seven percent of Hazard Mitigation Grand Program funds available to a state for development of state, local, and Indian Tribal mitigation plans (Federal Emergency Management Agency, 2013).

U.S. Geological Survey Landslide Hazard Program

The United States Geological Survey (USGS) Landslide Hazard Program provides information on landslide hazards including information on current landslides, landslide reporting, real time monitoring of landslide areas, mapping of landslides through the National Landslide Hazards Map, local landslide information, landslide education, and research.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code [PRC] 2621-2624, Division 2 Chapter 7.5) was passed in 1972 following the destructive February 9, 1971 moment magnitude (Mw)³ 6.6 San Fernando earthquake to mitigate the hazard of surface faulting to structures intended for human occupancy. The Act's main purpose is to prohibit siting buildings used for human occupancy across traces of active faults that constitute a potential hazard to structures from surface faulting or fault creep. The Act requires the State Geologist to establish regulatory zones, known as "Earthquake Fault Zones," delineating appropriately wide earthquake fault zones to encompass potentially active and recently active traces of faults. Local agencies must regulate most development projects within these zones. Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed human occupancy structures would not be constructed across active faults. An evaluation and written report of a specific site must be prepared by a licensed geologist. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault (typically at least 50 foot setbacks are required) (Department of Conservation, 2017).

Effective June 1, 1998, the Natural Hazards Disclosure Act requires that sellers of real property and their agents provide prospective buyers with a "Natural Hazard Disclosure Statement" when the property being sold lies within one or more State-mapped hazard areas, including Earthquake Fault Zones.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (PRC, Chapter 7.8, § 2690-2699.6) directs the Department of Conservation, California Geological Survey (CGS) to identify and map areas prone to liquefaction, earthquake-induced landslides, and amplified ground shaking. The purpose of the Seismic Hazards Mapping Act is to minimize loss of life and property through the identification, evaluation, and mitigation of seismic hazards.

Staff geologists in the Seismic Hazard Zonation Program gather existing geological, geophysical, and geotechnical data from numerous sources to produce the Seismic Hazard Zone Maps (<http://www.conservation.ca.gov/cgs/shzp>). They integrate and interpret these data regionally in order

³ Moment magnitude is used to measure the size of an earthquake in terms of energy release. Each unit step in moment magnitude is equivalent to roughly a factor of 32 in energy release. Thus, an earthquake of Mw of 7.0 releases about 32 times as much energy as one of 6.0 and 1,000 times that of 5.0.



to evaluate the severity of the seismic hazards and designate as Zones of Required Investigation (ZORI) those areas prone to liquefaction and earthquake-induced landslides. Cities and counties are then required to use the Seismic Hazard Zone Maps in their land use planning and building permit processes.

The Seismic Hazards Mapping Act requires that site-specific geotechnical investigations be conducted within the ZORI to identify and evaluate seismic hazards (i.e., liquefaction and earthquake induced landslides) and formulate mitigation measures prior to permitting most developments designed for human occupancy.

2016 California Building Standards Code

California building standards are published in the California Code of Regulations, Title 24, also known as the California Building Standards Code (CBSC). The CBSC, which applies to all applications for building permits, consists of 11 parts that contain administrative regulations for the California Building Standards Commission and for all State agencies that implement or enforce building standards. Local agencies must ensure development complies with the CBSC guidelines. Cities and counties have the ability to adopt additional building standards beyond the CBSC. CBSC Part 2, named the California Building Code (CBC), is based upon the 2016 IBC⁴.

Given the state's susceptibility to seismic events, the CBC's seismic standards are among the strictest in the world. The CBC applies to all development in the State, except where stricter standards have been adopted by local agencies. CBC Chapter 16 deals with structural design requirements governing seismically resistant construction (CBC § 1604), including (but not limited to) factors and coefficients used to establish seismic site class and seismic occupancy category for the soil/rock at the building location and the proposed building design (CBC § 1613.5 through 1613.7). CBC Chapter 18 includes (but is not limited to) the requirements for foundation and soil investigations (CBC § 1803); excavation, grading, and fill (CBC § 1804); allowable load-bearing values of soils (CBC § 1806); and the design of footings, foundations, and slope clearances (CBC § 1808 and 1809), retaining walls (CBC § 1807), and pier, pile, driven, and cat-in-place foundation support systems (CBC § 1810). CBC Chapter 33 includes (but is not limited to) requirements for safeguards at worksites to ensure stable excavations and cut or fill slopes (CBC § 3304).

CBC Appendix J applies to grading, excavation, and earthwork construction, and specifies that no grading shall be performed without first having obtained a permit from the building official.

CBC § J104.3 requires the preparation of a geotechnical report that contains at least the following:

- The nature and distribution of existing soils,
- Conclusions and recommendations for grading procedures,
- Soil design criteria for any structures or embankments required to accomplish the proposed grading, and
- Where necessary, slope stability studies, and recommendations and conclusions regarding site geology.

⁴ The District is exempt for local land use controls (including building and grading permits and infrastructure plan approvals), pursuant to Government Code § 53091 exempts water projects from local land use controls like zoning and building permits. However, it is the District's practice and intent to voluntarily meet applicable local building codes and share project plans with City officials for a courtesy review and comment.



Local

City of Dana Point General Plan

As part of the Dana Point General Plan to aid in planning, significant geologic hazards within the City are divided into six subunits, one of which is Capistrano Beach/Doheny Beach, which is where Project facilities are located. The following is a summary of the two primary geologic hazards identified by the City in the Project area:

Coastal Erosion - There are two types of coastal erosion in Dana Point: the retreat of coastal bluffs and the loss of beach sands. Most beach sand comes either from sediment transport during river and stream runoff, or from erosion of coastal cliffs and bluffs. Because both of these processes have been impeded by urbanization, both in Dana Point and elsewhere, beach replenishment has been affected. Some portions of the Dana Point coastline have been more impacted than others, since impact is highly dependent on local factors, including beach configuration and location relative to man made improvements, such as jetties and harbors.

Blufftop Erosion: Extending for approximately 6.7 miles, the Dana Point shoreline includes areas of sandy and rocky shore, coastal bluffs, and the rocky Dana Point Headlands. These areas have been subjected to continual erosion from oceanic, climatological, and developmental forces. Urbanization has accelerated the erosion process in many locations and created areas of instability.

The General Plan also sets forth goals and policies related to ensure seismic safety in the Public Safety Element. Although many of the policies pertain to actions and review to be undertaken by the City, those that are pertinent and applicable to the Project from each of the elements are shown below⁵:

Public Safety Element

GOAL 1: Reduce the risk to the community from geologic hazards including bluff instability, seismic hazards and coastal erosion.

- Policy 1.1:** Require review of soil and geologic conditions by a State Licensed Engineering Geologist under contract to the City, to determine stability prior to the approval of development where appropriate.
- Policy 1.2:** Monitor and document known and potential geologic hazards in the City.
- Policy 1.3:** Adopt standards and requirements for grading and construction to mitigate the potential for bluff failure and seismic hazards.
- Policy 1.12:** Specifically review and limit development on lands with seismic, slide, liquefaction, fire or topographic constraints.
- Policy 1.17:** Support and encourage the efforts of the Orange County Flood Control District to modify the San Juan Creek Channel in order to increase sediment yield to the Capistrano and Doheny Beach areas.

⁵ As noted previously, the District is exempt from local land use controls pursuant to Government Code § 53091, which exempts water projects from local land use controls like zoning and building permits.



Policy 1.21: Adopt and maintain accepted State standards for seismic performance of new buildings.

GOAL 2: Reduce the risk to the community's inhabitants from flood hazards.

Policy 2.1: Identify flood hazard areas and provide appropriate land use regulations for areas subject to flooding.

Policy 2.2: Regulate the construction of non-recreational uses on coastal stretches with high predicted storm wave run-up to minimize risk of property damage.

Policy 2.5: Continue to participate in the national flood insurance program.

Policy 2.6: Cooperate with the Orange County Flood Control District to plan for and make needed improvements or modifications to San Juan Creek Channel to enable it to carry runoff from a 100-year storm.

City of Dana Point Zoning Code⁶

The City of Dana Point adopted the Building and Construction Codes in Title 8, Chapter 8.01 Article 1 through 15, and Chapter 8.02 Article, respectively with the intent to safeguard life, limb, property, and the public welfare, and to comply with storm water permits issued to the City, by regulating grading on private property in the City of Dana Point. These codes regulate grading, drainage, cut and fills, permits, setbacks, erosion control; and for construction, adoption of the CBC. Grading permits are required for all project sites with few exceptions, none of which would apply to the proposed Project. Building permits are required and may be issued, as stated above, for projects that conform to the CBC.

4.5.3 SIGNIFICANCE CRITERIA

Significance Criteria under CEQA

Appendix G of the State CEQA Guidelines contains the Initial Study Checklist form, which includes questions related to geology and soils. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this Section. Accordingly, a project may create a significant environmental impact if one or more of the following occurs:

- a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42;
 - Strong seismic ground shaking;
 - Seismic-related ground failure, including liquefaction;
 - Landslides;

⁶ As noted previously, the District is exempt for local land use controls (including building and grading permits and infrastructure plan approvals), pursuant to Government Code § 53091 which exempts water projects from local building and zoning ordinances.



- b) Result in substantial soil erosion or the loss of topsoil;
- c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;
- d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property;
- e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

Methodology and Assumptions

The proposed Project and associated project design features (PDFs) are evaluated against the aforementioned significance criteria, as the basis for determining the level of impacts related to geology and soils. In addition to PDFs, this analysis considers existing regulations, laws and standards that serve to avoid or reduce potential environmental impacts. Where significant impacts remain, feasible mitigation measures are recommended, where warranted, to avoid or lessen the Project's significant adverse impacts. Further details regarding methods are provided in Appendix 10.6 of this EIR.

Project Design Features

- a) The desalination site design was created to minimize the total duration and volume of construction grading required, therefore minimizing construction-related traffic, air emissions, noise, vibration and dewatering.
- b) The design of the desalination plant and its facilities was designed in a way so future expansion would be minimal.
- c) The Project utilizes an existing urban built-up environment. Therefore, site grading would be minimal for all components of the Project.

4.5.4 IMPACTS AND MITIGATION

Impact 4.5-1: Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving;

- i) **Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42? *Level of Significance: Less than Significant.***

Construction

All Components

None of the Project components are located in proximity to any known active earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map. The nearest faults are the Newport-Inglewood Fault Zone located 3 miles southwest, which consists of a series of disconnected,



northwest-trending fault segments which extend from Los Angeles, through Long Beach and Torrance, to Newport Beach. From Newport Beach, the fault zone continues offshore southeasterly past Oceanside and is known as the Offshore Zone of Deformation. The Whittier-Elsinore fault zone is approximately 20 miles to the northeast. The Christanitos fault zone is an approximately 30-mile-long fault, located approximately 6 miles east of the site. Available data reviewed indicates that the Christanitos fault zone is not likely to be active. As such, impacts to all project components would be less than significant and mitigation for this geologic hazard would not be required (Ninyo & Moore, 2015).

Operations

All Components

As previously discussed, the proposed Project is not located in close proximity to any known fault lines. Furthermore, operation of the various project components would adhere to all applicable City regulations and engineering standards of specifications. Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Impact 4.5-1: Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving;

ii) Strong seismic ground shaking? *Level of Significance: Less Than Significant with Mitigation.*

The Project is located in the Southern California region, which is prone to ground shaking. All Project components would be constructed to the more recent Uniform Building Code standards and would be designed in conformance with all applicable standards to resist the harmful effect of seismic ground shaking.

Construction

Subsurface Intake wells

The construction of the subsurface intake wells would be temporary and occur on Doheny State Beach. Therefore, it is not anticipated to expose people or structures to substantial impacts related to strong seismic ground shaking. Impacts would be less than significant.

Southeast Intake Wells

The construction of the southeast intake wells would be temporary and occur on Capistrano Beach. Therefore, it is not anticipated to expose people or structures to substantial impacts related to strong seismic ground shaking. Impacts would be less than significant.

Raw Water Conveyance Alignment – North

The construction of the Raw Water Conveyance Alignment and staging/laydown areas for construction equipment would occur on Doheny State Beach, Capistrano County Beach, and an industrialized area of Dana Point. Due to the temporary nature of construction activities, the proposed Project is not anticipated



to expose people or structures to substantial impacts related to strong seismic ground shaking. Impacts would be less than significant.

Raw Water Conveyance Alignment – South

Refer to analysis above.

Desalination Facility

The construction of the desalination facility would be temporary and is not anticipated to expose people or structures to substantial impacts related to strong seismic ground shaking. Impacts would be less than significant. Impacts would be less than significant.

Brine Disposal System

Construction of the brine disposal system would occur concurrently with construction of the desalination facility. Therefore, refer above for impact analysis.

Operations

Subsurface Intake wells

The Project components are not located on the Alquist-Priolo Earthquake Fault Zoning Map. Furthermore, due to the subsurface nature of the intake wells, impacts would be less than significant. There is a possibility of strong seismic ground shaking for all Project component due to the nature of the geographic region of Southern California and its seismic activity. To reduce impacts, compliance with mitigation Measure GEO-1 would require a qualified geologist and geotechnical engineer to prepare site-specific geotechnical hazard investigations and recommendations for design level measures. This mitigation measure would ensure operation impacts to be less than significant in relationship to strong seismic ground shaking.

Southeast Intake Wells

Refer to analysis above.

Raw Water Conveyance Alignment – North

The raw water conveyance alignments are not located on the Alquist-Priolo Earthquake Fault Zoning Map. However, portions of the alignment are located directly below an identified earthquake-induced landslide zone (below the Capistrano bluffs), where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements (California Geologic Survey, 2001). Therefore, implementation of Mitigation Measure GEO-1, along with relevant civil engineering best practices, would ensure that raw water conveyance facility impacts due to strong seismic ground shaking are less than significant. The raw water conveyance alignments are not intended for human occupancy and would not result in a direct adverse impact to humans in this regard, therefore impacts would be less than significant.

Raw Water Conveyance Alignment – South

Refer to analysis above.



Desalination Facility

The Project components are not located on the Alquist-Priolo Earthquake Fault Zoning Map. There is a possibility of strong seismic ground shaking for the desalination facility due to the nature of the geographic region of Southern California and its seismic activity. To reduce impacts from ground shaking, compliance with Mitigation Measure GEO-1 would require a qualified geologist and geotechnical engineer to prepare site-specific geotechnical hazard investigations and recommendations for design level measures. This mitigation measure would ensure operation impacts to be less than significant in relationship to strong seismic ground shaking.

Brine Disposal System

The brine disposal component is not intended for human occupancy and would not result in a direct adverse impact to humans in this regard, therefore impacts would be less than significant.

Mitigation Measures

Mitigation Measure GEO-1, below, would reduce impacts to a level of less than significant.

Impact 4.5-1: Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving;

iii) Seismic-related ground failure, including liquefaction? *Level of Significance: Less Than Significant with Mitigation.*

Construction

All Components

The proposed Project site is located within liquefaction zones which are defined as “areas where historical occurrence of liquefaction, or local geological, geotechnical and ground water conditions indicate a potential for permanent ground displacements such that mitigation would be required” (California Geological Survey, 2001). To reduce impacts due to liquefaction, compliance with Mitigation Measure GEO-1 would be required. Mitigation Measure GEO-1 would require a qualified geologist and geotechnical engineer to prepare site-specific geotechnical hazard investigations and recommendations for design level measure. The investigation would include any necessary recommendations for soils remediation and/or foundation systems necessary to reduce seismic-related hazards, such as liquefaction, to a less than significant level.

Operations

All Components

Overall, development of the Project could result in potential impacts to an essential public utility as well as persons and structures involving liquefaction. There is a possibility of strong seismic ground shaking in the Project area due to the nature of the geographic region of Southern California and its seismic activity. The component with the most extensive facility infrastructure is the desalination facility, which is located on the east side of San Juan Creek. The creek is supported by a concrete channel wall to reduce the impacts due to erosion and liquefaction. To further reduce potential impacts due to liquefaction, compliance with Mitigation Measure GEO-1 would require a qualified geologist and geotechnical engineer to prepare site-



specific geotechnical hazard investigations and recommendations for design level measure. The investigation would include any necessary recommendations for soils remediation and/or foundation systems necessary to reduce seismic-related hazards, such as liquefaction, to less than significant. In addition, the proposed Project design and construction would be subject to compliance with the California Building Standards Code (CBSC). Compliance with the CBSC and Mitigation Measure GEO-1, would ensure that persons and structures associated with the proposed Project would not be exposed to potential seismic-related liquefaction. Impacts would be less than significant with mitigation.

Mitigation Measures

Mitigation Measure GEO-1, below, would reduce impacts to a level of less than significant.

Impact 4.5-1: Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving;

iv) Landslides? *Level of Significance: Less Than Significant with Mitigation.*

Construction

Subsurface Intake wells

The intake wells are not located in an area with steep slopes or adjacent to any area containing steep slopes that would be subject to impacts from landslides. Additionally, this project component is not intended for human occupancy. Therefore, construction of the subsurface intake wells would not expose people or structures to potential substantial adverse effects involving rupture of a known earthquake fault or seismically-induced landslide. Therefore, impacts would not occur and no mitigation is required.

Southeast Intake Wells

The southeast intake wells are located on portions of Capistrano Beach and not within an area with steep slopes. The nearest slope is located across PCH, approximately 350 feet from the well head locations. However, construction of southeast intake wells would be temporary and would not expose people or structures to potential substantial adverse effects involving rupture of a known earthquake fault or seismically-induced landslide. Therefore, impacts would not occur and no mitigation is required.

Raw Water Conveyance Alignment – North

The area immediately surrounding portions of the southeasterly conveyance system contains steep slopes as it would traverse Park Lantern Road. Some of these areas are identified on the California Geologic Survey (CGS) Seismic Hazard Zones Map as being subject to landslide hazards, due to its location below the Capistrano Beach bluffs. Construction of the raw water conveyance alignment does not propose any work adjacent to the bluff, and would only excavate within existing right-of-way. These activities would not result in a destabilization of the bluff or the potential otherwise for landslide hazards. Therefore, this impact is less than significant.

Raw Water Conveyance Alignment – South

The North and South alignments share a stretch of pipeline on the campgrounds on Doheny State Beach, as shown in Exhibit 3-3, Project Facility Locations. Refer to impact analysis above regarding landslide hazards.



Desalination Facility

The desalination facility site is not located in an area subject to landslides. The surrounding area is urban-built-up commercial and industrial uses. San Juan Creek is located to the west of the Project site but is protected by a concrete wall, stabilizing and protecting the desalination facility site. The site is relatively flat and is not exposed to landslide hazards. The desalination facility would contain several buildings on site, and would therefore be subject to CBC standards. Therefore, impacts would be less than significant.

Brine Disposal System

The brine disposal system is not located on an area with steep slopes or adjacent to any area containing steep slopes that would be subject to impacts from landslides. Therefore, no significant impacts related to landslides are anticipated.

Operations

Subsurface Intake wells

The subsurface intake wells are not located in an area with steep slopes or adjacent to any area containing steep slopes that would be subject to impacts from landslides. Therefore, no significant impacts are anticipated.

Southeast Intake Wells

The intake wells are not located in an area with steep slopes or adjacent to any area containing steep slopes that would be subject to impacts from landslides. Therefore, no significant impacts are anticipated.

Raw Water Conveyance Alignment – North

Once construction of the raw water conveyance alignment is complete, impacts due to landslides would be minimal due to the fact that the alignment would be subsurface. Impacts due to operations of the raw water conveyance alignment would be less than significant in this regard.

Raw Water Conveyance Alignment – South

Refer to analysis above.

Desalination Facility

Due to the active seismicity of the region, the desalination facility would conform to the CBC standards as well as any applicable building code regulations from the City of Dana Point. Overall, development of the desalination facility could expose an essential public utility as well as persons and structures to potential substantial adverse effects involving strong seismic ground shaking, seismic-related ground failure (liquefaction/lateral spreading), and seismically-induced landslides. Therefore, implementation of Mitigation Measure GEO-1 would further reduce impacts related to landslides. Impacts are less than significant with mitigation.

Brine Disposal System

Due to the offshore nature of this project component, impacts related to sea floor landslides would be have minimal impacts to the brine disposal system. However, compliance with Mitigation Measure GEO-1



would ensure that the brine disposal system would not be exposed to potential substantial adverse effects involving seismic-related ground failure (liquefaction and lateral spreading) during operations. Therefore, impacts would be less than significant with mitigation.

Mitigation Measures

GEO-1 Prior to ground disturbing activities, a site-specific soils engineering report as required by California Building Standards Code § 1803 shall be prepared by a registered geologist. The soils engineering report shall detail existing soils and geologic conditions and shall be required for all Project components located within Liquefaction Investigation Zones, Landslide Investigation Zones or Alquist-Priolo designated Earthquake Fault Rupture Hazard Zones. The soils engineering report shall specifically include laboratory test data, associated geotechnical engineering analysis, and a thorough discussion of seismicity, liquefaction, landslide, dynamic compaction, compressible soils, corrosive soils, and tsunami (as applicable). The soils engineering report shall include any recommendations for ground improvement and/or foundation systems necessary to mitigate potential geologic hazards, as necessary. Recommendations shall be reflected in Project grading and design plans as appropriate.

Impact 4.5-2: **Would the project result in substantial soil erosion or the loss of topsoil? *Level of Significance: Less Than Significant.***

Construction

Subsurface Intake Well Area

None of the Project elements contain valuable topsoil, as Project facilities are located in developed areas, within existing streets, or easements, or require temporary displacement of beach sands for subsurface intake well vaults.

Construction of the subsurface intake wells would not result in substantial disturbance of soils such that erosion or loss of topsoil would occur. The seawater intakes would be bored using HDD which would reduce the footprint of construction activities. While construction of the subsurface intakes would require some excavation for the below-ground vaults, all work would be done in accordance with applicable regulations to control storm water run-off and reduce erosion. Although a relatively small volume of beach sand would be excavated for the subsurface intake vaults and raw water conveyance lines, if this material is suitable it could be made available to the City of Dana Point, Orange County Parks, and/or State Parks for use in beach replenishment. Section 4.8, Hydrology and Water Quality addresses runoff-related erosion including implementation of construction and operations erosion control measures (HWQ-1 through HWQ-3). The Project's Coastal Development Permit will also require submittal of an Erosion Control Plan for Coastal Commission review and approval prior to construction (refer to Mitigation Measures HWQ-1 through HWQ-3). Implementation of mitigation measures and these permitting requirements would ensure that impacts related to soil erosion are less than significant.

Southeast Intake Wells

Refer to analysis above.



Raw Water Conveyance Alignment – North

None of the Project elements contain valuable topsoil, as Project facilities are located in developed areas, within existing streets, or easements, or require temporary displacement of beach sands for subsurface intake well vaults.

Construction activities for the raw water conveyance alignment would occur in areas that are previously disturbed and do not contain valuable topsoil. The areas would consist of existing hardscape or landscaped areas, or would be located in areas adjacent to the that would not be valuable as topsoil.

Construction of the raw water conveyance alignment would not result in substantial disturbance of soils such that erosion would occur. The conveyance system would either be trenched within existing disturbed right-of-way or other hardscaped areas, or installed using trenchless construction. While construction of the conveyance systems would require some excavation to place the conveyance system piping, all work would be done in accordance with applicable regulations to control storm water run-off and reduce erosion. As with the subsurface intake wells, no significant erosion or topsoil impacts are anticipated for the raw water conveyance construction with implementation of Mitigation Measures HWQ-1 through HWQ-3 and associated CDP conditions.

Raw Water Conveyance Alignment – South

Refer to analysis above.

Desalination Facility

None of the Project elements contain valuable topsoil, as Project facilities are located in developed areas, within existing streets, or easements, or require temporary displacement of beach sands for subsurface intake well vaults.

Construction of the desalination facility Project component has the potential to cause soil erosion due to grading, soil stockpiling, and siltation. Further, sandy soils found at the near-surface at the Project site have low cohesion and high potential for erosion from surface runoff. Construction activities related to the specific Project component would be required to comply with the Municipal National Pollutant Discharge Elimination System (NPDES) General Construction Permit, refer to Section 4.8, Hydrology and Water Quality for discussion of the Project's anticipated NPDES permitting process. The NPDES permitting process would ensure erosion control measures are incorporated into construction of the desalination facility including dust control and grading measures. The construction would be required to comply with the erosion control measures stipulated through the 2016 CBSC and the Dana Point Municipal Code Chapter 8.01 Grading and Excavation control, which requires erosion control plans be prepared in accordance with sub article 13 of the Grading Manual.

As discussed in Impact 4.5-3 below, the desalination facility would include alternatives to elevate the site to be above 100-year flood elevation. To accomplish this, approximately 64,600 CY would have to be moved to elevate the desalination facility site. Raising the ground elevation would act as a flood barrier from the creek and would indirectly reduce the potential adverse impacts related to soil erosion (refer to Section 4.8, Hydrology and Water Quality for additional discussion). Therefore, construction of the desalination facility would result in a less than significant impact in this regard.



Brine Disposal System

Construction activities for the brine disposal system connections would occur in an area that is previously disturbed and does not contain valuable topsoil. The area would consist of existing hardscape or landscaped areas. Construction activities would include tying into the existing San Juan Creek Ocean Outfall pipeline. No other work would be required. Therefore, the potential for these activities to result in impacts associated erosion or loss of topsoil would not occur and mitigation is not required.

Operations

Subsurface Intake wells

Operation of the intake wells would require some routine maintenance on the well heads within the well vaults which would have been previously placed within the ground. These activities are not expected to require substantial disturbance of any topsoil, nor would such activities be expected to result in substantial erosion. The intake wells would be completely enclosed within the well vaults and stable within the subsurface soils. As such, the potential for the day to day operation of the seawater intakes to result in soil erosion or loss of topsoil would not occur. Therefore, no impact would occur.

Southeast Intake Wells

Refer to analysis above.

Raw Water Conveyance Alignment – North

Operation of the conveyance system would require limited maintenance, and the system would be completely underground so access would be extremely limited. Accordingly, once in place, the disturbance of the soil around the conveyance system would be rare and significant impacts would not occur. Mitigation, therefore, is not required and impacts would be less than significant.

Raw Water Conveyance Alignment – South

Refer to analysis above.

Desalination Facility

The desalination facility Project component would not involve operations which would result in substantial soil erosion that would cause significant property damage or result in the loss of topsoil/sedimentation into local drainage facilities and water bodies; refer to Section 4.8, Hydrology and Water Quality. No impacts would occur.

Brine Disposal System

Operation of the brine disposal system would require limited maintenance. In addition, the existing system is completely underground so the potential for impacts related to erosion or loss of topsoil would not occur. No impacts would occur.

Mitigation Measures

No mitigation measures are required.



Impact 4.5-3: **Would the project 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? *Level of Significance: Less Than Significant with Mitigation.***

Construction

Subsurface Intake Well Area

As described in Impact 4.5-1 above, the proposed Project component construction would be temporary and therefore would not be susceptible to on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. Impacts would be less than significant in this regard.

Southeast Intake Wells

Refer to analysis above.

Raw Water Conveyance Alignment

As described in Impact 4.5-1 above, the raw water alignment is located in an area susceptible to liquefaction (California Geological Survey, 2001). Construction activities would be temporary and thus not anticipated to expose people or structures to substantial adverse effects involving landslides, lateral spreading, subsidence, liquefaction, or collapse. Therefore, impacts would be less than significant.

Desalination Facility

According to the California Geological Survey, the desalination facility is located in a liquefaction zone next to San Juan Creek. As part of the Project site design, approximately 86,500 (CU YD) of earth materials to raise the project site to approximately 28.2 feet amsl, which is approximately 1 foot higher than the 100-year flood elevation with creek overtopping; refer to [Section 4.8, Hydrology and Water Quality](#) for a more detailed discussion of this process. This Project design would reduce the possible impact from liquefaction on the existing site by elevating the site with compacted dirt. Some soil erosion may occur during grading. However, in general, soil erosion can be addressed with conventional grading techniques such as berms/dikes, desilting basins, and sand bags. Upon the completion of grading, soil erosion may be mitigated by planting drought tolerant vegetation and maintaining appropriate surface drainage. The Project site is underlain by alluvial soils which are predominately granular and range from a loose to dense consistency. Groundwater is relatively shallow. Based on previous geotechnical evaluations on site, some loose soils within the alluvial sediments are potentially liquefiable during a major earthquake event. The liquefaction potential is variable across the site and should be evaluated for the site-specific improvements as development plans become available. In general, soil liquefaction could result in excessive differential settlement which can cause damage to structures. Typical construction technique and building designs such as structural fill mats to dampen settlement effects, deep foundations extending through the zone of liquefaction, deep dynamic compaction, grouting, or the use of stone columns to relieve groundwater pore pressures are a few design features which would address liquefaction impacts. Furthermore, adherence to the CBC and Dana Point Municipal Code Chapter 8.01 Grading and Excavation Control would reduce impacts to less than significant.



Brine Disposal System

As described in Impact 4.5-1 above, the proposed Project component construction would be temporary and therefore would not be susceptible to on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. Impacts would be less than significant in this regard.

Operations

Subsurface Intake Wells

Operation of the intake wells would require some routine maintenance on the well heads within the well housing which would have been previously placed within the ground. Compliance with CBSC and implementation of Mitigation Measure GEO-1 would further reduce impacts to a less than significant level.

Southeast Intake Wells

Refer to analysis above.

Raw Water Conveyance Alignment – North

Operation of the raw water conveyance system would require limited maintenance and routine inspection visits. Compliance with CBSC and Dana Point Municipal Code Chapter 8.01 Grading and Excavation Control would further minimize impacts. Therefore, impacts are less than significant.

Raw Water Conveyance Alignment – South

Refer to analysis above.

Desalination Facility

Development of desalination facility could expose an essential public utility as well as persons and structures to potential substantial adverse effects involving strong seismic ground shaking, seismic-related ground failure (liquefaction/lateral spreading), and seismically-induced landslides. Mitigation Measure GEO-1 would require that SCWD (or its designee) identifies a qualified geologist and geotechnical engineer to investigate these areas prior to commencement of construction. GEO-1 would also require areas with potential exposure to seismic hazards be subject to a site-specific geotechnical investigation prior to ground disturbing activities. The investigation would include any necessary recommendations for soils remediation and/or foundation systems necessary to reduce seismic-related hazards to less than significant. In addition, ocean water desalination facility design and construction would be subject to compliance with the CBSC. Implementation of the project design features discussed previously, as well as compliance with the CBSC and Mitigation Measure GEO-1, would address impacts related to unstable soils. Impacts would be less than significant with mitigation.

Brine Disposal System

Due to the offshore nature of this project component, impacts related to unstable soils would have minimal impacts to the brine disposal system. However, compliance with Mitigation Measure GEO-1 would ensure that the brine disposal system would not be exposed to potential substantial adverse effects



involving unstable soils during operations. Therefore, impacts would be less than significant with mitigation.

Mitigation Measures

Refer to Impact 4.5-1 for Mitigation Measure GEO-1.

Impact 4.5-4: Would the project 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? *Level of Significance: Less Than Significant with Mitigation.*

Soils that expand and contract in volume (“shrink-swell” pattern) are considered to be expansive and may cause damage to aboveground infrastructure as a result of density changes that shift overlying materials. Fine-grain clay sediments are most likely to exhibit shrink-swell patterns in response to changing moisture levels. According to the USDA Natural Resource Conservation Service Web Soil Map, the Project area consists of Myford sandy loams, Sorrento loams, Alo clays, and beaches.

Construction

Subsurface Intake wells

The soil composition across the Project area include Myford sandy loams, Sorrento loams, Alo clays, and beaches. Although construction would be temporary, implementation of Mitigation Measure GEO-1 to reduce the exposure of people and structures to the effects of expansive soils. Mitigation Measure GEO-1 would require that SCWD (or its designee) identifies a qualified geologist and geotechnical engineer to investigate these areas prior to commencement of construction. The Mitigation Measure would require that areas with potential exposure to seismic hazards be subject to a site-specific geotechnical investigation prior to ground disturbing activities. The investigation would include any necessary recommendations for soils remediation and/or foundation systems necessary to reduce seismic-related hazards to less than significant. In addition, ocean water desalination facility design and construction would be subject to compliance with the CBSC. Therefore, impacts would be less than significant with mitigation incorporated.

Southeast Intake Wells

See analysis above.

Raw Water Conveyance Alignment – North

Construction of the northern alignment would occur on existing streets and right-of-way’s. No expansive soils are expected, however implementation of Mitigation Measure GEO-1 would further reduce the exposure of people and structures to the effects of expansive soils during construction. Therefore, impacts would be less than significant with mitigation.

Raw Water Conveyance Alignment – South

Refer analysis above.



Desalination Facility

As identified in the limited geotechnical evaluation, undocumented fill soils are present across the majority of the site. At the previous boring locations, the fill depths ranged from approximately 5 to 15 feet. In general, the fill materials consisted of dry to moist, soft to stiff, clayey silt. Silty clay, clayey sand, silty sand and sandy silt were also encountered in the fills on-site. Occasional pieces of concrete and/or rubble were encountered in some borings. Additional fills on-site include a relatively large fill stockpile and fills associated with levee construction adjacent to San Juan Creek. The stockpile is located north of the treatment plant and reaches a height of approximately 20 feet. The levee fills are adjacent to the San Juan Creek channel and are on the order of five feet in height. The levee fills were reportedly compacted during placement. The natural alluvial soils on site are predominantly sandy and are not expansive.

Nonetheless, the desalination facility operation would be subject to various controls to reduce the exposure of people and structures to the effects of expansive soils. Specifically, the Project would be subject to compliance with requirements set forth in the 2016 CBSC and site-specific mitigation measures. Mitigation Measure GEO-1 requires preparation of a soils engineering report pursuant to CBSC § 1803 for areas of the SCWD property where the ocean water desalination facility and its appurtenant facilities would be located. The soils engineering report would identify the presence of soil issues, which if not corrected would lead to structural defects, and would include any necessary recommendations for soils remediation and/or foundation systems necessary to reduce risks to life and property. Compliance with Mitigation Measure GEO-1, and the CBSC, as well as any identified soils engineering report recommendations (which are expected to stipulate the removal of all moderately to highly expansive clay soils and avoidance of clayey soils in compacted fill), would ensure that desalination facility construction would result in a less than significant impact related to risks to life or property associated with expansive soils.

Brine Disposal System

The Brine Disposal System is part of the Desalination Facility site. Therefore, impacts would be similar. Refer to analysis above.

Operations

Subsurface Intake wells

Subsurface Intake Well operations would be subject to various controls to reduce the exposure of people and structures to the effects of expansive soils. Compliance with Mitigation Measure GEO-1, as well as any identified soils engineering report recommendations, would ensure onshore operations would result in a less than significant impact related to risks to life or property associated with expansive soils. Impacts would be less than significant with mitigation.

Southeast Intake Wells

See analysis above.



Raw Water Conveyance Alignment – North

Compliance with Mitigation Measure GEO-1, as well as any identified soils engineering report recommendations, would ensure that raw water conveyance components operations would result in a less than significant impact related to risks to life or property associated with expansive soils.

Raw Water Conveyance Alignment – South

See analysis above.

Desalination Facility

The Desalination Facility would be subject to compliance with requirements set forth in the 2016 CBSC and site-specific mitigation measures. Mitigation Measure GEO-1 requires preparation of a soils engineering report pursuant to CBSC § 1803 for areas of the ESGS property where the ocean water desalination facility and its appurtenant facilities would be located. The soils engineering report would identify the presence of soil issues, which if not corrected would lead to structural defects, and would include any necessary recommendations for soils remediation and/or foundation systems necessary to reduce risks to life and property. Compliance with Mitigation Measure GEO-1 and the CBSC, as well as any identified soils engineering report recommendations (which are expected to stipulate the removal of all moderately to highly expansive clay soils and avoidance of clayey soils in compacted fill), would ensure that desalination facility operations would result in a less than significant impact related to risks to life or property associated with expansive soils.

Brine Disposal System

See analysis above.

Mitigation Measures

Refer to Impact 4.5-1 for Mitigation Measure GEO-1.

Impact 4.5-5: Would the project 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? Level of Significance: No Impact.

Construction and Operations

All Components

The proposed Project consists of a desalination facility and associated infrastructure including subsurface intakes, raw water conveyance system, brine disposal, and connections to water distribution pipelines. The Project does not propose the use of septic tanks or an alternative waste water disposal system. The proposed Project would utilize the existing sanitary sewer system. Therefore, impacts would not occur and mitigation is not required.

Mitigation Measures

No mitigation measures are required.



REGIONAL PROJECT

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential geology and soils impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). Expansion at the desalination facility site would have no impacts on geology and soils, since the desalination facility site would have already been graded. The Regional Project may require construction of additional regional product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified. Mitigation Measure GEO-1 would apply to the Regional Project, in addition to standard practices to avoid pipeline trenching across natural open space lands to minimize grading, erosion and associated potential impacts.

4.5.5 CUMULATIVE IMPACTS

As discussed below, all Project impacts would be mitigated to a less than significant impact. The proposed Project would increase exposure of people and structures to seismic and geologic hazards. However, potential impacts associated with exposure of people and structures to potential adverse effects involving seismic hazards, unstable geologic units, and expansive soils would be reduced to a less than significant level through implementation of engineering and construction practices, and compliance with the established regulatory framework, which includes CBSC, and Mitigation Measure GEO-1, which requires site-specific geotechnical hazard investigations and recommendation of design-level measures. Compliance with NPDES General Construction Permit and CBSC requirements would ensure the Project's impacts related to soil erosion are less than significant.

Cumulative development could similarly result in exposure of people and structures to potential adverse effects involving seismic hazards, unstable geologic units, and expansive soils. Cumulative development could also result in substantial soil erosion. However, these impacts would be evaluated on a project-specific level in accordance with CEQA. The seismic, geotechnical, and soil characteristics of each cumulative development site would be evaluated on a project-by-project basis, and appropriate mitigation measures would be required, as necessary. Cumulative development would be subject to numerous existing federal, State, regional, and local laws, ordinances, regulations, and standards in place to minimize and/or avoid the effects of past, current, and probable development. All development would be required to comply with the established regulatory framework, including the CBSC and Municipal Code of each respective jurisdiction, and site-specific mitigation measures, which would include the recommendations of the site-specific geotechnical and soils investigations, as required. Future development would also be required to uphold the General Plan policies of each respective jurisdiction. The City of Dana Point General Plan EIR addresses cumulative impacts of City buildout. The Doheny State Beach General Plan EIR addresses cumulative impacts of building out the State Beach. Therefore, the Project's incremental effects involving geology and soils, combined with those of the cumulative projects, are not considered cumulatively considerable.



4.5.6 SIGNIFICANT UNAVOIDABLE IMPACTS

The proposed Project would not result in any significant unavoidable impacts. All impacts associated with geology and soils would either not occur, be considered less than significant, or be mitigated to less than significant levels.



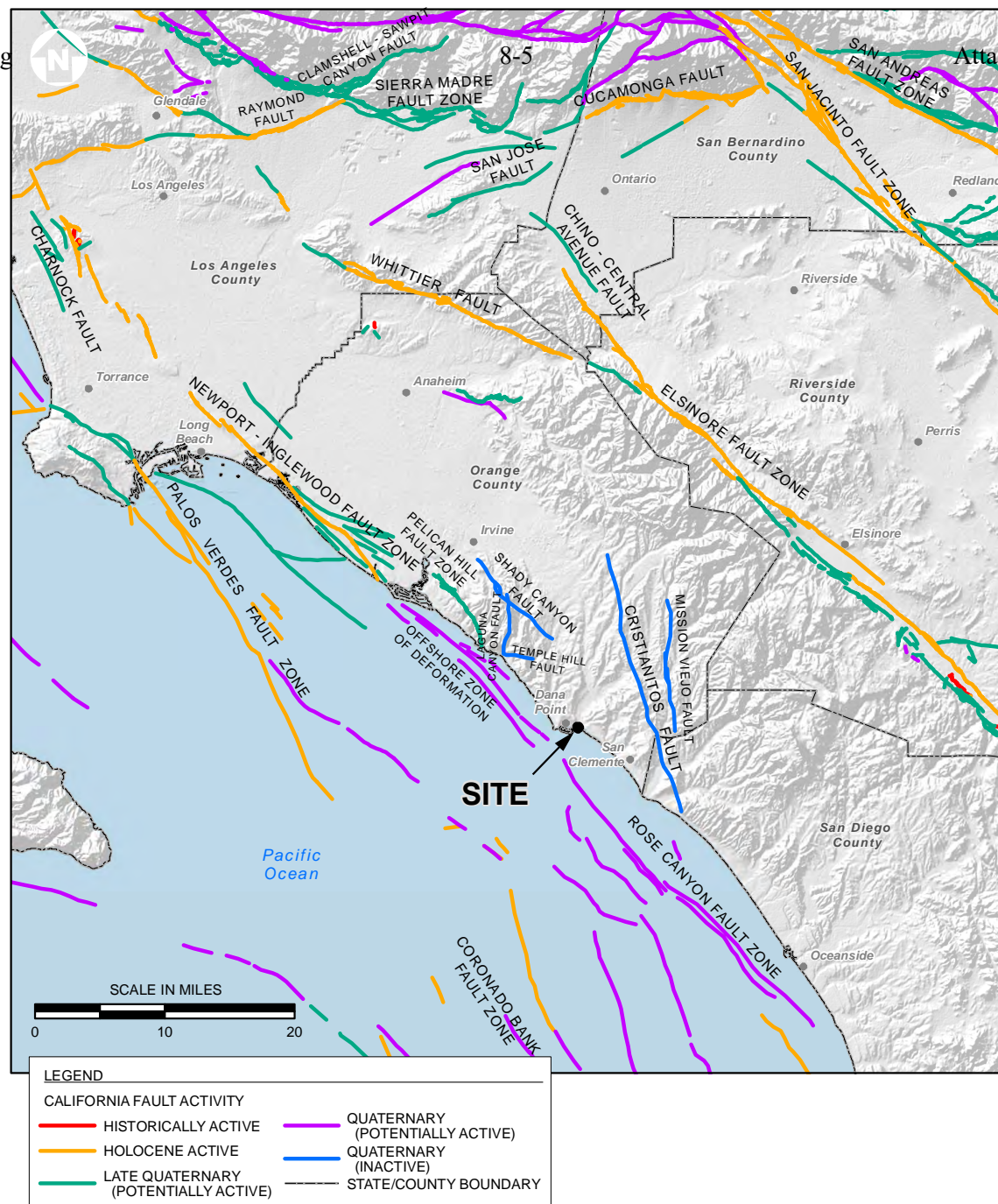


EXHIBIT 4.5-1: Regional Fault Map

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn

4.6 GREENHOUSE GAS EMISSIONS

This section evaluates greenhouse gas (GHG) emissions associated with the proposed Project and analyzes compliance with applicable regulations. Consideration of the Project's consistency with applicable plans, policies, and regulations, as well as the introduction of new sources of GHGs, is included in this section. Details on methodology and assumptions are provided in [Appendix 10.3, Air Quality/GHG Calculations](#).

4.6.1 AFFECTED ENVIRONMENT

The Doheny Ocean Desalination Project is located primarily within the City of Dana Point, in the coastal area of south Orange County, which is part of the South Coast Air Basin. Since Greenhouse Gas Emissions are a regional and even global environmental concern, this section focuses on the policy considerations related to the Project and its potential Greenhouse Gas Emission impacts. Refer to [Section 4.2, Air Quality](#) for additional discussion regarding the Project's physical and regulatory setting.

Climate Change & Global Warming

Climate change refers to any significant change in the measures of climate lasting for an extended period of time. Climate change encompasses major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer. 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.¹

Global warming refers to the recent and ongoing rise in global average temperature near Earth's surface. It is caused mostly by increasing concentrations of greenhouse gases (GHGs) in the atmosphere. Global warming is causing climate patterns to change. Since the 1900s, human activities have released large amounts of carbon dioxide and other greenhouse gases into the atmosphere. The bulk of greenhouse gases come from burning fossil fuels to produce energy, although deforestation, industrial processes, and some agricultural practices also emit gases into the atmosphere¹.

The Intergovernmental Panel on Climate Change (IPCC) released the Summary for Policymakers for the Fifth Assessment in September 2013. The report finds that evidence of warming is "unequivocal" and that it is "extremely likely" that human influence has been the dominant cause of that warming. Evidence backing up anthropogenic climate change includes increasing atmospheric carbon dioxide concentrations, rising air and ocean water temperatures, declines in the extent of arctic ice, and declining pH in ocean waters corresponding with man-made greenhouse gas emissions².

The IPCC also disclosed the following direct impacts of man-made climate change, including: higher maximum temperatures and more frequent hotter days; higher minimum temperatures and less frequent frost days; reduced diurnal temperature ranges; increases in heat index; and more frequent and severe weather episodes³. Other secondary impacts could include decreases in agricultural production and biodiversity, increases in warm climate diseases, and drastic habitat loss due to sea level rise.

¹ U.S. Environmental Protection Agency, <https://www.epa.gov/climatechange/climate-change-basic-information> (accessed September 29, 2016).

² State of California Governor's Office of Planning & Research, https://www.opr.ca.gov/m_climatechange.php (accessed October 13, 2016).

³ Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the IPCC*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.



Carbon Cycle & Greenhouse Effect

The global carbon cycle is comprised of large carbon flows to and from various reservoirs (e.g., atmosphere, ocean, and biomass). Billions of tons of carbon are absorbed by oceans and living biomass (i.e., sinks), and are emitted to the atmosphere annually through natural processes (i.e., sources). When in equilibrium, carbon fluxes (i.e., the net exchange) among these various reservoirs are roughly balanced.

When solar radiation extends to the Earth's surface, it can either be reflected back into space or absorbed by Earth. Once absorbed, the planet releases some of the energy back into the atmosphere in the form of longwave infrared radiation (i.e., heat). GHGs absorb energy, slowing or preventing the loss of heat to space. In this way, GHGs act like a blanket, making Earth warmer than it would otherwise be. This process is commonly known as the "greenhouse effect."⁴ Through man-made activities such as fossil fuel combustion and other industrial processes, the increase in GHG emissions is outpacing the natural carbon sources and sinks, increasing the planet's greenhouse effect, and effectively disrupting this balance.

Greenhouse Gas Emissions & Global Warming Potential

GHGs trap heat in the atmosphere. GHGs are emitted by natural processes and human activities. The accumulation of GHGs in the atmosphere regulates the earth's temperature. The seven major GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons (HFCs), perfluorocarbon (PFCs) and water vapor.

The most abundant GHGs are water vapor and CO₂.⁵ Many other trace gases have greater ability to absorb and re-radiate longwave radiation; however, these gases are not as plentiful. For this reason, and to gauge the potency of GHGs, scientists have established a Global Warming Potential (GWP) for each GHG based on its ability to absorb and re-radiate longwave radiation.

The GWP is a dimensionless metric that determines the relative ability of any gas to trap heat in the atmosphere and propagate the greenhouse effect. In other words, it quantifies the climate-change impact of emitting 1 kilogram (kg) of a greenhouse gas, normalized by the impact of emitting 1 kg of CO₂ for a specific timeframe (e.g., 20 years, 100 years, 500 years, etc.). This time dependence is set to reflect the different values of atmospheric persistence reliant on the chemistry and structure of each greenhouse gas.

GWP values from the IPCC's Fourth Assessment Report (AR4) on a 100-year timeframe are shown below:

The GHGs that would be normally associated with the proposed Project include the following:⁶

- Carbon Dioxide (CO₂). Carbon dioxide is primarily generated by fossil fuel combustion in stationary and mobile sources. Due to the emergence of industrial facilities and mobile sources in the past 250 years, CO₂ emissions from fossil fuel combustion increased by a total of 7.4 percent between

⁴ U.S. Environmental Protection Agency, <https://www.epa.gov/climate-change-science/causes-climate-change#Greenhouse> (accessed October 11, 2016).

⁵ U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014 (accessed April 15, 2016).

⁶ All Global Warming Potentials are given as 100 year GWP. Unless noted otherwise, all Global Warming Potentials were obtained from the Intergovernmental Panel on Climate Change. (Intergovernmental Panel on Climate Change, Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007).



1990 and 2014.⁷ Carbon dioxide is the most widely emitted GHG and is the reference gas (Global Warming Potential of 1) for determining Global Warming Potentials for other GHGs.

Table 4.6-1: SAR GWP Values (100-year Time Horizon)

Gas Name	Formula	GWP (CO ₂ e)
Carbon Dioxide	CO ₂	1
Methane	CH ₄	25
Nitrous Oxide	N ₂ O	298
HFC-23	CHF ₃	14,800
Sulfur Hexafluoride	SF ₆	22,800

The GHGs that would be normally associated with the proposed Project include the following:⁸

- Carbon Dioxide (CO₂). Carbon dioxide is primarily generated by fossil fuel combustion in stationary and mobile sources. Due to the emergence of industrial facilities and mobile sources in the past 250 years, CO₂ emissions from fossil fuel combustion increased by a total of 7.4 percent between 1990 and 2014.⁹ Carbon dioxide is the most widely emitted GHG and is the reference gas (Global Warming Potential of 1) for determining Global Warming Potentials for other GHGs.
- Methane (CH₄). Methane is emitted from biogenic sources, incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. The United States' top three methane sources are landfills, natural gas systems, and enteric fermentation. Methane is the primary component of natural gas, used for space and water heating, steam production, and power generation. The Global Warming Potential of methane is 25.
- Nitrous Oxide (N₂O). Nitrous oxide is produced by both natural and human-related sources. Primary human-related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. The Global Warming Potential of nitrous oxide is 298.
- Hydrofluorocarbons (HFCs). HFCs are typically used as refrigerants for both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is increasing, as the continued phase-out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The 100-year Global Warming Potential of HFCs range from 12 for HFC-161 to 14,800 for HFC-23.¹⁰
- Perfluorocarbons (PFCs). Perfluorocarbons are compounds consisting of carbon and fluorine, and are primarily created as a byproduct of aluminum production and semiconductor manufacturing. Perfluorocarbons are potent GHGs with a Global Warming Potential several thousand times that of carbon dioxide, depending on the specific PFC. Another area of concern regarding PFCs is their

⁷ U.S. Environmental Protection Agency, *Inventory of United States Greenhouse Gas Emissions and Sinks 1990 to 2014* (accessed April 15, 2016).

⁸ All Global Warming Potentials are given as 100 year GWP. Unless noted otherwise, all Global Warming Potentials were obtained from the Intergovernmental Panel on Climate Change. (Intergovernmental Panel on Climate Change, *Climate Change, Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, 2007).

⁹ U.S. Environmental Protection Agency, *Inventory of United States Greenhouse Gas Emissions and Sinks 1990 to 2014* (accessed April 15, 2016).

¹⁰ *Ibid.*



long atmospheric lifetime (up to 50,000 years).¹¹ The Global Warming Potential of PFCs range from 7,390 to 12,200.¹²

- Sulfur hexafluoride (SF₆). Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. Sulfur hexafluoride is the most potent GHG that has been evaluated by the IPCC with a Global Warming Potential of 22,800.¹³
- Water Vapor (H₂O). Although water vapor has not received the scrutiny of other GHGs, it is the primary contributor to the greenhouse effect. Natural processes, such as evaporation from oceans and rivers, and transpiration from plants, contribute 90 percent and 10 percent of the water vapor in our atmosphere, respectively. The primary human-related source of water vapor comes from fuel combustion in motor vehicles; however, it does not contribute a significant amount (less than one percent) to atmospheric concentrations of water vapor. The IPCC has not determined a Global Warming Potential for water vapor.

In addition to the six major GHGs discussed above (excluding water vapor), many other compounds could potentially contribute to the greenhouse effect. Some of these substances have been identified as stratospheric ozone (O₃) depleters, and their gradual phase-out is currently in effect. These compounds are listed below:

- Hydrochlorofluorocarbons (HCFCs). HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. As part of the Montreal Protocol, all developed countries that adhere to the Montreal Protocol are subject to a consumption cap and gradual phase-out of HCFCs. The United States is scheduled to achieve a 100 percent reduction to the cap by 2030. The 100-year Global Warming Potentials of HCFCs range from 90 for HCFC-123 to 1,800 for HCFC-142b.¹⁴
- 1,1,1 trichloroethane. 1,1,1 trichloroethane or methyl chloroform is a solvent and degreasing agent commonly used by manufacturers. The Global Warming Potential of methyl chloroform is 146 times that of carbon dioxide (CO₂ has a GWP of 1).¹⁵
- Chlorofluorocarbons (CFCs). CFCs are used as refrigerants, cleaning solvents, and aerosols spray propellants. CFCs were also part of the Environmental Protection Agency's (EPA) Final Rule (57 FR 3374) for the phase-out of O₃ depleting substances. Currently, CFCs have been replaced by HFCs in cooling systems and a variety of alternatives for cleaning solvents. Nevertheless, CFCs remain suspended in the atmosphere contributing to the greenhouse effect. CFCs are potent GHGs with 100-year Global Warming Potentials ranging from 3,800 for CFC 11 to 14,400 for CFC 13.¹⁶

To better understand the magnitude of the emissions from the proposed Project, it is useful to understand the extent of statewide GHG emissions as reflected in the California GHG emission inventory data for years

¹¹ U.S. Environmental Protection Agency, *Overview of Greenhouse Gas Emissions*, May 26, 2016, <http://www.epa.gov/climatechange/ghgemissions/gases/fqases.html#Trends> (accessed on June 14, 2016).

¹² *Ibid.*

¹³ *Ibid.*

¹⁴ Intergovernmental Panel on Climate Change, "Climate Change 2007: Working Group I: The Physical Science Basis, 2.10.2, Direct Global Warming Potentials", 2007, https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html (accessed June 14, 2016).

¹⁵ *Ibid.*

¹⁶ *Ibid.*



2010 through 2014. The emissions are broken down by inventory category (as defined in the AB 32 Scoping Plan) below:

Table 4.6-2: California GHG Emissions Inventory (Million Metric Tons of CO₂e)

Category	2010	2011	2012	2013	2014
Transportation	162.78	159.47	159.47	157.99	159.53
Industrial	90.99	90.49	90.63	93.10	93.32
Electric Power	90.34	88.06	95.09	89.65	88.24
Commercial & Residential	45.05	45.51	42.75	43.40	38.34
Agriculture	34.92	35.85	36.78	35.36	36.11
High GWP	12.39	13.65	14.89	16.05	17.15
Recycling & Waste	8.58	8.69	8.72	8.76	8.85
TOTAL	445.05	441.71	448.33	444.31	441.54
Notes: Gasses with high global warming potentials (High GWP) include fluorinated gases and include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF ₆), and nitrogen trifluoride (NF ₃). High GWP gas emissions occur from substitutes for ozone-depleting substances (ODS) use in the refrigeration, air conditioning, and heat pump systems; losses from the electricity transmission and distribution system from electrical gas (insulated switchgears); and gasses that are emitted in the semiconductor manufacturing process.					

4.6.2 REGULATORY FRAMEWORK

Federal

Executive Order 13514

Executive Order (EO) 13514 is focused on reducing GHGs internally in federal agency missions, programs and operations, but also directs federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is engaged in developing a national strategy for adaptation to climate change (Caltrans 2016).

On April 2, 2007, in *Massachusetts v. U.S. EPA*, 549 U.S. 497 (2007), the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act (CAA) and that the U.S. EPA has the authority to regulate GHG. The Court held that the U.S. EPA Administrator must determine whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision (Caltrans 2016).

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under § 202(a) of the CAA:

- Endangerment Finding: The Administrator found that the current and projected concentrations of the six key well-mixed GHGs (CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆) in the atmosphere threaten the public health and welfare of current and future generations.



- Cause or Contribute Finding: The Administrator found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing the U.S. EPA's Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles, which was published on September 15, 2009. On May 7, 2010, the final Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards was published in the Federal Register.

U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations. These steps were outlined by President Obama in a Presidential Memorandum on May 21, 2010.

The final combined U.S. EPA and NHTSA standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require these vehicles to meet an estimated combined average emissions level of 250 grams of CO₂ per mile, (equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO₂ level solely through fuel economy improvements). Together, these standards will cut GHG emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016). On August 28, 2012, U.S. EPA and NHTSA issued their joint rule to extend this national program of coordinated greenhouse gas and fuel economy standards to model years 2017 through 2025 passenger vehicles (Caltrans 2016).

The United States Supreme Court in *Massachusetts et al. v. Environmental Protection Agency et al.* 549 U.S. 05-1120) held that the U.S. EPA has the authority to regulate motor vehicle GHG emissions under the federal CAA.

The U.S. EPA publishes an annual GHG inventory (Inventory of U.S. Greenhouse Gas Emissions and Sinks),¹⁷ which tracks the national trend in GHG emissions and removals back to 1990. The report contains total U.S. emissions by source, economic sector, and GHG. U.S. EPA uses national energy data, data on national agricultural activities, and other national statistics to provide a comprehensive accounting of total GHG emissions for all man-made sources in the country. U.S. EPA also collects GHG emissions data from individual facilities and suppliers of certain fossil fuels and industrial gases through the Greenhouse Gas Reporting Program (U.S. EPA, April 2012).

In May 2010, U.S. EPA and the Department of Transportation's NHTSA published the final rule-making for a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States. The standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO₂ per mile, equivalent to 35.5 miles per gallon (MPG), if the automobile industry were to meet this CO₂ level solely through fuel economy improvements.

¹⁷ A greenhouse gas "sink" is a process, activity, or mechanism that absorbs more greenhouse gases than it releases.



In October 2012, U.S. EPA and NHTSA published the final rule-making for the second phase of the national program, which covers model years 2017 through 2025. The final standards are projected to result in an average industry fleetwide level of 163 grams of CO₂ per mile, equivalent to 54.5 MPG, if the automobile industry were to meet this CO₂ level solely through fuel economy improvements. U.S. EPA does not regulate residential sources of GHG emissions.

Recent Changes in Federal GHG Policy

On March 28, 2017, President Donald Trump signed Executive Order 13783, with the intent to reduce GHG regulations at the federal level. The Order rescinded Executive Order 13653, as well as the prior President's Climate Action Plan and the Council on Environmental Quality's *"Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews"* (August 5, 2016). The Order also calls for review, suspension and/or rescission of various federal regulations and policies related to climate change and greenhouse gas emissions. Following issuance of EO 13783, the EPA proposed to repeal the *Clean Power Plan*, and issued an *Energy Independence Report* (October 25, 2017) to implement EO 13783.¹⁸ These current and potential future changes in federal GHG regulations and policies may affect how the Project is viewed from a federal perspective as part of any federal permitting or funding, but it does not affect the Project's requirements under various local and state climate change policies and regulations, which are discussed further below.

State and Regional

California Air Resources Board (ARB) is responsible for the coordination and oversight of State and local air pollution control programs in California. Various statewide and local initiatives to reduce California's contribution to GHG emissions have raised awareness about climate change and its potential for severe long-term adverse environmental, social, and economic effects.

Assembly Bill (AB) 1493

AB 1493 (Pavley) of 2002 (Health and Safety Code § 43018.5) requires the ARB to develop and adopt the nation's first GHG emission standards for automobiles. These standards are also known as Pavley I. The California Legislature declared in AB 1493 that global warming is a matter of increasing concern for public health and the environment. It cites several risks that California faces from climate change, including a reduction in the state's water supply, an increase in air pollution caused by higher temperatures, harm to agriculture, an increase in wildfires, damage to the coastline, and economic losses caused by higher food, water, energy, and insurance prices. The bill also states that technological solutions to reduce GHG emissions would stimulate California's economy and provide jobs. In 2004, the State of California submitted a request for a waiver from federal clean air regulations, as the State is authorized to do under the CAA, to allow the State to require reduced tailpipe emissions of CO₂. In late 2007, the U.S. EPA denied California's waiver request and declined to promulgate adequate federal regulations limiting GHG emissions. In early 2008, the State brought suit against the U.S. EPA related to this denial.

In January 2009, President Obama instructed the U.S. EPA to reconsider the Bush Administration's denial of California's and 13 other states' requests to implement global warming pollution standards for cars and

¹⁸ <https://www.epa.gov/energy-independence> (accessed January 26, 2018).



trucks. In June 2009, the U.S. EPA granted California's waiver request, enabling the State to enforce its GHG emissions standards for new motor vehicles beginning with the current model year.

Executive Order S-3-05

In 2005, then-Governor Schwarzenegger issued EO S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent below 1990 levels (CalEPA, 2006).

In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA, 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These are strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light-duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, etc. The most recent CAT, dated December 2010, provides an update on the CAT's efforts towards achieving the State's emissions reduction targets, highlighting efforts in reducing GHG emissions from electricity and natural gas generation, climate change adaption including Ocean Protection Council policies on coastal hazards, and State-wide efforts towards water conservation and pursuit of energy efficiency in the water sector.¹⁹

Executive Order S-6-06

EO S-6-06 (State of California), signed on April 25, 2006, established two primary goals related to the use of biofuels within California, including: (1) by 2010, 20 percent of its biofuels need to be produced within California; increasing to 40 percent by 2020 and 75 percent by 2050; and (2) by 2010, 20 percent of the renewable electricity should be generated from biomass resources within the state, maintaining this level through 2020.

Assembly Bill (AB) 32

AB 32 ("California Global Warming Solutions Act of 2006, Health & Safety Code § 38500 et seq.) requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. The gases that are regulated by AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, nitrogen trifluoride, and sulfur hexafluoride. The reduction to 1990 levels would be accomplished through an enforceable statewide cap on GHG emissions that would be phased in starting in 2012. To effectively implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then ARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that ARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap, institute a schedule to meet the emissions cap, and develop tracking,

¹⁹ <http://www.energy.ca.gov/2010publications/CAT-1000-2010-005/CAT-1000-2010-005.PDF> (accessed February 1, 2018).



reporting, and enforcement mechanisms to ensure that the state achieves reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

Executive Order S-14-08 and Senate Bill 1078

Senate Bill (SB) 1078 (Public Utilities Code § 387, 390.1, and Article 16) addresses electricity supply and requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide a minimum 20 percent of their supply from renewable sources by 2017. This Senate Bill will affect statewide GHG emissions associated with electricity generation. In 2008, Governor Schwarzenegger signed Executive Order S-14-08, which set the Renewables Portfolio Standard target to 33 percent by 2020. It directed state government agencies and retail sellers of electricity to take all appropriate actions to implement this target. EO S-14-08 was later superseded by EO S-21-09 on September 15, 2009. EO S-21-09 directed the ARB to adopt regulations requiring 33 percent of electricity sold in the State come from renewable energy by 2020. This EO was superseded by statute SB X1-2 in 2011, which obligates all California electricity providers, including investor-owned utilities and publicly owned utilities, to obtain at least 33 percent of their energy from renewable electrical generation facilities by 2020, with interim targets of 20 percent by 2013 and 25 percent by 2016.

ARB is required by current law, AB 32 of 2006, to regulate sources of GHGs to meet a state goal of reducing greenhouse gas emissions to 1990 levels by 2020 and an 80 percent reduction of 1990 levels by 2050. The California Energy Commission (CEC) and California Public Utilities Commission (CPUC) serve in advisory roles to help ARB develop the regulations to administer the 33 percent by 2020 requirement. ARB is also authorized to increase the target and accelerate and expand the time frame.

Senate Bill (SB) 375

SB 375 (Cal. Public Resources Code § 21155, 21155.1, 21155.2, 21159.28.), signed in August 2008, enhances the state's ability to reach AB 32 goals by directing ARB to develop regional GHG emission reduction targets to be achieved from vehicles for 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPOs) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On September 23, 2010, ARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. The South Coast Association of Governments (SCAG) was assigned targets of a 0 percent reduction in GHGs from transportation sources from 2005 levels by 2020 and a 5 percent reduction in GHGs from transportation sources from 2005 levels by 2035.

Senate Bill (SB) 2X

In April 2011, Governor Edmund G. Brown, Jr signed SB 2X (Cal. Public Utilities Code § 399.18, 399.19, 399.26) requiring California to generate 33 percent of its electricity from renewable energy by 2020.

Senate Bill X1-2

Senate Bill X1-2 (Cal. Public Utilities Code § 399.14, 399.15, 399.17) was signed by Governor Edmund G. Brown, Jr., in April 2011, officially setting the state's renewable portfolio standard (RPS) target at 33 percent by 2020. This statute requires that all retail suppliers of electricity in California serve 33 percent



of their electrical load with renewable energy by 2020. This requirement applies to San Diego Gas and Electric (SDG&E), the utility that would provide electricity for the proposed Project.

Senate Bill 350 (Clean Energy and Pollution Reduction Act)

SB 350 (Cal. Public Resources Code § 25302.2, 25327) was signed by Governor Edmund G. Brown, Jr., in October 2015, establishing new clean energy, and air and greenhouse gas reduction goals for 2030 and beyond. SB 350 established California's 2030 greenhouse gas reduction target of 40 percent below 1990 levels. To achieve this reduction, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. Therefore, SB 350 would increase the use of RPS-eligible resources. The bill also makes revisions to the RPS Program and other requirements on public utilities and publicly owned electric utilities. Large utilities are required to develop and submit Integrated Resource Plans (IRPs) that detail how they will meet customer needs while reducing GHG emissions and increasing the use of clean energy resources. This requirement applies to SDG&E, the utility that would provide electricity for the proposed Project. In addition, SB 350 directs the CEC to establish energy efficiency targets by November 1, 2017, that achieve a statewide, cumulative doubling of energy efficiency savings in electricity and natural gas final end uses by 2030.

Senate Bill 1368

SB 1368 (codified at Public Utilities Code Chapter 3, commencing with § 8340 of Division 4.1) is the companion bill of AB 32. SB 1368 required the CPUC to establish a GHG emissions performance standard for baseload generation from investor-owned utilities by February 1, 2007. The bill also required the CEC to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural-gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and the CEC.

Senate Bill 97

SB 97 (Cal. Public Resources Code § 21083.05) was signed in August 2007 and acknowledged that climate change was a prominent environmental issue that required analysis under CEQA. This bill directed the Governor's Office of Planning and Research (OPR), which is part of the State Natural Resources Agency, to prepare, develop, and transmit to ARB guidelines for the feasible mitigation of GHG emissions (or the effects of GHG emissions), as required by CEQA. The CEQA Guidelines Amendments became effective on March 18, 2010.

Climate Change Scoping Plan

In October 2008, ARB published its Climate Change Scoping Plan, which is the State's plan to achieve GHG reductions in California required by AB 32. The Scoping Plan contains the main strategies California will implement to achieve reduction of 169 million metric tons of CO₂e, or approximately 30 percent from the state's projected 2020 emissions level of 596 million metric tons of CO₂e (MMTCO₂e) under a business-as-usual scenario (this is a reduction of 42 MMTCO₂e, or almost 10 percent, from 2002–2004 average emissions). The Scoping Plan also includes ARB-recommended GHG reductions for each emissions sector of the state's GHG inventory. The largest proposed GHG reduction recommendations are from improving emissions standards for light-duty vehicles (estimated reductions of 31.7 MMTCO₂e), implementation of the Low Carbon Fuel Standard (15.0 MMTCO₂e) program, energy efficiency measures in buildings and



appliances and the widespread development of combined heat and power systems (26.3 MMTCO₂e), and a renewable portfolio standard for electricity production (21.3 MMTCO₂e). The Scoping Plan identifies the local equivalent of AB 32 targets as a 15 percent reduction below baseline GHG emissions level, with baseline interpreted as GHG emissions levels between 2003 and 2008.

A key component of the Scoping Plan is the Renewable Portfolio Standard, which is intended to increase the percentage of renewables in California's electricity mix to 33 percent by year 2020, resulting in a reduction of 21.3 MMTCO₂e. Sources of renewable energy include, but are not limited to, biomass, wind, solar, geothermal, hydroelectric, and anaerobic digestion. Increasing the use of renewables will decrease California's reliance on fossil fuels, thus reducing GHG emissions.

The Scoping Plan states that land use planning and urban growth decisions will play important roles in the state's GHG reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions. (Meanwhile, ARB is also developing an additional protocol for community emissions.) ARB further acknowledges that decisions on how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emissions sectors. The Scoping Plan states that the ultimate GHG reduction assignment to local government operations is to be determined. With regard to land use planning, the Scoping Plan expects approximately 5.0 MMTCO₂e will be achieved associated with implementation of SB 375, which is discussed further below. The Climate Change Proposed Scoping Plan was approved by ARB on December 11, 2008.

The First Update of the Scoping Plan was approved by the ARB on May 22, 2014, which looked past 2020 to set mid-term goals (2030-2035) on the road to reaching the 2050 goals. The Second Update to the Climate Change Scoping Plan, titled the Final 2017 Scoping Plan Update, was approved by the ARB on December 14, 2017, to accelerate the reduction of greenhouse gas emissions over the coming decade by an additional 40 percent below 1990 levels by 2030 under SB 32.

2014 Scoping Plan Update

This First Update to California's Climate Change Scoping Plan (Update) was developed by the ARB in collaboration with the Climate Action Team and reflects the input and expertise of a range of state and local government agencies. The Update reflects public input and recommendations from business, environmental, environmental justice, and community-based organizations provided in response to the release of prior drafts of the Update, a Discussion Draft in October 2013, with the First Update approved on May 22, 2014. ***The ARB is currently moving forward with a Second Update to the Climate Change Scoping Plan, titled the Final 2017 Scoping Plan Update.*** The Final 2017 Scoping Plan, approved December 14, 2017, includes added emphasis on water conservation, energy efficiency and renewable energy, while acknowledging the need for a secure water supply including seawater desalination.²⁰

The 2014 Scoping Plan Update highlights California's success to date in reducing its GHG emissions and lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050. The First Update includes recommendations for establishing a mid-term emissions limit that aligns with the State's long-term goal of an emissions limit 80

²⁰ <https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm> (accessed January 26, 2018).



percent below 1990 levels by 2050 and sector-specific discussions covering issues, technologies, needs, and ongoing State activities to significantly reduce emissions throughout California's economy through 2050. The focus areas include energy, transportation, agriculture, water, waste management, and natural and working lands.²¹ With respect to the transportation sector, California has outlined several steps in the State's zero emission vehicle (ZEV) Action Plan to further support the market and accelerate its growth. Committed implementation of the actions described in the plan will help meet Governor Edmund G. Brown, Jr's 2012 EO B-16-2012, which—in addition to establishing a more specific 2050 GHG target for the transportation sector of 80 percent from 1990 levels—called for 1.5 million ZEVs on California's roadways by 2025.

Achieving such an aggressive 2050 target will require innovation and unprecedented advancements in energy demand and supply.²² Emissions from 2020 to 2050 will have to decline at more than twice the rate of that which is needed to reach the 2020 statewide emissions limit. In addition to our climate objectives, California also must meet federal clean air standards. Emissions of criteria air pollutants, including ozone precursors (primarily oxides of nitrogen, or NO_x) and particulate matter, must be reduced by an estimated 90 percent by 2032 to comply with federal air quality standards. The scope and scale of emission reductions necessary to improve air quality is similar to that needed to meet long-term climate targets. Achieving both objectives will align programs and investments to leverage limited resources for maximum benefit.

The 2014 Scoping Plan Update provides various policy goals for the water sector, focused primarily on conservation (reducing water consumption reduces GHG emissions associated with production, treatment and conveyance of water), energy efficiency (minimizing GHG emissions due to electricity demand associated with the water sector), and reliance upon a diverse water supply portfolio that includes less energy intensive water supply sources. However, the Scoping Plan Update notes that these AB32 related policies have the potential to conflict with other public policies, programs, and regulations. Specifically, the 2014 Scoping Plan Update notes the following:

*"Multiple policy objectives must be balanced across a wide spectrum of State water and climate planning documents, such as the AB 32 Scoping Plan, the Safeguarding California Plan, the California Water Plan, the Delta Plan, the Bay Delta Conservation Plan, and the Integrated Regional Water Management Strategic Plan. The California Water Action Plan provides some guidance on the relationship between the priorities established in these water and climate planning documents by establishing priorities for the next five years. State agency collaboration and policy alignment requires a foundation of information sharing and feedback. Both agency staff and executives will need to devote more time to inter-agency dialogue to ensure that policy differences are resolved with a full understanding of the consequences of decisions taken. In addition, achieving efficient and aligned policies across agencies may require alterations to existing agency authorities and decision-making procedures."*²³

²¹ California Air Resources Board, First Update to the Climate Change Scoping Plan, http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf, May 2014 (accessed September 12, 2016).

²² Ibid.

²³ Ibid, page 64.



California Building Code

The California Building Code (CBC) contains standards that regulate the method of use, properties, performance, or types of materials used in the construction, alteration, improvement, repair, or rehabilitation of a building or other improvement to real property. The CBC is adopted every three years by the Building Standards Commission (BSC). In the interim, the BSC also adopts annual updates to make necessary mid-term corrections. The CBC standards apply statewide; however, a local jurisdiction may amend a CBC standard if it makes a finding that the amendment is reasonably necessary due to local climatic, geological, or topographical conditions.

Green Building Standards

In essence, green buildings standards are indistinguishable from any other building standards. Both are contained in the CBC and regulate the construction of new buildings and improvements. The only practical distinction between the two is that whereas the focus of traditional building standards has been protecting public health and safety, the focus of green building standards is to improve environmental performance.

AB 32, which mandates the reduction in greenhouse gas emissions in California to 1990 levels by 2020, increased the urgency around the adoption of green building standards. In its scoping plan for the implementation of AB 32, ARB identified energy use as the second largest contributor to California's GHG emissions, constituting roughly 25 percent of all such emissions. In recommending a green building strategy as one element of the scoping plan, ARB estimated that green building standards would reduce GHG emissions by approximately 26 MMTCO₂e by 2020.

The green buildings standards were most recently updated in 2013. The 2013 building energy efficiency standards are 25 percent more efficient than previous standards for residential construction and 30 percent more efficient for non-residential construction (CEC 2016).

2006 Appliance Efficiency Regulations

The CEC adopted Appliance Efficiency Regulations (Title 20, CCR § 1601 through 1608) on October 11, 2006. The regulations were approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non-federally regulated appliances. While these regulations are now often viewed as "business-as-usual," they exceed the standards imposed by all other states, and they reduce GHG emissions by reducing energy demand.

Mandatory Reporting of Greenhouse Gas Emissions

Reporting of greenhouse gases by major sources is required by the California Global Warming Solutions Act (AB 32, 2006). Revisions to the existing ARB mandatory GHG reporting regulation were considered at the board hearing on December 16, 2010. The revised regulation was approved by the California Office of Administrative Law and became effective on January 1, 2012. The revised regulation affects industrial facilities, suppliers of transportation fuels, natural gas, natural gas liquids, liquefied petroleum gas, and carbon dioxide, operators of petroleum and natural gas systems, and electricity retail providers and marketers.



Cap and Trade Regulation

The cap-and-trade regulation is a key element in California's climate plan. It sets a statewide limit on sources responsible for 85 percent of California's greenhouse gas emissions, and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The cap-and-trade rules came into effect on January 1, 2013, and apply to large electric power plants and large industrial plants.

Under the cap-and-trade regulation, companies must hold enough emission allowances to cover their emissions, and are free to buy and sell allowances on the open market. California held its first auction of greenhouse gas allowances on November 14, 2012. California's GHG cap-and-trade system will reduce GHG emissions from regulated entities by approximately 16 percent, or more, by 2020.

2012-2035 Regional Transportation Plan/Sustainable Communities Strategy

On April 4, 2012, the Regional Council of the Southern California Association of Governments (SCAG) adopted the *2012-2035 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS). California's Sustainable Communities and Climate Protection Act, or SB 375, requires SCAG to develop a Sustainable Communities Strategy (SCS) to reduce GHG emissions from automobiles and light trucks through integrated transportation, land use, housing, and environmental planning. The SCS provides a plan for meeting the greenhouse gas emission-reduction targets set by the ARB for the SCAG region. The *2012-2035 RTP/SCS* has been designed to achieve minimum GHG reductions of 8 percent by year 2020 and 13 percent by year 2035.

The RTP/SCS does not envision a wholesale redevelopment of the Southern California region. The vast majority of neighborhoods and business districts that will exist in 2035 are already on the ground, and most of them, especially residential neighborhoods, will be unchanged in the next 25 years. Rather, the RTP/SCS envisions a new development pattern for new neighborhoods and revitalized neighborhoods and business districts that builds upon the current pattern to give residents more choices and more opportunities as they consider where to live and work in the future.

Unique to the SCAG region, SB 375 provides for a subregional council of governments and the county transportation commission to work together to propose an SCS for a subregional area. Orange County is one of these subregional areas. The subregional SCS for Orange County was prepared in June 2011 and has been incorporated in its entirety into the Final 2012–2035 RTP/SCS. GHG-reduction strategies contained in the subregional SCS for Orange County include the following:

- Support transit-oriented development.
- Support infill housing development and redevelopment.
- Support mixed-use development and thereby improve the walkability of communities.
- Increase regional accessibility in order to reduce vehicle miles traveled.
- Improve jobs-to-housing ratio.
- Promote land use patterns that encourage the use of alternatives to single-occupant automobile use.
- Support retention and/or development of affordable housing.



- Support natural land restoration and conservation and/or protection offering significant carbon mitigation potential via both sequestration and avoidance of increased emissions due to land conversion.
- Eliminate bottlenecks and reduce delay on freeways, toll roads, and arterials.
- Apply Transportation System Management and Complete Street practices to arterials and freeways to maximize efficiency.
- Improve modes through enhanced service, frequency, convenience, and choices.
- Expand and enhance Transportation Demand Management practices to reduce barriers to alternative travel modes and attract commuters away from single occupant vehicle travel.
- Continue existing, and explore expansion of, highway pricing strategies.
- Implement near-term and long-term transportation improvements to provide mobility choices and sustainable transportation options.
- Acknowledge current sustainability strategies practiced by Orange County jurisdictions and continue to implement strategies that will result in or support the reduction of GHG emissions.

SCAG adopted the 2016 RTP/SCS on April 7, 2016, which aims to reduce GHG emissions by 8 percent in 2020, 18 percent by 2045 and 21 percent by 2040 as compared to 2005 levels, in order to meet applicable state and federal requirements.²⁴

Local

Dana Point Energy Efficiency & Conservation Plan

The Dana Point Energy Efficiency & Conservation Plan was released in December 2011, and its purpose is to “identify goals and measures that can be utilized to reduce energy consumption and promote the conservation of natural resources in Dana Point.” The six main goals of the plan are stated as to:

- 1) Reduce energy use, and hence reduce greenhouse gas emissions
- 2) Promote sustainable land use and redevelopment
- 3) Encourage sustainable construction
- 4) Promote efficient transportation
- 5) Continue current efforts to conserve and efficiently use water
- 6) Encourage public education and outreach in the community concerning energy reduction and sustainable behaviors.

According to report calculations, Dana Point has decreased its per capita emissions (-6.78 percent) between 1990 and 2004, but due to population growth has increased its total emissions by approximately 4.5 percent. Based on these rough calculations the City of Dana Point would therefore have to reduce emissions by at least 4.5 percent to reach California’s emissions reduction requirement of 1990 levels by 2020.

²⁴ <http://scaqrtpscs.net/Pages/FINAL2016RTPSCS.aspx> (accessed January 26, 2018).



As part of the local water efficiency and conservation measures, “The City, in concert with South Coast Water District...will continue to provide significant water saving measures for residents and businesses including equipment, tips, and information and support alternative potable water sourcing such as desalination.”²⁵ [emphasis added]

4.6.3 SIGNIFICANCE CRITERIA

Significance Criteria under CEQA

CEQA Guidelines Appendix G, Environmental Checklist Form, includes questions pertaining to greenhouse gases. The issues presented in the Environmental Checklist have been utilized as thresholds of significance in this section. Accordingly, the Project would have a significant adverse environmental impact if it would:

- Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases

The amendments to the CEQA Guidelines § 15064.4(b) that resulted from Senate Bill 97 indicate that a lead agency should consider the following factors when assessing the significance of impacts from GHG emissions on the environment:

- The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting.
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Net Carbon Neutral

As a public entity, the South Coast Water District (SCWD) supports the objectives of AB 32 and is dedicated to assisting the great state of California maintain its leadership role of impactful climate change mitigation legislation and practices. As a result, SCWD has voluntarily committed to ensure the Project is net carbon neutral. Net carbon neutral in this context is defined to mean that the proposed Project would be designed and operated in such a manner that there would be no net increase in GHG emissions, as compared to the baseline environmental setting. The net carbon neutral standard would also include construction-phase emissions that are accounted for in a manner consistent with SCAQMD’s draft GHG analysis recommendations.

Methodology and Assumptions

The proposed Project and associated project design features (PDFs) are evaluated against the aforementioned significance criteria, as the basis for determining the level of impacts related to greenhouse gas emissions. In addition to PDFs, this analysis considers existing regulations, laws and

²⁵ City of Dana Point – Department of Public Works & Engineering, “Dana Point Energy Efficiency & Conservation Plan”, <http://www.danapoint.org/departments/public-works-engineering/environmental/>, December 2011.



standards that serve to avoid or reduce potential environmental impacts. Where significant impacts remain, feasible mitigation measures are recommended, where warranted, to avoid or lessen the Project's significant adverse impacts. Further details regarding methods are provided in [Appendix 10.3](#) of this EIR.

Project Design Features

- Refer to Project Design Features listed in [Section 4.2, Air Quality](#).

4.6.4 IMPACTS AND MITIGATION

Impact 4.6-1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? *Level of Significance: Less than Significant with Mitigation*

Although the GHG emissions of each individual Project component were included in this analysis, due to the global nature of GHG emissions, the impact analysis focuses on the total GHG emissions of the overall Project from both a construction and operational perspective.

Construction

Construction Emissions Methodology

Construction GHG emissions were calculated by using CalEEMod 2016.3.2. Details regarding the construction schedule, construction activities, equipment inventory, assumptions, and data used to calculate construction-related GHG emissions are available in [Appendix 10.3, Air Quality/GHG Calculations](#). In addition, since the Project design is conceptual and subject to modification during final design and permitting, conservative assumptions were utilized, as noted in [Appendix 10.3, Air Quality/GHG Calculations](#).

Construction GHG Emissions Summary

The Phase 1 Project (up to 5 MGD) includes construction of the ocean desalination facility, screened ocean intake and concentrate discharge facilities, and the desalinated water conveyance facility. This analysis assumes that the Project may result in simultaneous construction activities of multiple components. This analysis assumes that the Phase 1 Project construction would commence in 2019 and require approximately 20 months.

Construction and commissioning of the Regional Project (up to 15 MGD) would require approximately 6 months. Commencement of Regional Project construction and precise phasing is unknown and would be determined based upon funding sources, financial partners, and specific end users of the additional water supply beyond 5 MGD. For purposes of this analysis, Regional Project construction is assumed to commence in 2030. Estimated construction-generated GHG emissions are provided in [Table 4.6-4, Construction GHG Emissions Summary](#).

[Table 4.6-4, Construction GHG Emissions Summary](#) (below) summarizes the projected construction-related greenhouse gas emissions associated with the Project. The vast majority of these emissions would come from construction equipment and construction vehicles, with the remaining coming from indirect sources such as commuter trips. Pursuant to SCAQMD methodology, these construction emissions are



amortized over an assumed 30-year operational life of the Project, and are included in the operational emissions table below. Annualized construction emissions are approximately 415 MTCO₂e per year for the Phase 1 Project and 18 MTCO₂e per year for the Regional Project. Detailed assumptions are provided in [Appendix 10.3, Air Quality/GHG Calculations](#).

Table 4.6-4: Construction GHG Emissions Summary

Emissions Source	Total Emissions (Metric Tons) ¹			
	CO ₂	CH ₄	N ₂ O	CO ₂ e ²
5 MGD 2019	8,739	1.57	0.00	8,778
5 MGD 2020	3,666	0.63	0.00	3,682
15 MGD 2030	276	0.02	0.00	276
15 MGD 2031	253	0.01	0.00	253
TOTAL	12,934	2.22	0.00	12,989²⁶
¹ Construction emissions from CalEEMod analysis, see Appendix 10.3, Air Quality/GHG Calculations .				
² CO ₂ e = CO ₂ + CH ₄ * 21 + N ₂ O * 310, IPCC SAR GWP Values				

Operation

Operations Emissions Methodology

Direct operational GHG emissions were calculated by using a combination of emission models and emission factors, which included CalEEMod 2016.3.2 and SDG&E's GHG intensity factor for 2015. Details regarding GHG analysis assumptions and modeling are provided in [Appendix 10.3, Air Quality/GHG Calculations](#).

Direct operational GHG emissions associated with the proposed Project would be generated by the emergency generators, area sources (e.g., heating), mobile sources (on-site and off-site vehicle travel), as well as waste generation at the administration building. Indirect operational GHG emissions (i.e., electricity consumption) were calculated using CalEEMod 2016.3.2 and various local and regional factors. Details regarding the sources, assumptions, and data used to calculate operational-related GHG emissions are available in [Appendix 10.3, Air Quality/GHG Calculations](#).

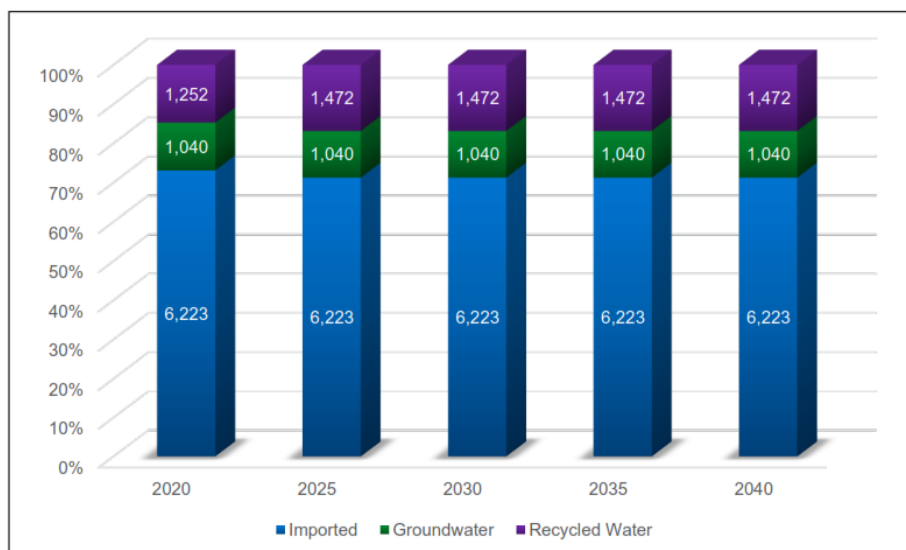
Future Supply & Demand Projections

In order to calculate future baseline emissions, reliable future supply and demand projections must be utilized. All baseline supply and demand projections are from SCWD's 2015 Urban Water Management Plan (UWMP). These future projections do not include the Project (i.e., "No Project" scenario), and therefore assumes for baselines conditions that SCWD continues to rely primarily upon imported water. The SCWD 2015 UWMP demand projections are shown below in [Figure 4.6-1](#).

²⁶ Use of subsurface intakes may also result in "degassing" of CO₂ (release of CO₂ into the atmosphere by bringing pressurized groundwater to the surface, a process similar to the "pop" of a champagne bottle when the cork is removed). However, this potential effect is relatively small, estimated at a few hundred MTCO₂e per year, which would be accounted for in the Project's GHG mitigation.



Figure 4.6-1: SCWD Future Water Supply Portfolio (No Project)



Source: SCWD 2015 UWMP

The overall demand for water within the SCWD’s jurisdiction is expected to remain near constant over the next 25 years with only a 2.52 percent increase between 2020 and 2040. In addition, the total amount of imported water being supplied to the SCWD is expected to remain stable at 6,223 AF per year.

Imported Water Sources

More than 70 percent of SCWD’s water is supplied by imports via the Colorado River Aqueduct (CRA) and the State Water Project (SWP). The CRA is owned and operated by the Metropolitan Water District of Southern California (MWD) and transports water from the Colorado River to its terminus at Lake Mathews in Riverside County. The primary purpose of the SWP is to divert and store water during wet periods in Northern and Central California and distribute it to areas of need in Northern California, the San Francisco Bay area, the San Joaquin Valley, the Central Coast, and Southern California. The raw water obtained from these two sources for Orange County is treated at the Robert B. Diemer Filtration Plant (Diemer) located north of Yorba Linda.

Phase I Project – Product Water Destination

The Phase I Project (up to 5 MGD) is assumed to serve SCWD and its customers,²⁷ with the product water delivered into the existing local conveyance system. Phase I Project water is assumed to replace corresponding quantities of imported water, and as such reduces GHG-related emissions of imported water associated with SCWD’s water supply portfolio.

Regional Project – Product Water Destination

The potential future Regional Project (up to 15 MGD) is similarly assumed to replace a corresponding quantity of imported water. In other words, SCWD and any other local Municipal Water District of Orange County (MWD) retail agency that receives Regional Project water would be utilizing desalinated water

²⁷ The District may make Phase I Project product water available to other south Orange County water agencies, on an emergency or baseload basis, subject to consistency with applicable Urban Water Management Plans.



on a one-to-one replacement basis of imported water received from the CRA and SWP. The Regional Project GHG analysis is programmatic, and does not account for other potential GHG-related impacts that could occur should the Regional Project be implemented (as noted in [Section 3.0, Project Description](#)). Prior to implementing any expansion of the Project beyond 5 MGD, SCWD would need to prepare additional CEQA documentation as well as obtain amended or new regulatory permits for the increase in desalinated water production. It would be speculative for SCWD to attempt to predict how “freed up” imported water could be used by MWD, MWDOC or others in the future. As noted above, the availability of each imported source is highly variable and dependent on a multitude of factors including drought conditions, water rights, and climate change impacts. It is generally anticipated that any Regional Project water supplies would go to water retailers or CUP-regulated private utilities to serve existing or approved development.

Operations Emissions Summary

Table 4.6-5: GHG Emissions Summary

Emission Source	CO ₂ e (MT/YR)	
	5 MGD	15 MGD
Operational Emissions¹		
Energy ²	12	12
Mobile Sources ³	45	35
Stationary Sources (Emergency Generators) ⁴	38	38
Waste Sources ⁵	1	1
Water (Indoor and Outdoor) ⁶	3	3
Construction Emissions		
Annualized Construction Emissions	450	428
Indirect Energy Emissions⁷		
Desalination Facility ⁸	7,207	22,097
Slant Wells ⁹	445	1,289
Imported Water Displacement ¹⁰	-2,252	-6,767
Net Project Emissions	5,959	17,146
¹ Operational emissions from CalEEMod analysis (see Appendix 10.3, Air Quality/GHG Calculations for additional details on assumptions). ² Energy use for facility lights and typical facility use for the Administration Building using CalEEMod default energy consumption assumptions. ³ On-road mobile vehicles for commuter trips and deliveries. ⁴ It is assumed that the generator would be a 500-horsepower diesel generator and operate a maximum of 60 minutes per day when it is tested. ⁵ Waste Sources is for waste from the Administration building using CalEEMod default waste generation rates. ⁶ Water consumption for the Administration building using CalEEMod default water use rates. ⁷ Energy consumption for water equipment operations. Project facilities would require energy for the treatment and conveyance of water. ⁸ Desalination Facility Emissions [MT CO ₂ e/YR] = Desalination Facility Energy Footprint [kWh/YR] * Grid Electricity Emission Factor [MT CO ₂ e/kWh] ⁹ Slant Wells Emissions [MT CO ₂ e/YR] = Slant Wells Energy Footprint [kWh/YR] * Grid Electricity Emission Factor [MT CO ₂ e/kWh]. ¹⁰ Imported Water Displacement Credits [MT CO ₂ e/YR] = ∑ Displaced Source Water Volume [AF/YR] * Displaced Source Specific Energy Intensity [MWh/AF] * Source Specific Carbon Intensity [MT CO ₂ e/MWh]. Assuming 50/50 split of displacement offset from SWP and CRA.		

Table 4.6-5, GHG Emissions Summary (above) summarizes the greenhouse gas emissions associated with the Project. Operational mobile emissions (commuter trips and deliveries), off-road emissions (emergency generator and area sources), and waste emissions (waste disposal) produce a minimal amount of emissions compared to those caused by the Project’s annual energy demand. The vast majority of Project-



related operational emissions are from indirect emissions associated with the Project's electricity consumption from the power grid. As discussed further in Impact 4.6-2, the Project's electricity-related GHG emissions are regulated by the SCAQMD, ARB, the Department of Water Resources (DWR) and others and as such will be further reduced through these agency's efforts to comply with AB32 and related GHG policies and regulations.

SCWD is committed to achieving a "carbon neutral" ocean desalination project with no net increase in GHG emissions compared to the baseline scenario (continued reliance on current water supply portfolio which is primarily from imported water). This means that the Project's net increase in GHG emissions would be 100 percent offset through a combination of Project Design Features and mitigation measures. The PDFs cited in Section 4.2, Air Quality demonstrate that SCWD has incorporated a variety of design considerations to reduce GHG emissions, including favorable siting and design, installation of roof-top solar panels on Project buildings (where feasible), and incorporation of state-of-the-art energy recovery devices that reduce Project overall energy demand by approximately 35 percent. This is in addition to SCWD's broader commitment to energy efficiency as exhibited through the system-wide energy savings associated with its ongoing conservation and water recycling programs. Mitigation Measures in Section 4.2, Air Quality would also reduce construction and operation-related GHG emissions.

As discussed in Section 3.0, Project Description, SCWD is committed to pursuing feasible energy minimization and efficiency, as part of the Project, including consideration of onsite rooftop solar and energy recovery devices, fuel cells, and renewable energy contracts/credits for "clean energy," in order to offset the Project's incremental additional energy demand in comparison to SCWD's current water supply portfolio (in order to achieve "carbon neutral" energy emissions). For purposes of this EIR, the GHG analysis conservatively relies only upon PDFs noted in Section 3.0 and Section 4.2, and does not account for potential additional GHG reductions that may be achieved should one or more alternative energy sources be implemented as part of the Project. The mitigation measures below, GHG-1 and GHG-2, would ensure that the Project's GHG emissions are fully offset to achieve carbon neutrality, resulting in less than significant impacts regarding greenhouse gas emissions.

The total amount of emissions that would need to be offset would be approximately 5,959 MTCO₂e/yr for the Phase I Project and 17,146 MTCO₂e/yr for the Regional Project. As described in Mitigation GHG-2, the GHG offset would be evaluated annually and "trued up" based on comparing actual imported water supply GHG emissions to the SCWD's water supply portfolio GHGs with the Project, based on actual Project energy consumption and associated GHG emissions.

Given that greenhouse gas emissions would be fully offset through emission reduction measures and offsets projects, the proposed Project would not result in a cumulatively considerable contribution to global climate change. Therefore, the greenhouse gas emissions impact related to the construction and operation of this would be less than significant with mitigation.

Mitigation Measures

GHG-1 SCWD (or its designee) shall prepare an Energy Minimization and GHG Reduction Plan prior to the start of Project construction activities. The purpose of the Plan is to document Project GHG emissions and the net incremental emissions required to be offset in order to achieve net carbon neutrality (no net increase in GHG emissions beyond emissions associated with imported water, defined as the GHG emissions that



are attributed to SCWD's portfolio, with the Project's water supply replaced by water imported from CRA and SWP). The Plan shall, at a minimum, include the following elements:

- 1) **Project GHG Emissions** – updated GHG emission estimates based upon final design plans;
- 2) **Updated CRA and SWP GHG Emissions** – updated emissions associated with importing water that would be imported from CRA and SWP if the Project were not constructed;
- 3) **Incremental Project GHG Emissions** – Project GHG emissions minus GHG emissions associated with importing water, representing the net incremental GHG emissions requiring offset in order to achieve net carbon neutrality, currently estimated at 5,959 MTCO₂eq /year for the up to 5 MGD Project .
- 4) **GHG Mitigation Options** – the Plan shall identify specific strategies to be implemented which shall, at minimum, be sufficient to reduce or offset the Project's incremental GHG emissions to a "no net increase" performance standard. Strategies shall be verifiable and feasible to acquire and implement over the Project life. The Plan shall identify how each strategy shall be implemented, and the emission reductions associated with strategy. Subject to review and modification by other permitting agencies (including the California Coastal Commission and State Lands Commission), SCWD may include any/or all of the following strategies in the Plan:
 - a) Minimize Project's Energy Demand – SCWD is committed to constructing and operating an environmentally sound project that minimizes electricity demand through implementation of reasonable and feasible design measures. The Plan shall include a summary of state-of-the-art energy recovery and conservation technologies available for utility-scale desalination facilities and shall include a commitment by SCWD to incorporate all available feasible energy recovery and conservation technologies; or, if SCWD finds that any of the technologies will not be feasible for the project, the Plan shall include a detailed description as to why such technology is considered to be infeasible. The carbon footprint estimate for the approved project shall include consideration of all proposed energy recovery and conservation technologies that will be employed by the project, and shall clearly describe the calculated GHG emissions reductions that will be associated with each technology.
 - b) On-site Solar PV – SCWD is committed to installing on-site roof-top solar PV panels or other on-site renewable energy (subject to space availability and only such that there would be no significant visual impacts). The GHG reduction benefit would depend on rooftop surface area availability and other factors. According to initial design calculations, the desalination facility site buildings would accommodate solar panels on a roof surface of approximately 45,000 square feet, with the potential to generate less than 1,000 MWh/year of electricity. If installed, the electricity produced by the onsite PV system



would be used by the Project and therefore would reduce the Project's electrical demand on SDG&E. SCWD is in the process of exploring solar proposals and will update this information as it becomes available.

- c) On-site Fuel Cells – The District is committed to reducing GHG emissions by reasonable and feasible methods, including potential use of on-site fuel cells. Potential use of fuel cells is being explored by the District in consultation with SDG&E, relative to cost, requirements for offsite improvements if any, additional permitting requirements, and timeliness of this option. If fuel cells are not deemed feasible, the District commits to a “net carbon neutral” project as described further in Mitigation Measure GHG-2.
- d) GHG Offsets (or “Carbon Offset”) – SCWD may pursue a Renewable Power Purchase Agreement (PPA)²⁸ to achieve the required level of GHG emission reductions to achieve net carbon neutrality. If the PPA is not feasible or desirable to provide adequate GHG emissions reduction, SCWD would pursue additional third-party verifiable GHG offsets and/or Renewable Energy Certificates.²⁹ To the extent practicable, GHG offset projects must be located within California. Offsets may include, but not be limited to:³⁰
 - i. *Landfill Methane Capture*: Methane capture removes GHG emissions from the atmosphere. These GHG offsets are readily available across the country from numerous verified providers.
 - ii. *Reforestation*: Reforestation provides GHG reduction associated with carbon sequestration, and is a widely available GHG offset nationally and internationally.
 - iii. *Wind Power*: Wind Power provides clean energy to reduce fossil-fuel related electricity emissions. Wind Power GHG offsets are readily available across the country and internationally.

GHG-2

SCWD (or its designee) shall prepare and publish an Annual GHG Verification Report in the first quarter of each year following Project construction or operations. The purpose of the Plan is to “true up” the incremental GHG emission estimate annually by reporting on actual estimated Project GHG emissions, emissions associated with importing water, and the GHG offsets associated with verifiable GHG mitigation. The

²⁸ A renewable power purchase agreement is a contract between two parties where one party sells both electricity and renewable energy certificates (RECs) to another party. The “seller” is often the developer or project owner, the “buyer” is the power consumer. Renewable energy PPAs can take two primary forms – physical or financial (the latter often referred to as “virtual”) – the best structure depending on the markets where the consumer and renewable projects are located, as well as the goals, priorities, and risk tolerance of the consumer (from <https://3degreesinc.com/ppas-power-purchase-agreements/> (accessed January 27, 2018)).

²⁹ Carbon offsets, also known as VERs or CRTs (carbon reduction tons), represent the act of reducing, avoiding, destroying or sequestering the equivalent of a ton of greenhouse gas (GHG) in one place to “offset” an emission taking place somewhere else. Offsets generally represent direct emission reductions or sequestration -- for example, the destruction of methane emitted from decaying manure at a dairy farm. So they can be used to offset direct emissions, like those from Scope 1 in a company's footprint. On the other hand, renewable energy certificates, or RECs, represent proof that one megawatt hour (MWh) of energy was generated from a clean, renewable source, such as wind, solar, hydro, or certain types of renewable biomass, which effectively offsets the GHGs that would have otherwise been associated with the production electricity. RECs are also known as Green Tags, Renewable Energy Certificates or Tradable Renewable Certificates.

³⁰ SCWD assumes that each or any of the identified GHG mitigation strategies either have or will receive any required discretionary approvals prior to being applied to the Project, or otherwise have negligible environmental impact.



Report shall be prepared by SCWD and verified by an independent accredited verification entity, pursuant to ARB Mandatory Reporting Regulation. The findings of the Report shall be used to adjust the annual GHG offsets required for the subsequent Project operational years. Additional offsets, if required, shall be in place by the end of the next operational year.

Impact 4.6-2: Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? *Level of Significance: Less than Significant with Mitigation.*

Construction and Operations

All Components

ARB and other state agencies are implementing a variety of statewide programs to reduce GHG emissions that will contribute to meeting reduction goals of the Scoping Plan and SB 32/Executive Order B-30-15. These and other efforts would reduce the Phase 1 Project's and Regional Project's GHG emissions related to energy generation. Thus, it is reasonable to expect the project's GHG emissions level to decline with implementation of the regulatory initiatives identified by ARB in the Second Update to the Scoping Plan (and as further Scoping Plan Updates are implemented), and other technological innovations. As such, given the reasonably anticipated decline in the Project's indirect GHG emissions once fully constructed and operational, the Project would be consistent with the State's GHG reduction goals.

The Scoping Plan recognizes that AB 32 establishes an emissions reduction trajectory that will allow California to achieve the more stringent 2050 target: "These [GHG emissions reduction] measures also put the State on a path to meet the long-term 2050 goal of reducing California's GHG emissions to 80 percent below 1990 levels."³¹ The emissions reduction strategies recommended by ARB would serve to reduce the Project's post-2020 emissions level to the extent applicable by law, such as transitioning the energy sector toward zero carbon.³² Scoping Plan Measure W-3 has a "target" of 20 percent energy efficiency from 2006 levels. The Scoping Plan, however, also notes that GHG reductions in the water sector are not counted toward the AB32 2020 goal and are "indirectly realized through the reduced energy requirements and are accounted for in the Electricity and Natural Gas sector."³³ In addition, many factors would influence the State's ability to attain the 2050 GHG reduction goal, including changes in regulatory standards; fuel, transportation and power generation technologies; population growth; and land use development patterns.

The State is currently implementing several targeted, agricultural, urban, and industrial-based water conservation, recycling, and water use efficiency programs as part of an integrated water management effort that will help achieve GHG reductions through reduced energy demand within the water sector. While it is important for every sector to contribute to the State's climate goals, ensuring universal access to clean water as outlined in AB 685 (Eng., Chapter 524, Statutes of 2012),³⁴ also known as the "human

³¹ California Air Resources Board, *Climate Change Scoping Plan, a Framework for Change*, December 2008.

³² California Air Resources Board, *First Update to the Climate Change Scoping Plan*, May 2014.

³³ *Climate Change Scoping Plan*, ARB, December 2008, page 66.

³⁴ California Legislative Information Website, Assembly Bill No. 685, http://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201120120AB68 (accessed June 12, 2017).



rights to water” bill, should take precedence over achieving GHG emission reductions from water sector activities where a potential conflict exists.

ARB’s Cap and Trade Program (California Code of Regulations Title 17, § 95800–96023) is designed to reduce GHG emissions from major sources (deemed “covered entities”) by setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve AB 32’s emissions-reduction mandate of returning to 1990 levels of emissions by 2020. ARB has expressed its intention to extend the Cap and Trade Program beyond 2020 in conjunction with setting a mid-term target. The “recommended action” in the First Update for the Cap and Trade Program is to develop a plan for a post-2020 Cap and Trade Program, including cost containment, to provide market certainty and address a mid-term emissions target.³⁵ ARB adopted the 2017 Scoping Plan Update in November 2017. Although the Cap and Trade Program is not available to indirect electricity consumers such as the Project, it nonetheless serves to reduce the cumulative effect of State-wide and global GHG emissions.

Governor Edmund G. Brown, Jr expressed a commitment to achieve “three ambitious goals” that he would like to see accomplished by 2030 to reduce the State’s GHG emissions in his January 2015 inaugural address. These goals include: (1) increasing the State’s Renewable Portfolio Standard from 33 percent in 2020 to 50 percent in 2030;³⁶ (2) cutting the petroleum use in cars and trucks in half; and (3) doubling the efficiency of existing buildings and making heating fuels cleaner.³⁷ These expressions of Executive Branch policy may become adopted legislative or regulatory action and include GHG reductions through actions. For example, SB 350 requires the State to double energy efficiency saving in electricity and natural gas by retail customers by 2030, and increases the Renewable Portfolio Standard so that 50 percent of the State’s electricity must be procured by renewable sources by 2030.

In addition, as shown in Table 3-6, Projected Electrical Energy Use – Normal Operation (5 MGD Potable Water Production Capacity) in Section 3.0, Project Description, the total estimated electrical consumption of the Phase 1 Project would be 3 megawatts (MW). As described above, the State’s electrical utilities are subject to increasing RPS requirements, and compliance with such requirements is the responsibility of the electrical utilities. Therefore, the Project’s post-2020 emissions trajectory would follow a declining trend, consistent with the 2030 and 2050 targets. The Project would not hinder the State’s achievement of the near-term 2020 goal (as codified in AB 32), the interim 2030 goal, and the long-term 2050 goal.³⁸

Further, the State’s existing and proposed regulatory framework requires the State to reduce its GHG emissions level to 40 percent below 1990 levels by 2030, and to 80 percent below 1990 levels by 2050. Various combinations of policies could allow the statewide emissions level to remain low through 2050. The combination of new technologies and other regulations would contribute to the State achieving the 2030 and 2050 targets. Some of these measures are likely to reduce the Project’s GHG emissions. For example, energy used by the project would be cleaner due to continued implementation of the RPS and vehicles traveling to and from the Project site would continue to be subject to more stringent fuel standards, or future requirements for electrified engines or fuel cell technology, as determined by ARB.

³⁵ California Air Resources Board, *California’s 2017 Climate Change Scoping Plan*, November 2017.

³⁶ The CEC reports that it is ahead of schedule for meeting the State’s RPS targets; see California Energy Commission Website, *Renewable Energy – Overview*, http://www.energy.ca.gov/renewables/tracking_progress/documents/renewable.pdf (accessed June 12, 2017).

³⁷ California Office of Governor, Governor Brown Sworn In, *Delivers Inaugural Address*, January 5, 2015

³⁸ At this time, California’s top three publicly-owned utilities are well ahead of their respective RPS targets, with PG&E, SCE and SDG&E reporting RPS procurements for 2020 at 37.0%, 36.9% and 43.1%, respectively (www.cpuc.ca.gov/rps_homepage/) (accessed January 27, 2018).



In addition, construction trucks and equipment could be subject to more stringent emissions standards, including the possibility of Tier IV emissions standards.

Relative to the GHG impacts of imported water, DWR and MWD are each committed to helping meet the State's GHG reduction goals. DWR is implementing a range of GHG measures as outlined in its "Clean Energy for the State Water Project" and associated Greenhouse Gas Emissions Reduction Plan.³⁹ DWR is currently projecting to be ahead of its 2020 and 2050 GHG targets.⁴⁰

The proposed Project would not otherwise affect the state's ability to comply with AB 32 because it would incorporate high-efficiency design, green building design, and renewable power generation to the extent feasible, as well as GHG offsets and/or reduction projects that would fully offset the proposed Project's net GHG emissions. As noted earlier in this report, the exploration of desalination technology is expressly supported by the Dana Point Energy Efficiency & Conservation Plan. Therefore, the proposed Project would not conflict with AB 32, or otherwise affect the state's ability to comply with other climate change related measures.

Mitigation Measures

Refer to Mitigation Measures GHG-1 and GHG-2.

REGIONAL PROJECT

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential GHG impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). The impact analysis above includes estimates for Regional Project construction and operational GHG emissions with respect to local facility improvements for slant wells, raw water conveyance and the desalination site. However, the Regional Project may require construction of additional Regional Project product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified. Depending on the nature and extent of proposed Regional Project conveyance facilities, construction-related GHG impacts could be significant even with mitigation. Mitigation Measures AQ-1 through AQ-3 and GHG-1 and GHG-2 would apply to the Regional Project, in addition to standard practices to avoid pipeline trenching across natural open space lands to minimize grading, erosion and associated potential impacts.

4.6.5 CUMULATIVE IMPACTS

It is generally the case that an individual project of this size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory.⁴¹ GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective.⁴² By definition, in light of findings by the IPCC and State of California, cumulative GHG emissions are significant and unavoidable. The State has implemented a vast

³⁹ California Department of Water Resources, *Clean Energy for the State Water Project*, May 12, 2016.

⁴⁰ *Ibid*, page 14.

⁴¹ California Air Pollution Control Officers Association, *CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*, 2008.

⁴² *Ibid*.



array of regulations, policies, and programs to reduce the State's contribution to global GHG emissions. The proposed Project would ensure that there would be no net increase in GHG emissions (Net Carbon Neutral). Therefore, the Project's impacts do not represent a cumulatively considerable contribution toward global GHG emissions in light of the facts set forth in this EIR (incremental Project GHG emissions are fully offset such that the Project is carbon neutral).

Similarly, all future development with the potential to generate GHG emissions would be required to demonstrate compliance with applicable federal and State regulatory requirements, including General Plan goals and policies of the affected jurisdiction, intended to reduce and/or avoid potential adverse environmental effects. At a regional level, SCAG's 2016 RTP/SCS⁴³ has been adopted to achieve consistency with State mobility and GHG goals such as AB32. As such, cumulative impacts to GHG emissions would be mitigated on a project-by-project level, and in accordance with the established regulatory framework, through the established regulatory review process.

4.6.6 SIGNIFICANT UNAVOIDABLE IMPACTS

None have been identified.

⁴³ "California Senate Bill 375 (SB 375) requires that the RTP also include an SCS, which outlines growth strategies that better integrate land use and transportation planning and help reduce the state's greenhouse gas emissions from cars and light trucks (California Government Code § 65080 (b)(2)(B)). The RTP is combined with the SCS to form the RTP/SCS, which is further detailed in Chapter 5. For the SCAG region, the California Air Resources Board (ARB) has set greenhouse gas reduction targets at eight percent below 2005 per capita emissions levels by 2020, and 13 percent below 2005 per capita emissions levels by 2035. As we will discuss in this Plan, the region will meet or exceed these targets, lowering greenhouse gas emissions (below 2005 levels) by eight percent by 2020; 18 percent by 2035; and 21 percent by 2040" (<http://scaqrtpscs.net/Pages/FINAL2016RTPSCS.aspx> (accessed January 27, 2018)).



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4.7 HAZARDS AND HAZARDOUS MATERIALS

This section discusses the existing conditions concerning the potential presence of hazardous materials on/adjacent to the Doheny Ocean Desalination Project (“Project”) site and the federal, state, and local regulations that govern these materials. This section evaluates the potential for hazards created by the Project, including whether the Project would create a significant hazard to the public environment through the routine transport, use, or disposal of hazardous materials, or through upset conditions involving the release of such materials. Where significant impacts are identified, mitigation measures are specified to avoid or reduce these impacts to less than significant. Refer to [Section 4.5, Geology and Soils](#), concerning the Project’s potential impacts related to geologic and seismic hazards, and [Section 4.8, Hydrology and Water Quality](#), concerning the Project’s potential impacts related to coastal hazards.

This section is primarily based on the following studies:

- The EDR (Environmental Data Resources) Radius Map Report with GeoCheck (EDR, July 24, 2017). The EDR searches hazardous materials databases and provides a listing of records pertaining to sites that store, handle, use, or have a history of a spill of a hazardous material(s) within 0.25 miles of a defined area. For purposes of this analysis, the EDR Report was used to determine if there are any known incidents of hazardous materials releases on the Project site or in its vicinity that could affect Project construction or operation. The following EDR studies/resources were also utilized (see [Appendix 10.8.1, Environmental Data Resources Radius Map Report with Geocheck](#)):
 - EDR Historical Topo Map Report with QuadMatch (EDR, July 24, 2017);
 - Certified Sanborn Map Report (EDR, July 25, 2017); and
 - The EDR Photo Decade Package (EDR, July 27, 2017).
- Phase I Environmental Site Assessment (Phase I ESA) (Ninyo & Moore, May 27, 1999) (see [Appendix 10.8.2, Phase I Environmental Site Assessment](#)). The purpose of the Phase I ESA was to evaluate whether Recognized Environmental Conditions (RECs, defined as the likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing or past release, or a material threat of a release of any hazardous substances) are present due to past or present land use of the site, and/or properties in the site vicinity. The site addressed in the Phase I ESA included the proposed desalination facility site.
- Phase II Environmental Site Assessment (Phase II ESA) (Ninyo & Moore, February 19, 2001) (see [Appendix 10.8.3, Phase II Environmental Evaluation](#)). This study included a review of regulatory files regarding potential off-site concerns, subsurface exploration, and soil and groundwater testing. The site addressed in the Phase II ESA included the proposed desalination facility site.

This section also considers City, County, and state resources, including the City of Dana Point Emergency Plan, and County of Orange requirements, as the Certified Unified Protection Agency (CUPA).



4.7.1 AFFECTED ENVIRONMENT

Environmental Setting

Subsurface Intake Wells

The subsurface intake study area is depicted on Exhibit 3-3, Project Facility Locations, which includes Doheny State Beach. Doheny State Beach is in an urbanized area of Dana Point, with recreational, retail, and commercial uses located adjacent to the beach. In this area, the Project site generally involves developed areas such as beach landscaping and access roads, with only limited upper beach areas. The proposed slant well site would extend below the ocean floor.

Because the surface intake wells (at Doheny State Beach) would draw some of their water from inland (i.e., from the San Juan Groundwater Basin), this analysis also considers whether there is any known groundwater contamination that could contaminate slant well sourcewater intake (as discussed further below, District groundwater wells PW-1, PW-2, and PW-3 are located north of the proposed desalination facility site, and are in the vicinity of past groundwater contamination from commercial uses along Doheny Park Road).¹

Southeast Intake Wells

The southeast intake study area extends southerly beyond Doheny State Beach (DSB), and includes Capistrano Beach Park (while still in the City of Dana Point); see Exhibit 3-4, Southeast Intake Well Study Area. As with the intake well sites at Doheny State Beach, the southeast intake well sites would generally involve developed areas such as beach landscaping and parking, with only limited upper beach areas. As discussed further below, no known hazardous materials issues exist in this study area.

Raw Water Conveyance Alignments

The raw water conveyance pipeline alignments are within beach access roads, maintenance roads, local City streets, and other previously disturbed areas; see Exhibit 3-3, Project Facility Locations. The environmental records searches and Phase I and Phase II Environmental Site Assessments describe known potential Recognized Environmental Conditions in the Project area.

Desalination Facility

The proposed desalination facility site is within the District's San Juan Creek Property, which is occupied by various storage and commercial tenant uses and has been previously disturbed; see Exhibit 3-6, Desalination Facility: Conceptual Site Plan. The desalination facility site is bounded by the existing drainage facility L01S02 to the north, PCH to the south, the SCRRA rail line to the east, and San Juan Creek to the west. Various tenants also occupy the mid- and northern portions of the property including storage yards, landscape company, nurseries, and a boat repair facility. According to the Phase I ESA (summarized below in greater detail), no underground storage tanks (USTs) or sub-surface features (i.e., clarifiers or sumps) have been located on the Project site.

¹ State Water Resources Control Board Right to Divert and Use Water Permit 21138.



Regional Project Facilities

Regional Project facilities (as described in Section 3) would be in substantially the same location as the Phase I Project facilities, with the exception of the SDG&E electrical line extensions (which would extend north of the site within existing streets) and the Regional Project product water conveyance, pumping and storage facilities, the location of which is not known at this time.

Hazardous Materials Investigations

The following summarizes the results of a 1999 Phase I Environmental Site Assessment (ESA), 2001 Phase II ESA, and 2017 Environmental Data Records search (refer to [Appendix 10.8](#)).

Phase I Environmental Site Assessment

A Phase I ESA was prepared in 1999 for the District's San Juan Creek Property. Results of the search indicate that neither the Project site nor properties within a 0.5 to 1.0-mile radius from the site were listed in the databases that were searched, except the following:

- **State Leaking Underground Storage Tank (LUST) Lists:** The Project site was not listed on this database. Seven facilities located within 0.5-miles from the Project site are listed. None of these facilities are located immediately adjacent to or potentially upgradient from the Project site. As such, it is unlikely that the leaks at these seven facilities outside the Project site would impact the proposed Project. Relevant sites are discussed further below in [Table 4.7-1, Potential Hazardous Materials Sites On/Near the Project Area](#).
- **Reported Leaks:** A release of gasoline was reported to have affected groundwater at the Cannan Bart facility located approximately 100 feet east/southeast and potentially cross-gradient from the Project site. The Phase I ESA concluded there is a low to moderate likelihood that impacted groundwater from this facility would have environmentally impacted the Project site.
- **Solid Waste Landfill Sites (SWFL):** The Project site was not listed on this database. One facility is located within a 0.5-mile radius from the Project site. The facility is a closed solid waste disposal facility cross-gradient from the Project site. The Phase I ESA concluded it is unlikely this facility has environmentally impacted the Project site.
- **State Index of Properties with Hazardous Waste – CORTESE List:** The Project site is not listed on this database. Four facilities are listed within 0.5-miles of the Project site. These facilities are also listed on the LUST database, as discussed above. As such, it is unlikely that hazardous waste generated by these four facilities would impact the Project site. Relevant sites are discussed further below in [Table 4.7-1](#).

Phase I ESA Conclusions

The Phase I ESA presented the following summary of findings regarding the proposed Project site:

- Imported fill material was brought to the site in the late 1980's. Given that the source(s) of this fill material is unknown, "surprises" could be encountered during grading activities. These surprises could include encountering pieces of inert materials such as concrete, wood, and asphalt, as well as contaminated soil.



- Although no onsite issues with the then present tenants were observed, historical tenants could have misused/mishandled hazardous materials and could have impacted soil/groundwater at the site.
- Approximately 25 55-gallon drums of waste resins were observed at the Spartan Marine facility, which is located on the Project site. Little to no staining was noted at this location. Based on the small quantities of materials used onsite, it appeared these wastes had been “stockpiled.” It is recommended that these materials be properly disposed of off-site by a licensed contractor
- Two off-site facilities were reported relatively close to the site and noted on the LUST database. Given these facilities are near the proposed desalination facility site, there is a low to moderate likelihood that impacted groundwater from one or both of these facilities could have environmentally impacted the site.

Overall, the Phase I ESA concluded that significant adverse environmental conditions resulting from current or past activities at the proposed desalination facility site or surrounding properties have occurred, and these activities would not constitute a REC, except for the two off-site LUST facilities.

Phase II Environmental Site Assessment

A Phase II ESA was conducted for the San Juan Creek Property in December 2000 to further evaluate potential RECs identified in the Phase I ESA. In December 2000, four soil borings were obtained at a depth of 51.5 feet bgs (below ground surface). These soil samples above the groundwater table were screened in the field for volatile organic carbons, but none were detected. In January 2000, 20 test pits (TP-1 through TP-20) from near Stonehill Drive on the north to the southern property boundary (north of PCH) were excavated to depth of up to 12 feet bgs. Of the 20 test pits analyzed, only one (i.e., TP-1 excavated in the northern half of the desalination facility site) tested positive for petroleum hydrocarbons. Petroleum hydrocarbon odor and staining were noted in soil excavated from TP-1 to a depth of approximately 6.0 feet bgs. Soil samples from the other samples indicated no detectable concentrations of petroleum hydrocarbons or volatile organic carbons (VOCs). Additionally, no detectable to low concentrations, below the total threshold limit concentrations (TTLC) and ten times the soluble threshold limit concentrations (STLC) were reported for Title 22 metals. One sample from Test Pit 15, approximately 1,260 feet north of the southern property boundary, indicated low concentrations of heavy petroleum hydrocarbon (213 milligram/kilogram); however, this may have been a result of asphalt in the sample.

As previously noted, the Phase I ESA concluded, based on the information obtained during the regulatory review of the off-site LUST cases, there was a low to moderate likelihood that impacted groundwater could be present beneath the proposed desalination facility site. To further assess groundwater conditions beneath the site, seven additional soil borings were drilled in January 2001 in the southern portion of the proposed desalination facility site to determine if groundwater may have been impacted by known off-site LUSTs. The borings were drilled to a depth of approximately 20 feet bgs and one water sample was collected from each boring and analyzed for petroleum hydrocarbons. None of the borings tested positive for constituents except GP-5, which indicated low concentrations (10 micrograms per liter) of Methyl Tertiary Butyl Ether (MTBE).



The Phase II ESA presented the following summary of findings regarding the proposed desalination facility site:

- Based on the results of the soil sample analyses, low concentrations of diesel fuel were discovered adjacent to one above-ground storage tank (AST). Although the concentrations detected would be considered low, and the vertical extent appeared to be limited, site access was limited, and a full assessment of the lateral extent could not be provided during the Phase II ESA.
- Based on review of the regulatory files regarding LUST cases in the site vicinity, it was concluded there was a low to moderate likelihood that shallow groundwater might be impacted beneath the site due to these releases. A limited groundwater sampling investigation was subsequently conducted along the southeastern property line. The laboratory results indicated low concentrations of MTBE in one of the six hydropunch samples. Based on the proximity of the off-site LUST cases, the Phase II ESA concluded that the concentrations of MTBE detected beneath the site were possibly from one or more of these off-site sources. MTBE is an additive used in gasoline and is very soluble in water. Given the high solubility, MTBE typically migrates faster in groundwater than the other petroleum hydrocarbon constituents. Based on this information, and since the other five groundwater sampling points did not detect MTBE, the Phase II ESA concluded that the concentrations detected could be the edge of a larger petroleum hydrocarbon plume located east of the site.
- Based on the age of the office and maintenance building located at the pumping station, asbestos-containing materials (ACMs) could be present.

Environmental Data Resources (EDR) Search

An EDR search was conducted for the entire Project area. According to the EDR search, 199 records were located pertaining to sites that store, handle, use, or have a history of a spill of a hazardous material(s) within 0.25 miles of a Project component. The EDR records combined a search of a total of 90 governmental databases pertaining to hazards and hazardous materials. Within these records, numerous issue areas of the databases overlap and many contain the same information or provide redundancy on certain records. According to the EDR search, only one record was located pertaining to hazards and hazardous materials within Doheny State Beach park boundaries at 25300 Dana Point Harbor Drive. Also, the search did not reveal any record indicating hazardous materials were used/spilled within the proposed desalination facility site, seawater intake site, or conveyance pipeline alignment. However, the search revealed 14 sites located adjacent to/within 0.25 miles of the Project area that could affect the Project site due to a past spill or proximity. The sites and potential associated issues are listed in Table 4.7-1, Potential Hazardous Materials Sites On/Near the Project Area, and depicted in Exhibit 4.7-1, Recognized Environmental Conditions Map. The sites are listed from beginning with the most northern site, then east to west. The EDR report findings were reviewed to determine if because of the listed site conditions, Project implementation would create a significant hazard to the public or the environment through reasonably foreseeable upset/accident conditions involving the release of hazardous materials. Based on the listed site conditions, the potential exists these sites may have resulted in contamination of soil/groundwater that could affect the Project (as described further below).



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Table 4.7-1 – Potential Hazardous Materials Sites On/Near the Project Area

Address/Business Name	Proposed Nearest Project Component/Site	Hazardous Materials Database ²	Description	Potential for Soil/Groundwater Contamination
25300 Dana Point Harbor Drive/ Doheny State Beach	On-site: Seawater intake system and conveyance	HIST UST, CA FID UST, UST, SWEEPS UST	On 06/01/1988, a visual inspection detected a leak of unleaded fuel from a 1970 UST. The case is listed as Active, and clean-up or remediation activities are unknown. Recent search of Geotracker does not indicate this site as an active LUST site. ²	Medium: This area is likely associated with a small construction yard in the northern area of Doheny State Beach.
34306 Pacific Coast Highway / Thrifty Service Station #390 / Unocal	Seawater intake system and conveyance are approximately 100 feet south of this location	LUST, HIST UST, CHMIRS, HIST CORTESE, SWEEPS UST, CAL FID UST, RCRA-LQG, HAZNET, EDR Hist Auto	On 10/19/1987, spilled waste oil affected groundwater. The spill was excavated and contaminated soils were disposed of. In 2008, the site was listed as a LUST cleanup site. The site has had other small spills from vehicle gas tanks and has received numerous enforcement letters, as recently as June 2012. In May 2013, action was taken regarding an Interim Remedial Action Plan.	Medium to High: The initial spill was identified and cleaned and the case was closed. The status and extent of more recent spills and current remediation are unknown.
34271 Del Obispo Street / Southern California Gas Company	Seawater intake system is 1200 feet south of this location	LUST, HIST UST, CHMIRS, HIST CORTESE, RCRA-LQG, FINDS, ECHO	On 10/26/1988, waste oil, motor oil, hydraulic oil, and/or lubricating oil was spilled. The spill affected the drinking water aquifer. The material was excavated and disposed of.	Low: The 1988 spill was remediated.
34342 Pacific Coast Highway / Arco, Dana Point Auto Service	Seawater intake system and conveyance are approximately 750 feet south of this location	HAZNET, FINDS, UST, RGA LUST, FINDS, CA FID UST, EDR Hist Auto, LUST, Hist CORTESE SWEEPS UST	On 04/10/1986, a case was opened regarding a gasoline spill at the site. The affected groundwater was approximately 13 feet deep; however, it was pumped and treated. The case was closed on 06/19/1992. On 01/17/1995, a gasoline release from the site affected the aquifer. This was confirmed on 07/21/1995. Initial remediation appears to have occurred on 02/15/1995 and subsequent remediation on 01/01/2001. The case was closed on 09/01/2016.	Low: The case was closed and no other cases or evidence of contaminates migrating off-site are indicated.

² <http://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=25300+Dana+Point+Harbor+Drive> (accessed March 20, 2018).



Table 4.7-1 – Potential Hazardous Materials Sites On/Near the Project Area

Address/Business Name	Proposed Nearest Project Component/Site	Hazardous Materials Database ²	Description	Potential for Soil/Groundwater Contamination
34152 Del Obispo Street / County of Orange EMA (J.B. Latham Treatment Plant)	Onsite: Adjacent to conveyance route; outfall utilized for Project brine discharge	LUST, SWEEPS UST, CA FID UST, HIST CORTESE, NDPES, WDS, FINDS, RGA LUST, EMI	On 04/22/1987, a waste oil/used oil spill affected groundwater at approximately 4.0-foot depth. The case was closed on 05/11/1990, without remediation listed. The site is also a permitted air emitter.	Low: The site is a wastewater treatment plant and heavily regulated by local and state authorities; no significant known conditions currently exist.
25742 Victoria Boulevard/ Cannon Bart Inc.	Desalination facility is approximately 200 feet west of this location	LUST, HIST CORTESE, RGA LUST, UST, FINDS	On 04/11/1986, a gasoline leak due to corrosion was discovered and reported on 04/28/1986. The leak affected the aquifer. Remediation included removing the free product floating in the water table. The case was closed on 05/09/2005.	Low: The case is closed.
34131 Doheny Park Road - Unnocal Corporation	Desalination facility is approximately 800 feet west of this location	LUST, SLIC, HIST UST, HAZNET, FINDS, SWEEPS UST	On 12/29/1988, the case was opened regarding a gasoline leak that affected groundwater. Remediation was opened on 12/01/2014, but the case was not closed until 07/12/2016 and the site is listed as a LUST clean-up site.	Medium: Although the spill occurred in 1988 (almost 30 years ago), it was not closed until 2016. The contaminant reached the groundwater and likely migrated off-site (refer to 25842 Victoria Boulevard immediately following).
25842 Victoria Boulevard - Victoria Field Office	Desalination facility is approximately 4000 feet west, and conveyance is approximately 600 feet south of this location	SLIC, FINDS	Site clean-up was conducted on 11/30/2011. The aquifer was affected by potential contaminants including MTBE/TBA/and other fuel oxygenates. No release from this site occurred. The release was likely from Unocal at 34131 Doheny Park Road.	Medium: The contaminated site is located between the Unocal location and the proposed Project location. The contaminant reached the groundwater and there is a medium potential that it migrated off-site toward 25842 Victoria Boulevard.



Table 4.7-1 – Potential Hazardous Materials Sites On/Near the Project Area

Address/Business Name	Proposed Nearest Project Component/Site	Hazardous Materials Database ²	Description	Potential for Soil/Groundwater Contamination
34162 Doheny Park Road – Capistrano Lumber	Desalination facility is approximately 1000 feet west of this location	FINDS, LUST, HIST CORTESE	On 03/27/1986, a gasoline spill was reported. The gasoline spill, which affected only the soil, was excavated and treated off-site, and the case was closed.	Low: The spill affected soil and the case was closed.
26111 Victoria Boulevard / Orange County Fire Station #29	Conveyance is approximately 1300 feet west of this location	LUST, HIST CORTESE, UST, SWEEPS UST, RGA LUST, HAZNET	On 05/18/1993, a diesel fuel oil and additives leak was reported. The case was completed/closed on 12/31/1998.	Low: The spill appears to have been remediated.
34073 Doheny Park Road – Kent Cleaners	Desalination facility is approximately 1000 feet west of this location	HAZNET, SLIC, DRYCLEANERS, EMI	In 2011, approximately 200 pounds of contaminated soil was cleaned from the site and disposed of off-site. The site is now under an open-site assessment, and is a cleanup program site for tetrachloroethylene (PCE) and trichloroethylene (TCE). A Phase I ESA for the site was conducted and it was identified as an REC and potential source of vapor phased contamination for potential release of dry cleaning solvents or volatile organic carbons.	Low: The site is 800 feet from the desalination facility site. Although the release appears to have affected soil and is releasing vapors, it did not affect the water table, thus, effects remain low.
34295 Doheny Park Road – Exxon #7-4816 (former)	Conveyance is adjacent/within Las Vegas Street	RGA LUST, FINDS, ECHO, RCRA-SQG, HAZNET, LUST, HIST CORTESE,	On 02/18/1999, gasoline was released to the soil only. Remediation using free product removal, soil vapor extraction, and in situ physical/chemical treatment was undertaken, but as of 03/04/2010, remediation was open and the site is a LUST cleanup site.	Medium to High: Due to proximity to the Project site, and because clean-up appears to be ongoing, the risk to the conveyance system site is medium to high.
34656 Pacific Coast Highway – Capistrano Realty	Conveyance alignment is approximately 200	UST, HIST CORTESE,	On 10/19/1988, a waste oil leak occurred and affected groundwater. Enforcement staff letters were sent. A Risk Assessment Report was completed on 07/30/2008 and a	Low: The site has been remediated and is now a vacant



Table 4.7-1 – Potential Hazardous Materials Sites On/Near the Project Area

Address/Business Name	Proposed Nearest Project Component/Site	Hazardous Materials Database ²	Description	Potential for Soil/Groundwater Contamination
	feet south of this location		Soil and Water Investigation Workplan was completed on 05/15/2007. The case shows it was completed on 11/23/2009.	dirt lot with no structures (per 10/18/2016 aerial).
34700 Pacific Coast Highway- Capistrano - Surf Center	Conveyance alignment is approximately 200 feet south of this location	LUST, HIST, CORTESE, FINDS	On 05/20/1998, a gasoline leak was reported, but the incident was minor and required no remedial action. The site shows that it was completed on 06/11/1998. The site is listed on LUST through 2007 – it is likely still listed, but its status remains as remediated.	Low: The site now vacant, is a dirt lot with no structures, and has no known contamination (per aerial dated 10/18/2016).
Notes: Database Acronyms are noted in <u>Appendix 10.8.1, Environmental Data Resources (EDR) Radius Map Report with GeoCheck.</u>				



Structural Building Components

Hazardous materials, such as asbestos, lead, and polychlorinated biphenyls, could occur in older building materials and could be released during demolition or renovation of existing facilities. None of the Project components except the desalination facility site would occur in areas with built structures.

Existing Hazardous Materials Usage

The Project area currently has a wide range of hazardous materials usage. At Doheny State Beach and Capistrano Beach Park, this would mostly be typical maintenance chemicals and materials utilized for facility maintenance, cleaning, painting, repair, and construction. Within the raw water conveyance study area, hazardous materials usage occurs along the alignments from various residential, commercial, industrial and institutional uses, as permitted and regulated by local and state laws. In addition, the raw water conveyance alignments are along public roads, which are utilized for allowable transport of hazardous materials. Within the desalination facility site, no known contamination has been identified, although the various commercial tenants likely use and store a wide range of hazardous materials, consistent with site zoning and applicable regulations.

Nearby Airports or Airstrips

The proposed Project site is not located within two miles of any public or private use airport, or in the vicinity of a private airstrip.

Wildland Fire Hazards

The proposed Project site is within the coastal, urbanized portion of Dana Point, a fully urbanized area that is not adjacent to or intermixed with wildlands. Therefore, the Project area is not exposed to significant risk involving wildland fires.

Schools

The proposed Project is within Capistrano Unified School District (CUSD) boundaries, and in close proximity to 13 schools, academies, or preschools; see [Table 4.7-2, Schools Within 0.25 Miles of Project Site](#), and [Exhibit 4.7-2, Schools Within 0.25 Miles of Proposed Project](#).

4.7.2 REGULATORY FRAMEWORK

The California Department of Toxic Substances Control (DTSC) describes a hazardous waste as, “a waste with a chemical composition or other properties that make it capable of causing illness, death, or some other harm to humans and other life forms when mismanaged or released into the environment.” Hazardous waste materials are generally determined based on four characteristics including their ignitability, corrosivity, reactivity, and toxicity. Accordingly, their use and transportation are regulated by local, state, and federal regulations to protect human health and the environment.



Table 4.7-2 Schools Within 0.25 Miles of Project Site

School	Address	Project Component and Distance
St. Anne School	32451 Bear Brand Road	Adjacent to underground electrical line in Bear Brand Road Regional Project Only
Dana Point Montessori Preschool	33501 Del Obispo	Within 1/10 mile of underground electrical line Regional Project Only
Del Obispo Elementary School	25591 Camino Del Avion	Adjacent to underground electrical line in Del Obispo Street Regional Project Only
San Clemente Christian School	25975 Domingo Avenue	Less than 1/10 mile from South Raw Water Conveyance alignment; less than ¼ mile from Desalination Facility site
Marco Forster Middle School	25601 Camino Del Avion	0.20 miles east of underground electrical line in Del Obispo Street Regional Project only
Schools Outside 0.25 Mile Radius		
Palisades Elementary School	26462 Via Sacramento	0.27 miles north of Southeast Intake Well (F Pod)
John Malcolm Elementary School	32261 Charles Rd	0.34 miles north west of electrical line in Bear Brand Road Regional Project only
St. Edwards Catholic Preschool	33866 Calle La Primavera	0.35 miles west of conveyance in Del Obispo Street and 0.55 miles west of brine disposal system
St. Edwards the Confessor Parish School	33866 Calle La Primavera	0.35 miles west of conveyance in Del Obispo Street and 0.55 miles west of brine disposal system
Kinoshita Elementary School	2 Via Positiva	0.35 miles northeast of electrical line in Del Obispo Street Regional Project only
Nobis Preschool	26153 Via Victoria	0.43 miles from Desalination Facility site
Ready Set Grow Preschool	34240 Camino Capistrano	0.43 miles from Desalination Facility site
Fresh Start	32972 Calle Perfecto	0.66 miles south-east of electrical line in Camino Del Avion Regional Project only

Sources: Environmental Data Resources, *The EDR Radius Map Report with GeoCheck*, July 24, 2017; and Google Earth Pro 2017.

Federal

According to the U.S. Environmental Protection Agency (EPA), special handling and management are required for materials and wastes that exhibit hazardous properties. In general, treatment, storage, transport, reporting requirements, health and safety provisions for workers and members of the public, and ultimately remediation and disposal of these materials are highly regulated at both the federal and State levels. Compliance with federal and State hazardous materials laws and regulations minimizes the potential risks to the public and the environment presented by these potential hazards.



These laws provide the “cradle to grave” regulation of hazardous wastes. Businesses, institutions, and other entities that generate hazardous waste are required to identify and track their hazardous waste from the point of generation until it is recycled, reused, or disposed of. The EPA and the DTSC have developed and continue to update lists of hazardous wastes subject to regulation.

Resource Conservation and Recovery Act (RCRA)

The RCRA (42 U.S.C. § 6901 et seq.) gives the EPA the authority to control hazardous waste from the “cradle-to-grave.” This includes the generation, transportation, treatment, storage, and disposal of hazardous waste by “large-quantity generators” (1,000 kilograms/month or more, which is one metric ton, or 2,205 pounds). Under RCRA regulations, hazardous waste must be tracked from the time of generation to the point of disposal. At a minimum, each generator of hazardous waste must register and obtain a hazardous waste activity identification number. If hazardous waste is stored for more than 90 days or treated or disposed at a facility, any treatment, storage, or disposal unit must be permitted under RCRA. Additionally, all hazardous waste transporters are required to be permitted and must have an identification number. RCRA allows individual states to develop their own program for the regulation of hazardous waste, as long as it is at least as stringent as RCRA. In California, the EPA has delegated RCRA enforcement to the State of California.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601 et seq.), also known as the Superfund Act, outlines the potential liability related to the cleanup of hazardous substances, available defenses to such liability, appropriate inquiry into site status under Superfund (which is the federal government’s program to clean up the nation’s uncontrolled hazardous waste sites), statutory definitions of hazardous substances and petroleum products, and the petroleum product exclusion under CERCLA. CERCLA provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA establishes requirements concerning closed and abandoned hazardous waste sites, provides for liability of persons responsible for releases of hazardous waste at these sites, and establishes a trust fund to provide for cleanup when no responsible party can be identified. CERCLA also establishes the National Contingency Plan (NCP), which provides guidelines and procedures necessary to respond to releases and threatened releases of hazardous substances.

Superfund Amendment and Reauthorization Act

The Superfund Amendments and Reauthorization Act (SARA) pertains primarily to emergency management of accidental releases. It requires formation of State and local emergency planning committees, which are responsible for collecting material handling and transportation data for use as a basis for planning. Chemical inventory data is made available to the community at large under the “right-to-know” provision of the law. In addition, SARA also requires annual reporting of continuous emissions and accidental releases of specified compounds. These annual submissions are compiled into a nationwide Toxics Release Inventory (TRI).

Hazardous Materials Transportation Act

The Hazardous Materials Transportation Act (HMTA) (49 U.S.C. § 5101 et seq.) is the statutory basis for the extensive body of regulations aimed at ensuring the safe transport of hazardous materials on water,



rail, highways, air, or in pipelines. The HMTA includes provisions for material classification, packaging, marking, labeling, warning placards, and shipping documentation.

The United States Department of Transportation (DOT) has developed a system of numerical designations (the International Classification System) that must be displayed on placards, labels, and/or shipping papers. Any hazardous material being transported is classified according to its hazardous properties. This system classifies hazardous materials with nine different classes (1-9) based on a number of characteristics, including explosives, gases, flammable liquids and solids, oxidizers, poisons, etc. In addition to the numerical classification system for hazardous materials, the DOT has established a placard system for transporting of hazardous waste, which has been adopted by the EPA who regulates these shipments. These placards are required to be displayed on all sides on any truck or railcar that transports hazardous materials.

State

In addition to the EPA and DTSC, the Regional Water Quality Control Board (RWQCB), San Diego Region, is the enforcing agency for the protection and restoration of water resources for the Project area, including remediation of unauthorized releases of hazardous substances in soil and groundwater; refer to the Regional and Local Section below. As discussed below, State agencies involved in hazardous materials management include the Office of Emergency Services (OES), California Department of Transportation (Caltrans), California Highway Patrol (CHP), California Air Resources Board (CARB), and California's Department of Resources Recycling and Recovery (CalRecycle). California hazardous materials management laws include the following, among others.

Department of Toxic Substances Control

The mission of the DTSC is to protect California's people and environment from harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of chemically safer products. As part of its mission, the DTSC maintains its Enforcement and Emergency Response Division (EERD) to administer the technical implementation of the State Unified Program. The Unified Program is a consolidation of six environmental programs at the local level. Those agencies at the local level with responsibility for the program are known as Certified Unified Program Agencies (CUPA). The DTSC also has the responsibility of overseeing and regulating hazardous materials, generators, transporters, and facilities that may use, generate, store, transport, or recycle, hazardous materials.

Hazardous Materials Release Response Plans and Inventory Act

The Hazardous Materials Release Response Plans and Inventory Act (also known as the "Hazardous Materials Business Plan Program") (California Health & Safety Code, § 25500 et seq.) establishes business and area plans relating to the handling and release or threatened release of hazardous materials. Under the Hazardous Materials Business Plan Program, businesses are required to submit basic information to firefighters, health officials, planners, public safety officers, health care providers, regulatory agencies and any other interested persons regarding the location, type, quantity, and health risks of hazardous materials which are handled, used, stored, or disposed of in the state.



Hazardous Substances Account Act

The Hazardous Substances Account Act (HSAA), also known as the “California Superfund” (California Health & Safety Code § 25300, et seq.), is the State’s Superfund program which authorizes the California EPA to clean up contaminated sites and hazardous substance releases into the environment that do not qualify for cleanup under CERCLA. The HSAA establishes regulations and incentives to ensure that generators of hazardous waste use technology and best management practices for the safe handling, treatment, recycling, and destruction of their hazardous waste prior to disposal.

Hazardous Waste Control Law

The Hazardous Waste Control Law (HWCL) (California Health & Safety Code § 25100, et seq.) is California’s primary hazardous waste statute. The HWCL implements RCRA as California’s “cradle-to-grave” waste management system. HWCL specifies that generators have the primary duty to determine whether their wastes are hazardous and ensure their proper management. The HWCL also establishes criteria for reuse and recycling of hazardous waste used or reused as raw materials. The HWCL exceeds federal requirements by mandating source reduction planning, and a much broader requirement for permitting facilities that treat hazardous waste. It also regulates various types of wastes and waste management activities that are not covered by federal law with RCRA.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program

The Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) (Health & Safety Code § 25404 et seq.) required the administrative consolidation of six hazardous materials and waste programs (Program Elements) under one agency, a CUPA. The Program Elements consolidated under the Unified Program are: Hazardous Waste Generator and Onsite Hazardous Waste Treatment Programs (a.k.a. Tiered Permitting); Aboveground Petroleum Storage Tank Spill Prevention Control and Countermeasure Plan (SPCC); Hazardous Materials Release Response Plans and Inventory Program (a.k.a. Hazardous Materials Disclosure or “Community-Right-To-Know”); California Accidental Release Prevention Program (Cal ARP); UST Program; and Uniform Fire Code Plans and Inventory Requirements. The Unified Program is intended to provide relief to businesses complying with the overlapping and sometimes conflicting requirements of formerly independently managed programs. The Unified Program is implemented at the local government level by CUPAs. Most CUPAs have been established as a function of a local environmental health or fire department. Some CUPAs have contractual agreements with another local agency (a “participating agency”) which implements one or more Program Elements in coordination with the CUPA.

Safe Drinking Water and Toxic Enforcement Act of 1986

The Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) amended the Health and Safety Code to require that persons doing business neither expose individuals to carcinogens or chemicals causing reproductive toxicity without giving clear and reasonable warning, nor discharge such chemicals into drinking water. The Office of Environmental Health Hazard Assessment (OEHHA) is the responsible agency for implementation of Proposition 65.



State Water Resources Control Board

Brownfields are underutilized properties where reuse is hindered by the actual or suspected presence of pollution or contamination. The State Water Resources Control Board's (SWRCB) Brownfield Program goals are to:

- Expedite and facilitate site cleanups and closures for brownfield sites to support reuse of those sites;
- Preserve open space and greenfields;
- Protect groundwater and surface water resources, safeguard public health, and promote environmental justice; and
- Streamline site assessment, clean up, monitoring, and closure requirements and procedures within the various SWRCB site cleanup programs.

Site clean-up responsibilities for brownfields primarily reside within four main SWRCB programs: the Underground Storage Tank Program; Site Cleanup Program; Department of Defense Program; and the Land Disposal Program. These SWRCB cleanup programs are charged with ensuring sites are remediated to protect California's surface and groundwater and return them to beneficial uses.

California Air Resources Board

One of the CARB's major goals is to protect the public from exposure to toxic air contaminants. The California Air Toxics Program establishes the process for the identification and control of toxic air contaminants and includes provisions to make the public aware of significant toxic exposures and for reducing risk.

The Toxic Air Contaminant Identification and Control Act (AB 1807, Tanner 1983) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, Connelly 1987) supplements the AB 1807 program, by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

Under AB 1807, CARB is required to use certain criteria in the prioritization for the identification and control of air toxics. In selecting substances for review, the CARB must consider criteria concerning "the risk of harm to public health, amount or potential amount of emissions, manner of, and exposure to, usage of the substance in California, persistence in the atmosphere, and ambient concentrations in the community." AB 1807 also requires CARB to use available information gathered from the AB 2588 program to include in the prioritization of compounds. This report includes available information on each of the above factors required under AB 1807 program mandates. AB 2588 air toxics "Hot Spots" program requires facilities to report their air toxics emissions, ascertain health risks, and notify nearby residents of significant risks. In September 1992, the Hot Spots Act was amended by Senate Bill 1731, which required facilities that pose a significant health risk to the community to reduce their risk through a risk management plan.

Accidental Release Prevention Program

The California Accidental Release Prevention Program (CalARP) provides for consistency with federal laws (i.e., the Emergency Preparedness and Community Right-to-Know Act and the Clean Air Act) regarding



accidental chemical releases and allows local oversight of both the State and federal programs. State and federal laws are similar in their requirements; however, the California threshold planning quantities for regulated substances are lower than the federal quantities. Local agencies may set lower reporting thresholds or add additional chemicals to the program. The Accidental Release Prevention Law is implemented by the CUPAs and requires that any business, where the maximum quantity of a regulated substance exceeds the specified threshold quantity, register with the responsible CUPA as a manager of regulated substances and prepare a Risk Management Plan. A Risk Management Plan must contain an off-site consequence analysis, a five-year accident history, an accident prevention program, an emergency response program, and a certification of the truth and accuracy of the submitted information. Businesses submit their Risk Management Plan to the CUPA, which makes it available to emergency response personnel. Additionally, businesses must prepare a Business Plan, which is required to identify the type of business, location, emergency contacts, emergency procedures, mitigation plans, and chemical inventory at each location.

Transportation of Hazardous Materials/Wastes

Transportation of hazardous materials/waste is regulated by California Code of Regulations (CCR) Title 26. The United States DOT is the primary regulatory authority for the interstate transport of hazardous materials. The DOT establishes regulations for safe handling procedures (i.e., packaging, marking, labeling, and routing). The CHP and Caltrans enforce federal and State regulations and respond to hazardous materials transportation emergencies. Emergency responses are coordinated as necessary between federal, State, and local governmental authorities and private persons through a State-mandated Emergency Management Plan.

Worker and Workplace Hazardous Materials Safety

Occupational safety standards exist to minimize worker safety risks from both physical and chemical hazards in the workplace. The California Division of Occupational Safety and Health (Cal/OSHA) is responsible for developing and enforcing workplace safety standards and assuring worker safety in the handling and use of hazardous materials. Among other requirements, Cal/OSHA requires many businesses to prepare Injury and Illness Prevention Plans and Chemical Hygiene Plans. The Hazard Communication Standard requires that workers be informed of the hazards associated with the materials they handle.

Regional

San Diego Regional Water Quality Control Board

The San Diego RWQCB is the enforcing agency for the protection and restoration of water resources, including remediation of unauthorized releases of hazardous substances in soil and groundwater. The RWQCB's Site Cleanup Program (SCP) regulates and oversees site investigation and corrective action involving sites not overseen by the Underground Tank Program and the Well Investigation Program.

The SCP is not restricted to particular pollutants or environments; rather, it covers all types of pollutants (such as solvents, petroleum fuels, and heavy metals) and all environments (including surface and water, groundwater, and the vadose zone). Upon confirming that an unauthorized discharge is polluting or threatens to pollute regional waterbodies, the RWQCB oversees site investigation and corrective action. Statutory authority for the SCP is derived from the California Water Code, Division 7, § 13304. Guidelines for site investigation and remediation are promulgated in State Board Resolution No. 92-49, *Policies and*



Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code § 13304. The SCP Units generally provide oversight for sites in the following programs: Cost Recovery (CR) Program; the Brownfields; and the Department of Defense (DOD) Program.

South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) works with CARB and is responsible for developing and implementing rules and regulations regarding air toxics on a local level. The SCAQMD establishes permitting requirements, inspects emission sources, and enforces measures through educational programs/fines. Refer to Section 5.2, Air Quality, for a discussion of the Project's consistency with SCAQMD requirements.

County of Orange Environmental Health Division (Certified Unified Program Agency)

The County of Orange Environmental Health Division (OCEHD) is the designated CUPA for the County of Orange. The CUPA is the local administrative agency that coordinates hazardous materials and hazardous wastes regulation in Orange County through the following six programs:

- Hazardous Materials Disclosure (HMD);
- Business Emergency Plan (BEP);
- Hazardous Waste (HW) Inspection;
- Underground Storage Tank (UST);
- Aboveground Petroleum Storage Tank (APST); and
- California Accidental Release Prevention (CalARP).

Hazardous Materials Disclosure and Business Emergency Plan. The HMD and BEP programs require businesses that handle hazardous materials in quantities equal to or greater than 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of compressed gas, or extremely hazardous substances above the threshold planning quantity, report this information to the CUPA. The programs are intended to prevent or minimize damage to public health and safety and the environment, from release or threatened release of hazardous materials. The HMD and BEP programs also require Orange County businesses to:

- Inventory their hazardous materials;
- Develop a site map;
- Develop an emergency plan; and
- Implement a training program for employees.

Hazardous Waste Inspection Program. This program is intended to ensure that all hazardous wastes generated by Orange County businesses are properly handled, recycled, treated, stored, and disposed.

Underground Storage Tank Inspection Program. This program is intended to ensure that hazardous materials stored in UST are not released into the environment, potentially polluting ground and surface waters.

Aboveground Petroleum Storage Tank Program. Assembly Bill 1130 (the Aboveground Petroleum Storage Act) authorized administration and implementation of the Aboveground Petroleum Storage Tank (APST) Program to the local CUPA. APST applies to any business with a total storage capacity, at any one site, of more than 1,320 gallons of petroleum products in tanks or containers larger than 55 gallons. APST-regulated tank facilities are also regulated by the U.S. EPA Region 9 Oil Program Clean Water Act Compliance Office. The Federal standards (called the SPCC rule) regulate non-petroleum oils that are not



regulated under APST such as vegetable oil. It is possible for a tank facility to be regulated and inspected by both the EPA and CUPA, or just the EPA.

California Accidental Release Prevention Program. The California Accidental Release Prevention Program (CalARP) is a part of the Orange County CUPA. This program requires any business that handles more than threshold quantities of a Regulated Substance (RS) to develop a Risk Management Plan (RMP). The RMP is implemented by the business to prevent or mitigate releases of regulated substances that could have off-site consequences. Regulated Substances and their threshold quantities can be found in California Code of Regulations, Title 19, § 2770.5 (i.e., Table 1 – Federal Regulated Substances List and Threshold Quantities for Accidental Release Prevention, Table 2 - Federal Regulated Flammable Substances List 1 and Threshold Quantities for Accidental Release Prevention, Table 3 - State Regulated Substances List and Threshold Quantities for Accidental Release Prevention).

Local

City of Dana Point General Plan – Public Safety Element

The City of Dana Point General Plan Public Safety Element addresses issues and risks associated with hazardous materials and wastes. The General Plan classifies wastes into four basic categories: toxins, corrosives, reactives, and ignitables. Toxins include a broad range of industrial chemicals and agricultural pesticides whose ingestion can cause serious illness or death. Through body contact rather than ingestion, corrosives can cause inflammation or destruction of living tissue. When mixed with other substances, reactives can cause damage from blast and flash fire. Ignitables pose the threat of combustion at low ignition temperatures and rapid burning. To help address hazardous materials issues, the City of Dana Point General Plan implements applicable sections of the County of Orange Hazardous Materials Management Plan. The General Plan Public Safety Element also sets forth goals and policies to reduce the risks from hazardous materials and wastes. These goals and policies relevant to the Project are as follows:

Goal 3: Reduce the risk to the community's inhabitants from exposure to hazardous materials and wastes.

- Policy 3.1:** Cooperate with the County to implement applicable portions of the County's proposed Hazardous Waste Management Plan.
- Policy 3.2:** Cooperate with railroad operations to ensure that hazardous materials transported by rail do not pose a threat to life or property.
- Policy 3.3:** Establish regulations requiring land uses involved in the production, storage, transportation, handling, or disposal of hazardous materials be located a safe distance from other land uses that may be adversely affected by such activities.
- Policy 3.8:** Minimize the amount and toxicity of hazardous waste and materials generated in Dana Point by encouraging recycling, source reduction technologies and educational assistance to local residents, visitors and businesses.
- Policy 3.10:** Support efforts to enforce State "right to know" laws, which outline the public's right to information about local toxic producers.



Policy 3.11: Establish development standards for storage of industrial chemicals and other potentially hazardous substances.

Policy 3.12: Coordinate with the County of Orange in the implementation of the National Pollution Discharge Elimination System Permits (NPDES) regulations.

Goal 5: Develop and maintain a Disaster Preparedness Plan.

Policy 5.1: Develop a Disaster Preparedness Plan that identifies all available resources and funds for use in the event of a disaster.

Policy 5.6: Include procedures for dealing with earthquake, offshore oil spills, major rail and roadway accidents, flooding and hazardous materials and nuclear emergencies in the Disaster Preparedness Plan.

General Plan Figure PS-7, Evacuation Routes and Emergency Facilities, depicts the City's generalized evacuation routes. In an emergency, evacuation routes would be established depending on the nature and extent of the particular incident. Routes may be altered by public safety officials responding to local conditions. Review of General Plan Figure PS-7 indicates that the Project site is not within or adjacent to a specified evacuation route.

City of Dana Point Municipal Code Chapter 9.41, Hazardous Waste Facilities

The City of Dana Point Municipal Code Chapter 9.41 establishes uniform standards to control the location, design, and maintenance of hazardous waste facilities, and to protect the City residents' health, quality of life, and environment. Policies include among others: prioritizing hazardous waste management strategies including source reduction, recycling, treatment and disposal; emphasizing public participation; cooperating with state and federal agencies; regulating transportation of materials; establishing regulations for pre-treatment before discharge to sewers; and cooperating with the County for household hazardous waste management.

City of Dana Point Emergency Plan

The City of Dana Point Emergency Plan (Emergency Plan) provides the framework for responding to major emergencies or disasters. The goals of this plan are to outline a strategy to prepare for, respond to, and recover from an emergency or disaster that affects the City. To facilitate meeting these goals, the Emergency Plan:

- Identifies potential hazards that form the basis for the emergency plan;
- Identifies authorities and assigns responsibilities to the appropriate agencies;
- Identifies other jurisdictions and organizations with which planning and emergency response activities are coordinated;
- Establishes an organizational structure to manage the emergency response;
- Outlines preplanned response actions to be taken by emergency personnel to mitigate the effects of a disaster;
- Outlines a process of disseminating emergency information and instructions to the public;



- Describes the resources available to support emergency response activities;
- Establishes responsibilities for maintaining the overall City emergency preparedness program; and
- Provides the basis for initial training and subsequent retraining of emergency workers.

Doheny State Beach Park General Plan

The Doheny State Beach General Plan³ serves as a framework to guide the park's day-to-day decisions on park operations and improvements and also serves as the EIR. The General Plan has broad-based policies that provide management guidelines by defining a framework for implementing diverse missions of resource stewardship, interpretation, and visitor use and services. As part of the General Plan and EIR, hazards are contemplated in terms of public safety concerning emergency and safety facilities needed to assure adequate emergency response. Goals and guidelines⁴ relevant to the Project are listed below.

Goal FAC 4: Park roads, walkways, bicycle routes, and utilities are adequately maintained and improved to ensure public safety for all park users and to provide adequate capacity for their level of use.

Guideline FAC 4.1: The level of use of park roads and utility infrastructure requires continual monitoring to ensure that facilities are improved and/or upgraded as needed to adequately accommodate increased visitor attendance.

4.7.3 SIGNIFICANCE CRITERIA

Significance Criteria under CEQA

CEQA Guidelines Appendix G, Environmental Checklist Form includes questions pertaining to hazards and hazardous resources. The issues presented in the Environmental Checklist have been utilized as thresholds of significance in this section. Accordingly, the Project would have a significant adverse environmental impact if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- 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;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment;

³ California Department of Parks and Recreation, *Doheny State Beach General Plan & Draft Environmental Impact Report*, December 2003.

⁴ Instead of policies, the Doheny State Beach General Plan includes guidelines, which are a general set of parameters that provide directions towards accomplishing goals (page 3-3).



- 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;
- For a project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the Project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Methodology and Assumptions

The proposed Project and associated project design features (PDFs) are evaluated against the aforementioned significance criteria, as the basis for determining the level of impacts related to hazards and hazardous materials. In addition to PDFs, this analysis considers existing regulations, laws and standards that serve to avoid or reduce potential environmental impacts. Where significant impacts remain, feasible mitigation measures are recommended, where warranted, to avoid or lessen the Project's significant adverse impacts. Further details regarding methods are provided in [Appendix 10.7](#) of this EIR.

Project Design Features

The Project's potential impacts concerning hazards and hazardous materials would be avoided or reduced through the following PDFs:

- Locating the desalination facility in an area zoned for industrial use, with no sensitive receptors bordering the site.

4.7.4 IMPACTS AND MITIGATION

Impact 4.7-1: Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? *Level of Significance: Less than Significant with Mitigation.*

Note: this impact focuses on potential hazardous materials impacts related to the "routine" construction and operational process of the Project. Refer to Impact 4.7-2 for a discussion regarding "upset conditions," including potential encounter of hazardous materials during construction.

Construction

Subsurface Intake Wells

Subsurface seawater intake and southeast intake well construction would occur at up to eight well cluster locations, with a potential disturbance areas of generally less than 10,000 square-feet each (although typically only one slant well would be drilled at a time, and no more than four slant wells are anticipated to be needed for the Phase I Project). This disturbance area would allow for placement of the well vault and temporarily locating drilling and construction equipment and vehicles. Seawater intake construction,



excluding drilling the wells, would use and store limited amounts of hazardous materials, including construction materials such as paints and solvents, vehicle fuel, and other common hazardous materials. Intake well construction would take place within the confines of the slant well construction area described above, and would require transport to and from the site.

The routine transport, use, or disposal of these materials during intake well construction is not anticipated to create a significant hazard to the public or the environment, as the routine transport, use, and disposal of these materials must adhere to Federal, State, and local regulations for transport, handling, storage, and disposal of hazardous substances. Intake well construction would also be subject to compliance with Mitigation Measure HAZ-2 (Hazardous Waste Management Plan) which requires implementation of a Waste Management Plan for all waste stored, used and generated during facility construction. The District would be required to obtain a hazardous waste generator identification number from the DTSC prior to generating any hazardous waste during construction. Compliance with the regulatory framework and implementation of the specified mitigation measures would ensure seawater intake construction would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during construction. With mitigation, a less than significant impact would occur in this regard.

In addition to the typical construction materials described above, drilling fluids and muds would be used during well drilling operations. Drilling activities would originate at wellhead clusters from onshore locations and extend under the sea floor to the intake location approximately 1,000 feet off-shore. The materials used for drilling are not considered acutely hazardous. Drilling operations would comply with all State and County standards pertaining to well construction as set forth in a Coastal Development Permit and State Lands Commission lease agreement, which would substantially reduce the potential for accidental drilling fluids release to the beach or marine environment. Drilling activities would be subject to compliance with Mitigation Measure HAZ-1 (Drilling Monitoring and Management Plan), in conjunction with Mitigation Measures HAZ-2 (Hazardous Waste Management Plan) and HAZ-3 (Registered Professional Engineer/Geologist). Similar slant well drilling operations have been safely and effectively conducted for test slant wells constructed and operated at Doheny State Beach and in Marina, California (designed and monitored by the same hydrogeologist for this Project, GeoScience Support Services). Compliance with State and County regulations, and implementation of Mitigation Measures HAZ-1, HAZ-2, and HAZ-3 would ensure drilling activities would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during construction. With mitigation, a less than significant impact would occur in this regard.

Also, well “development” (the process of initially pumping the slant wells to rid the well of sand, and also to “pump out” any potential elevated levels of iron or manganese) would result in temporary discharge of iron and manganese through the beach diffuser and/or through South Orange County Wastewater Authority’s (SOCWA) existing San Juan Creek Ocean Outfall (SJCOO). Iron and manganese are both listed as “hazardous substances” by the state of California,⁵ and any temporary discharge during well development would be regulated by the Regional Water Quality Control Board. This temporary impact is addressed in greater detail in Section 4.8, Hydrology and Water Quality.

⁵ <https://www.dir.ca.gov/title8/339.html> (accessed March 14, 2018).



Southeast Intake Wells

See analysis above.

Raw Water Conveyance Alignments – North and South

Conveyance system construction would likely require use and storage of limited amounts of hazardous materials including standard construction materials, vehicle fuels, and others; see *Subsurface Intake Wells* discussion above. As previously noted, drilling fluids and muds would be used during trenchless construction operations on certain pipeline segments. Conveyance system construction would also require transport of these materials to and from the site. The routine transport, use, or disposal of these materials during conveyance system construction is not anticipated to create a significant hazard to the public or the environment, since Project construction must adhere to Federal, State, and local regulations for transport, handling, storage, and disposal of hazardous substances.

Compliance with the regulatory framework and implementation of Mitigation Measures HAZ-1, HAZ-2, and HAZ-3 would ensure conveyance system construction would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during construction. With mitigation, a less than significant impact would occur in this regard.

Desalination Facility

Desalination facility construction would likely require use and storage of limited amounts of hazardous materials including standard construction materials, vehicle fuels, and others; see *Subsurface Intake Wells and Southeast Intake Wells* Section above. Desalination facility construction would also require transport of these materials to and from the site. The routine transport, use, or disposal of these materials during desalination facility construction could create a significant hazard to the public or the environment, if upset/accident conditions occurred associated with accidental release of such materials. However, the routine transport, use, and disposal of these materials must adhere to Federal, State, and local regulations for transport, handling, storage, and disposal of hazardous substances. Compliance with the regulatory framework and implementation of Mitigation Measures HAZ-1, HAZ-2 and HAZ-3 would ensure desalination facility construction would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during construction. The desalination facility will replace the existing 60+ individual tenants with a modern water supply facility that includes all appropriate safety measures and meets or exceeds applicable regulations, which is considered a positive change from the current site conditions. With mitigation, a less than significant impact would occur in this regard.

Brine Disposal System

Refer to above discussion under Desalination Facility, since the brine disposal system will be constructed within the desalination facility site. With mitigation, a less than significant impact would occur in this regard.



Operations

Subsurface Intake Wells

To maintain safe operation and function, routine well maintenance would require use of limited amounts of hazardous materials, including standard maintenance materials, such as vehicle fuel, oils, and solvents. Materials used would be similar to that used at other District groundwater and well facilities. During routine maintenance, District employees and its contractors have standard protocols for handling hazardous materials should they be encountered during maintenance procedures, consistent with the District's Hazardous Material Business Plan (refer to HAZ-2). A less than significant impact would occur in this regard.

Subsurface intake well operation will draw a small percentage of inland groundwater into the slant wells (estimated at 5% for wells at Doheny State Beach, after an initial pumping period until the wells reach a steady-state condition). Given that there are known groundwater contamination plumes inland of the proposed slant wells, the District modeled slant well operation at various scenarios for representative groundwater contamination constituents in the nearest known plumes. The results of this modeling (contained in [Appendix 10.10.2](#), Section 3) indicates that operation of the slant wells will not result in the intake of contaminated groundwater, and in fact has a very limited effect on these plumes.⁶ Normal Project operations and regulatory permits will require groundwater monitoring as well as monitoring of feedwater quality from the slant wells to ensure that any contaminants, regardless of source, are detected and treated prior to distribution of product water.

Southeast Intake Wells

See analysis above for the Subsurface Intake Wells. With respect to effect on groundwater contamination plumes, the Southeast Intake Wells are hydrologically distinct from groundwater in the San Juan Basin, and would not be affected by nor have any effect on existing groundwater contamination.⁷

Raw Water Conveyance Alignments – North and South

Conveyance system maintenance would require the occasional use of equipment and maintenance fuels, lubricants, and solvents needed to ensure proper conveyance system operations. However, such maintenance would be only periodic and performed in accordance with local, state, and federal regulations. Compliance with applicable hazardous materials and hazardous waste regulations, as discussed in the *Desalination Facility* section, below, would ensure the conveyance components would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during Project operations. A less than significant impact would occur in this regard.

Desalination Facility

Desalination facility operations would involve the routine transport, use, and storage of materials/chemicals typical of water treatment and desalination facilities. [Table 3-6, Chemical Use and Application Summary](#) in [Section 3, Project Description](#), summarizes the chemicals, application points, and

⁶ *Appendix 10.10.2 shows that pumping 8.6 MGD has little effect on the groundwater plume (page 37, and Figures 54, 55 and 56 of Appendix 10.10.2), as does pumping at even higher levels. In fact, groundwater modeling shows that the Project would improve plume conditions by causing the plume to dissipate faster.*

⁷ *Table 4.3, Appendix 10.10.1.*



average chemical doses based on preliminary Project design. Chemicals that would be needed for control of biological fouling, pretreatment, membrane cleaning, and post-treatment, include the following:

- Sodium hypochlorite, which could be used periodically to chlorinate the intake piping system, in the chemically enhanced backwash (CEB) for the microfiltration process, and in the calcite backwash stream;
- Sodium bisulfite, which would be added at the intake pump station to neutralize the chlorine residual that remains after shock chlorination, and for neutralizing chlorine in the spent CEB and calcite backwash;
- Citric acid and other proprietary chemicals, for membrane cleaning operations;
- Carbon dioxide and calcite, for post-treatment;
- Ammonia (aqueous form) and sodium hypochlorite, to form chloramine for final disinfection;
- Caustic soda (sodium hydroxide), for final pH adjustment and to enhance boron removal in the second pass reverse osmosis (RO) process;
- Fluorosilicic acid for supplementation in product water;
- Polymer, as a coagulant aid for onsite clarification;
- Sulfuric acid, used for periodic cleaning of RO membranes; and
- Proprietary antiscalant chemicals for the second pass RO process.⁸

Use of these chemicals would produce various residual waste streams during the desalination process. High iron and manganese solids would be hauled off-site for disposal, while RO membrane cleaning chemicals would be neutralized and discharged to the sanitary sewer, as discussed in detail in Section 4.15, Utilities and Service Systems.

A chemical storage area is proposed on the east side of the site that would house all of the chemical storage tanks in a safe and contained manner. Each tank would be fully enclosed and mounted on a concrete pad within an isolated concrete containment basin sized to accommodate the full volume of the respective chemical tank plus 20 percent in the event of a spill or leak. A chemical delivery area would be located adjacent to the road for convenient truck access and isolated spill containment.

The routine transport, use, or disposal of these materials during desalination facility operations is not anticipated to create a significant hazard to the public or the environment, with compliance with Federal, State, and local regulations for transport, handling, storage, and disposal of hazardous substances. Compliance with strict standards enforced by the EPA, DTSC, and OCEHD (the designated CUPA) would be required. As discussed above, the Project applicant would be required to obtain a hazardous waste generator identification number from the DTSC prior to generating any hazardous waste. Additionally, as required by the OCEHD, the Project must adhere to County hazardous materials and hazardous waste regulations through compliance with various programs, including the following:

- Hazardous Materials Disclosure (HMD);

⁸ The materials/chemicals necessary for operation of the desalination facility, along with their application, dosages, and annual usage are subject to change based on final design/engineering/treatment requirements.



- Business Emergency Plan (BEP);
- Hazardous Waste (HW) Inspection;
- Underground Storage Tank (UST);
- Aboveground Petroleum Storage Tank (APST); and
- California Accidental Release Prevention (CalARP).

In compliance with the HMD and BEP programs, the hazardous materials used during Project operations must be reported to the CUPA. As part of the HMD and BEP programs, the Project must inventory its hazardous materials, develop a sitemap and an emergency plan, and implement an employee training program. Compliance with the HW inspection program would ensure that all hazardous wastes generated by the Project are properly handled, recycled, treated, stored, and disposed. Compliance with the UST program would ensure that hazardous materials stored in USTs are not released into the environment, potentially polluting ground and surface waters. The Project may store more than 1,320 gallons of petroleum products in tanks or containers larger than 55 gallons. Accordingly, Project operations would be regulated pursuant to APST program requirements.⁹ As discussed above, the Project would likely handle more than threshold quantities of a Regulated Substance (RS). Accordingly, in compliance with CalARP requirements, the Project must develop a Risk Management Plan (RMP) to prevent or mitigate releases of regulated substances that could have off-site consequences.

Compliance with Mitigation Measure HAZ-2 (Hazardous Waste Management Plan), which requires implementation of a Waste Management Plan for all waste generated during facility operations, would also be required. Compliance with applicable hazardous materials and hazardous waste regulations, as well as the specified mitigation measures, would ensure the Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during Project operations. With mitigation, a less than significant impact would occur in this regard.

Brine Disposal System

Brine disposal system operations would discharge treated wastewater mixed with brine generated from the desalination facility via the existing SJCOO to approximately 10,500 feet offshore. Neither of these materials are considered acutely hazardous. Discharges are regulated by SOCWA's current NPDES for the SJCOO, in compliance with the Ocean Plan and Porter-Cologne Water Quality Control Act. Refer to Section 4.8, Hydrology and Water Quality, for a detailed discussion concerning the Project's potential impacts to water quality resulting from brine disposal system operations.

Mitigation Measures

HAZ-1 Drilling Monitoring and Management Program. Prior to the issuance of a grading, drilling, or construction permit, the District or its designee shall prepare a Drilling Monitoring and Management Program (DMMP) to be implemented as part of the Project. The DMMP would be used to minimize potential hazardous materials effects and releases to the environment, and shall include best management practices

⁹ The APST program applies to any business with a total storage capacity, at any one site, of more than 1,320 gallons of petroleum products in tanks or containers larger than 55 gallons. APST-regulated tank facilities are also regulated by the U.S. EPA Region 9 Oil Program Clean Water Act Compliance Office. The Federal standards (called the SPCC rule) regulate non-petroleum oils that are not regulated under APST such as vegetable oil. It is possible for a tank facility to be regulated and inspected by both the EPA and CUPA, or just the EPA.



(BMPs). BMPs shall include monitoring all drilling activities and to ensure that the loss of drilling fluids including drilling mud, borehole, collapse, and groundwater interference does not occur. To help prevent such releases or collapse, monitoring of all drilling activities shall be done by a qualified geotechnical engineer and will include strategies to minimize the potential for leaks including; using pilot holes to test best drilling location; using muds with naturally occurring materials and that are heavier than water such as bentonite and non-toxic polymers; monitoring of fluid pressures; adjusting fluids to maintain proper drilling pressures; and by using dyes to detect leaks into the water column.

In case of a spill, the DMMP shall clearly define measures that would be used to contain spills and minimize other hazards. The monitoring and response measures shall be designed to be specific to the expected subsurface conditions for each Intake Well proposed to be drilled.

HAZ-2

Hazardous Waste Management Plan. Prior to issuance of a grading, drilling, or construction permit, the District or its designee shall prepare a Hazardous Waste Management Plan for all waste generated, used, handled, or transported during facility construction and operation to include, seawater intakes, conveyance system, desalination facility, brine disposal, and water distribution system. The Hazardous Waste Management Plan shall define all wastes expected to be generated during construction activities. The Plan shall contain, at a minimum, the following:

- Incorporation of applicable elements of the District's Hazardous Material Business Plan as determined by the District;
- Address applicable provisions of local, state and federal law, including CalARP;
- A description of all waste streams, including projections of frequency, amounts generated, and hazard classifications; and
- Methods of managing each waste, including storage, treatment methods, disposal by a licensed contractor, and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.

Implementation of the Hazardous Waste Management Plan shall be verified and implemented through the construction and operation horizon. The District also shall complete an Annual Compliance Report, documenting the actual waste management methods used during the year compared to planned management methods.

HAZ-3

Registered Professional Engineer or Geologist. The District shall have a Registered Professional Engineer or Geologist, with experience in remedial investigation and feasibility studies, available for consultation during soil excavation and grading activities. The Registered Professional Engineer or Geologist shall be given full authority to oversee any drilling, microtunneling, jack and bore, excavation, trenching, or other earthmoving activities that have the potential to disturb



contaminated soil or groundwater and provide recommendations for remediation and/or prevention should it be necessary.

Impact 4.7-2: Would the project 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? *Level of Significance: Less than Significant with Mitigation.*

Note: this impact focuses on potential hazardous materials impacts related to the accidental release of hazardous materials into the environment. Refer to Impact 4.7-1 for a discussion regarding routine transport, storage, use or disposal of hazardous materials.

Prior studies have determined there are known incidents of hazardous materials releases that could affect Project construction or operations. As depicted on [Exhibit 4.7-1](#), Recognized Environmental Conditions Map, and discussed in [Table 4.7-1](#), Potential Hazardous Materials Sites Near the Project Site, the EDR search revealed one site within the Project boundaries (Doheny State Beach Park at 25300 Dana Point Harbor Drive) and 14 sites located adjacent to/within 0.25 miles of the Project area with a reported spill of hazardous materials that could affect the Project site due to location or proximity (e.g., having experienced spills in which materials could have migrated into adjacent areas). Some of these areas include right-of-ways (ROW's), such as Doheny Park Road, Las Vegas Street, and Victoria Boulevard near the northern boundary of the proposed desalination facility. If during Project construction, areas with unknown contaminants are upset, the disturbance associated with construction-related activities could expose the public/construction workers and environment to contaminated soil, contaminated groundwater, or other underground hazards and hazardous materials.

Construction

Subsurface Intake Wells

Wellhead construction within beach areas would include coastal hazard measures to protect beach construction sites from potential for ocean contamination and spills; refer to [Section 4.8, Hydrology and Water Quality](#), for an analysis of potential impacts in this regard.

There are no known contamination areas within the subsurface intake well areas at Doheny State Beach, other than the one spill believed to be isolated, in the North Day Use parking area. Typical of any construction project involving grading or drilling, and associated potential for encountering previously undocumented contamination, Project construction could result in unanticipated release of hazardous materials into the environment. It is possible between Project approval and construction, that new sources of potential contamination risk occur, or that previously unidentified contamination is encountered during construction. As discussed above, standard construction measures will be utilized during Project construction, including compliance with the District's Hazardous Material Business Plan and the required Hazardous Waste Management Plan (HAZ-2). This potential impact would be further mitigated through compliance with all applicable local, state and federal regulations regarding minimizing potential for risk of upset during construction, and dealing with unplanned encounters with hazardous materials during construction.

The Project would be subject to compliance with Mitigation Measures HAZ-1 through HAZ-9. Mitigation Measure HAZ-3 (Registered Professional Engineer or Geologist) requires that a Registered Professional



Engineer or Geologist, with experience in remedial investigation and feasibility studies, be available for consultation during soil excavation and grading activities, and have full authority to oversee any drilling, microtunneling, or jack and bore, excavation, trenching, or other earthmoving activities that have the potential to disturb contaminated soil. Mitigation Measure HAZ-4 (Inspection of Potentially Contaminated Soils) requires the Registered Professional Engineer/Geologist to inspect the area containing contaminated soils unearthed during site disturbance activities. Mitigation Measure HAZ-5 (Remedial Investigation Workplan) requires a Remedial Investigation Workplan (RI Workplan) that includes a detailed site characterization plan with soil and groundwater sampling and analysis to determine the extent and nature of contamination. Mitigation Measure HAZ-7 (Project Demolition and Construction Safety and Health Program) requires a Project Demolition and Construction Safety and Health Program and a Demolition and Construction Fire Protection and Prevention Plan and Emergency Action Plan. Mitigation Measure HAZ-9 (Retain a Site Construction Safety Supervisor) requires a site construction safety supervisor. The Project design team is very familiar with this specific construction method (having used similar technology for test wells at Doheny State Beach and Marina, California), as well as associated necessary measures to ensure a safe drilling operation. Following compliance with the specified mitigation measures, Project construction is not anticipated to 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. With mitigation, a less than significant impact would occur in this regard.

Southeast Intake Wells

See analysis above in the discussion regarding Subsurface Intake Wells. Similar potential impacts could occur with the Southeast Intake Wells. No known sources of existing contamination exist in this area.

Raw Water Conveyance Alignments – North and South

Conveyance system construction would largely occur within existing street rights-of-way, in addition to trenchless construction at San Juan Creek, San Juan Creek Lagoon, and under PCH and the MetroLink railroad. During pipeline construction, trenching operations may encounter contamination, from known or as yet unknown sources along the pipeline construction routes. This is common for any roadway or utility construction in this area, and similar to conditions addressed in the District's recently adopted Infrastructure Master Plan Update IS/MND. Pipeline contractors have standard protocols for handling hazardous materials should they be encountered during construction, and the District will include such protocols in construction bid documents, consistent with the District's Hazardous Material Business Plan (refer to HAZ-2).

In the event hazardous materials are found discovered, the Project would be subject to compliance with Mitigation Measures HAZ-1 through HAZ-9. Following compliance with the specified mitigation measures, Project construction is not anticipated to 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. With mitigation, a less than significant impact would occur in this regard.

Desalination Facility

Desalination facility construction would occur on a site that has historically and currently contains industrial land uses, including a District storage site and over 60 individual tenant occupants. Although the



desalination facility site is not listed as having experienced a hazardous materials spill, the site may contain unknown hazardous materials in existing structures and machinery, as well as unknown buried environmental conditions. In addition, off-site groundwater contamination plumes may impact groundwater beneath the site. As noted in the existing conditions above and in [Table 4.7-1](#), several sites located east (upgradient) of the desalination facility site have had historic groundwater contamination incidents, and this industrial area may have further groundwater contamination or previously unidentified contamination. Given the area's relatively shallow depth to groundwater (ranging from 3 to 16 feet above amsl, representing a depth of approximately 10 to 15 feet bgs),¹⁰ it is possible that facility construction may encounter contaminated groundwater, particularly for deeper excavations, trenching, or trenchless construction (refer to [Section 4.8, Hydrology and Water Quality](#) for further discussion regarding construction dewatering in shallow groundwater).

Thus, Project construction could 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. However, Project construction will follow applicable local, state and federal regulations with respect to handling hazardous materials encountered during construction. These construction conditions are similar to those encountered during major capital improvement projects, including the District's Groundwater Recovery Facility and related improvements. The Project would also be subject to compliance with Mitigation Measures HAZ-1 through HAZ -9, as described below. Through compliance with required regulations and implementation of required Mitigation Measures, no significant impacts are anticipated.

Brine Disposal System

The brine disposal system would utilize the existing SJCOO, which discharges treated wastewater approximately 10,500 feet offshore. No construction activities other than tying into the existing outfall pipe would be required. As indicated in [Table 4.7-1](#), no sites are listed with the potential for materials to affect the brine disposal system site. Connection to the SJCOO would occur within the desalination facility site, which is addressed above. Therefore, with mitigation, no significant impact would occur in this regard.

Operations

Subsurface Intake Wells

Intake well operations would require routine maintenance, which could involve hazardous materials. Any materials needed for routine maintenance would be transported, used, and disposed of in accordance with Federal, State, and local regulations, as discussed above (see Impact 4.7-1) to ensure subsurface intake well operations would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions. During extended slant well operations both at Doheny State Beach and Marina, California, no accidental releases of hazardous materials into the environment occurred, and with implementation of standard design and operational practices including compliance with applicable regulations, no such accidental release is anticipated with the Project. The Project would also be subject to compliance with Mitigation Measures HAZ-1 through HAZ-9. Therefore, compliance with the regulatory framework and specified mitigation measures would ensure that

¹⁰ [Appendix 10.6, page 19.](#)



subsurface intake well operations would not 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. With mitigation, a less than significant impact would occur in this regard.

Southeast Intake Wells

Refer to analysis above.

Raw Water Conveyance Alignment – North and South

Conveyance system operations would require routine maintenance typical of other District facilities, which could involve hazardous materials. Any materials needed for routine maintenance would be transported, used, and disposed of in accordance with Federal, State, and local regulations, as discussed above (see Impact 4.7-1) to ensure conveyance system operations would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions. The Project would also be subject to compliance with Mitigation Measure HAZ-8, as well as compliance with the District's existing Hazardous Material Business Plan (HAZ-2). Therefore, compliance with the regulatory framework and specified mitigation measures would ensure that conveyance system operations would not 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. With mitigation, a less than significant impact would occur in this regard.

Desalination Facility

Desalination facility operations would involve the routine transport, use, and storage of materials/chemicals typical of water treatment and desalination facilities. Additionally, use of these chemicals would produce various residual waste streams during the desalination process. Use of these materials could 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. However, as discussed in Impact 4.7-1 above, the routine transport, use, and disposal of these materials during desalination facility operations must adhere to Federal, State, and local regulations for transport, handling, storage, and disposal of hazardous substances. As required by the OCEHD, the Project must adhere to County hazardous materials and hazardous waste regulations through compliance with various programs (i.e., HMD, BEP, HW, UST, APST, and CalARP). The Project would also be subject to compliance with Mitigation Measure HAZ-8. Therefore, compliance with the regulatory framework and the specified mitigation measure would ensure that desalination facility operations would not 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. With mitigation, a less than significant impact would occur in this regard.

Brine Disposal System

Brine disposal system operations would discharge treated wastewater mixed with brine generated from the desalination facility via the existing SJCOO through a diffuser approximately 10,500 feet offshore. Neither of these materials are considered acutely hazardous. Refer to Section 4.8, Hydrology and Water



Quality, for a detailed discussion concerning the Project's potential impacts to water quality resulting from brine disposal system operations.

Mitigation Measures

HAZ-4 Inspection of Potentially Contaminated Soils. If potentially contaminated soils are unearthed during site disturbance activities as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the Registered Professional Engineer or Geologist (per HAZ-3) shall inspect the identified area, determine the need for sampling to confirm the nature and extent of contamination, and file a written report to the City of Dana Point Community Development Department (Building and Safety Division) and the Orange County Department of Environmental Health stating the recommended course of action. Depending on the nature and extent of contamination, the Registered Professional Engineer or Geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If significant remediation may be required, the Registered Professional Engineer or Geologist shall contact representatives of the San Diego Regional Water Quality Control Board, DTSC, and other local agencies, as applicable, for guidance and possible oversight. The District is responsible for implementing all recommended actions.

HAZ-5 Remedial Investigation Workplan. Prior to demolition of any structures or equipment on the proposed desalination facility, in the event hazardous materials are discovered that require remediation (pursuant to HAZ-4), the District shall prepare a Remedial Investigation Workplan (RI Workplan) to the satisfaction of City of Dana Point Community Development Department (Building and Safety Division) and the Orange County Department of Environmental Health. The RI Workplan shall include a detailed site characterization plan with soil and groundwater sampling and analysis to determine the extent and nature of contamination existing beneath the surface of the desalination facility. The RI Workplan shall be provided to the DTSC, San Diego Regional Water Quality Control, and City of Dana Point Fire Department, and other local agencies, as applicable, for review and comment. If contaminated soil or groundwater is found to exist, the District shall contact representatives of appropriate agencies for further guidance and possible oversight. In no event shall the District proceed with site preparation or construction activities at any location on the site where hazardous waste contamination is found to be present until that location is either remediated or shown to pose an insignificant risk to humans and the environment as demonstrated to the satisfaction of the applicable agency responsible for remediation oversight.

HAZ-6 Survey of Asbestos-Containing Materials and Lead-Based Paint. Prior to demolition of any existing structures (including piping materials), the District shall, to the satisfaction of City of Dana Point Community Development Department (Building and Safety Division) and the Orange County Department of Environmental Health, complete and submit a survey of all Asbestos-Containing Materials (ACM) and Regulated Building Materials (RBM) that contain lead-based paint to the listed



agencies for review and comment and for approval. If any such materials are located, and after receiving approval and prior to demolition, the District shall remove all ACM and RBM from the site in accordance with all applicable guidelines and regulations pertaining to the safe handling, removal, and disposal of such materials. The District shall contract with a licensed company to perform all related work efforts and shall inform the City of Dana Point and County of Orange when all ACM and RBM were removed from the site.

HAZ-7

Project Demolition and Construction Safety and Health Program. Prior to demolition of any existing structures, the District shall, to the satisfaction of City of Dana Point Community Development Department (Building and Safety Division) and the Orange County Department of Environmental Health, submit for review and comment a copy of the Project Demolition and Construction Safety and Health Program containing the following:

- A Demolition and Construction Safety Program;
- A Demolition and Construction Personal Protective Equipment Program;
- A Demolition and Construction Exposure Monitoring Program;
- A Demolition and Construction Emergency Action Plan; and
- A Demolition and Construction Fire Protection and Prevention Plan.

The Demolition and Construction Fire Protection and Prevention Plan and Emergency Action Plan shall include the following:

- a) Methods to maintain fire access roadways and submittal of a fire access layout plan for review by the City of Dana Point Fire Department.
- b) Provision of fire flow calculations to verify that the available water supply proposed will be adequate for emergency operations.
- c) A requirement that all temporary fire mains and hydrants shall be adequately braced and tied-down to anticipate the effects of water hammer and that protection from vehicular impact is provided as necessary.

HAZ-8

Project Operations and Maintenance Safety and Health Program. Prior to issuance of any well, grading or construction permit, the District shall, to the satisfaction of City of Dana Point Community Development Department (Building and Safety Division) and the Orange County Department of Environmental Health, submit for approval a copy of the Project Operations and Maintenance Safety and Health Program containing the following:

- An Operation Injury and Illness Prevention Plan;
- An Emergency Action Plan;
- Hazardous Materials Management Program;
- Operations and Maintenance Safety Program;
- Fire Protection and Prevention Program (8 CCR § 3221); and,



- Personal Protective Equipment Program (8 CCR § 3401-3411).

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the Cal/OSHA Consultation Service, for review and comment concerning compliance of the program with all applicable Safety Orders for approval. The Operation Fire Protection Plan and the Emergency Action Plan shall also be submitted to the City of Dana Point Fire Department for review and comment. The Project Operations Fire Protection and Prevention Plan and Emergency Action Plan shall address:

- a) Provision of remote annunciation for all fire alarm and automatic suppression devices and the placement of remote annunciation at applicable project sites.
- b) Provision of fire alarm system and automatic fire sprinklers for all new structures.
- c) Adequate emergency access for Fire Department operations.

HAZ-9

Retain a Site Construction Safety Supervisor. The District shall, to the satisfaction of City of Dana Point Community Development Department (Building and Safety Division), retain a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

- Have over-all authority for coordination and implementation of all occupational safety and health practices, policies, and programs; and
- Ensure that the Project's safety program complies with relevant Cal/OSHA and federal regulations, including the following:
 - a) Ensure that all construction workers, operational employees, and supervisors receive adequate safety training;
 - b) Complete accident and safety-related incident investigations, emergency response reports for injuries, and inform the Project Engineer of safety-related incidents; and
 - c) Ensure that all required plans and other applicable mitigation measures are implemented.

The CSS shall submit a monthly safety inspection report to the Project Engineer that includes the following:

- Record of all employees trained for that month (all records shall be kept on site for the duration of the Project);
- Summary report of safety management actions and safety-related incidents that occurred during the month;
- Report of any continuing or unresolved situations and incidents that may pose a danger to life or health; and
- Report of accidents and injuries that occurred during the month.



Impact 4.7-3: Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? *Level of Significance: Less than Significant with Mitigation.*

Construction and Operation

The schools located within 0.25-miles of the Project site are outlined in Table 4.7-2, Schools Within 0.25-Miles of Project Site, and depicted on Exhibit 4.7-2, Schools Within 0.25 Miles of Project Site. As shown in Table 4.7-2, the only school within 0.25 miles of the Phase I ESA Project is the San Clemente Christian School, located at 25975 Domingo Avenue. This school would be within 1/10 of a mile of the South Raw Water Conveyance line construction in Doheny Park Road, although this would be for a relatively brief period, and the hazardous materials utilized during pipeline construction would be typical for municipal pipelines, and comply with all applicable safety regulations, as noted in Impact 4.7-1 above. During desalination facility operation, this school would be approximately 0.21 miles from the desalination facility site. However, the school is substantially buffered between itself and the desalination facility, including several blocks of commercial/industrial buildings and the MetroLink railroad. The desalination facility site is zoned for uses such as municipal water supply, and Project operation would comply with all applicable operational safety regulations, as noted above in Impact 4.7-1. With compliance with applicable regulations and implementation of mitigation measures HAZ-1 through HAZ-9, no significant impacts are anticipated.

Mitigation Measures

Implementation of Mitigation Measures HAZ-1 through HAZ-9 would reduce impacts to a level of less than significant.

Impact 4.7-4: Would the project 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? *Level of Significance: Less than Significant with Mitigation.*

Construction and Operations

All Components

As discussed above, Phase I ESA includes the results of the 1999 search of local, state, and federal databases. Results of the Phase I ESA search indicate that the Project site was not listed in any of the databases that were searched, including those required by Government Code § 65962.5 (commonly referred to as the “Cortese List.”)¹¹ Additionally, results of the 2017 EDR search indicate that the Project

¹¹ Government Code § 65962.5 provides in part that “(a) The Department of Toxic Substances Control shall compile and update as appropriate, but at least annually, and shall submit to the Secretary for Environmental Protection, a list of all of the following: (1) All hazardous waste facilities subject to corrective action pursuant to § 25187.5 of the Health and Safety Code. (2) All land designated as hazardous waste property or border zone property pursuant to Article 11 (commencing with § 25220) of Chapter 6.5 of Division 20 of the Health and Safety Code. (3) All information received by the Department of Toxic Substances Control pursuant to § 25242 of the Health and Safety Code on hazardous waste disposals on public land. (4) All sites listed pursuant to § 25356 of the Health and Safety Code. Government Code § 65962.5 (b) also requires that “The State Department of Health Services shall compile and update as appropriate, but at least annually, and shall submit to the Secretary for Environmental Protection, a list of all public drinking water wells that contain detectable levels of organic contaminants and that are subject to water analysis pursuant to § 116395 of the Health and Safety Code” (subsection b) and “The State Water Resources Control Board shall compile and update as appropriate, but at least annually, and shall submit to the Secretary for Environmental Protection, a list of all of the following: (1) All underground storage tanks for which an unauthorized release report is filed pursuant to § 25295 of the Health and Safety Code. (2) All solid waste disposal facilities from which there is a migration of hazardous waste and for which a California



site was not listed in the Cortese List, although one record was listed (HIST UST, CA FID UST, UST, SWEEPS UST) within Doheny State Beach park boundaries; see Table 4.7-1.

On 06/01/1988, a visual inspection of this site suggested a leak of unleaded fuel from a 1970 UST. The case was previously listed as active and clean-up or remediation activities are unknown. A recent Geotracker search (March 20, 2018) does not show this site as active remediation or LUST. Given the age of the originally reported incident (30 years ago) and limited activity intended for this area (potentially limited staging for the subsurface intake well construction), this is not considered likely to represent a significant environmental issue.

The EDR search did not reveal any records for Cortese sites located on the desalination facility site, subsurface intake wells, or raw water conveyance pipeline alignments. As concluded in Impact 4.7-2 above, implementation of Mitigation Measures HAZ-1 through HAZ-9 would ensure that Project construction and operations would not create a significant hazard to the public or the environment. Therefore, with mitigation, the Project would not result in a significant hazard to the public or environment concerning a Government Code § 65962.5-listed site.

Mitigation Measures

See Mitigation Measures HAZ-1 through HAZ-9 relative to identification and mitigation of potential hazardous materials during Project construction.

Impact 4.7-5: 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?
Level of Significance: No Impact.

Construction and Operations

All Components

The proposed Project site is not located within 2.0 miles of a public airport or public use airport. The nearest airport is John Wayne Airport, located approximately 18 miles northwest. The John Wayne Airport Environs Land Use Plan (AELUP) implements policy and regulations, including those concerning Safety Compatibility Zones¹². As shown in AELUP Figure 1, the Project site is located outside of the John Wayne Airport influence area. Therefore, the Project would not result in an airport-related safety hazard for people working in the Project area. No impact would occur in this regard.

Mitigation Measures

No mitigation measures are required.

regional water quality control board has notified the Department of Toxic Substances Control pursuant to subdivision (e) of § 13273 of the Water Code. (3) All cease and desist orders issued after January 1, 1986, pursuant to § 13301 of the Water Code, and all cleanup or abatement orders issued after January 1, 1986, pursuant to § 13304 of the Water Code, that concern the discharge of wastes that are hazardous materials" (subsection c).

¹² http://www.ocair.com/Commissions/ALUC/Docs/JWA_AELUP-April-17-2008.pdf.



Impact 4.7-6: For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? *Level of Significance: No Impact.*

Construction and Operations

All Components

The proposed Project site is not located within the vicinity of a private airstrip. Therefore, the Project would not result in an airstrip-related safety hazard for people working in the Project area. No impact would occur in this regard.

Mitigation Measures

No mitigation measures are required.

Impact 4.7-7: Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? *Level of Significance: Less than Significant.*

Construction

Subsurface Intake Wells

Subsurface intake well construction would occur within Doheny State Beach, thus, would not impede access to nearby roadways or a designated evacuation route (according to City of Dana Point General Plan Figure PS-7). Additionally, construction would not interfere with the City's emergency response plan, as construction would not block any designated evacuation routes. Therefore, subsurface intake well construction would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No impact would occur in this regard.

Southeast Intake Wells

Southeast intake well construction would occur within the Capistrano Beach Park parking lot. Construction would not impede access to the main Palisades Drive access driveway or a designated evacuation route (according to City of Dana Point General Plan Figure PS-7). Additionally, construction would not interfere with the City's emergency response plan. Therefore, southeast intake well construction would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No impact would occur in this regard.

Raw Water Conveyance Alignment – North and South

Conveyance system construction would occur within existing ROW's and developed areas that could result in partial lane closures. However, review of City of Dana Point General Plan Figure PS-7 indicates that the Project site is not within or adjacent to a specified evacuation route, which is defined as a predesignated route for emergency evacuation use. Further, it is not anticipated that full lane closures would be required. Partial lane closures would be temporary and would not obstruct emergency vehicle traffic or emergency vehicle response during construction. In addition, Mitigation Measure TRF-2 (Construction Traffic Control Plan) would require preparation of a Traffic Control Plan that would ensure emergency vehicle access to/through the Project site, as well as to adjacent areas. Additionally, construction would



not interfere with the City's emergency response plan. Therefore, with mitigation incorporated, conveyance system construction would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. With mitigation, a less than significant impact would occur in this regard.

Desalination Facility

Desalination facility construction would occur within the site boundaries, thus, would not impede access to nearby roadways or a designated evacuation route (according to General Plan Figure PS-7). Additionally, construction would not interfere with the City's emergency response plan. Construction activities may require the transport of heavy equipment and materials to and from the Project site, which may impede traffic flows. However, these impediments would be localized and short-term. Additionally, a Construction Traffic Control Plan (Mitigation Measure TRF-2) would be implemented to ensure emergency vehicle access to/near the Project site and adjacent areas. Project construction would not interfere with the City's emergency response plan. Therefore, with mitigation, desalination facility construction would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. With mitigation, a less than significant impact would occur in this regard.

Brine Disposal System

Brine disposal system construction would occur within the Project footprint, thus, would not impede access to nearby roadways or a designated evacuation route (according to General Plan Figure PS-7). Additionally, construction would not interfere with the City's emergency response plan. Therefore, brine disposal system construction would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No impact would occur in this regard.

Operations

Subsurface Intake Wells

Seawater intake system routine operations would occur entirely underground, while periodic maintenance operations would occur entirely within the site. Thus, operations would not disrupt or interfere with emergency access, or impede access to nearby roadways or a designated evacuation route. Additionally, operations would not interfere with the City's emergency response plan. Therefore, seawater intake system operations would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No impact would occur in this regard.

Southeast Intake Wells

Refer to analysis above.

Raw Water Conveyance Alignment – North and South

Conveyance system routine operations would occur entirely underground. Thus, routine operations would not disrupt or interfere with emergency access or impede access to nearby roadways or a designated evacuation route. Conveyance system maintenance would occur within the ROW, thus, could periodically result in partial lane closures. However, review of General Plan Figure PS-7 indicates that the Project site is not within or adjacent to a specified evacuation route. Further, it is not anticipated that full



lane closures would be required. Partial lane closures would be temporary and would not obstruct emergency vehicle traffic or emergency vehicle response during operations. In addition, Mitigation Measure TRF-2 (Construction Traffic Control Plan) would require preparation of a Traffic Control Plan that would ensure emergency vehicle access to/through the Project site, as well as to adjacent areas. Additionally, operations would not interfere with the City's emergency response plan. Therefore, with mitigation incorporated, conveyance system operations would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. With mitigation, a less than significant impact would occur in this regard.

Desalination Facility

Desalination facility operations would occur entirely within the site boundaries. Thus, operations would not disrupt or interfere with emergency access, or impede access to nearby roadways or a designated evacuation route. Additionally, operations would not interfere with the City's emergency response plan. Therefore, desalination facility operations would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No impact would occur in this regard.

Brine Disposal System

Brine disposal system routine operations would occur entirely underground, while periodic maintenance operations would occur entirely within the desalination facility site. Thus, operations would not disrupt or interfere with emergency access, or impede access to nearby roadways or a designated evacuation route. Additionally, operations would not interfere with the City's emergency response plan. Therefore, brine disposal system operations would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No impact would occur in this regard.

Mitigation Measures

See Mitigation Measure TRF-2 (Construction Traffic Control Plan) in Section 4.13 of this EIR, which would require preparation of a Traffic Control Plan that would ensure emergency vehicle access to/through the Project site, as well as to adjacent areas.

Impact 4.7-8: **Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? *Level of Significance: Less than Significant.***

Construction and Operations

All Components

The proposed Project site is within Dana Point, a fully urbanized area that is not adjacent to or intermixed with wildlands. Further, according to the Dana Point Fire Hazard Severity Zone Map¹³, the Project site is in a Zone NHFA (Non-High Fire Areas). Therefore, the Project would not expose people or structures to a significant risk involving wildland fires. A less than significant impact would occur in this regard.

¹³ City of Dana Point Building and Safety, Fire Hazard Severity Maps, Available at: <http://www.danapoint.org/departments/community-development/building-safety/fire-hazard-severity-zones>, (accessed February 21, 2018).



Mitigation Measures

No mitigation measures are required.

4.7.5 REGIONAL PROJECT

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential hazard impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). Expansion at the desalination facility site would have no significant additional impacts relative to hazards and hazardous materials. The Regional Project may require construction of additional regional product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified. Mitigation Measures HAZ-1 through HAZ-9 would apply to the Regional Project.

A subcomponent of the Regional Project includes electrical line connections and extensions, which would extend further north of the desalination site within existing roads, below-ground (as shown on Exhibit 3-12, Underground Electrical Line Extensions). For the Regional Project, the below-ground electrical lines would be within 0.25 miles of the Dana Point Montessori, Del Obispo Elementary School and Marco Forster Middle School (see Table 4.7-2). However, these electrical lines would be installed using typical trenching methods by SDG&E and its contractors, and would be belowground. No unusual circumstances are anticipated to suggest this construction presents a significant health hazard. Therefore, with implementation of standard construction practices and compliance with applicable regulations, no significant impacts are anticipated.

4.7.6 CUMULATIVE IMPACTS

For purposes of hazardous materials impact analysis, cumulative impacts are considered for cumulative development in the general Project vicinity, which could pose impacts to groundwater. Refer also to Section 4.0, Environmental Analysis, for discussion concerning the basis for the cumulative impact analysis and a list of related cumulative projects located in the Project vicinity.

This EIR has incorporated by reference the City of Dana Point General Plan Final EIR, which addresses cumulative impacts from City buildout. The General Plan Final EIR concluded that risk of upset and impacts resulting from General Plan implementation would be adverse, but less than significant. As discussed below, Project impacts would be mitigated to less than significant levels with mitigation incorporated, and the Project's contribution to cumulative impacts is not otherwise considered to be "cumulatively considerable." Project implementation is not expected to cumulatively contribute to the groundwater contamination in the area following compliance with federal, State, and local laws and regulations, as well as implementation of specified Mitigation Measures HAZ-1 through HAZ-9. Mitigation Measure TRF-2 would ensure the Project's construction-related impacts to an adopted emergency response plan are less than significant through implementation of a Construction Traffic Control Plan. Cumulative development would be subject to the numerous existing federal, State, regional, and local laws, ordinances, regulations, and standards, which are intended to minimize/avoid the effects of past, current, and probable development. Thus, Project implementation would not result in any significant cumulatively considerable



impacts concerning hazards and hazardous materials following compliance with federal, State, and local laws and regulations, as well as Mitigation Measures HAZ-1 through HAZ-9, and TRF-2.

Similarly, all future development, which could result in impacts concerning hazards and hazardous materials, would be required to demonstrate compliance with applicable federal and State regulatory requirements, including the City of Dana Point General Plan policies, Municipal Code standards, and Emergency Plan requirements, intended to avoid/reduce potential adverse environmental effects. As such, cumulative impacts concerning hazards and hazardous materials would be mitigated on a project-by-project level, and in accordance with the established regulatory framework, through the established regulatory review process.

4.7.7 SIGNIFICANT UNAVOIDABLE IMPACTS

The Project would not result in any significant unavoidable impacts concerning hazards and hazardous materials.





EXHIBIT 4.7-1: Recognized Environmental Conditions Map

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn

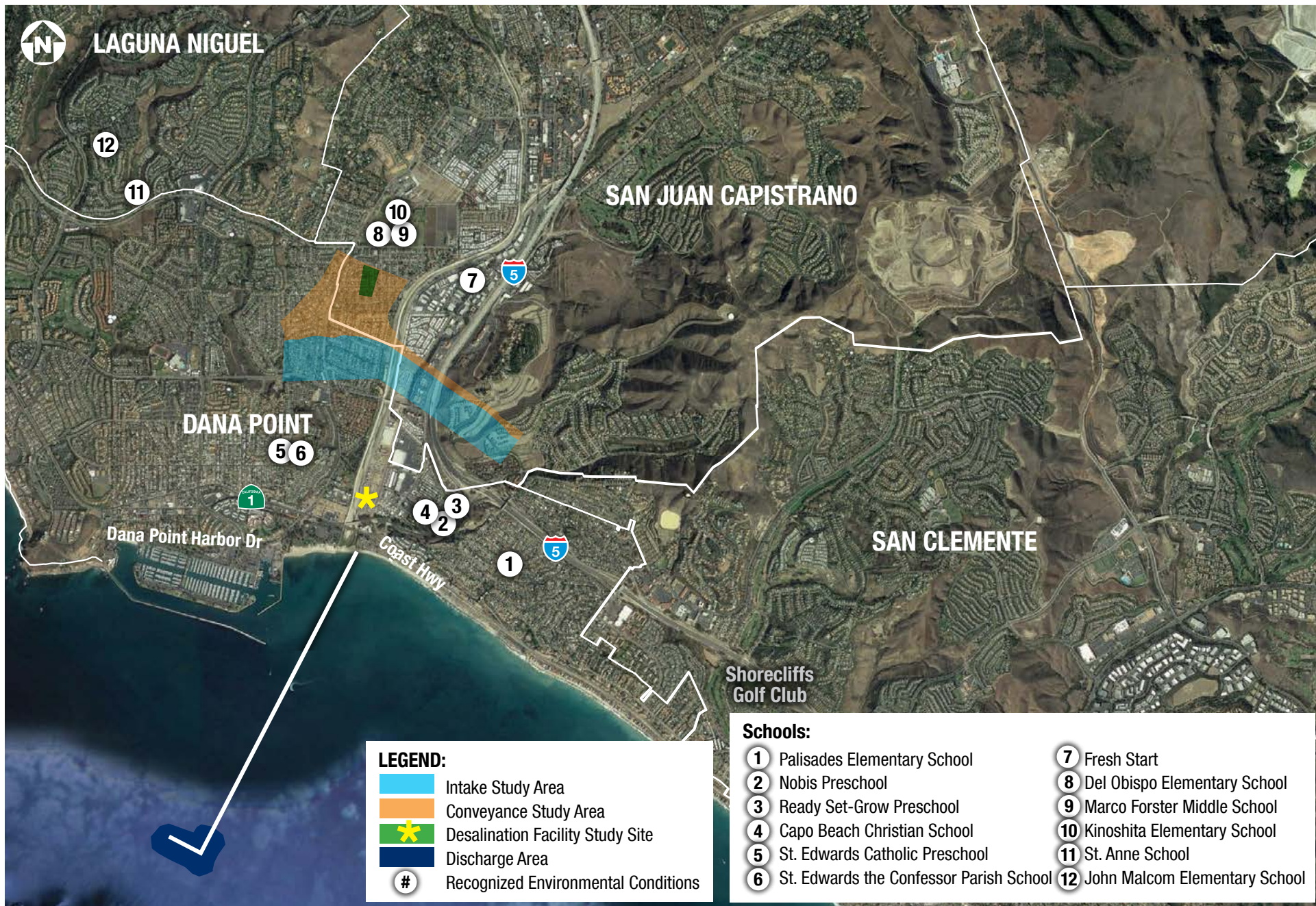


EXHIBIT 4.7-2: Schools within 0.25 Miles of the Proposed Project

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn

4.8 HYDROLOGY AND WATER QUALITY

This section describes the hydrology and water quality on and around the Doheny Ocean Desalination Project study area, and evaluates whether the proposed Project would result in adverse effects to such resources.

The setting, context, and impact analysis in this section are based primarily upon a hydrology study for the desalination facility ([Appendix 10.9](#)), groundwater modeling for the slant wells ([Appendix 10.10](#)), brine discharge modeling for the slant wells ([Appendix 10.11](#)), and coastal hazard analysis for the slant wells ([Appendix 10.7](#)).

4.8.1 AFFECTED ENVIRONMENT

Drainage and Flood Hazards

Subsurface Intake Wells

The Doheny State Beach (DSB) drainage facilities are managed by the County of Orange and City of Dana Point. Major storm drain facilities at DSB include San Juan Creek (Facility 01), which bisects DSB into “North” and “South” Day Use areas, and North Creek. North Creek is a local drainage facility collecting runoff from developed areas north of DSB, conveying flows along the western edge of the North Day Use Area, discharging into the Pacific Ocean (primarily during wet weather).

San Juan Creek discharges into the Pacific Ocean at DSB, with a beach berm creating a lagoon nearly year-round, except for large storm events that breach the sand berm and allow San Juan Creek to flow directly into the Pacific Ocean. North Creek normally only discharges to the Pacific Ocean during wet weather. A runoff diversion system was installed at North Creek in 2003 to intercept dry-weather low flows before they enter DSB, trapping and holding debris for cleanout, and diverting low flow runoff to the J.B. Latham wastewater treatment plant.¹ In addition to San Juan Creek and North Creek, there are four regional stormwater outlets that discharge stormwater at DSB. These are shown in DSB Map 6 in the Doheny State Beach General Plan EIR, and are clearly visible on the ground and in aerial photographs shown on Map 6.

DSB is subject to coastal erosion, high surf wave damage, and tsunami hazards, particularly along the shoreline and at the mouth of San Juan Creek. Generally, the North Day Use is more protected due to eddy effect of the Dana Point Harbor breakwater. The shoreline portions of DSB Campground and South Day Use areas have historically been subject to damage when high surf combines with high tide, particularly during the winter months. State Parks staff attempt to minimize coastal erosion damage through temporary placement of sand berms and using riprap in more vulnerable locations, as presently exists in several portions of the South Day Use Area.

Southeast Intake Wells

In Capistrano Beach Park, surface water drainage is conveyed from adjacent coastal bluffs through several stormdrain culverts that run under PCH, the MetroLink rail line, and the beach parking lot, discharging at the beach into the Pacific Ocean. Similar to DSB South Day Use Area, the shoreline portion of the southeast intake well area at Capistrano Beach Park is subject to coastal wave, erosion and tsunami hazards. This is a relatively narrow stretch of beach that experiences coastal wave and erosion damage periodically,

¹ Doheny State Beach General Plan, page 2-10 and 2-11.



particularly during the higher wave energy winter season. Like DSB, the County has placed riprap at Capistrano Beach Park to protect parking areas and structures subject to coastal damage.

Raw Water Conveyance Alignments

The Raw Water Conveyance alignments follow existing public streets, with associated storm water drainage facilities. Several alignment locations traverse major drainage facilities, including San Juan Creek, and major drainage culverts that convey flows through DSB and Capistrano Beach Park.

Desalination Facility

As shown in Exhibit 3-1, Regional Vicinity, the desalination facility site is located along the east bank of San Juan Creek between PCH and Stonehill Drive. Besides San Juan Creek along the site's western boundary, there are two major storm drain systems conveying runoff from the northeast toward San Juan Creek, both owned and maintained by the County of Orange (see Exhibit 4.15-1, Existing Infrastructure). These include the L01S02 system, which is a double concrete box culvert that conveys flows from north and east of the desalination facility site to the east bank of the San Juan Creek, then runs parallel to San Juan Creek immediately adjacent to the site, then outfalls to San Juan Creek near the site's southern limits. At the southern end of the desalination facility site, a 54-inch diameter (54") Reinforced Concrete Pipe (RCP) runs in parallel with PCH. The pipe collects runoff from the site and the watershed east of the railroad tracks and discharges to San Juan Creek. Local stormwater drainage within the site is limited. A dirt swale (South Drainage Swale) is located between the proposed desalination facility site and the desalination facility staging area, collecting local runoff and discharging to the L01S02 system. The South Drainage Swale and the 54" RCP have gates to prevent backflow from San Juan Creek.

Federal Emergency Management Agency (FEMA) Flood Insurance Rated Map (FIRM) shows the desalination facility site is located in Flood Zone AO, with an average of one-foot inundation depth under a 1% annual chance (100-Year) flood. According to the County of Orange, San Juan Creek and Facility L01S02 currently does not have the capacity to contain a 100-year flood.² Exhibit 4.8-1, Flood Inundation (Existing Condition) shows the modeled 100-year flood impacts at the desalination facility site. In its current condition, the 100-year storm would flood the desalination site in depths up to three feet or more of water, particularly in the southwestern site limits. This is due to a combination of factors, including the local storm drain system (L01S02 and the South Drainage Swale) being "overwhelmed" by a major storm event, as well as flows backing up into the site from San Juan Creek.³

Brine Disposal System

This would be entirely within the desalination facility site (see above discussion), located at the desalination facility site's southwestern corner.

Water Quality

Subsurface Intake Wells

DSB has historically experienced water quality issues, primarily due to nuisance flows entering the shoreline via North Creek and San Juan Creek, as well as storm events that carry upstream high bacterial

² Amended NOP Comment letter from the County of Orange, dated December 18, 2017, page 2 (Appendix 10.2).

³ Appendix 10.9, Local Hazard Condition and Drainage Study (page 20).



loads into the ocean.⁴ DSB is currently on the State's 303(d) list of water quality impaired surface waters (see below),⁵ which is being addressed through various upper watershed water quality programs such as the San Juan Creek Water Management Plan, and the Regional Board's MS4 Permit (see below), for which the City of Dana Point is a co-permittee. Ocean water quality is of key concern to agencies and the public, due to DSB beneficial uses for water recreation (refer to Section 4.12, Recreation, Mitigation Measures REC-1 and REC-2). San Juan Creek and the Pacific Ocean are sensitive water quality receiving bodies due to water recreation (contact and non-contact), as well as a variety of wildlife beneficial uses, including San Juan Creek's important role as a wildlife corridor and critical habitat for steelhead (refer to Section 4.3, Biological Resources for additional discussion).⁶

Currently, all shorelines along DSB are meeting State health standards for water quality.⁷

Southeast Intake Wells

Capistrano Beach has consistently relatively good ocean water quality, receiving all "A's" on Heal the Bay's 2017 annual beach report card.⁸ Currently, all shorelines along Capistrano Beach are meeting State water quality standards.⁹

Raw Water Conveyance Alignments

This raw water conveyance alignments would be below-ground and would not materially affect surface or groundwater quality (refer to above discussion for drainage conditions for Raw Water Conveyance pipelines).

Desalination Facility

The desalination facility site is adjacent to San Juan Creek, and site drainage would enter San Juan Creek, which flows into the Pacific Ocean (see discussion above regarding DSB and San Juan Creek mouth water quality).

Brine Disposal System

Existing water quality conditions at the connection point to the SJCOO would be the same as addressed above, since this facility would be below-ground and connect to the existing South Orange County Wastewater Authority (SOCWA) San Juan Creek Ocean Outfall (SJCOO), which discharges into the Pacific Ocean approximately 2.2 miles offshore of Doheny State Beach. Discharges from the SJCOO are regulated by SOCWA's current NPDES permit for the SJCOO, in compliance with the Ocean Plan and Porter-Cologne Water Quality Control Act (discussed below under Regulatory Framework).

⁴ https://www.waterboards.ca.gov/about_us/performance_report_1617/plan_assess/docs/fy1314/11112_r9_dohenybeach_bacteria.pdf (accessed March 28, 2018).

⁵ https://www.waterboards.ca.gov/about_us/performance_report_1617/plan_assess/docs/fy1314/11112_r9_dohenybeach_bacteria.pdf (accessed March 28, 2018).

⁶ Water Quality Control Plan for the San Diego Basin, September 8, 1994, as amended through April 4, 2011 (Chapter 2, Beneficial Uses), https://www.waterboards.ca.gov/rwqcb9/water_issues/programs/basin_plan/docs/update082812/Chpt_2_2012.pdf (accessed March 29, 2018).

⁷ <https://ocbeachinfo.com/danapoint/> (accessed March 28, 2018).

⁸ <https://www.ocregister.com/2017/06/15/beach-quality-report-card/> (accessed March 28, 2018).

⁹ <https://ocbeachinfo.com/danapoint/> (accessed March 28, 2018).



Groundwater

Subsurface Intake Wells

In the DSB area, the District has reviewed extensive investigations regarding the nature and extent of offshore and onshore groundwater resources. These studies, dating back to the 1990's, are summarized in [Section 3.3, Project History](#), and were updated recently by a series of field investigations and groundwater modeling studies, contained in [Appendix 10.10](#). These studies have concluded that there is a relatively deep and broad "paleo channel" of alluvial soils offshore of DSB, and that this offshore groundwater is hydrologically connected to the San Juan Basin.

In 2008, the District incorporated local groundwater into its water resource portfolio with the construction of its Groundwater Recovery Facility (GRF), which extracts and treats brackish groundwater from the Basin. The District's past groundwater production has averaged roughly 850 acre-feet-per-year (AFY), or about 12 percent of the District's total water supply. With the addition of the District's second GRF well (located in the City of Dana Point's Creekside Park), in optimal Basin conditions the District is able to extract its full permitted amount of 1,300 AFY from the Basin, which nets approximately 1,040 AFY of treated groundwater production. The Basin differs from adjudicated groundwater basins as it does not strictly follow the term "safe yield" in preventing undesirable results occurring as a result of over-production of groundwater. The Basin is governed by the San Juan Basin Authority (SJBA), which is a Joint Powers Authority comprised of representatives from four local jurisdictions including the District, Moulton Niguel Water District, the City of San Juan Capistrano, and Santa Margarita Water District. The SJBA has recently adopted the concept of "adaptive management" of the Basin to vary pumping from year to year based on actual basin conditions, derived from monitoring efforts. This is due in part to the SWRCB characterization of the Basin as a "flowing underground stream" and because the storage in the groundwater basin is small relative to recharge and production. The range of natural yield of the Basin is 7,000 AFY to 11,000 AFY.¹⁰ In September 2014, the GRF had to be shut down in response to Basin groundwater stress due to elevated levels of chlorides and total dissolved solids (TDS). The GRF was subsequently reactivated and resumed limited production in 2017.

The hydrologic connection of the DSB offshore area to the San Juan Basin is important, as the San Juan Basin has historically experienced over-pumping, resulting in the District having to periodically shut down its GRF located immediately north of the desalination facility site, east of San Juan Creek to inhibit seawater intrusion.

Groundwater quality in this immediate offshore area suggests some influence from onshore groundwater water as the groundwater offshore is brackish (lower salinity than ocean water). In addition, the offshore groundwater has been shown to contain pockets of "ancient marine water" pockets of older groundwater in the aquifer below the ocean floor, offshore of DSB). This ancient marine water contains elevated levels of iron (Fe) and Manganese (Mn), but can be used as a raw water source for desalination. Existing offshore groundwater quality was monitored as part of the previous Doheny Beach Ocean Desalination Test Slant Well project, operated from 2008 to 2012. Estimated existing water quality levels are summarized in [Appendix 10.1, Preliminary Design Report \(Section 1.4.2\)](#).

¹⁰ 2015 Urban Water Management Plan, Section 3-3.



Southeast Intake Wells

Following completion of hydrogeology studies at DSB, the District conducted a series of field studies and hydrogeologic modeling studies to evaluate the existing groundwater resources further south, focusing on the southern limits of DSB and on Capistrano Beach Park (these are summarized in [Section 3.3](#) and provided in [Appendix 10.10](#)). These studies concluded that the offshore areas south of the DSB Campground, including potential slant well pods F, G and H, are discontinuous with the San Juan Basin (not hydrogeologically connected to the onshore portion of the groundwater basin, as described further below in the Impacts section). In addition, limited groundwater quality data and hydrogeologic modeling indicates that these offshore areas would not draw from onshore groundwater resources as is the case at DSB near the mouth of San Juan Creek. Should the District pursue construction of slant wells at Capistrano Beach Park, additional physical studies will be conducted to determine specific offshore groundwater quality at Capistrano Beach Park, including whether or not this area contains similar elevated levels of iron and manganese.

Raw Water Conveyance Alignments

As discussed in [Section 4.7, Hazards and Hazardous Materials](#), portions of the Raw Water Conveyance Alignments have relatively shallow groundwater, as little as a few feet below ground surface (bgs) near the shoreline. Further inland, groundwater depths increase, but are still relatively shallow depending on location, with areas near drainages (including San Juan Creek and the San Juan Creek Lagoon) also having shallow groundwater.

Groundwater quality for the inland portions of the Project is relevant to required pipeline trenching, trenchless construction (tunneling), and deep excavations that may be required for Project construction. In certain areas, particularly along Doheny Park Road and PCH at Del Obispo, groundwater may contain elevated levels of regulated contaminants requiring special treatment should dewatering be required during pipeline trenching. As part of the Project's hydrogeologic modeling, the existing physical extent of known groundwater contamination was modeled. Refer to [Section 4.7, Hazard and Hazardous Materials](#), for additional discussion.

Desalination Facility

Refer to discussion above under Raw Water Conveyance Alignments, and to [Section 4.7, Hazard and Hazardous Materials](#), for additional discussion.

Concentrate (Brine) Disposal System

Refer to discussion above under Raw Water Conveyance Alignments, and to [Section 4.7, Hazard and Hazardous Materials](#), for additional discussion.

Regional Project Facilities

- Regional Project facilities (as described in [Section 3.0](#)) would be in substantially the same location as the Phase I Project facilities, with the exception of the SDG&E electrical line extensions (which would extend north of the site within existing streets) and the Regional Project product water conveyance, pumping and storage facilities, the location of which is not known at this time.



4.8.2 REGULATORY FRAMEWORK

Federal

Federal Clean Water Act

The Project would be subject to federal permit requirements under the Federal Clean Water Act (CWA). The primary goals of the CWA are to maintain the chemical, physical, and biological integrity of the nation's waters and to make all surface waters fishable and swimmable. The CWA forms the basic national framework for the management of water quality and the control of pollution discharges; it provides the legal framework for several water quality regulations, including the National Pollutant Discharge Elimination System (NPDES), effluent limitations, water quality standards, pretreatment standards, antidegradation policy, nonpoint-source discharge programs, and wetlands protection. The United States Environmental Protection Agency (EPA) has delegated the administrative responsibility for portions of the CWA to State and regional agencies. In California, the State Water Resources Control Board (SWRCB) administers the NPDES permitting program and is responsible for developing NPDES permitting requirements. The SWRCB works in coordination with the Regional Water Quality Control Boards (RWQCB) to preserve, protect, enhance, and restore water quality.

Under the NPDES permit program, the EPA establishes regulations for discharging stormwater by municipal and industrial facilities and construction activities. Section 402 of the CWA prohibits the discharge of pollutants to "Waters of the United States" from any point source unless the discharge is in compliance with an NPDES Permit.

The Anti-degradation Policy under EPA's Water Quality Standards Regulations (48 F.R. 51400, 40 CFR 131.12, November 8, 1983), requires states and tribes to establish a three-tiered anti-degradation program to prevent a decrease in water quality standards.

- Tier 1—Maintains and protects existing uses and water quality conditions that support such uses. Tier 1 is applicable to all surface waters.
- Tier 2—Maintains and protects "high quality" waters where existing conditions are better than necessary to support "fishable/swimmable" waters. Water quality can be lowered in such waters but not to the point at which it would interfere with existing or designed uses.
- Tier 3—Maintains and protects water quality in outstanding national resource waters (ONRWs). Water quality cannot be lowered in such waters except for certain temporary changes.

Anti-degradation was explicitly incorporated into the federal CWA through 1987 amendments, codified in § 303(d)(4)(B), requiring satisfaction of anti-degradation requirements before making certain changes in NPDES permits.

Section 303(d) of the CWA requires the SWRCB to list impaired water bodies that are too polluted or otherwise degraded to meet the water quality standards set by states, territories, or authorized tribes. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop Total Maximum Daily Loads for these waters (refer to discussion above regarding current 303(d) listings at DSB).

Section 404 of the CWA is administered and enforced by the U.S. Army Corps of Engineers (USACE). Section 404 establishes a program to regulate the discharge of dredged and fill material into waters of the



United States, including wetlands and coastal areas below the mean high tide. USACE administers the day-to-day program, and reviews and considers individual permit decisions and jurisdictional determinations. USACE also develops policy and guidance, and enforces Section 404 provisions.

Rivers and Harbors Appropriations Act of 1899

This act authorizes the USACE to exercise control over all construction projects that occur within navigable waters of the United States. The Act was intended for the protection of navigation and navigable capacity and was later amended to include protection of the environment. Section 10 of the Act regulates work and structures occurring in, over, and under navigable waters that affect the course, location, condition, or capacity of navigable waters of the U.S., including dredging, wharf improvements, overwater cranes, and artificial islands and installations on the outer continental shelf. Under Section 13 of the Act, discharge of refuse into any navigable water is prohibited without approval of the USACE. The Act also will apply to facilities (such as the proposed slant wells) that are placed below the ocean floor, even though they do not directly affect navigable waters.

FEMA Flood Mapping

The National Flood Insurance Program (NFIP) aims to reduce the impact of flooding on private and public structures. It does so by providing affordable insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socio-economic impact of disasters by promoting the purchase and retention of general risk insurance, but also of flood insurance, specifically. FEMA produces Flood Insurance Rate Maps (FIRM) for regions throughout the United States, indicating flood hazard potential. As stated by FEMA, a “Letter of Map Revision (LOMR) is the Federal Emergency Management Agency’s (FEMA’s) official modification to an effective FIRM. LOMRs can result in a physical change to the existing regulatory floodway, the effective Base Flood Elevations (BFEs), or the Special Flood Hazard Area (SFHA). LOMR reviews take up to 90 days to process, are subject to an appeal period, and usually become effective within six months after they are issued. Because a LOMR officially revises the effective FIRM, the flood hazard updates shown are used to rate flood insurance policies and enforce flood insurance and development requirements.”¹¹

Coastal Zone Management Act

The U.S. Congress recognized the importance of meeting the challenge of continued growth in the coastal zone by passing the Coastal Zone Management Act (CZMA) in 1972. This act, administered by the National Oceanic and Atmospheric Administration, provides for the management of the nation’s coastal resources, including the Great Lakes. The goal is to “preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation’s coastal zone....” (16 U.S.C. § 1452(1)).

The CZMA outlines three national programs, the National Coastal Zone Management Program, the National Estuarine Research Reserve System, and the Coastal and Estuarine Land Conservation Program (CELCP). The National Coastal Zone Management Program aims to balance competing land and water issues through state and territorial coastal management programs. The reserves serve as field laboratories that provide a greater understanding of estuaries and how humans impact them, and CELCP

¹¹ <https://www.fema.gov/letter-map-revision> (accessed March 29, 2018).



provides matching funds to state and local governments to purchase threatened coastal and estuarine lands or obtain conservation easements.

State

California Coastal Act of 1976

The California Coastal Act of 1976 (Coastal Act) (see Public Resources Code § 30000 et seq.) was adopted to protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources. The Coastal Act is also intended to assure orderly, balanced utilization and conservation of coastal zone resources, and priority for coastal-dependent and coastal-related development over other development on the coast. The Coastal Act policies constitute the statutory standards applied to planning and regulatory decisions made by the California Coastal Commission (CCC) and by local governments, pursuant to the Coastal Act. The Coastal Act includes specific policies that address issues such as shoreline public access and recreation, terrestrial and marine habitat protection, visual resources, industrial uses, water quality, development design, and power plants, among others.

The CCC was made permanent by the Coastal Act to provide for continued state coastal planning and management. In partnership with coastal cities and counties, the CCC plans and regulates the use of land and water in the coastal zone. The coastal zone varies in width from several hundred feet in highly urbanized areas up to five miles in certain rural areas, and offshore the coastal zone includes a three-milewide band of ocean.

Development activities are broadly defined by the Coastal Act to include (among others) construction of buildings, divisions of land, and activities that change the intensity of use of land or public access to coastal waters. Implementation of Coastal Act policies is accomplished primarily through the preparation of local coastal programs (LCPs) that are required to be completed by each of the coastal zone counties and cities.

Coastal Act Chapter 2 provides definitions that govern the interpretation of the Coastal Act, including the following that are relevant to the proposed project:

- Section 30101, *Coastal-Dependent Development or Use*: "Coastal-dependent development or use" means any development or use which requires a site on, or adjacent to, the sea to be able to function at all;
- Section 30114(a), *Public Works*: "Public works" means all production, storage, transmission, and recovery facilities for water, sewerage, telephone, and other similar utilities owned or operated by any public agency or by any utility subject to the jurisdiction of the Public Utilities Commission, except for energy facilities.

Coastal Act Chapter 3, *Coastal Resources Planning and Management Policies*, includes policies that constitute the standards by which the permissibility of proposed developments subject to the provisions of the Coastal Act are determined. Public agencies carrying out or supporting activities that could have a direct impact on resources within the coastal zone shall consider the effect of such actions on coastal zone resources to assure that these policies are achieved. The CCC together with the Regional Water Quality Control Board address ocean water quality issues as they relate to a project's construction and operational effects in light of the Ocean Plan (discussed below) and Coastal Act requirements to minimize harm to marine life.



California State Lands Commission

The California State Lands Commission (SLC) provides stewardship of California's public trust lands, waterways, and resources through economic development, protection, preservation, and restoration. The SLC is tasked with public land management and resource protection to ensure the future quality of the environment and balanced use of the lands and resources entrusted to its care. The State's public trust lands include tidelands, navigable waterways, and submerged coastal lands extending to a distance of three nautical miles, and the waters and underlying beds of more than 120 rivers, lakes, streams, and sloughs.

The California SLC regulates different uses of tidelands and submerged lands to ensure the proposed uses of these lands is consistent with the Public Trust Doctrine principle that certain resources are preserved for public use. Generally, the SLC has jurisdiction over land below mean high tide (MHT). Public and private entities may apply to the SLC for land leases or permits on State lands for many purposes, including dredging. California Government Code § 65940 describes the degree of specificity and contents required for a surface land lease application.

California Porter-Cologne Water Quality Control Act (Porter-Cologne Act)

The Porter-Cologne Act (California Water Code § 13000 et seq) is the principal law governing water quality regulation in California. It established a comprehensive program to protect water quality and the beneficial uses of water. The Porter-Cologne Act applies to surface waters, wetlands, and ground water and to both point and nonpoint sources of pollution. Pursuant to the Porter-Cologne Act the policy of the State is as follows:

- That the quality of all the waters of the State shall be protected,
- That all activities and factors affecting the quality of water shall be regulated to attain the highest water quality within reason, and
- That the State must be prepared to exercise its full power and jurisdiction to protect the quality of water in the State from degradation.

The Porter-Cologne Act established nine RWQCB's (based on hydrogeologic barriers) and the SWRB, which are charged with implementing its provisions and which have primary responsibility for protecting water quality in California. The State Water Board provides program guidance and oversight, allocates funds, and reviews Regional Water Board decisions. In addition, the State Water Board allocates rights to the use of surface water. The Regional Water Boards have primary responsibility for individual permitting, inspection, and enforcement actions within each of nine hydrology regions. The State Water Board and Regional Water Boards have numerous nonpoint source pollution (NPS)-related responsibilities, including monitoring and assessment, planning, financial assistance, and management.

The Regional Water Boards regulate discharges under the Porter-Cologne Act primarily through issuance of NPDES permits for point source discharges and waste discharge requirements (WDRs) for NPS discharges. Anyone discharging or proposing to discharge materials that could affect water quality (other than to a community sanitary sewer system regulated by an NPDES permit) must file a report of waste discharge. The SWRCB and the RWQCBs can make their own investigations or may require dischargers to carry out water quality investigations and report on water quality issues. The Porter-Cologne Act provides several options for enforcing WDRs and other orders, including cease and desist orders, cleanup and abatement orders, administrative civil liability orders, civil court actions, and criminal prosecutions.



The Porter-Cologne Act also implements many provisions of the Clean Water Act, such as the NPDES permitting program. Section 401 of the Clean Water Act gives the State Water Board the authority to review any proposed federally permitted or federally licensed activity that may impact water quality and to certify, condition, or deny the activity if it does not comply with State water quality standards. If the State Water Board imposes a condition on its certification, those conditions must be included in the federal permit or license. Except for dredge and fill activities, injection wells, and solid waste disposal sites, waste discharge requirements may not “specify the design, location, type of construction, or particular manner in which compliance may be had....” (Porter-Cologne Act § 13360). Thus, waste discharge requirements ordinarily specify the allowable discharge concentration or load or the resulting condition of the receiving water, rather than the manner by which those results are to be achieved. However, the Regional Water Boards may impose discharge prohibitions and other limitations on the volume, characteristics, area, or timing of discharges and can set discharge limits such that the only practical way to comply is to use management practices. Regional Water Boards can also waive waste discharge requirements for a specific discharge or category of discharges on the condition that management measures identified in a water quality management plan approved by the State Water Board or Regional Water Boards are followed.

The Porter-Cologne Act also requires adoption of water quality control plans that contain the guiding policies of water pollution management in California. A number of statewide water quality control plans have been adopted by the State Water Board. In addition, regional water quality control plans (basin plans) have been adopted by each of the Regional Water Boards and are updated as necessary and practical. These plans identify the existing and potential beneficial uses of waters of the State and establish water quality objectives to protect these uses. The basin plans also contain implementation, surveillance, and monitoring plans. Statewide and regional water quality control plans include enforceable prohibitions against certain types of discharges, including those that may pertain to nonpoint sources. Portions of water quality control plans, the water quality objectives and beneficial use designations, are subject to review by EPA. When approved they become water quality standards under the CWA.

State Water Resources Control Board

The SWRCB administers water rights, water pollution control, and water quality functions throughout the State, while the RWQCBs conduct planning, permitting, and enforcement activities. The City of Dana Point lies within the jurisdiction of the San Diego RWQCB (SDRWQCB).

The NPDES permit is broken up into two Phases: I and II. Phase I requires medium and large cities, or certain counties with populations of 100,000 or more to obtain NPDES permit coverage for their stormwater discharges. Phase II requires regulated small Municipal Separate Storm Sewer Systems (MS4s) in urbanized areas, as well as small MS4s outside the urbanized areas that are designated by the permitting authority, to obtain NPDES permit coverage for their stormwater discharges. Concerning the proposed Project, the NPDES permit is divided into two parts: construction and post-construction. The construction permitting is administered by the SWRCB, while the post-construction permitting is administered by the RWQCB. Development projects typically result in the disturbance of soil that requires compliance with the NPDES General Permit, *Waste Discharge Requirements for Discharges of Stormwater Runoff Associated with Construction Activities* (Order No. 2012-0006-DWQ, NPDES Number CAS000002) (General Construction Permit). This Statewide General Construction Permit regulates discharges from construction sites that disturb one or more acres of soil.



The SWRCB has issued and periodically renews a statewide General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (GCASP) and a statewide General Industrial Activities Stormwater Permit (GIASP) for projects that do not require an individual permit for these activities. The GCASP was adopted in 2009 and further revised in 2012 (Order No. 2012-0006-DWQ). The most recent GIASP (Order No. 2014-0057-DWQ) was adopted in April 2014 and requires dischargers to develop and implement a Stormwater Pollution Prevention Plan (SWPPP) to reduce or prevent industrial pollutants in stormwater discharges, eliminate unauthorized non-storm discharges, and conduct visual and analytical stormwater discharge monitoring to verify the effectiveness of the SWPPP and submit an annual report.

By law, all stormwater discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least one acre of total land area must comply with the provisions of this NPDES Permit, and develop and implement an effective SWPPP. The SWPPP is required to contain a site map(s), which shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the Project site. The SWPPP is required to list Best Management Practices (BMPs) the discharger will use to protect stormwater runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for “non-visible” pollutants to be implemented if there is a failure of BMPs; and, a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Construction General Permit Section A describes the elements that must be contained in an SWPPP. A project applicant must submit a Notice of Intent (NOI) to the SWRCB to be covered by the NPDES General Permit, and prepare the SWPPP before beginning construction. SWPPP implementation starts with the commencement of construction and continues through project completion. Upon project completion, the applicant must submit a Notice of Termination (NOT) to the SWRCB to indicate that construction is completed.

The Municipal Stormwater Permitting Program regulates stormwater discharges from municipal separate storm sewer (drain) systems (MS4s). Most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area. The MS4 permits require the discharger to develop and implement a Stormwater Management Plan/Program with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in CWA § 402(p). The management programs specify what BMPs will be used to address certain program areas. The program areas include public education and outreach; illicit discharge detection and elimination; construction and post-construction; and good housekeeping for municipal operations.

For construction activities that would result in the disturbance of one acre or more, permittees must develop, implement, and enforce a program to reduce pollutant runoff in stormwater. This includes: (1) a program to prevent illicit stormwater discharges; (2) structural and non-structural BMPs to reduce pollutants in runoff from construction sites; and (3) preventing discharges from causing or contributing to violations of water quality standards. Permittees are required to review construction site plans to determine potential water quality impacts and ensure proposed controls are adequate. These include preparation and submission of an Erosion and Sediment Control Plan (ESCP) with elements of an SWPPP, prior to issuance of building or grading permits. The 2012 MS4 permit requires that the ESCP be developed by a Qualified SWPPP Developer. Permittees are required to develop a list of BMPs for a range of construction activities.



State Water Resources Control Board - Drinking Water System Discharges

Water purveyors regularly discharge drinking water into storm drains or other conveyances that drain to surface waters. Planned discharges are part of a water purveyor's essential operations to comply with the federal Safe Drinking Water Act and the California Health and Safety Code for providing reliable and safe drinking water. Surface water discharges also occur from pipe breaks, system failures, and emergencies.

Section 402 of the Clean Water Act requires that a discharge of any pollutant or combination of pollutants to surface waters that are deemed waters of the United States be regulated by a National Pollutant Discharge Elimination System (NPDES) permit. To provide coverage to discharges by water purveyors to waters of the United States in compliance with CWA Section 402, the State Water Board adopted the Statewide General NPDES Permit for Drinking Water System Discharges to Waters of the United States on November 18, 2014.

It is the intention of the State Water Board to regulate all mandatory low-threat-type discharges from community water systems statewide with consistent regulation. This means that with the transition from Regional Water Board permits to the statewide permit, the Regional Water Boards will no longer be regulating the mandatory low-threat-type discharges from drinking water systems that meet the criteria of the statewide permit. The new statewide permit provides coverage for unplanned and emergency discharges in addition to discharges from supply wells and distribution systems. The statewide permit also grants a regulatory exemption to water purveyors for compliance with federal water quality criteria (the California Toxic Rule), and requires minimal monitoring and reporting.

State Water Resources Control Board – Desalination Facilities and Brine Disposal

On May 6, 2015, the State Water Resources Control Board (State Water Board) adopted an amendment to the Water Quality Control Plan for the Ocean Waters of California (Ocean Plan) to address effects associated with the construction and operation of seawater desalination facilities (Desalination Amendment, or “OPA”). The Amendment supports the use of ocean water as a reliable supplement to traditional water supplies while protecting marine life and water quality. The Desalination Amendment, for the first time, provides a uniform, consistent process for permitting of seawater desalination facilities statewide. In doing so, it provides direction for regional water boards when permitting new or expanded facilities and provides specific implementation and monitoring and reporting requirements. The Office of Administrative Law approved the Desalination Amendment on January 28, 2016. The EPA approved the portions of the Desalination Amendment that implement the federal Clean Water Act on April 7, 2016. Therefore, the Desalination Amendment is now fully in effect.

Desalination facilities and brine disposal were identified as Issue Number 4 in the 2011-2013 Triennial Review Workplan (a periodic review of the Ocean Plan) because several new desalination facilities were planned along the California coast to augment existing water supplies. The operation and construction of seawater desalination facilities can result in marine life mortality and harm to aquatic life beneficial uses. During the process of ocean desalination, organisms may be drawn in with the source water and enter the facility's water processing system. Salt and minerals are removed from salt water to produce fresh water and organisms do not survive the desalination process. The salt, minerals, and other compounds produced as a byproduct of desalination are discharged into the ocean as hypersaline brine. Brine is denser than the receiving ocean water and, depending on discharge methods, may settle on the seafloor and have adverse effect on marine organisms.



The Desalination Amendment requires new or expanded seawater desalination facilities to use the best available, site, design, technology, and mitigation measures feasible to minimize intake and mortality of all forms of marine life. Based on the best available science, the amendment identifies preferred technologies; however, alternative intake and disposal methods can be used if demonstrated to be as protective of marine life as the preferred technologies. Additionally, mitigation measures are required in order to address harmful impacts on marine life that occur after a desalination facility uses the best available site, design, and technology feasible. Feasibility considerations regarding site, design, technology, and mitigation measures take into account economic, environmental, social, and technological factors and whether something is capable of being accomplished in a successful manner within a reasonable period of time.

As shown in Table 4.8-1, 2015 California Ocean Plan Desalination Amendment (OPA) Water Quality Objectives, water quality objectives for bacterial, physical, chemical, biological, and radioactive constituents are identified in the Ocean Plan.

Table 4.8-1: 2015 California Ocean Plan Desalination Amendment Water Quality Objectives

	Units of Measurement	Limiting Concentrations		
		6-Month Median	Daily Maximum	Instantaneous Maximum
OBJECTIVES FOR PROTECTION OF MARINE AQUATIC LIFE				
Arsenic	µg/L	8.	32.	80.0
Cadmium	µg/L	1.	4.	10.0
Chromium (Hexavalent) (see below, a)	µg/L	2.	8.	20.0
Copper	µg/L	3.	12.	30.0
Lead	µg/L	2.	8.	20.0
Mercury	µg/L	0.04	0.16	0.4
Nickel	µg/L	5.	20.	50.0
Selenium	µg/L	15.	60.	150.0
Silver	µg/L	0.7	2.8	7.0
Zinc	µg/L	20.	80.	200.0
Cyanide (see below, b)	µg/L	1.	4.	10.0
Total Chlorine Residual (for intermittent chlorine sources see below, c)	µg/L	2.	8.	60.0
Ammonia (expressed as nitrogen)	µg/L	600.	2400.	6000.0
Acute* Toxicity	TUa	N/A	0.3	N/A
Chronic* Toxicity	TUc	N/A	1.	N/A
Phenolic Compounds (nonchlorinated)	µg/L	30.	120.	300.0
Chlorinated Phenolics	µg/L	1.	4.	10.0
Endosulfan*	µg/L	0.009	0.018	0.027
Endrin	µg/L	0.002	0.004	0.006
HCH*	µg/L	0.004	0.008	0.012



	Units of Measurement	Limiting Concentrations		
		6-Month Median	Daily Maximum	Instantaneous Maximum
Radioactivity	Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, § 30253 of the California Code of Regulations. Reference to § 30253 is prospective, including future changes to any incorporated provisions of federal law, as the changes take effect.			
Chemical		30-day Average (µg/L)		
		Decimal Notation		Scientific Notation
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – NONCARCINOGENS				
Acrolein		220.		2.2 x 10 ²
Antimony		1,200.		1.2 x 10 ³
bis(2-chloroethoxy) methane		4.4		4.4 x 10 ⁰
bis(2-chloroisopropyl) ether		1,200.		1.2 x 10 ³
Chlorobenzene		570.		5.7 x 10 ²
chromium (III)		190,000.		1.9 x 10 ⁵
di-n-butyl phthalate		3,500.		3.5 x 10 ³
dichlorobenzenes*		5,100.		5.1 x 10 ³
diethyl phthalate		33,000.		3.3 x 10 ⁴
dimethyl phthalate		820,000.		8.2 x 10 ⁵
4,6-dinitro-2-methylphenol		220.		2.2 x 10 ²
2,4-dinitrophenol		4.0		4.0 x 10 ⁰
Ethylbenzene		4,100.		4.1 x 10 ³
Fluoranthene		15.		1.5 x 10 ¹
Hexachlorocyclopentadiene		58.		5.8 x 10 ¹
Nitrobenzene		4.9		4.9 x 10 ⁰
Thallium		2.		2. x 10 ⁰
Toluene		85,000.		8.5 x 10 ⁴
Tributyltin		0.0014		1.4 x 10 ⁻³
1,1,1-trichloroethane		540,000.		5.4 x 10 ⁵
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS				
Acrylonitrile		0.10		1.0 x 10 ⁻¹
Aldrin		0.000022		2.2 x 10 ⁻⁵
Benzene		5.9		5.9 x 10 ⁰
Benzidine		0.000069		6.9 x 10 ⁻⁵
Beryllium		0.033		3.3 x 10 ⁻²
bis(2-chloroethyl) ether		0.045		4.5 x 10 ⁻²
bis(2-ethylhexyl) phthalate		3.5		3.5 x 10 ⁰
carbon tetrachloride		0.90		9.0 x 10 ⁻¹
chlordane*		0.000023		2.3 x 10 ⁻⁵
Chlorodibromomethane		8.6		8.6 x 10 ⁰
Chloroform		130.		1.3 x 10 ²
DDT*		0.00017		1.7 x 10 ⁻⁴



Chemical	30-day Average (µg/L)	
	Decimal Notation	Scientific Notation
1,4-dichlorobenzene	18.	1.8×10^1
3,3'-dichlorobenzidine	0.0081	8.1×10^{-3}
1,2-dichloroethane	28.	2.8×10^1
1,1-dichloroethylene	0.9	9×10^{-1}
Dichlorobromomethane	6.2	6.2×10^0
Dichloromethane	450.	4.5×10^2
1,3-dichloropropene	8.9	8.9×10^0
Dieldrin	0.00004	4.0×10^{-5}
2,4-dinitrotoluene	2.6	2.6×10^0
1,2-diphenylhydrazine	0.16	1.6×10^{-1}
halomethanes*	130.	1.3×10^2
Heptachlor	0.00005	5×10^{-5}
heptachlor epoxide	0.00002	2×10^{-5}
Hexachlorobenzene	0.00021	2.1×10^{-4}
Hexachlorobutadiene	14.	1.4×10^1
Hexachloroethane	2.5	2.5×10^0
Isophorone	730.	7.3×10^2
N-nitrosodimethylamine	7.3	7.3×10^0
N-nitrosodi-N-propylamine	0.38	3.8×10^{-1}
N-nitrosodiphenylamine	2.5	2.5×10^0
PAHs*	0.0088	8.8×10^{-3}
PCBs*	0.000019	1.9×10^{-5}
TCDD equivalents*	0.0000000039	3.9×10^{-9}
1,1,2,2-tetrachloroethane	2.3	2.3×10^0
Tetrachloroethylene	2.0	2.0×10^0
Toxaphene	0.00021	2.1×10^{-4}
Trichloroethylene	27.	2.7×10^1
1,1,2-trichloroethane	9.4	9.4×10^0
2,4,6-trichlorophenol	0.29	2.9×10^{-1}
vinyl chloride	36.	3.6×10^1

*See Ocean Plan Appendix I for definition of terms.

Notes:

- Dischargers may at their option meet this objective as a total chromium objective.
- If a discharger can demonstrate to the satisfaction of the Regional Water Board (subject to EPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by the combined measurement of free cyanide, simple alkali metal cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR PART 136, as revised May 14, 1999.
- Water quality objectives for total chlorine residual applying to intermittent discharges not exceeding two hours, shall be determined through the use of the following equation: $\log y = -0.43 (\log x) + 1.8$ where: y = the water quality objective (in µg/L) to apply when chlorine is being discharged; x = the duration of uninterrupted chlorine discharge in minutes.

Source: State Water Resources Control Board, Division of Water Quality, *Final Staff Report Including the Final Substitute Environmental Documentation - Amendment to the Water Quality Control Plan for Ocean Waters of California*, May 6, 2015.



The Ocean Plan identifies background seawater concentrations for five constituents, which include arsenic, copper, mercury, silver, and zinc; refer to Table 4.8-2, Background Seawater Concentrations (Cs). Background concentrations for other constituents shown in Table 4.8-2 above are assumed to be zero. As such concentrations are assumed for the entirety of the California coastline, and therefore; they likely do not accurately represent existing ambient concentrations occurring within the vicinity of the proposed Project.

Table 4.8-2: Background Seawater Concentrations (Cs)

Water Constituent	Cs (µg/L)
Arsenic	3.0
Copper	2.0
Mercury	0.0005
Silver	0.16
Zinc	8.0
Notes: For all other Ocean Plan parameters, Cs = 0.	

Source: State Water Resources Control Board, Division of Water Quality, *Final Staff Report Including the Final Substitute Environmental Documentation - Amendment to the Water Quality Control Plan for Ocean Waters of California*, Background Seawater Concentrations (Cs), page 14, May 6, 2015.

As described in the OPA, the brine mixing zone (BMZ) is an allocated impact zone where there may be toxic effects on marine life due to elevated salinity. More specifically, BMZ is defined as:

“the area where salinity may exceed 2.0 parts per thousand above natural background salinity, or the concentration of salinity approved as part of an alternative receiving water limitation. The standard brine mixing zone shall not exceed 100 meters (328 feet) laterally from the points of discharge and throughout the water column.”¹²

Ocean Plan Chapter III.M.3 provides standards applicable to all desalination facilities discharging brine into ocean waters, including facilities that commingle brine and wastewater. The receiving water limitation for salinity shall be established as described below:

- Discharges shall not exceed a daily maximum of 2 parts per thousand (ppt) above natural background salinity measured no further than 100 meters (or 328 feet) horizontally from each discharge point. There is no vertical limit to this zone. The receiving water limitation for salinity shall be established as described in § M.3.b.
- Alternatively, an owner or operator may submit a proposal for a facility-specific salinity receiving water limit to be met no further than 100 meters horizontally from the discharge. There is no vertical limit to this zone. To determine whether a proposed facility-specific alternative receiving water limitation is adequately protective of beneficial uses, an owner or operator shall:
 - Establish baseline biological conditions at the discharge locations over a 2-month period prior to commencing brine discharge;
 - Conduct chronic toxicity Whole Effluent Toxicity (WET) tests as described in § M.3.c(1)(b); and
 - Conduct any additional toxicity studies required by the Regional Board.

¹² 2015 Ocean Plan Amendment for Desalination Facilities, page 53.



- The facility-specific alternative receiving water limitation shall be based on the lowest observed effect concentration (LOEC) for the most sensitive species and toxicity endpoint as determined in the chronic toxicity studies.

The SWRCB recommends the alternative that is consistent with the statewide requirements for use of the most protective best available brine discharge method feasible based upon evaluation of facility-specific characteristics. This would require an owner or operator of a seawater desalination facility to assess the availability and feasibility of diluting brine discharge by commingling brine with wastewater. If wastewater is unavailable, or considered to be an infeasible option of brine disposal, the use of multiport diffusers is recommended to rapidly mix and disperse brine in receiving water bodies. Such multiport diffusers are installed as an end-of-pipe system on submerged marine outfalls, allowing effluent to be discharged through various ports or openings. Pressure is increased through the ports at the discharge and allow for the mixing to occur that results in rapid dilution and reduction of salinity. The use of multiport diffusers requires a relatively limited area to enable rapid turbulent mixing that disperses and dilutes brine. In instances where wastewater is unavailable for dilution, and no live organisms are present in the effluent, multiport diffusers are considered to be the preferred method for discharging brine.

As part of adopting the OPA, the SWRCB Resolution 2015-0033 “directs State Water Board staff to propose and pursue a Memorandum of Agreement with the CCC, California Department of Fish and Wildlife (CDFW), and the SLC to promote interagency collaboration for siting, design, mitigation, and permitting of desalination facilities.” This may also include coordination with other affected State agencies, such as the California Energy Commission.

Sustainable Groundwater Management Act

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package, composed of Assembly Bill 1739 (AB 1739), Senate Bill 1168 (SB 1168), and Senate Bill 1319 (SB 1319). This legislation is collectively referred to as the Sustainable Groundwater Management Act (SGMA). This Act was aimed at recognizing that groundwater management within the state is best accomplished at the local/regional level, versus the state level. The SGMA identifies procedures to develop a groundwater management plan so that local agencies can manage their groundwater resources in an efficient and sustainable manner and to protect the quality of supplies, while allowing for a limited role for intervention at the State level only if determined necessary to protect the resource. The SGMA requires the creation of groundwater sustainability agencies (GSAs) to develop and implement local groundwater sustainability plans (GSPs) and provides a state framework to regulate groundwater for the first time in the state’s history. The SGMA formally defines sustainable groundwater management; establishes a framework for local agencies to develop plans and implement strategies to sustainably manage groundwater resources; prioritizes basins with the greatest problems (ranked as high- and medium-priority); and, establishes a 20-year timeline for implementation. The SGMA includes provisions to promote engagement by interested parties in formation of a GSA and development and implementation of a GSP. The SGMA requires that the GSA provide this information to the Department of Water Resources (DWR). The DWR has the lead role in working with local agencies in implementing the specific provisions identified in the SGMA.



The State of California currently lists the San Juan Basin as a “low” priority groundwater basin relative to SGMA, which means that a date for GSA formation and GSP preparation has not been set by DWR.¹³

Urban Water Management Act

Urban Water Management Plans (UWMPs) are prepared by California's urban water suppliers to support their long-term resource planning, and ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that either provides over 3,000 acre-feet of water annually, or serves more than 3,000 urban connections is required to assess the reliability of its water sources over a 20-year planning horizon, and report its progress on 20% reduction in per-capita urban water consumption by the year 2020, as required in the Water Conservation Bill of 2009 SBX7-7.

The plans must be prepared every 5 years and submitted to DWR. DWR staff then reviews the submitted plans to make sure they have completed the requirements identified in the Water Code, § 10608 through 10656, then submits a report to the Legislature summarizing the status of the plans.

For each round of UWMPs, DWR provides guidance for urban water suppliers. This includes preparation of a Guidebook, workshops, and program staff to assist in preparing comprehensive and useful water management plans, implementation of water conservation programs, and understanding the requirements of the Act. The District's latest UWMP is dated 2015, and is described in the Purpose and Need (Section 3), as well as the Alternatives (Section 5).

State Water Resources Control Board – Drinking Water Quality Standards

Adjudicatory and regulatory function of water rights, water quality, and safe and reliable drinking water supplies are under the authority of the SWRCB. The Division of Drinking Water regulates public water systems; oversees water recycling projects; permits water treatment devices; and, supports and promotes water system security, among other functions. The Project would require a Permit to Operate a Public Water System (California Health and Safety Code § 116525).

Regulations are provided in California Code of Regulations (CCR) Title 17 and Title 22. Drinking water-related statutes are from the Corporations Code, Education Code, Food and Agricultural Code, Government Code, Health and Safety Code, Public Resources Code, and Water Code.

Drinking water standards are called maximum contaminant levels (MCLs). MCLs are found in CCR Title 22. Primary MCLs (e.g., aluminum, chromium, copper, fluoride, nitrate, selenium) address human health concerns. Aesthetics such as taste and odor are addressed by secondary MCLs (i.e., color, turbidity, zinc, iron, manganese). MCLs are adopted as regulations to be enforced by the SWRCB. They are health-protective drinking water standards to be met by public water systems. MCLs consider a chemical's potential health risks as well other factors, such as their detectability and treatability, and costs of treatment. Standards also include detection limits for purposes of reporting (DLRs).

The Office of Environmental Health Hazard Assessment (OEHHA) establishes public health goals pursuant to Health & Safety Code § 116365(c) for contaminants with MCLs, and for those for which MCLs will be adopted. Public water systems use public health goals to provide information about drinking water contaminants in their annual Consumer Confidence Reports. Health & Safety Code § 116365(a) requires that a contaminant's MCL be established at a level as close to its public health goal as is technologically

¹³ <https://gis.water.ca.gov/app/bbat/> (accessed March 29, 2018).



and economically feasible, placing primary emphasis on the protection of public health. The public health goals are established by the OEHHA and represent concentrations of drinking water contaminants that pose no significant health risk if consumed for a lifetime, based on current risk assessment principles, practices, and methods.

California Toxics Rule

The California Toxics Rule (CTR) provides water quality criteria for priority toxic pollutants potentially affecting inland estuaries, surface waters, and bays within the State. The CTR is intended to protect public health and the environment. Such standards are enforced by the EPA and the SWRCB and are generally incorporated into the NPDES Permit at the local level.

Local

Besides the RWQCB and SJBA described above in the Existing Setting and Groundwater discussions, the County of Orange and City of Dana Point also play important roles in managing and regulating surface and groundwater resources within the Project area.

San Juan Creek Watershed Management Program

The San Juan Creek Watershed is part of the South Orange County Watershed Management Area (WMA). The County of Orange, cities, water and wastewater agencies of South Orange County formed the South Orange County Integrated Regional Water Management (IRWM) Group in 2004 and subsequently developed and adopted the South Orange County IRWM Plan. The IRWM Group established the South Orange County IRWM region as a cooperative framework for planning and implementing water management strategies in the region to improve water quality, integrate flood management, restore natural resources, and increase water supply and reliability.¹⁴

At its July 18, 2013 meeting the SOC WMA Executive Committee, comprised of an elected official from each of the member organizations, voted to adopt the 2013 IRWM Final Plan. The 2013 IRWM Final Plan developed objectives, strategies, and implementation projects to achieve five goals in an integrated fashion: improving water quality, integrating flood management, increasing water supply and reliability, promoting water use efficiency, and protecting natural resources. Strategies covered topics such as flood management; urban runoff management; watershed management; water use efficiency; water supply and reliability; recycled water; habitat preservation, conservation, and restoration; water quality protection and improvement; and resource stewardship. Adoption of the 2013 IRWM Plan, however, does not commit any WMA member to any of the specific projects but rather establishes a planning framework to look at a range of projects on a watershed level.¹⁵

Orange County Drainage Area Management Plan

The purpose of the Drainage Area Management Plan (DAMP) is to satisfy NPDES permit conditions for creating and implementing an Urban Runoff Management Program to reduce pollutant discharges to the maximum extent practicable. Storm water drainage systems are required to be constructed in accordance with low impact development (LID) features and infiltration/biotreatment best management practices (BMPs) identified in the DAMP, which outlines structural and nonstructural BMPs to meet these goals.

¹⁴ <http://www.ocwatersheds.com/programs/ourws/sanjuancreek/sjreportsstudies> (accessed March 30, 2018).

¹⁵ http://www.ocwatersheds.com/programs/ourws/wmaareas/wmasouthoc/soc_wma_irwmp (accessed March 30, 2018).



The DAMP identifies the following seven minimum control measures required under the Municipal Permit: public outreach, public involvement, illicit discharge detection and elimination, construction site runoff, existing development, new development and redevelopment, and municipal operations.¹⁶

City of Dana Point Municipal Code

Chapter 15.10.060 sets development requirements to control surface runoff from construction sites. The chapter includes best management practices requirements set forth in the DAMP and the City's Local Implementation Plan as required by the City, to prevent, reduce or remove, to the maximum extent practicable, pollutants from entering the MS4. A developer of a priority¹⁷ development project shall commence any land disturbing activities in connection with the proposed Project without first submitting and obtaining the City's approval of a Water Quality Management Plan (WQMP) for the Project. All WQMPs must be consistent with the City's Model WQMP, including demonstrating compliance with all applicable WQMP requirements and low impact development and hydromodification requirements provided for in the City's Local Implementation Plan. All best management practices set forth in the approved project-specific WQMP, including, but not limited to, any applicable low impact development requirements, shall be implemented and maintained at all priority development projects, by the developer, owner, and/or other responsible party.

Chapter 15.10.070 requires implementation of BMPs to ensure that discharge of pollutants from the Project site are in compliance with the goals set forth in the Municipal Code. Each developer shall implement, maintain and operate all such BMPs in a timely and reasonably diligent manner. All construction, grading and building activities shall comply with all other applicable laws, including all other applicable City ordinances, the NPDES order and applicable State General Permit(s).

Dana Point General Plan

Public Facilities/Growth Management Element

GOAL 1: Encourage adequate water and sewer service.

- Policy 1.1:** Work closely with local-serving water and sewer districts in determining future area needs and expanding sewer service to the Headlands area, when necessary. (Coastal Act/30250, 30255, 30254)
- Policy 1.5:** Consider requiring new development to pay for the cost of extending reclaimed water lines in the City.
- Policy 1.7:** Evaluate the varying levels of service provided by the water and sewer districts serving the City and support increased coordination among these districts in order to provide consistent service levels.
- Policy 1.8:** Encourage and support water and sewer districts in the effective management of their revenue resources to ensure equitable service throughout the City.

¹⁶ <http://www.ocwatersheds.com/documents/damp> (accessed March 30, 2018).

¹⁷ A project is classified as a priority development project by meeting specific criteria: 1) projects that disturb greater than 1 acre of area; 2) redevelopment projects that create or replace 5,000 sq. ft. of impervious area on an already developed site; and 3) projects directly adjacent to and directly discharging to an Environmentally Sensitive Area (ESA).



GOAL 2: Maintain and improve portions of the storm drainage system for which the City is responsible and encourage adequate maintenance of other portions of that system.

Policy 2.2: Work with the Orange County Flood Control District in ensuring the adequacy of regional storm drainage facilities. (Coastal Act/30235, 30236, 30253)

Significance Criteria under CEQA

Appendix G of the State CEQA Guidelines contains the Initial Study Checklist form, which includes questions related to hydrology and water quality. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this Section. Accordingly, a project may create a significant environmental impact if one or more of the following occurs:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- 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;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam;
- Inundation by seiche, tsunami, or mudflow.

Methodology and Assumptions

- The proposed Project and associated project design features (PDFs) are evaluated against the aforementioned significance criteria, as the basis for determining the level of impacts related to hydrology and water quality. In addition to PDFs, this analysis considers existing regulations, laws and standards that serve to avoid or reduce potential environmental impacts. Where significant impacts remain, feasible mitigation measures are recommended, where warranted, to avoid or lessen the Project's significant adverse impacts. Further details regarding methods are provided in Appendix 10.9 of this EIR.



SRF CEQA-Plus Analysis

This EIR section also includes an evaluation of 100-year flood hazards and Clean Water Act compliance, as required by the SWRCB for SRF loan applications (this discussion is provided under Impact 4.9-8 and 4.9-1, respectively).

Project Design Features

The Project's potential impacts concerning hydrology and water quality would be avoided or reduced through the following PDFs:

- The subsurface intakes will reduce pre-treatment requirements (and avoid marine life impingement impacts), which is the preferred ocean water intake method by the SWRCB's Ocean Plan Amendment;
- The subsurface intakes avoid potential source water impacts from periodic algal blooms;
- The Project proposes to locate coastal infrastructure, including slant wells and raw water conveyance pipelines, either outside identified coastal hazard zones or place infrastructure below the projected coastal hazard scour limits;
- The Project's brine discharge will utilize an existing ocean outfall, rather than a new ocean outfall, which reduces construction and operational impacts, as well as allows for the brine to be blended with existing outfall wastewater discharge, which is the preferred method of brine discharge by the SWRCB's Ocean Plan Amendment.

4.8.3 IMPACTS AND MITIGATION MEASURES

Impact 4.8-1: Would the project violate any water quality standards or waste discharge requirements? *Level of Significance: Less than Significant with Mitigation.*

Construction

Subsurface Intake Wells/Southeast Intake Wells

Subsurface intake well construction would occur entirely within the designated drill work areas at DSB or Capistrano Beach Park. The slant wells would be drilled primarily in disturbed and developed locations including landscaped parking lots, other existing hardscaped areas, and areas with non-native landscaped vegetation. These work areas will have appropriate spill containment and erosion prevention measures as required by applicable City, County, State and other regulatory agency permit conditions (refer to Mitigation Measure HWQ-1 below).

Construction at Capistrano Beach Park (slant well pods F, G and H) will likely require high surf mitigation to protect the drill rig work areas from winter storms (since all slant well construction would occur during the "off season" when coastal wave energy is higher, frequently causing flooding and related damage to the Capistrano Beach Park parking lot). As discussed in Mitigation Measure HWQ-2 below, high surf mitigation could involve placement of temporary sandbags or K-rail (temporary concrete barrier) along the coastal side of the drill rig work area, which may occur below the mean high tide (MHT). In addition to property owner approval (State Parks and County Parks), any construction below the MHT would require appropriate permits and approvals from the State Lands Commission, Coastal Commission, and/or



U.S. Army Corps of Engineers (ACOE). The ACOE regulates discharge of fill materials into waters of the U.S. under Section 404 of the Clean Water Act.

Slant well pod F (the area north of Palisades Drive) is the least preferred of potential slant well locations due to the narrow beach section, which would be most likely to require encroachment below the MHT, and associated high surf mitigation and regulatory permitting.

In addition to construction-related erosion impacts associated with the drill rig work area, well “development” (the process of initially pumping the slant wells to rid the well of drilling fluids and sand, and also to “pump out” any potential elevated levels of iron or manganese) would result in temporary discharge of raw ocean water through the existing DSB slant well beach diffuser, or through a connection at DSB to the existing SJCOO (at the DSB campground), or through the new beach diffuser proposed at Capistrano Beach Park if that is the chosen location of the slant wells.

The well development process would occur in two phases. Initially, well development would be necessary to clean the well by removing drilling materials. The drilling material consists of water, bentonite mud, and/or the use of environmentally inert biodegradable additives to advance the drill bit through the sand, under the ocean floor. The well development water would likely be pumped to baker tanks to allow sediment to settle out. The clarified well development water would be pumped back to the ocean via a diffuser or direct connection to the SJCOO as noted above. This well development water is raw ocean water, and does not include any of the pre or post-treatment process, or brine from the RO process, that will be required for the subsequent processing of raw ocean water at the desalination facility.

This initial well development process lasts about one month, and may not require continuous (24 hour/day) pumping. Depending on initial and discharge water quality, the initial well development discharge would require a WDR permit or other permits from the Regional Board. If the well development water is discharged directly to the existing SJCOO via the connection point at DSB campground, this would also require a new or modified NDPES permit to temporarily modify the SJCOO discharge. This well development process has been successfully permitted and implemented for similar slant well technology at DSB and at Marina, California.

During and following initial well development, initial slant well pumping will also produce elevated levels of iron and manganese, as discussed at length in the PDR ([Appendix 10.1](#), Section 3.1.3). This will be the case at DSB (the preferred location for the slant wells), and may also be the case for slant wells at Capistrano Beach Park. Preliminary estimates indicate that this extended pumping period (to achieve lower iron and manganese levels in the source water) may take approximately 18 months. If discharged using the existing or new beach diffuser, elevated iron levels may produce visible discoloration. Therefore, the District prefers the option of connecting to the existing SJCOO, which would blend the temporarily elevated iron and manganese levels with the existing SJCOO wastewater discharge, and dilute the discharge via the existing SJCOO diffusers. Any extended pumping program would require permits and approvals from applicable local and state agencies, particularly the Regional Board, for issuance of a WDR or NPDES permit. If suitable solutions cannot be resolved through the permitting process, the District will provide temporary iron/manganese pretreatment modular units at the desalination facility site until such time that the iron and manganese levels are acceptable for the RO process (refer to Mitigation Measure BIO-3).



With implementation of Project Design Features and required mitigation measures, no significant impacts are anticipated with respect to construction-related water quality impacts for the subsurface intake wells at DSB or Capistrano Beach Park.

Desalination Facility/Brine Disposal System Connection

The proposed Project desalination facility component would be developed within disturbed and developed areas on the District's San Juan Creek property. This includes the Project's connection to the existing SJCOO for brine disposal. These District parcels have been highly modified and are currently developed with limited landscaped areas, hardscape, dirt lots, parking lots, and buildings. Construction activities would include limited vegetation removal, site grading, excavation, soil stockpiling, and/or backfilling. San Juan Creek is directly west of the desalination facility site, draining to the San Juan Creek lagoon and the Pacific Ocean. Section 4.7, Hazards and Hazardous Materials addresses the potential construction-related impacts associated with use, transport, storage and accidental upset conditions related to hazardous materials.

Construction activities would be required to comply with the General Construction Permit. This includes the preparation and implementation of a SWPPP and associated BMPs. The District would prepare and submit a Notice of Intent (NOI) to the SWRCB, providing notification and intent to comply with the General Construction Permit. Although the proposed Project component is not expected to violate water quality standards or waste discharge requirements, it is required to implement Mitigation Measure HWQ-1 to further ensure Project compliance with water quality requirements for Project construction. With implementation of Project Design Features and required mitigation measures, no significant impacts are anticipated with respect to construction-related water quality impacts for the desalination facility site and the brine disposal system connection.

Raw Water Conveyance Alignments

All surface disturbances needed for the construction of the raw water conveyance system from the subsurface intake wells to the desalination facility would occur in previously disturbed urban areas and existing rights of way. This construction element, along with all other Project construction, would be subject to requirements of the NPDES General Construction Permit, including preparation of an SWPPP and implementation of BMPs. Construction of the raw water conveyance system would result in a less than significant impact with implementation of Mitigation Measure HWQ-1 which would ensure Project consistency with the NPDES requirements.

Operations

Subsurface Intake Wells/Southeast Intake Wells

Subsurface intake well operation will draw a small percentage of inland groundwater into the slant wells at DSB (estimated at 6.6% for wells at Doheny State Beach, when the wells reach a steady-state condition). Given that there are known groundwater contamination plumes inland of the proposed slant wells, the District modeled slant well operation at various scenarios for representative groundwater contamination constituents in the nearest known plumes. The results of this modeling (contained in Appendix 10.10.2, Section 3.0) indicates that operation of the slant wells will not result in the intake of contaminated



groundwater, and in fact has a very limited effect on these plumes.¹⁸ Normal Project operations and regulatory permits will require groundwater monitoring as well as monitoring of feedwater quality from the slant wells to ensure that any contaminants, regardless of source, are detected and treated prior to distribution of product water. No significant impacts are anticipated.

For potential slant well sites at Capistrano Beach Park, these wells are not hydrologically connected to the onshore portion of San Juan Basin or other groundwater sources and therefore are anticipated to have no significant impact on existing groundwater contamination plumes.

Raw Water Conveyance Alignments

There are no significant water quality impacts anticipated with operating the raw water conveyance system because the operation of this system would not involve discharge.

Desalination Facility

As discussed under Regulatory Framework above, the Project will require a Water Quality Management Plan (WQMP) to provide post-construction BMPs, consistent with City and County of Orange DAMP requirements (see Mitigation Measure HWQ-4). The Project will incorporate site design BMPs, source control BMPs, and treatment control BMPs to reduce or eliminate post-project runoff, control source pollutants, and treat stormwater runoff before it flows to the storm drain system. Implementation of BMPs would reduce negative water quality effects to less than significant. The capacity of existing or planned stormwater drainage systems would not be exceeded due to treatment of runoff. With implementation of Mitigation Measure HWQ-4 (that include the BMPs), the potential to violate water quality standards, objectives and beneficial uses and/or waste discharge requirements, threaten impaired water bodies with pollutant(s) of concern, discharge polluted runoff, increase quantity of runoff, significantly impact surface water quality, or otherwise degrade water quality or exacerbate water quality environmentally sensitive areas or impact aquatic habitat, will be reduced to less than significant. Water quality would not be substantially degraded.

The operation of the desalination facility would require a Permit to Operate a Public Water System (California Health and Safety Code § 116525). All potable water produced by the desalination facility would be treated to a level suitable for human consumption in compliance with SWRCB Division of Drinking Water requirements for potable water (CCR Title 17 and 22). The SWRCB is also responsible for issuance of NPDES permits for discharges from drinking water systems to surface water in California (Order No. WQ 2014-0194, NPDES No. CAG140001). Given the Project is mandated by law to comply with applicable drinking water standards, desalination facility operation would not violate any water quality standards or waste discharge requirements. Therefore, impacts would be less than significant.

Product Water Conveyance

The final “product” of the desalination facility would be distributed through the District’s existing water distribution system and therefore would be required to meet rigorous potable drinking water regulations as administered by the SWRCB’s Drinking Water Program. In addition, product water would be conveyed through various local and potentially regional water conveyance systems, with most of the water ending up being treated at local wastewater treatment facilities following end-user consumption and subsequent

¹⁸ Appendix 10.10.2 shows that pumping 8.6 MGD has little effect on the groundwater plume (page 37, and Figures 54, 55 and 56 of Appendix 10.10.2), as does pumping at even higher levels. In fact, groundwater modeling shows that the Project would improve plume conditions by causing the plume to dissipate faster.



discharge into the local sanitary sewer system. The Project would also be required to comply with existing wastewater treatment plant NPDES permits (see Brine Discharge System discussion below). With compliance with required permitting processes, impacts would be less than significant.

Brine Discharge System

The brine discharge from the Project will meet applicable water quality requirements as established in either a new or modified NPDES permit from the RWQCB for use of the existing SOCWA SJCOO discharge (ORDER NO. R9-2012-0012; NPDES NO. CA0107417). Detailed brine modeling calculations are provided in Appendix 10.11, Brine Discharge Modeling and are summarized in Tables 4.8-3 and 4.8-4 below. Project brine modeling calculations show that under virtually every scenario the Project will meet OPA requirements, except for two conditions (described further below and shown in Tables 4.8-3 and 4.8-4). It should further be noted that the Project's brine modeling uses the existing SOCWA SJCOO diffuser jet design, which could be modified if necessary to meet OPA requirements (discussed further in Section 4.3, Biological Resources).¹⁹

- Buoyant discharge for the Regional Project (up to 15 MGD brine) with SJCOO discharge of 31 MGD, due to total discharge of 46 MGD exceeding the maximum permitted outfall capacity, requiring an NPDES permit amendment. This scenario is not likely due to ongoing efforts by SOCWA and its member agencies to maximize reclamation of treated wastewater, which would be expected to reduce SJCOO discharge over time. At this time, the District does not intend to proceed with a 15 MGD Regional Project and any such future action would require separate discretionary permits and approvals from a wide range of local, state and federal agencies.

Negative discharge for the Phase I Project (up to 5 MGD brine),²⁰ with zero wastewater discharge assumed, which fails to meet the OPA requirement of no more than 2 ppt salinity increase at 100m from the diffuser. This scenario is also unlikely, as only 0.35 MGD of SJCOO wastewater is required to provide adequate blending. Therefore, the District has stipulated that, with approval of the Phase I Project, as a member agency of SOCWA the District would ensure that there is at least 0.35 MGD of wastewater in the SJCOO to provide adequate blending (refer to Mitigation Measure HWQ-3).²¹

Therefore, with implementation of Project Design Features and Mitigation Measure HWQ-3, impacts would be less than significant.

¹⁹ Actual dilution rates achieved from the current SJCOO diffusers are likely higher. According to Appendix 10.11, "The current permit certifies the SJCOO for a minimum initial dilution ratio of 101:1 at a maximum discharge rate of 38.78 mgd secondary effluent, including 1 mgd brine wastes. These discharge limits were issued despite the fact that the maximum certified hydraulic capacity of the SJCOO is 86 mgd, and the updated dilution study in Appendix-H of RWQCB, (2014a) showed that the achieved minimum initial dilution is actually 162 to 1 during worst-month conditions."

²⁰ The actual operational capacity may be less depending on final design and other operational considerations. In addition, 5 MGD is the projected average annual daily production, with actual daily production varying by an estimated 10%, up to 5.5 MGD (to account for down time), with annual production averaging no more than 5MGD. The EIR has modeled production capacities up to 15 MGD, showing that even at higher capacities, the Project would be consistent with the Ocean Plan Amendment.

²¹ If needed, the District could also offset low SJCOO flows by withdrawing additional raw water (offshore subsurface ocean water) via the subsurface intakes, estimated to require approximately 1.8 MGD of raw water to meet OPA salinity requirements should the 0.35 MGD of wastewater not be available.



Table 4.8.-3: Summary of Results for the Envelope of Operating Conditions for Producing Buoyant Discharges

Discharge Scenario Brine + Wastewater = Total Flow Rate (MGD)	Combined Discharge Salinity (ppt)	Discharge Velocity m/sec	Densimetric Froude Number $F_r = u / \sqrt{g'd}$	Distance vertically to 101 to 1 dilution factor (m)	Distance vertically to worst monthly trapping level (ZID, m)	Initial Dilution, Dm at worst monthly trapping level**	Initial Dilution Waste Water Only @ Equivalent Total Flow Rate	Meet existing NPDES permit limits?
5 + 8 = 13	25.77	0.97	13.9	26.1	29.0	195	224	Yes
5 + 13 = 18.0	18.61	1.34	13.9	24.8	29.0	185	206	Yes
5 + 18.9 = 23.9	14.02	1.78	16.1	24.8	29.0	172	188	Yes
15 + 18.9 = 33.9	29.64	2.52	51.1	25.5	29.0	134	167	Yes
5 + 31 = 36.0	9.30	2.68	21.8	24.9	29.0	155	164	Yes
15 + 31 = 46.0	21.85	3.42	40.1	26.6	29.0	135	159	**No

Red = dry-weather

Blue = average conditions

Green = wet-weather

* Trapping Level defaults to sea surface for worst-case temperature/salinity profile, cf. RWQCB (2014a, Appendix-H)

**Exceeds maximum permitted combined discharge rate of 38.78 mgd under NPDES permit (No. CA 0107417, Order No. R9-2012- 0012 as amended by Order No. R9-2014-0105)

Table 4.8-4: Summary of Results for the Envelope of Operating Conditions Producing Dense (Negative Buoyancy) Discharges

Discharge Scenario Brine + Wastewater = Total Flow Rate (MGD)	Combined Discharge Salinity (ppt)	Discharge Velocity m/sec	Densimetric Froude Number $F_r = u / \sqrt{g'd}$	Horizontal Distance to within 2 ppt of *Natural Background (m)	Initial Dilution At 100 m BMZ (Dm)	Distance to ZID (m)	Initial Dilution at ZID (Dm)	Initial Dilution Waste Water Only @ Equivalent Total Flow Rate	Meet brine Ocean Plan limits?
5 + 0 = 5	67.0	0.37	2.61	105	14.2	250	120	260	**No
5 + 0.35 = 5.35	62.63	0.40	2.99	96	14.0	242	118	258	Yes
10 + 0 = 10	67.0	0.74	5.21	55	61.0	165	117	236	Yes
15 + 0 = 15	67.0	1.12	7.82	39	110	148	127	216	Yes
15 + 8 = 23	43.69	1.71	21.4	3.5	131	94	131	190	Yes
15 + 13 = 28.0	35.89	2.08	53.8	0.3	187	75	187	178	Yes

Red = dry-weather

Blue = average conditions

Green = wet-weather

*Natural background salinity at the SJCOO is 33.5 ppt.

**Fails to dilute to within 2 ppt of natural background salinity within a horizontal distance of 100 m



Mitigation Measures

Also refer to Mitigation Measure BIO-3.

- HWQ-1** Prior to any ground disturbance activities, SCWD shall manage stormwater pollution from construction activities by complying with State Water Resources Control Board's National Pollutant Discharge Elimination System (NPDES) Waste Discharge Requirements for Discharges of Stormwater Runoff Associated with Construction Activities. At least 30 days prior to construction, SCWD (or its designee) shall develop and implement a construction Stormwater Pollution Prevention Plan (SWPPP) for the construction of the Project that identifies project-specific best management practices (BMPs) to be implemented during the construction phase. The SWPPP shall include applicable erosion control measures, with the intent to satisfy Erosion Control Plan requirements of regulatory permitting agencies including the California Coastal Commission, State Parks, County Parks and City of Dana Point.
- HWQ-2** High Surf Mitigation - In order to minimize potential for coastal wave damage, SCWD or its contractor shall prepare a High Surf Mitigation Plan for any slant well construction proposed at Capistrano Beach Park, or otherwise subject to high surf wave damage. This Plan shall be prepared for applicable regulatory agency review and approval at least 30 days prior to construction, and shall include the following at minimum (or equivalent measures as determined appropriate by the Coastal Commission and County of Orange) to provide for public safety and avoid construction site erosion or related water quality impacts):
- The drill rig itself shall be on a skid-mounted platform, secured by temporary pilings keyed into competent underlying material, estimated at 20-30 feet deep.
 - The drill rig shall be capable of elevating above grade during small wave events.
 - For smaller coastal storm events (typically less than one foot of water over the site, to be determined by the Contractor, based on typical coastal wave patterns for this season), the drill rig work area shall be secured by sandbags or K-rails.
 - For larger storm events (typically where more than two feet of water would be over the site, to be determined by the Contractor, where local or National Weather Service warnings indicate high surf hazards or the drill rig work area is otherwise anticipated to be exposed to coastal wave damage beyond which sandbags or K-rails will suffice), the drill rig and appurtenant equipment will be temporarily demobilized and relocated depending on the storm severity, requiring 6-12 hours of advanced warning.
 - To prevent damage to the slant well drill hole, the temporary casings at the surface would be temporarily sealed.
- HWQ-3** Minimum SJCOO Flow – As part of the Project's NPDES Permit application for brine discharge, the District stipulates that the Project will comply with applicable OPA requirements. If required to meet OPA requirements, the District, as a SOCWA member agency with shared responsibility in managing SJCOO discharges, will ensure



that SJCOO wastewater discharges are at least 0.35 MGD where required to provide adequate blending of the Project's brine discharge.

HWQ-4: Prior to construction, the District (or its designee) shall prepare a Water Quality Management Plan (WQMP) for review and approval by the City of Dana Point, identifying applicable site design BMPs, which address low impact development and designing the site in sustainable ways, source control BMPs, which are operation, management, LID/Treatment Control BMPs, Hydromodification Management BMPs, and housekeeping activities which control pollutants at the source, include staff and contractor training, street sweeping, storm drain system maintenance, efficient irrigation practices, litter management, etc.; and treatment BMPs, which remove pollutants from runoff prior to discharge. All these BMPs will be implemented for comprehensive pollutant management program and management and treatment of the runoff generated from the project.

Impact 4.8-2: **Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?**
Level of Significance: Less than Significant.

Construction

All Components

The proposed subsurface intake wells would be constructed using dual rotary drilling technology, which provides a large-diameter cased borehole inside, within which the well is constructed and gravel packed before the outer casing is then extracted. With the dual rotary method, the outer drill casing ensures a stable borehole, even in unconsolidated aquifer materials. This drilling method uses drilling fluids in the shallow unsaturated section and primarily water in the saturated section to stabilize the borehole and reduce friction, which reduces total drilling time. Any potable water required during construction would be provided by the District, and would not represent a significant effect on groundwater supplies, as very little of existing potable water is derived from groundwater sources.

For extended slant well pumping to remove iron and manganese, the net effect on local groundwater supplies would be higher than the steady state condition achieved after 18 months or so of pumping. This initial higher portion of inland groundwater is not considered a significant impact, as it would be temporary, the affected groundwater is not usable due to high salinity levels, and the Project's long-term effect would be to protect groundwater resources by providing a new source of potable water. As discussed below and in [Appendix 10.10](#), temporary extended pumping at Capistrano Beach Park (slant well pods F, G, and H) would not have any impact on San Juan Basin groundwater.

During construction of the slant wells, raw water conveyance lines and deep footings at the desalination facility site, construction dewatering may be necessary to remove groundwater from excavations during construction. Groundwater dewatering may require treatment prior to discharge into the municipal storm drain or sanitary sewer system. In coastal areas such as the Project, construction dewatering is a well-established and common practice for both the District and applicable regulatory agencies. Considering



the temporary nature of dewatering and requirement to meet applicable state and federal water quality standards, no significant impacts are anticipated.

Operations

All Components

The brine disposal system and raw water conveyance alignment would not require ongoing groundwater supplies for operation. While the desalination facility site will slightly increase the impervious surfaces, surface flows will discharge into San Juan Creek where stormwater runoff has the opportunity to recharge groundwater, both in the Creek and in San Juan Creek Lagoon (which is typically closed off from outletting to the Pacific Ocean, except for large storm events that breach the sand berm at the mouth of the lagoon).

The Project's primary effects on groundwater would be those associated with relatively limited withdrawal of inland groundwater during ongoing slant well production, estimated at approximately 5% of the raw water source (of the 10 MGD of source water required for the Phase I Project, approximately 0.6 MGD of inland groundwater is estimated to be drawn into the subsurface intake wells at DSB; no such groundwater impact would occur for slant wells at Capistrano Beach Park, since this area is not hydrologically connected to the onshore portion of the San Juan Basin, as discussed further below).

Results of the model scenario runs are included in Table 4.8-5, Summary of Predictive Scenario Assumptions below, and as described in detail in Appendix 10.10, Groundwater Modeling Reports. Groundwater modeling shows that the Capistrano Beach Park wells (slant well pods F, G, or H) have no effect on San Juan Basin groundwater levels or San Juan Creek lagoon levels.

Slant wells at DSB have the potential to reduce annual San Juan Basin groundwater yield by up to 392 AFY. This is not considered a significant impact, as the affected groundwater is not potable due to elevated salinity levels, and the DSB slant wells will actually create a pumping "trough" which will reduce further seawater intrusion into the San Juan Basin.²² In addition, the District has a current groundwater right of up to 1,300 AFY (or approximately 1.15 MGD).²³ Subject to confirmation by the San Juan Basin Authority and State Water Resources Control Board, the District is not anticipated to need new or modified water rights, as the inland groundwater drawn in by the slant wells would be less than the District's current groundwater rights (0.6 MGD compared to an existing right of 1.15 MGD), and the groundwater drawn into the slant wells is "undeveloped" and available for extraction (since it is not usable due to high salinity levels).²⁴ The nearshore shallow aquifer groundwater levels could be reduced by as much as 13.96 feet for the Phase I Project. However, there are no local potable groundwater wells that would be adversely affected by this change (refer to Section 4.3, Biological Resources, for a discussion of groundwater level effects on the San Juan Creek Lagoon and associated wildlife).

²² Appendix 10.10.1, page 53.

²³ South Coast Water District 2015 Urban Water Management Plan, page 3-8.

²⁴ State Water Resource Control Board Final Review of California American Water Company's Monterey Peninsula Water Supply Project, July 31, 2013, Section 6.4.



Table 4.8-5: Summary of Predictive Scenario Assumptions

Model Scenario	Hydrology	Local Groundwater Pumping and Well Screening Pumping Constraint	Doheny Ocean Desalination Project Pumping		
			Doheny State Beach	Capistrano Beach	Total
Baseline	1947 to 2010 (Dry, Wet and Average) ¹	Near-term pumping with water level constraint of 2 ft above top of well screen	-	-	No Project Pumping
Scenario 1			10 MGD from 3 slant wells (Pod D)	-	Project Pumping of 10 MGD (11,210 AFY) from 3 slant wells
Scenario 2			-	10 MGD from 7 slant wells (Pods F, G, H)	Project Pumping of 10 MGD (11,210 AFY) from 7 slant wells
Scenario 3			20 MGD from 9 slant wells (Pods A, B, D, E)	10 MGD from 7 slant wells (Pods F, G, H)	Project Pumping of 30 MGD (33,630 AFY) from 16 slant wells

¹ The total model simulation period is a 64-year period that represents the hydrology from 1947 through 2010. Of this, the 30-year period from 1947 through 1976 is characterized as “dry hydrology”, 1963 through 1992 is characterized as “average hydrology” and the period from 1978 through 1983 is characterized as “wet hydrology”.

Source: Geoscience, 2016. Foundational Actions Funding Program – Advancement of Slant Well Technology and Groundwater Flow and Solute Transport Modeling for the Doheny Ocean Desalination Project Task 4 – Modeling of Slant Well Feed Water Supply, Impacts and Mitigation Approaches.

Table 4.8-6: Summary of Predictive Scenario Results

Model Run	Local Yield Dry Hydrology (1947-1976)	Local Yield Average Hydrology (1963-1992)	Local Yield Wet Hydrology (1978-1983)	Change from Baseline – Dry Hydrology (1947-1976)	Change from Baseline – Average Hydrology (1963-1992)	Change from Baseline – Wet Hydrology (1978-1983)
Baseline Scenario (No Project Pumping)	7,756 AFY	7,871 AFY	8,556 AFY	-	-	-
Scenario 1 (Project Pumping of 10 MGD from Doheny Beach)	7,364 AFY	7,519 AFY	8,448 AFY	-392 AFY	-352 AFY	-108 AFY
Scenario 2 (Project Pumping of 10 MGD from Capistrano Beach)	7,756 AFY	7,871 AFY	8,556 AFY	0 AFY	0 AFY	0 AFY
Scenario 3 (Project Pumping of 30 MGD – 20 from Doheny Beach, 10 from Capistrano Beach)	6,899 AFY	7,066 AFY	8,177 FY	-857 AFY	-805 AFY	-379 AFY



Mitigation Measures

No mitigation measures are required.

Impact 4.8-3: **Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site? *Level of Significance: Less than Significant.***

Construction/Operations

All Components

Construction and operation of the subsurface intake wells, southeast intake wells, raw water conveyance alignment, and brine disposal system would not significantly increase the impervious surface or otherwise affect the drainage patterns, since all facilities would be buried underground. Minor above-ground appurtenances such as electrical vaults or buildings would be small structures located on existing disturbed areas and would not significantly impact drainage patterns. The Project has been designed to avoid existing drainage facilities, including use of trenchless construction for any crossings of San Juan Creek Lagoon, San Juan Creek and existing County drainage facilities.

The Project proposes to elevate the desalination facility to protect from flooding impacts of San Juan Creek, as well as include high surf mitigation to protect slant well drill rig work areas from coastal wave damage. These measures will protect the Project from existing flood hazards, rather than modify a drainage course. Water quality implications of Project construction is discussed above in Impact 4.8-1, as well as in Section 4.5, Geology and Soils.

Mitigation Measures

No mitigation measures are required.

Impact 4.8-4: **Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? *Level of Significance: Less than Significant.***

Construction/Operations

All Components

Refer to discussion above under Impact 4.8-3. The Project does not represent a “substantial alteration” in existing drainage patterns, other than that noted above and discussed in detail in Impact 4.8-9 below (elevation of the desalination facility site above the 100-year flood plain, and protection of slant well drill rig work areas during high winter surf conditions). As discussed further in Impact 4.8-9 and Appendix 10.9, the Project proposes elevating the desalination facility site approximately three to five feet, to be above the 100-year flood hazard level. This design solution will not so much alter a drainage pattern, as it will protect the desalination facility site from existing drainage facility impacts, as these facilities are predicted to overtop or back up into the site during the 100-year storm.



Mitigation Measures

No mitigation measures are required.

Impact 4.8-5: **Would the project 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? *Level of Significance: Less than Significant with Mitigation.***

Construction/Operation

All Components

With respect to increasing stormwater runoff, the majority of Project facilities are either belowground or so small that they will not create substantial new sources of stormwater runoff, which can easily be accommodated by existing drainage facilities. For the desalination facility site, the Project hydrology study ([Appendix 10.9](#)) modeled existing and future conditions and recommends an on-site detention basin to mitigate post-project increase in runoff. The hydrology study also recommends relocating an existing drainage inlet (the 54" RCP inlet at the site's southern boundary) since the current inlet location is impacted by 100-year flood conditions where San Juan Creek backs up and overtops into the site. This is a favorable improvement to the existing condition.

With respect to providing substantial additional sources of polluted runoff, during construction and Project operation, Project facilities would follow standard District construction protocols as noted in the District's 2017 Infrastructure Master Plan Update and Capital Improvement Projects IS/MND, including adherence to applicable City, County and State water quality measures to avoid or reduce construction and operational water quality impacts associated with stormwater runoff and erosion control. Stormwater quality is addressed further above in Impact 4.8-1. In particular, Mitigation Measure HWQ-1 requires compliance with NPDES permitting and implementation of BMPs for construction and operational water quality, and Mitigation Measure HWQ-4 requires a WQMP to address operational water quality impacts.

Adherence to the above requirements would prevent significant impacts to existing stormwater drainage systems during construction and operation of the proposed Project facilities, as well as mitigate stormwater runoff water quality impacts. As a result, impacts associated with creating runoff or creating substantial sources of polluted runoff would be less than significant.

Mitigation Measures

Refer to Mitigation Measure HWQ-1 above.

Impact 4.8-6: **Would the project otherwise substantially degrade water quality? *Level of Significance: Less than Significant with Mitigation.***

Construction/Operations

All Components

Refer to Impact 4.8-1 discussion above. Impacts would be less than significant with mitigation incorporated.



Mitigation Measures

Refer to Mitigation Measure HWQ-1 above.

Impact 4.8-7: Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? *Level of Significance: No Impact.*

Construction/Operations

All Components

The Project does not propose development of housing. Therefore, the proposed Project would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. No impact would occur.

Mitigation Measures

No mitigation measures are required.

Impact 4.8-8: Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows? *Level of Significance: Less Than Significant with Mitigation.*

Construction/Operations

All Components

See discussion below in Impact 4.8-9. During construction, the Project will place the slant well drill rigs within the 100-year flood hazard zone, for which high surf mitigation is required (Mitigation HWQ-2). These high surf measures will temporarily divert and protect the drill rig work areas from coastal wave damage. Due to the temporary nature of this work and relatively small area affected, this is not considered a significant impact to adjacent areas of the Capistrano Beach Park parking lot. These areas are currently exposed to coastal wave damage, and this exposure will be similar during temporary slant well construction, albeit slightly reduced for parking lot areas immediately adjacent to the drill rig work area due to high surf mitigation impeding coastal waves propagating across the parking lot.

The desalination facility site is currently within the 100-year flood hazard zone, as discussed further in Impact 4.8-9 below. The Project proposes to elevate the desalination facility site approximately three to five feet (to elevation 28.2 amsl), prior to placing desalination facility structures on the site. Therefore, following grading, no structures would be placed within the 100-year flood zone. As part of the desalination facility site's final engineering and construction approval process, the District or its designees will obtain a Conditional Letter of Map Revision (CLOMR) from FEMA, in coordination with the County of Orange and City of Dana Point. The CLOMR and subsequent LOMR will revise the FEMA FIRM designation for the site to remove it from the 100-year flood hazard.

Elevating the desalination facility site will cause a change in the behavior of flooding patterns during major storm events, as San Juan Creek overtopping will no longer back up into the desalination facility site. Areas east of the desalination facility site (such as the MetroLink railroad and commercial areas along Doheny Park Road) would be better protected from San Juan Creek overtopping with elevation of the desalination site. There will be a small parcel of land (owned by Caltrans) between the desalination site and the PCH



bridge that would remain at its current elevation and still be subject to potential flooding during the 100-year storm. However, as discussed in Impact 4.8-9 and as shown in the hydrology study ([Appendix 10.9](#)), the post-project condition here would be virtually identical to the future no-project condition.

Refer to Impact 4.8-9 and 4.8-10 for analysis of flood hazards. Impacts would be less than significant with implementation of Mitigation Measure HWQ-2 and HWQ-5.

Mitigation Measures

Refer to Mitigation Measure HWQ-2.

HWQ-5 Prior to grading, the District or its designee shall prepare a final design hydrology study in compliance with City and FEMA requirements to demonstrate that the desalination facility site is adequately protected from flood hazards, and any associated improvements (including elevating the site above existing grade) do not adversely affect adjacent properties. The District shall coordinate with the City, County and FEMA in preparing and processing a Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) to remove the site from the 100-year flood hazard area, at which time FEMA will update its FIRM flood hazard maps for the area.

Impact 4.8-9: **Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? *Level of Significance: Less Than Significant Impact with Mitigation.***

Construction/Operations

Dam Inundation Hazards

Upstream of the desalination facility site, within San Juan Creek, east of Ortega Highway, is the Trampas Canyon Dam and Reservoir Project, currently under construction by Santa Margarita Water District (SMWD). This facility replaces the older dam which was used in historic mining operations. The new dam and reservoir, when completed, is estimated to have a dam failure inundation area of approximately two feet, similar to the 100-year flood hazard. The risk of dam failure is considered extremely unlikely.²⁵ Given that the desalination facility site will be protected from the 100-year flood hazard, this is not considered a significant hazard for the Project.

San Juan Creek Flood Hazards

The Project hydrology study ([Appendix 10.9](#)) evaluated several potential design solutions to protect the desalination facility site from the 100-year flood hazard. The results of these studies are summarized in Preliminary Design Report ([Appendix 10.1](#), Section 3.6). Several of the alternatives would have required substantial modifications to off-site facilities including San Juan Creek, reliance upon other agencies to ensure the improvements are constructed, and greater long-term maintenance risks. The selected flood control design solution (referred to as Alternative 1 in the hydrology study) would cost less, provide adequate flood protection, require no long-term maintenance, could be implemented by the District, and provides added flood hazard protection for properties to the east due to elevating the site. Future with

²⁵ http://www.smwd.com/assets/downloads/meeting-agenda/2015-11-04_BDM_Attachment1.pdf, page 4-42 (accessed April 3, 2018).



Project 100-year flood hazard mapping is shown in Exhibit 4.8-2, Flood Inundation Map, Future Condition, 100-Year Flood, No Project.

The proposed drainage solution (Alternative 1 from Appendix 10.9) includes re-grading the desalination facility site to 28.2 feet amsl, which is approximately 1 foot higher than the 100-year flood elevation with creek overtopping. This requires importing approximately 64,600 CY of fill, which is included in this EIR's impact analysis in the appropriate EIR sections (relative to construction-related impacts, including air quality, greenhouse gasses, noise and traffic). This alternative also includes a detention basin to mitigate additional runoff generated from development of the Project site. The detention basin was sized to be 0.5 acres and 3 feet deep (shown on Exhibit 3.5 and on Figure 3.10 of Appendix 10.9). Lastly, this alternative includes the capping of an existing drainage inlet (DI) adjacent to the 54" RCP pipe outfall at San Juan Creek located at the desalination facility site's southern boundary, and relocating the DI eastward within the Project site (also shown in Exhibit 3-5 and in Figure 3.10 of Appendix 10.9). Otherwise, overtopping flow from the creek could enter the existing DI, backflow up the pipe and inundate areas east of the Project site. Raising the ground elevation reduces both the extent and depth of flooding. San Juan Creek flood hazards will be mitigated to less than significant levels through Project Design Features and mitigation measure HWQ-5 described above, which requires a final hydrology study prior to grading.

Although San Juan Creek flooding will also affect areas where other facilities are proposed (primarily raw water conveyance lines and subsurface intake wells at DSB in the vicinity of San Juan Creek Lagoon), these facilities are all below-ground and would not be adversely impacted by San Juan Creek flooding. Minor appurtenant facilities, such as the electrical control building, would be located at DSB in the North Day Use or campground area, and could be affected by the 100-year flood or other coastal hazards (see discussion below). This facility will be sited or designed to provide adequate flood hazard protection as determined appropriate by the District and State Parks (see Mitigation Measure HWQ-6, below). This is not an occupied structure and as such potential exposure to extreme flooding events is not considered a significant impact.

Coastal Flood Hazards

All Project facilities located along the shoreline are subject to coastal hazards, including winter high surf conditions and tsunami hazards. Appendix 10.7, Coastal Hazard Analyses includes two studies, one evaluating coastal hazards at DSB, and one evaluating coastal hazards at Capistrano Beach Park.

Doheny State Beach

DSB well locations at the North Day Use Area (pods A, B and C) and campground (pods D and E) are relatively well protected from coastal hazards, due in part to the protection provided by Dana Point Harbor (as reflected in the larger beach section in this area and accumulation of beach sands immediately offshore). Should a slant well be sited in the DSB South Day Use Area, this area would have similar coastal hazards as described for Capistrano Beach Park, below, due to the narrower beach section and increased distance from the protective cover of Dana Point Harbor.

The results of the coastal hazard analysis shows that all facilities at DSB (North Day Use and campground vicinity) are adequately protected from predicted coastal hazards through Year 2100. Table 4.8-7 shows that all facilities are adequately protected from future coastal hazards through Year 2100, allowing for "extreme" wave events and "extreme" ocean water levels based on the "low" range of estimated future



sea level rise, representing a return interval estimated at once in 500 years.²⁶ Even with assuming the “high” range of future sea level rise, facilities will be adequately protected.²⁷ Facilities shown in [Figure 4.8-1](#) below include slant well pods on the beach at DSB (more vulnerable), which have now been shifted further from the shoreline within the landscaped grass area of DSB. Therefore, slant wells at DSB are even less affected than shown in the table below and [Appendix 10.7](#). Finally, it should be noted that the preferred location for the electrical control building at DSB is at the northwest corner of the DSB campground, in a disturbed area near the existing SJCOO vault (referred to as the “Well Pump Electrical North” in the figure below). This location is at a higher elevation than the South location, and is therefore even more protected from coastal hazards. In any case, even with potential future coastal flooding, Project slant wells and raw water conveyance lines at DSB will be located belowground, and not subject to flood hazards. Facilities will be sited and buried at sufficient depth to ensure protection from reasonably foreseeable future coastal erosion hazards. No significant impacts are anticipated.

Figure 4.8-1: Critical Shore-front Infrastructure Locations for the Doheny Desalination Project



²⁶ [Appendix 10.7](#), page 3.

²⁷ The difference between “low” and “high” level predictions for Year 2070 and Year 2100 sea level rise is approximately four feet as shown in [Table 4.8-7](#) below. Values in [Table 4.8-8](#) are shown in NAVD, which is roughly 2.5 feet lower than amsl (therefore, in interpreting this table, add 2.5 feet to arrive at the estimated flood elevation level in amsl).



Table 4.8-7: Extremal Total Water Level (*TWL) and Overtopping Rates (Q') Analysis

	Well Head #1 Elevation = 17 ft. NAVD	Well Head #2 Elevation = 17 ft. NAVD	Well Head #3 Elevation = 18 ft. NAVD	Well Pump Electrical South Elevation = 21 ft. NAVD	Well pump Electrical North Elevation = 18 ft. NAVD
*TWL(100) Present Sea Level (eroded/accreted)	13.1/14.8 ft. NAVD status = dry	13.1/14.8 ft. NAVD status = dry	13.1/14.8 ft. NAVD status = dry	13.1/14.8 ft. NAVD status = dry	13.1/14.8 ft. NAVD status = dry
*QÇ(100) Present Sea Level (eroded/accreted)	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.
*TWL(100) 2070 Sea Level Low Range	13.8/15.5 ft. NAVD status = dry	13.8/15.5 ft. NAVD status = dry	13.8/15.5 ft. NAVD status = dry	13.8/15.5 ft. NAVD status = dry	13.8/15.5 ft. NAVD status = dry
*QÇ(100) 2070 Sea Level Low Range Projection (eroded/accreted)	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.
*TWL(100) 2070 Sea Level High Range Projection (eroded/accreted)	16.3/18.0 ft. NAVD status = flooded	16.3/18.0 ft. NAVD status = flooded	16.3/18.0 ft. NAVD status = dry	16.3/18.0 ft. NAVD status = dry	16.3/18.0 ft. NAVD status = dry
*QÇ(100) 2070 Sea Level High Range Projection (eroded/accreted)	0.0/0.04 cfs/ft.	0.0/0.04 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.
*TWL(100) 2100 Sea Level Low Range Projection (eroded/accreted)	14.5/16.1 ft. NAVD status = dry	14.5/16.1 ft. NAVD status = dry	14.5/16.1 ft. NAVD status = dry	14.5/16.1 ft. NAVD status = dry	14.5/16.1 ft. NAVD status = dry
*QÇ(100) 2100 Sea Level Low Range Projection (eroded/accreted)	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.
*TWL(100) @ 2100 Sea Level High Range Projection (eroded/accreted)	18.5/20.3 ft. NAVD status = flooded	18.5/20.3 ft. NAVD status = flooded	18.5/20.3 ft. NAVD status = flooded	18.5/20.3 ft. NAVD status = dry	18.5/20.3 ft. NAVD status = flooded
*QÇ(100) 2100 Sea Level High Range Projection (eroded/accreted)	0.08/0.26 cfs/ft.	0.08/0.26 cfs/ft.	0.01/0.15 cfs/ft.	0.0/0.0 cfs/ft.	0.01/0.15 cfs/ft.

*Evaluated for the 100-yr return period



Capistrano Beach Park Coastal Hazards

Potential slant well sites at Capistrano Beach Park are more susceptible to coastal hazards due to the narrow beach section and distance from the protective effects of Dana Point Harbor, as summarized in Table 4.8-8 below (and discussed in detail within Appendix 10.7). The Capistrano Beach Park area historically floods and experiences wave damage during large storm events, and is currently protected partially by riprap along the coastal side of the beach parking lot. Orange County Parks is currently seeking approvals from the California Coastal Commission to install additional coastal protection along the western (shoreward) side of the beach parking lot. Coastal hazard modeling shows that slant well sites at Capistrano Beach Park would experience coastal wave damage in Year 2070 and Year 2100 under “high” sea level rise scenarios. In addition, during major storm events, portions of the beach parking lot are anticipated to experience wave damage. This is only an issue during construction, when the well sites will be exposed within the small drill rig work area, requiring high surf mitigation to protect the drill rig site (see discussion above in Impact 4.8-1, and mitigation measure HWQ-2). The slant wells and associated pumps and raw water conveyance pipelines will be sufficiently buried at depths to protect the infrastructure from reasonably foreseeable coastal wave and erosion hazards (see Mitigation Measure HWQ-5, below). With implementation of Project Design Features and mitigation, no significant coastal hazard impacts are anticipated for the Capistrano Beach Park slant wells.

Table 4.8-8: Extremal Total Water Level (*TWL) and Overtopping Rates (Q') Analysis

	Well Head-F Elevation = 17 ft. NAVD eroded/accreted	Well Head-G Elevation = 18 ft. NAVD eroded/accreted	Well Head-H Elevation = 17 ft. NAVD eroded/accreted
*TWL(100) Present Sea Level (eroded/accreted)	14.0/15.6 ft. NAVD status = dry	14.0/15.6 ft. NAVD status = dry	14.0/15.6 ft. NAVD status = dry
*Q'(100) Present Sea Level (eroded/accreted)	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.
*TWL(100) 2070 Sea Level Low Range Projection (eroded/accreted)	14.7/16.3 ft. NAVD status = dry	14.7/16.3 ft. NAVD status = dry	14.7/16.3 ft. NAVD status = dry
*Q'(100) 2070 Sea Level Low Range Projection (eroded/accreted)	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.
*TWL(100) 2070 Sea Level High Range Projection (eroded/accreted)	17.2/18.8 ft. NAVD status = wetted/flooded	17.2/18.8 ft. NAVD status = dry/flooded	17.2/18.8 ft. NAVD status = wetted/flooded
*Q'(100) 2070 Sea Level High Range Projection (eroded/accreted)	0.0098/0.104 cfs/ft.	0.0/0.027 cfs/ft.	0.0098/0.104 cfs/ft.
*TWL(100) 2100 Sea Level Low Range Projection (eroded/accreted)	15.4/17.0 ft. NAVD status = dry	15.4/17.0 ft. NAVD status = dry	15.4/17.0 ft. NAVD
*Q'(100) 2100 Sea Level Low Range Projection (eroded/accreted)	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.



	Well Head-F Elevation = 17 ft. NAVD eroded/accreted	Well Head-G Elevation = 18 ft. NAVD eroded/accreted	Well Head-H Elevation = 17 ft. NAVD eroded/accreted
*TWL(100) @ 2100 Sea Level High Range Projection (eroded/accreted)	19.4/21.1 ft. NAVD status = flooded	19.4/21.1 ft. NAVD status = flooded	19.4/21.1 ft. NAVD status = flooded
*Q'(100) 2100 Sea Level High Range Projection (eroded/accreted)	0.191/0.364 cfs/ft.	0.08/0.236 cfs/ft.	0.191/0.364 cfs/ft.

Source: Appendix 10.7.2, Coastal Hazards Supplemental Analysis for the Doheny Desalination Project

Mitigation Measures

HWQ-6 Prior to constructing the electrical control building, the District shall prepare a final hydrology study that demonstrates the facility is adequately protected from flood hazards. The facility should be sited as far as practicable from extreme flood hazard potential areas, recognizing the coastal location may make this challenging. In the event the facility is sited in a flood hazard zone, the building shall be designed to withstand reasonably foreseeable future flood hazard events, to the satisfaction of State Parks.

HWQ-7 Prior to any construction shoreward of PCH, the District shall prepare a Coastal Hazard Mitigation Plan, for review and approval by the property owner (State Parks and/or County Parks), in addition to the Coastal Commission. The Coastal Hazard Plan shall demonstrate that the proposed facilities are adequately protected from coastal hazards during construction, operation and maintenance activities, such that facilities and workers are protected, as determined appropriate by the reviewing agencies (State Parks and/or County Parks, and Coastal Commission). For any slant well subject to coastal erosion or wave damage, the Plan shall demonstrate that the slant well vault and associated infrastructure are buried sufficiently deep so as to avoid exposure in the reasonably foreseeable future for the life of the slant well. The Plan shall be implemented by the District (or its designee) for the duration of Project construction and operations.

Impact 4.8-10: **Would the Project be subject to inundation by seiche, tsunami, or mudflow? *Less than Significant with Mitigation.***

Construction/Operations

All Components

None of the Project areas are subject to mudflow hazards. DSB is relatively flat with no adjacent slopes capable of generating mudflows. Although the Capistrano bluffs located east and above the Capistrano Beach Park slant well sites have historically experience rockfalls, the parking lot is nearly 200 feet from the bluff base, and is separated from the bluff by PCH and the MetroLink railroad. No significant impacts are anticipated.

The San Juan Creek is the nearest inland body of water to the Project site. However, the Creek is only full for short periods of time during heavy storm events. The desalination facility component would be located on the eastern edge of the San Juan Creek channel. The channel has a bottom width of approximately 150



feet, with an average height of about 14 feet (USACOE, 2002), which results in a low potential for inundation by seiche at the desalination facility. The remaining Project components would be located subsurface and are not located in areas where inundation by seiche would impact facility components.

Tsunami induced erosion, runup, and inundation were analyzed for the Doheny State Beach profiles for present and future sea levels, with low and high range sea level rise projections (summarized and shown on exhibits in Appendix 10.9, Hydrology Study, with detailed modeling contained in Appendix 10.7). The tsunami event scenario was based on a 2-meter-high solitary wave (approximately 6.6 feet) that could be anticipated for a catastrophic tsunami event from a major landslide on the east side of San Clemente Island. Under the scenario, the tsunami reaches 6 meters in height (almost 20 feet high) due to shoaling,²⁸ before breaking on the shoreline.

However, as shown in the tables below, a hypothetical tsunami would cause flooding at the slant well sites at DSB and Capistrano Beach Park for high sea level rise scenarios in Year 2070 and Year 2100. As with the coastal hazards discussion above in Impact 4.8-9, Project facilities along the coast would be below ground and not affected by a tsunami, except perhaps during construction. However, the likelihood of a tsunami occurring at the Project area during construction is considered extremely remote. Furthermore, should such a remotely possible event occur, the Project's coastal facilities would be subject to the high surf mitigation protocol and would have sufficient time to demobilize in advance of a tsunami, given modern tsunami warning systems. The City of Dana Point is in fact identified as a "tsunami ready" community.²⁹

Therefore, in consideration of the above, and with implementation of Mitigation Measures HWQ-2 and HWQ-7, the Project is not anticipated to be significantly impacted by mudflows, seiche or tsunami hazards.

Mitigation Measures

Refer to Mitigation Measures HWQ-2 and HWQ-7.

4.8.4 CUMULATIVE IMPACTS

As discussed above, the Project would not result in any significant impacts to hydrology or water quality, in consideration of Project Design Features, existing regulations and requirements, and EIR mitigation measures. Locally, cumulative impacts have also been addressed as part of the City of Dana Point General Plan (for City-wide buildout impacts), and the Doheny State Beach General Plan (for cumulative impacts associated with DSB).

²⁸ Wave shoaling is the process where waves build in height as ocean depth decreases, especially as waves approach the shoreline.

²⁹ <http://www.danapoint.org/departments/public-safety/emergency-services/tsunami> (accessed April 4, 2018).



Table 4.8-9: Tsunami Total Water Level (TWL) and Overtopping Rates (Q') Analysis

	Well Head #1 Elevation = 17 ft. NAVD	Well Head #2 Elevation = 17 ft. NAVD	Well Head #3 Elevation = 18 ft. NAVD	Well Pump Electrical South Elevation = 21 ft. NAVD	Well pump Electrical North Elevation = 18 ft. NAVD
TWL Present Sea Level	15.22 ft. NAVD status = dry	15.22 ft. NAVD status = dry	15.22 ft. NAVD status = dry	15.22 ft. NAVD status = dry	15.22 ft. NAVD status = dry
Q' Present Sea Level	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.
TWL 2070 Sea Level Low Range Projection	15.92 ft. NAVD status = dry	15.92 ft. NAVD status = dry	15.92 ft. NAVD status = dry	15.92 ft. NAVD status = dry	15.92 ft. NAVD status = dry
Q' 2070 Sea Level Low Range Projection	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.
TWL 2070 Sea Level High Range Projection	18.43 ft. NAVD status = flooded	18.43 ft. NAVD status = flooded	18.43 ft. NAVD status = flooded	18.43 ft. NAVD status = dry	18.43 ft. NAVD status = flooded
Q' 2070 Sea Level High Range Projection	0.07 cfs/ft.	0.07 cfs/ft.	0.01 cfs/ft.	0.0/0.0 cfs/ft.	0.01 cfs/ft.
TWL 2100 Sea Level Low Range Projection	16.59 ft. NAVD status = dry	16.59 ft. NAVD status = dry	16.59 ft. NAVD status = dry	16.59 ft. NAVD status = dry	16.59 ft. NAVD status = dry
Q' 2100 Sea Level Low Range Projection	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.
TWL @ 2100 Sea Level High Range Projection	20.71 ft. NAVD status = flooded	20.71 ft. NAVD status = flooded	20.71 ft. NAVD status = flooded	20.71 ft. NAVD status = dry	20.71 ft. NAVD status = flooded
Q' 2100 Sea Level High Range Projection	0.31 cfs/ft.	0.31 cfs/ft.	0.31 cfs/ft.	0.0/0.0 cfs/ft.	0.19 cfs/ft.

*Evaluated for 2m high tsunami deep water wave height approaching Doheny State Beach from 165 degrees true



Table 4.8-10: Tsunami Total Water Level (TWL) and Overtopping Rates (Q') Analysis

	Well Head-F Elevation = 17 ft. NAVD eroded/accreted	Well Head-G Elevation = 18 ft. NAVD eroded/accreted	Well Head-H Elevation = 17 ft. NAVD eroded/accreted
*TWL(100) Present Sea Level (eroded)	15.3 ft. NAVD status = dry	15.3 ft. NAVD status = dry	15.3 ft. NAVD status = dry
*Q'(100) Present Sea Level (eroded)	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.
*TWL(100) 2070 Sea Level Low Range Projection (eroded)	16.0 ft. NAVD status = dry	16.0 ft. NAVD status = dry	16.0 ft. NAVD status = dry
*Q'(100) 2070 Sea Level Low Range Projection (eroded)	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.
*TWL(100) 2070 Sea Level High Range Projection (eroded)	18.5 ft. NAVD status = flooded	18.5 ft. NAVD status = flooded	18.5 ft. NAVD status = flooded
*Q'(100) 2070 Sea Level High Range Projection (eroded)	0.0788 cfs/ft.	0.0095 cfs/ft.	0.0788 cfs/ft.
*TWL(100) 2100 Sea Level Low Range Projection (eroded)	16.6 ft. NAVD status = dry	16.6 ft. NAVD status = dry	16.6 ft. NAVD status = dry
*Q'(100) 2100 Sea Level Low Range Projection (eroded)	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.	0.0/0.0 cfs/ft.
*TWL(100) @ 2100 Sea Level High Range Projection (eroded)	20.8 ft. NAVD status = flooded	20.8 ft. NAVD status = flooded	20.8 ft. NAVD status = flooded
*Q'(100) 2100 Sea Level High Range Projection (eroded)	0.323 cfs/ft.	0.202 cfs/ft.	0.323 cfs/ft.

*Evaluated for 2m high tsunami deep water wave height approaching Capistrano Beach from 165 degrees true

Flood Hazards

Flood hazards are addressed on a project-by-project basis to ensure adequate flood control protection. In the Project area, flood hazards are managed and regulated by the County of Orange and City of Dana Point, among others. The County is primarily responsible for San Juan Creek flood hazards, and is addressing regional flood hazard potential along with other local, state and federal stakeholders, particularly through the San Juan Creek Flood Risk Management Feasibility Study and various implementation projects, including the current San Juan Creek Levee Improvements Project. This project is under construction, and planned for completion by October 2019, to improve flood control for the lower reaches of San Juan Creek, including the City of Dana Point.³⁰

³⁰ http://www.ocflood.com/nfc/projects_a/sjcleveeimp (accessed April 4, 2018).



The City of Dana Point also manages flood hazards within the City limits through its project review and building permit process. Within DSB and Capistrano Beach Park, specific flood hazard protection measures are implemented as determined appropriate, including current efforts to improve coastal hazard protection along the shoreline edge of Capistrano Beach Park.

With mitigation, the Project will not have any significant flood hazard impacts nor will the Project represent a “cumulatively considerable” contribution toward cumulative flood hazards. In fact, the proposed desalination facility site improvements will provide for additional flood protection for properties to the east of the desalination facility site.

Groundwater

Groundwater is a locally managed resource, in the Project area primarily by the San Juan Basin Authority (SJBA), of which the District is a member. The SJBA manages the basin’s Groundwater Management and Facilities Plan (2013) and associated Adaptive Pumping Management Plan (2016), including monitoring basin groundwater levels and groundwater quality.³¹ The District works closely with SJBA in this regard, particularly with respect to operation of its Groundwater Recovery Facility and related groundwater wells. As discussed in detail within Impact 4.8-2, the Project will not result in any significant impacts to groundwater quantity or quality within the SJBA. Slant wells at Capistrano Beach Park (pods F, G or H) would have no impact. Slant well pods at DSB (pods A-E) would draw some inland groundwater from the SJBA, although this would be strictly monitored to ensure compliance with the basin plans and existing District water rights. Installation of slant wells at DSB would provide favorable benefits to San Juan Basin groundwater, in that they would create a pumping “trough” to reduce seawater intrusion into the Basin.

With mitigation, the Project will not have any significant impacts to groundwater or groundwater quality, nor will the Project represent a “cumulatively considerable” contribution toward cumulative groundwater impacts. In fact, the proposed slants wells (if constructed at DSB) would provide favorable benefits to groundwater by creating a pumping trough and reducing seawater intrusion.

Coastal Hazards

Coastal hazards are a site-specific issue. As discussed in Impacts 4.9 and 4.10 above, the Project will not result in any significant coastal hazard impacts, in consideration of Project Design Features and EIR mitigation. Following construction, the Project has no effect on local coastal hazards, and does not otherwise represent a “cumulatively considerable” contribution to local coastal hazards.

Water Quality

Water quality is managed and regulated at the local, state and federal level. In addition to County and City programs and regulations aimed at protecting surface and groundwater quality, SJBA also manages groundwater quality within the basin, through its Groundwater Facilities and Management Plan. Surface water runoff is regulated by local agencies within the San Juan Creek watershed, as part of the development review process. At the State level, the RWQCB regulates point discharges into San Juan Creek and its tributaries, as well as regulates point discharges into the Pacific Ocean from wastewater treatment plants and other outfalls. In the Project area, the primary point discharge is SOCWA’s SJCOO, which is regulated by the RWQCB pursuant to its existing NPDES Permit. There are numerous other discharge points into the Pacific Ocean, affecting local offshore water quality, also regulated by the

³¹ http://sjbauthority.com/assets/downloads/20160830_APM_Memo.pdf (accessed April 4, 2018).



RWQCB. The SWRCB and RWQCB regulate non-point discharges within the San Juan Creek Watershed through the San Diego County MS4 Permit, which governs discharges into the municipal stormwater drainage system, for which local co-permittee agencies are responsible for implementing, including the City of Dana Point and County of Orange. Specifically, the County of Orange and other stakeholders submitted a Water Quality Improvement Plan (WQIP) for the South Orange County Watershed Management Area, pursuant to the San Diego County MS4 Permit, including commitments for monitoring and remedial measures to achieve water quality objectives.³²

The Coastal Commission, State Lands Commission and U.S Army Corps of Engineers also regulate surface water quality on both a project-level and programmatic regulatory level through enacting and enforcing applicable regulations and policies, working with local municipal stakeholders. Cumulative impacts to Pacific Ocean water quality are specifically regulated by the SWRCB, RWQCB, Coastal Commission and U.S. Army Corps of Engineers, pursuant to the Coastal Act, Ocean Plan Amendment, and Clean Water Act, among other regulations. Although several other ocean desalination projects in the region are either operating (Carlsbad and Santa Barbara) or are at various stages of conceptual planning or entitlement (Camp Pendleton, Huntington Beach, and West Basin Municipal Water District), these are regulated on an individual basis pursuant to the Ocean Plan Amendment, Porter-Cologne Water Quality Control Act and Clean Water Act, among other regulations. Given the requirement to achieve Ocean Plan Amendment water quality standards within 100 meters (328 feet) of the outfall diffuser, these ocean desalination projects are not anticipated to represent a significant cumulative water quality impact to the Pacific Ocean (the nearest operating ocean desalination facility to the Project is in Carlsbad, nearly 30 miles southeast, and the nearest proposed ocean desalination facility that is actively pursuing approvals is in Huntington Beach, over 20 miles to the northwest). The Project's brine discharge, when added to the existing SJCOO, will be required to demonstrate compliance with the Ocean Plan and other applicable water quality regulations. As discussed above in Impact 4.8-2, the Project will not have any significant water quality impacts with respect to brine discharge.

The Project is not anticipated to have any individual or cumulatively considerable water quality impacts, with implementation of Mitigation Measure HWQ-1 through HWQ-5, in addition to compliance with NPDES Permit requirements and relevant laws, ordinances, and regulations.

REGIONAL PROJECT

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential hydrology and water quality impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). Expansion at the desalination facility site would have no additional impacts on hydrology and water quality, since the desalination facility site would have already been graded. This section includes analysis of potential future Regional Project impacts related to brine discharge, lagoon water levels and turbulence mortality. The Regional Project may require construction of additional regional product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified.

³² San Diego Regional Municipal Separate Storm Sewer Systems (MS4) Permit (Order R9-2013-0001 as amended by Order No. R9-2015-001 and Order No. R9- 2015-0100) requires the development of a Water Quality Improvement Plan (WQIP, the "Plan") for the South Orange County Watershed Management Area (San Juan Hydrologic Unit), which includes the San Juan Creek watershed. https://www.waterboards.ca.gov/sandiego/water_issues/programs/stormwater/docs/wqip/south_orange_county/APRIL2017_COMPLET_ESOCWQIP.pdf (accessed April 4, 2018).

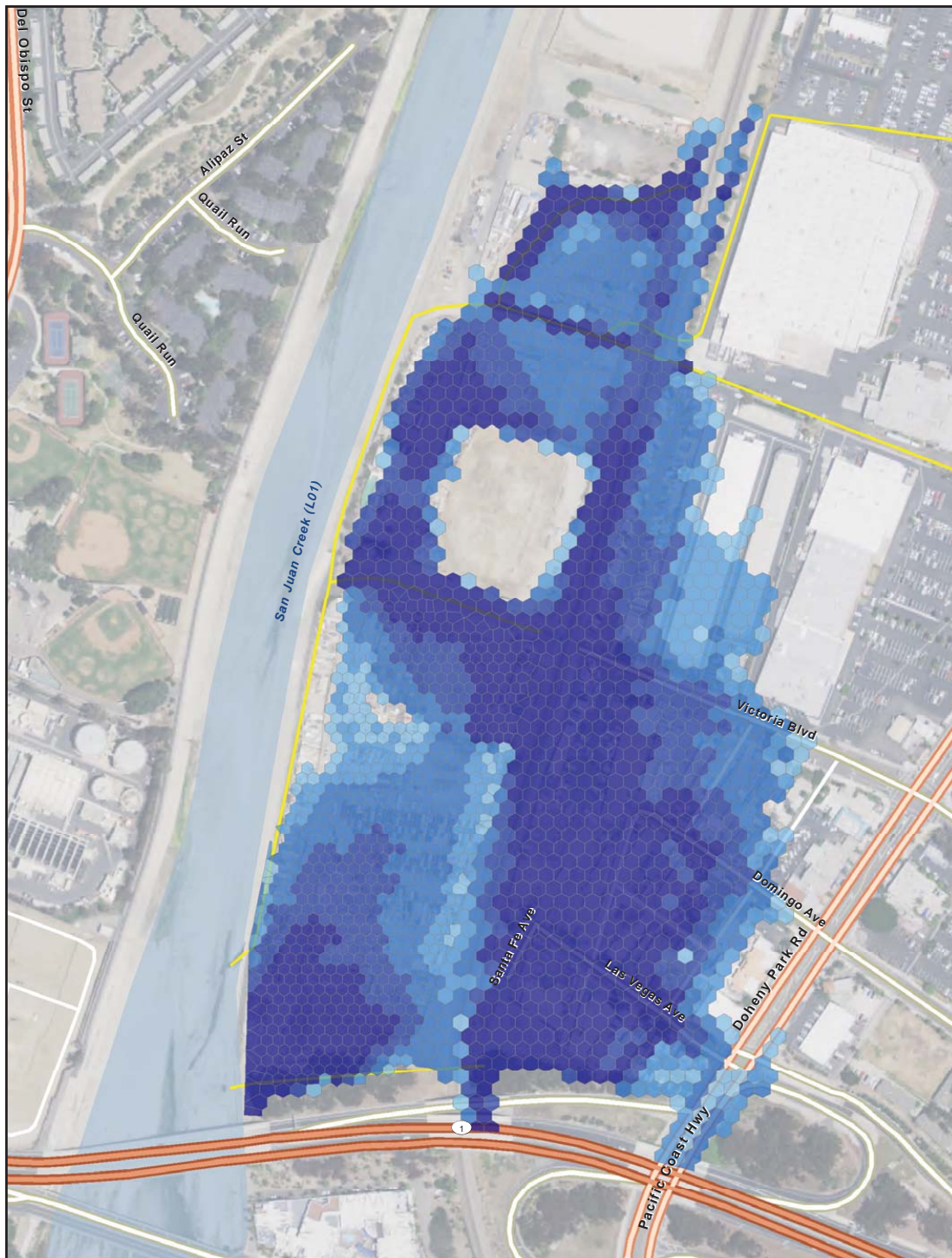


Mitigation Measures above would apply to the Regional Project, in addition to standard practices to avoid pipeline trenching across natural open space lands to minimize grading, erosion and associated potential impacts.

4.8.5 SIGNIFICANT UNAVOIDABLE IMPACTS

The proposed project would not result in any significant unavoidable impacts. All impacts associated with hydrology and water quality would either not occur, be considered less than significant, or be mitigated to less than significant levels.





— Storm Water Conduits (in model)

Maximum Flooding Depth

2-6"
 6-12"
 1-2'
 2-3'
 >3'

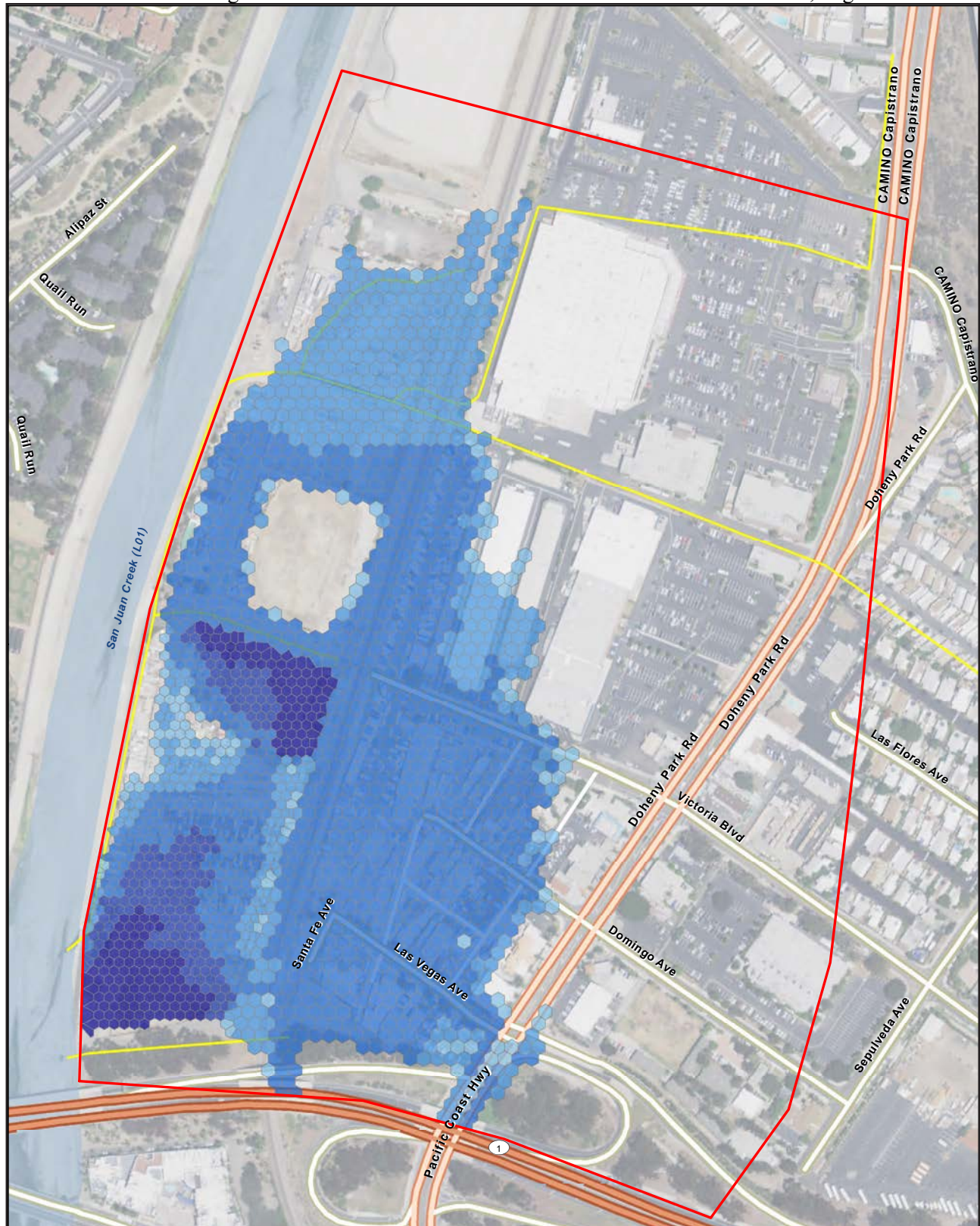
Source: GHD Written Correspondence, March 5, 2018.

EXHIBIT 4.8-1: Flood Inundation, Existing Conditions

South Coast Water District - Doheny Ocean Desalination Project



Kimley»Horn



— Storm Water Conduits (in model) Two-Dimensional Model Boundary

Source: GHD Written Correspondence, March 5, 2018.

Maximum Flooding Depth

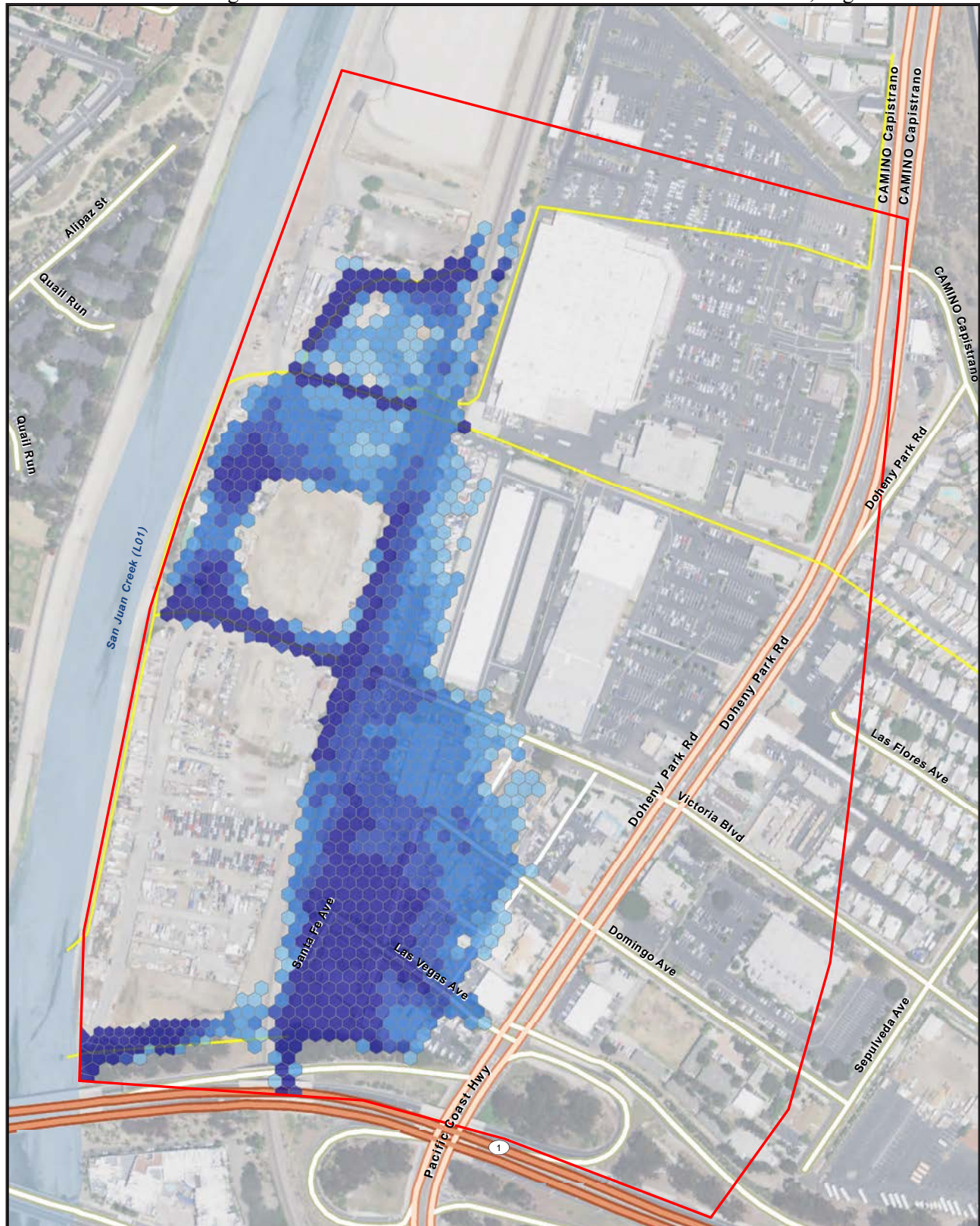
■ 2-6"
 ■ 6-12"
 ■ 1-2'
 ■ 2-3'
 ■ >3'

EXHIBIT 4.8-2: Flood Inundation, Future Condition, 100-year Flood, No Project

South Coast Water District - Doheny Ocean Desalination Project



Kimley»Horn



— Storm Water Conduits (in model) Two-Dimensional Model Boundary

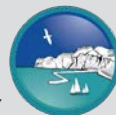
Source: GHD Written Correspondence, March 5, 2018.

Maximum Flooding Depth

■ 2-6"
 ■ 6-12"
 ■ 1-2'
 ■ 2-3'
 ■ >3'

EXHIBIT 4.8-3: Flood Inundation, Future Condition, 100-year Flood, With Project

South Coast Water District - Doheny Ocean Desalination Project



Kimley»Horn

4.9 LAND USE AND PLANNING

This section describes the environmental and regulatory land use and planning settings, and evaluates the Project for consistency with applicable land use plans, policies, and regulations of an agency with jurisdiction over the Project adopted to avoid or mitigate an environmental effect. Applicable land use plans evaluated in this section include the following:

- *City of Dana Point General Plan (DPGP) (as amended);*
- *City of Dana Point Municipal Code (DPMC); and*
- *Doheny State Beach General Plan & Draft Environmental Impact Report (DSBGP) (California Department of Parks and Recreation, December 2003).*

4.9.1 AFFECTED ENVIRONMENT

Environmental Setting

Regional

The Project area is in Dana Point, California, in southwestern Orange County approximately 50 miles southeast of downtown Los Angeles; refer to Exhibit 3-1, Regional Vicinity. Dana Point is a largely residential, coastal community bordered by the cities of Laguna Niguel to the north, Laguna Beach to the northwest, the Pacific Ocean to the south and west, San Juan Capistrano to the east and northeast, and San Clemente to the southeast.

Natural and Open Space Features

The Project area's dominant natural feature is the beach itself and the adjacent Pacific Ocean. Doheny State Beach (DSB) is a protected beach that is part of the parks system of the State of California and includes the freshwater lagoon created by San Juan Creek. This lagoon is generally separated from the open ocean by a narrow sandbar, but flows into the Pacific during most large storm events. The beach is popular for recreational activities such as volleyball and surfing. In the Project area, other natural features that dominate the environment include Dana Point Harbor, San Juan Creek (and its associated bike trail), and the Capistrano bluffs above PCH.

Scenic Highways

PCH traverses the Project area, being designated as a Scenic Highway corridor on the Dana Point Circulation Element and a Viewscape Corridor on the Orange County Circulation Element. PCH runs parallel to the coast through Dana Point, between DSB and the proposed desalination facility site. PCH is designated as an eligible California State Scenic Highway. Refer to Section 4.1, Aesthetics.

Local

All Project elements are within the City of Dana Point, with proposed slant wells located at DSB and Capistrano Beach Park. Project facilities would be on and around DSB (located immediately east of Dana Point Harbor and south/southeast of the Dana Point Harbor Drive/PCH intersection), and Capistrano Beach Park (located east of DSB and south of Coast Highway).



Subsurface Intake Wells

The subsurface intake well study area is depicted on [Exhibit 3-3, Project Facility Locations](#). As shown, this area is within DSB, which is in an urbanized area of Dana Point (refer to [Section 4.1, Aesthetics](#) and [Section 4.12, Recreation](#) for additional background regarding DSB). These well sites generally involve developed areas such as beach landscaping and parking, with only limited upper beach areas. Retail shops and stores, restaurants, hotels, and other primarily visitor-serving commercial uses are located adjacent to the State Beach. Dana Point Harbor is at the northwest end of the State Beach and provides recreational boating, sport fishing, whale watching trips, and marina facilities. Service commercial, equipment storage and maintenance, and industrial uses are also located nearby, west of Doheny Park Road and north of PCH. The abandoned test slant well is located at DSB in the vicinity of the lifeguard tower. The test slant well diffuser remains in place along the jetty extending out from the north bank of San Juan Creek Lagoon.

Southeast Intake Wells

The southeast intake wells extend southerly beyond Doheny State Beach (DSB), and includes Capistrano Beach Park (while still in the City of Dana Point); see [Exhibit 3-4, Southeast Intake Well Study Area](#). Capistrano Beach Park is a 7.05-acre Orange County Parks facility located at 35005 Beach Road, at PCH and Beach Road (refer to [Section 4.1, Aesthetics](#) and [Section 4.12, Recreation](#) for additional background regarding DSB). As with the subsurface intake well sites, the southeast intake well sites generally involve developed areas such as beach landscaping and parking, and are set back from the beach. Residential uses are located north and west of the site. Hotels and Motels are also located to the north. Parking lots are situated between the railroad and the State Beach.

Raw Water Conveyance Alignments

There are two primary alignments for the raw water conveyance pipelines within the overall Conveyance Study Area (i.e., northern and southern). The alignments are within beach access roads, maintenance roads, local city streets, and other previously disturbed areas; see [Exhibit 3-2, Project Facility Locations](#). The northern alignment option would utilize Dana Point Harbor Drive and Del Obispo Street right-of-way (ROW). Land uses surrounding the northern alignment option include residential uses on the bluff, and commercial uses, including hotels east of Del Obispo Street. The southern alignment option would utilize Park Lantern, Doheny Park Road and Las Vegas Avenue. Land uses within the southern alignment include previously disturbed areas such as campgrounds on DSB. Land uses surrounding the southern alignment option include commercial uses (e.g., hotels/motels).

Desalination Facility Site

The proposed desalination facility site is in an urbanized area of Dana Point, within SCWD's San Juan Creek Property, which is occupied by various storage and commercial tenant uses, and has been previously disturbed; see [Exhibit 3-6, Desalination Facility-Conceptual Site Plan \(Initial & Future Stages\)](#). To the north, land uses include additional storage on SCWD's property. To the south, land uses include PCH, a hotel, and DSB. To the east, land uses include commercial uses, an active railroad track running parallel to the Project site, multiple asphalt parking lots, and Interstate 5. To the west across San Juan Creek, land uses consists of a condominium complex, a sports complex with three baseball fields and tennis courts, the Dana Point Community Center, and the J.B. Latham Treatment Plant.



Concentrate (Brine) Disposal System

The brine disposal system area is depicted on Exhibit 3-6, Desalination Facility-Conceptual Site Plan (Initial & Future Stages). The existing SJCOO would be used to return the Project's brine and treated process waste streams to the ocean. The SJCOO serves the J.B. Latham Wastewater Treatment Plant, which is located on the west side of San Juan Creek. Connection to the SJCOO would be from within the desalination facility site (see discussion above regarding existing land uses at the desalination facility site).

Regional Project Facilities

Regional Project facilities (as described in Section 3) would be in substantially the same location as the Phase I Project facilities, with the exception of the SDG&E electrical line extensions (which would extend north of the site within existing streets) and the Regional Project product water conveyance, pumping and storage facilities, the location of which is not known at this time.

4.9.2 REGULATORY FRAMEWORK

This section (and discussion below) focuses on regulatory framework specifically addressing land use plans and policies. Refer to the appropriate EIR sections for regulatory background for other resource topics.

State

California Coastal Act of 1976

The California Coastal Act (CCA) (California Pub. Res. Code § 30000 *et seq.*) was enacted by the State Legislature in 1976 to provide long-term protection of California's 1,100-mile coastline for the benefit of current and future generations. The CCA created a partnership between the State (acting through the California Coastal Commission (Commission) and local county and city governments to manage the conservation and development of coastal resources through a comprehensive planning and regulatory program.

The Coastal Act, which the Commission administers, requires local governments in the Coastal Zone to prepare a Local Coastal Program (LCP) that contains a land use plan and land use regulations. The Commission works with local governments to shape each LCP and ensure it conforms to Coastal Act goals and policies. Once this is achieved, the Commission could "certify" the LCP, thereby transferring permit-issuing authority to the local government, subject to the terms of the certified LCP. For other areas, such as local jurisdictions without a certified LCP, the Commission retains permit issuing authority under the Coastal Act.

The City of Dana Point Post – LCP Certification Permit and Appeal Jurisdiction Map depicts the Coastal Zone boundary, where the Commission retains post-LCP certification permit and appeal jurisdiction pursuant to Public Resources Code § 30519(b), and 30603(a), and where the Commission has delegated original permit jurisdiction to the local government (i.e., City of Dana Point) pursuant to Public Resources Code § 30613.¹ Any locally-approved development project between the first public road and the sea, within 300 feet of a beach, mean high tide or bluff edge, within 100 feet of a wetland or stream; or on tidelands, submerged lands, or public trust lands, is appealable to the Commission. As shown in the Appeal Jurisdiction Map, all Project components are proposed where the Commission retains post-LCP

¹ <http://www.danapoint.org/home/showdocument?id=107> (accessed May 4, 2018).



certification permit/appeal jurisdiction. In addition, all “major public works” projects² are appealable to the Coastal Commission. The City of Dana Point, in consultation with the Coastal Commission, may consent to “consolidated permit review” where the Coastal Commission reviews the entire Project for Coastal Act compliance, including marine and terrestrial elements.

Land use decisions within the Coastal Zone are subject to Coastal Act provisions. The Coastal Act Policies that are relevant to the Project are included in Table 4.9-1, Coastal Act and Dana Point LCP Consistency Analysis, included at the end of this section.

California State Lands Commission

The California State Lands Commission (CSLC) provides protection and enhancement of lands and natural resources by issuing leases for use or development, championing public access, resolving boundaries between public and private lands, and implementing regulatory programs to protect state waters from oil spills and invasive species introductions. The CSLC actions secure and safeguard the public’s access rights to waterways and the coastline, and preserve irreplaceable natural habitats for wildlife, vegetation, and biological communities.

The CSLC regulates the use of tidelands and submerged lands under its jurisdiction to ensure that proposed uses of these lands are consistent with the Public Trust Doctrine principle that certain resources are preserved for public use. Generally, the CSLC has jurisdiction of land below mean high tide (MHT). Public and private entities may apply to the CSLC for land leases or permits on State lands for many purposes including dredging, among others. California Government Code § 65940 describes the degree of specificity and contents required for a surface land lease application.

Doheny State Beach General Plan & Draft Environmental Impact Report

The DSBGP defines the purpose, vision, and long-term goals and guidelines for DSB park management, and serves as the EIR.³ It also provides guidelines for future land use management and designation. The DSBGP contains the following:

- **Chapter 1, Introduction.**
- **Chapter 2, *Existing Conditions and Issues*,** describes the park’s current physical and social conditions, including information on: land use; significant physical, biotic, cultural, aesthetic, and recreations values; and existing facilities. Systemwide planning influences, regional conditions and planning activities, and issues/analysis are also included.
- **Chapter 3, *Park Plan*,** discusses the Park Plan’s purpose and vision, and park management zones, including park-wide and area-specific goals and guidelines.
- **Chapter 4, *Environmental Analysis*,** provides an environmental analysis of Park Plan implementation, in accordance with the CEQA Guidelines. Chapter 4 includes the full range of CEQA topics, including Executive Summary, Project Description, Significant Environmental Impacts, Cumulative Impacts, Alternatives to the Proposed Project, Long-term Environmental Impacts, and Environmental Effects Found Not to be Significant.

² Defined as public works projects with greater than \$100,000 in construction cost (City of Dana Point Zoning Code § 9.75.130).

³ <https://www.parks.ca.gov/pages/21299/files/DohenyGeneralPlan.pdf> (accessed May 4, 2018).



- Chapter 5, Report Contributors
- Chapter 6, References
- Chapter 7, Acronyms
- Chapter 8, Glossary of Terms

DSBGP Map 7, *Park Management Zones*, depicts the State Beach management zones (i.e., Core Habitat Zone, Native Plant Resource Zone, and Recreation/Operations Zone), which have been developed to preserve and improve the distinct natural, aesthetic, and recreational values found in the park. Map 8, *Land Use Plan*, depicts the DSBGP Land Use Plan. DSBGP Map 7 indicates the subsurface intake wells, wellheads, wellhead installation areas, and shared raw water conveyance alignments are within the following State Beach Park Management Zones and proposed land use change areas:

- **Recreation/Operations Zone:** This zone designates areas where visitor recreational activities and park operations and maintenance facilities are the principal existing and planned land uses. This zone is a high-intensity use area where developed land uses and visitor activities would be concentrated. While future development/maintenance activities in this zone must be sensitive to adjacent natural resource areas, the zone is demarcated to avoid those areas of greatest resource sensitivity in the park.
- **Native Plant Resource Zone:** This zone is designated over those areas of native or ornamental landscaping where picnicking and other forms of recreational use occur. This zone includes landscaped areas adjacent to San Juan Creek⁴ and other pockets of vegetation separating use areas or providing visual screening. DSBGP Map 7 also indicates the Project is within the proposed Environmental Enhancement Area land use change area.
- **Core Habitat Zone:** This zone includes San Juan Creek and associated riparian wetland areas and the ocean.⁵ Preservation and management to maximize natural habitat conditions are the primary land use objectives to be accomplished in considering any development plans or activities that would directly or indirectly affect this zone.

DSBGP Map 8 indicates the subsurface intake wells, wellheads, wellhead installation areas, and shared raw water conveyance alignments are within the North Day Use Area and South Day Use Area designations, and two proposed land use change areas: Improved Visitor Center and Concession Area; and Expanded Campground Area.

Table 4.9-2, *Doheny State Beach General Plan Consistency Analysis* (provided at the end of this section) includes the DSBGP guidelines that are relevant to the proposed Project.

Regional

Southern California Association of Governments

Southern California Association of Governments (SCAG) functions as the Metropolitan Planning Organization (MPO) for six counties: Los Angeles, Orange, San Bernardino, Riverside, Ventura, and

⁴ This zone also includes landscaped areas adjacent to North Creek, which are outside of the Project area.

⁵ This zone also includes North Creek and the associated riparian wetland areas, and the small dune restoration site on the beach (North Day Use Area) near North Creek, which are outside of the Project area.



Imperial. As the designated MPO, SCAG is mandated by the Federal government to research and draw up plans for transportation, growth management, hazardous waste management, and air quality. Additional mandates exist at the State level. SCAG is responsible for the maintenance of a continuous, comprehensive, and coordinated planning process. SCAG is also responsible for the development of demographic projections, as well as integrated land use, housing, employment, transportation programs, measures, and strategies for portions of the SCAQMD's 2016 Air Quality Management Plan for the South Coast Air Basin (2016 AQMP). Dana Point is within the jurisdiction of the Orange County Council of Governments (OCCOG), one of 14 Subregional Organizations that make up SCAG.

SCAG adopted the 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): Towards a Sustainable Future in April 2016. The RTP/SCS is intended to provide guidance for increasing mobility for the region's residents and visitors, while emphasizing sustainability and integrated planning. The RTP/SCS encompasses three key principles for the region's future: mobility; economy; and, sustainability. The RTP/SCS emphasizes a commitment to reducing emissions from transportation sources in conformance with SB 375, improving public health, and meeting the Federal Clean Air Act (CAA) National Ambient Air Quality Standards (NAAQs).

SCAG's Intergovernmental Review (IGR) Section is responsible for performing consistency review of regionally significant local plans, projects, and programs with SCAG's adopted regional plans. SCAG's IGR Section uses the criteria recommended by CEQA Guidelines Section 15206 to determine whether a project is considered regionally significant. A proposed plan, project, or program is directed to demonstrate how it is consistent with the 2016 RTP/SCS, which is established through consistency with 2016 RTP/SCS Goals and Adopted Growth Forecasts. Table 4.9-3, SCAG Consistency Analysis (provided at the end of this section) includes the RTP/SCS Goals and Adopted Growth Forecasts that are relevant to the proposed Project. SCAG encourages the use of 2016 RTP/SCS Program EIR mitigation measures to aid in demonstrating consistency with regional plans and policies.

Local

City of Dana Point General Plan

The DPGP contains goals, policies, and programs, which are intended to guide land use and development decisions into the 21st century. The DPGP consists of a Land Use Policy Map and the following nine elements, or chapters, which together fulfill the state general plan requirements:

- Land Use;
- Urban Design;
- Housing;
- Circulation;
- Noise;
- Public Safety;
- Conservation/Open Space;
- Economic Development; and
- Public Facilities/Growth Management.

Land Use Element

The Land Use Element guides the allocation of the City's land use, and has major effects on key issues and subject areas examined in the other DPGP Elements. Land use policy also affects numerous issues in the remaining Plan Elements, including those concerned with Economic Development, Urban Design, Public



Facilities and Growth Management, Public Safety, and Noise. The DPGP Land Use Element policies relevant to the Project are included in Table 4.9-4, Dana Point General Plan Consistency Analysis, which is provided at the end of this section. The policies contained in the other DPGP elements are addressed in the respective sections of this EIR.

Land Use Designations

Land use designations indicate the type and nature of development that is allowed at any given location. The Land Use Map depicts the City's land use designations and indicates the desalination facility site is designated Community Facility and Industrial/Business Park (i.e., northern and southern portions, respectively), and the intake well sites are designated Recreation/Open Space. These designations are described below. The raw water conveyance alignments and brine disposal system pipeline would traverse various land use designations, and are within ROWs.

- **Community Facility:** This designation includes a wide range of public and private uses, distributed throughout the community such as public utilities, among others. The maximum allowable development intensity in this category is a floor area ratio (FAR) of 1.0:1.0; see DPGP Table LU-3, *Development Intensity/Density Standards*.
- **Industrial/Business Park:** This designation includes parcels of land with mixtures of industrial and commercial uses. The maximum allowable development intensity in this category is a FAR of 0.75:1.0.
- **Recreation/Open Space:** The Recreation/Open Space designation includes both public and private recreational uses.

City of Dana Point Local Coastal Program

The DPGP, Dana Point Zoning Ordinance and Zoning Map, and other implementing actions constitute the LCP for that portion of the coastal zone within the City's jurisdiction. The Appeal Jurisdiction Map⁶ depicts the Coastal Zone boundary and where the Commission has delegated original permit jurisdiction to the City of Dana Point pursuant to Public Resource Code § 30613. All Project components are proposed within the City's original permit jurisdiction. However, as previously noted, all Project components are proposed where the Commission retains post-LCP certification appeal jurisdiction.

Various Land Use Element policies constitute coastal resources planning and management policies that are part of the City's LCP. DPGP Table LU-1, *Land Use Element Local Coastal Program Reference Matrix*, identifies the required LCP components/issue areas included in the Land Use Element. The other DPGP element policies that pertain to Coastal Act issue areas are also included in Table 4.9-4.

City of Dana Point Municipal Code

DPMC Chapter 9.03, *Establishment of Zoning Districts*. The *Zoning Map of the City of Dana Point* (Zoning Map) depicts the City's Zoning District boundaries and indicates the desalination facility site is zoned Community Facilities District and Industrial/Business District (i.e., northern and southern portions, respectively), and the intake well sites are zoned Recreation District.

⁶ <http://www.danapoint.org/Home/ShowDocument?id=107> (accessed April 19, 2018).



DPMC Chapters 9.17, 9.19, and 9.21. The Industrial/Business District, Community Facilities District, and Recreation District regulations are provided in DPMC Chapters 9.17, 9.19, and 9.21, respectively, and summarized below.

- **Industrial/Business District:** This district permits a range of light industrial, business, and marine oriented uses. Public Utility Uses are allowed by right in this district, if no discretionary review is required; see DPMC § 9.17.020(b).
- **Community Facilities District:** This district provides for public, quasi-public, and private community uses to serve the City's needs. The District includes both public and private community uses such as public facilities, among others. Public Utility Uses are allowed in this district subject to approval of a Conditional Use Permit (CUP), in accordance with the provisions of Chapter 9.65; see DPMC § 9.19.020(b).
- **Recreation District:** This district permits community facilities, among other uses. Public Utility Uses are allowed in this district subject to approval of a CUP, in accordance with the provisions of Chapter 9.65; see DPMC § 9.21.020(b).

DPMC Chapter 9.27, Coastal Overlay District. This Chapter establishes procedures for processing CDPs within the City's Coastal Zone, consistent with the City's certified LCP.

DPMC Chapter 9.65, Conditional Use Permits. This Chapter establishes the procedures, findings and enforcement measures for those uses listed as conditional uses in the individual zoning districts.

DPMC Section 9.69.020, Coastal Development Permit Required, specifies that a CDP shall be required for all development, as defined in DPMC § 9.75.040, located within the Coastal Overlay District, with certain exceptions. A CDP would also be required for any proposed development in the "Coastal Commission Permit Jurisdiction" area, as delineated on the Appeal Jurisdiction Map, in which case the CDP shall be obtained directly from the Commission.

4.9.3 SIGNIFICANCE CRITERIA

Significance Criteria under CEQA

CEQA Guidelines Appendix G contains the Initial Study Checklist form, which includes questions related to land use and planning. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this Section. Accordingly, the project would create a significant environmental impact, if one or more of the following occurs:

- Physically divide an established community (see Impact 4.9-1);
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect (see Impact 4.9-2); and
- Conflict with any applicable habitat conservation plan or natural community conservation plan (refer to Section 4.3, Biological Resources, Impact 4.3-6).



Methodology and Assumptions

The proposed Project and associated project design features (PDFs) are evaluated against the aforementioned significance criteria, as the basis for determining the level of impacts related to land use and planning. In addition to PDFs, this analysis considers existing regulations, laws and standards that serve to avoid or reduce potential environmental impacts. Where significant impacts remain, feasible mitigation measures are recommended, where warranted, to avoid or lessen the Project's significant adverse impacts. Further details regarding methods are provided in [Appendix 10.1](#) of this EIR.

SRF CEQA-Plus Analysis

This EIR section also includes an evaluation of Coastal Zone Management Act (CZMA) compliance and Environmental Justice, as required by the SWRCB for SRF loan applications (this discussion is provided under Impact 4.9-1).

Project Design Features

- The desalination facility is proposed at an existing developed industrial site to avoid disturbing the natural terrain and avoid land use compatibility impacts;
- Construction staging and laydown areas have been shifted to the desalination facility site and minimized at DSB and Capistrano Beach Park to minimize disruption to DSB and Capistrano Beach facilities/activities;
- Slant well construction will avoid peak recreation season to minimize disruption to beach and park visitors; and
- The slant wells have been shifted off of the beach onto picnic and parking lot areas to minimize impacts to the beach.

4.9.4 IMPACTS AND MITIGATION

Impact 4.9-1: Would the project physically divide an established community? *Level of Significance: No Impact.*

Construction and Operations

All Components

Projects that can divide an established community typically involve large scale linear infrastructure, such as freeways, highways, and drainage facilities, or “locally undesirable land uses” such as prisons or landfills sited within economically depressed areas. The Project does not involve such components, and the desalination facility is proposed entirely within an active, previously disturbed, District property (San Juan Creek Property) that is occupied by various storage and commercial tenant uses; see [Exhibit 3-3, Project Facility Locations](#). The proposed intake wells, conveyance alignments, and brine disposal system would be subsurface, with most conveyance facilities within roadway rights-of-way (ROW). Therefore, the proposed Project would not physically divide an established community. No impact would occur in this regard.

Pursuant to CEQA-Plus SRF loan requirements (as described in Section 2, Introduction and Purpose), the Project would not have any disproportionate impact upon minority, low-income or indigenous



populations or tribes. The desalination facilities are in Dana Point, which is in a relatively affluent portion of south Orange County. Although at a county level Orange County is approximately 60% white, the Census Tract (0422.01) encompassing the Project is approximately 73.9% white with 9% at the poverty level. The desalination site is industrial, and is already physically isolated from the surrounding communities, with San Juan Creek forming its western border, PCH along its southern border, and the MetroLink railroad along its eastern border, with additional District property to the north. Similarly, the slant well locations are physically isolated already, being located within DSB and Capistrano Beach Park. The Project will provide for a reliable, drought-proof, locally controlled water supply, which will benefit all local communities served by the District, as it will ensure long-term sustainability of housing, employment and community services that are dependent upon a reliable potable water supply.

Therefore, the Project neither divides an established community nor disproportionately affects a minority, low-income or indigenous population. There would not be any significant impacts in this regard.

Mitigation Measures

No mitigation measures are required.

Impact 4.9-2: Would the project conflict with any applicable land use plan, policy, regulation of an agency with jurisdiction over the project, adopted for the purpose of avoiding or mitigating an environmental effect? Level of Significance: Less Than Significant Impact with Mitigation.

California Coastal Act

All Project components are in the Coastal Zone, and construction is not allowed to begin until a CDP has been issued by either the Commission or the local government with a Commission-certified LCP (i.e., City of Dana Point). As previously noted, the Commission retains jurisdiction over development proposed on the immediate shoreline, tidelands, submerged lands, and public trust lands. Therefore, all onshore work is under the jurisdiction of the City of Dana Point and its LCP, while all of the marine work (below the mean high tide) is under the jurisdiction of the Coastal Commission (including slant wells and the use of the SCJO for brine discharge). As discussed above, if the CDP is issued by the City, it would be appealable to the Coastal Commission since facilities are within the Commission's appeal jurisdiction, and also since the Project is a "major public works" project. However, the City and Coastal Commission may conduct joint Coastal Act review administered by the Coastal Commission, a process known as "consolidated permit review." This simplifies the process for the public and stakeholders, while also retaining local agency and public involvement (a consolidated permit hearing would be held locally to facilitate local stakeholder participation, and the District would consult extensively with City staff through the Coastal Commission CDP application and review process).

Table 4.9-1 and Table 4.9-4 analyze the Project's consistency with the Coastal Act policies and DPGP policies, respectively, which form part of the City's LCP. As concluded in Table 4.9-1 and Table 4.9-4, the Project would not conflict with any Coastal Act or DPGP policy adopted to mitigate an environmental effect. The Project is a "coastal dependent" use (as it relies upon ocean water), appropriately sited and sized to meet District needs, with siting, design and mitigation that ensures compliance with the Coastal Act and Ocean Plan Amendment (OPA). Specifically, with respect to Coastal Act compliance, the Project:



- Has been sited in an area favorable to subsurface ocean intakes, which avoids marine life impingement and entrainment associated with screened ocean intakes;
- Utilizes subsurface intakes, which is the preferred method for ocean desalination intake by the Coastal Commission and Water Board's Ocean Plan Amendment;
- Commingles brine discharge with an existing wastewater treatment plant effluent discharge, also consistent with the OPA and Coastal Commission preferred methods;
- Has shifted slant wells off the beach to reduce coastal recreation impacts as well as reduce exposure to coastal hazards, and reduce impacts to shorebirds;
- Avoids ESHA, including use of micro-tunneling to avoid San Juan Creek and San Juan Creek Lagoon, as well as simply avoiding encroaching into the Environmental Enhancement Area of DSB;
- Limits slant well construction to the off-season for coastal recreational visitors to limit impacts to coastal recreation, access and parking;
- Provides screening for slant well drill rig work areas to reduce impacts associated with aesthetics, lighting and noise;
- Has shifted the slant well staging area to be predominantly within the San Juan Creek Property, with minimal footprint within DSB, reducing impacts to coastal access and parking;
- Has eliminated slant well Pod F as a potential location due to potential impacts to coastal recreation, coastal hazards, and coastal beach construction;
- Proposes slant wells and the desalination facility at existing developed sites, and publicly-owned facilities (DSB/Capistrano Beach Park for slant wells, and the District's San Juan Creek Property for the desalination facility site);
- Proposes the desalination facility in close proximity to the slant wells to reduce the extent of raw water conveyance pipeline construction;
- Proposes the desalination facility in close proximity to regional product water conveyance lines to reduce the extent of product water pipeline construction;
- Provides a long-term reliable drought-proof water supply for the District's service area, including coastal areas such as DSB, which will help ensure the long-term viability of coastal recreation and related uses;
- Provides a long-term reliable water supply that is hydrologically independent, reducing the District's imported water needs, thereby reducing pressure on highly constrained freshwater resources that are critical to maintain coastal habitats such as the Bay Delta;
- Is proposed by a public agency, consistent with an adopted Urban Water Management Plan (UWMP); and
- Minimizes electricity demand and associated greenhouse gas (GHG) emissions through a variety of demand management measures (including use of solar panels on facility rooftops) and GHG offsets, in addition to pursuing on-site and off-site renewable energy such as fuel cells (see [Section 4.6, Greenhouse Gas Emissions](#)).



Technical analyses of specific Coastal Act issues are addressed in the respective EIR sections and summarized in Tables 4.9-1 and 4.9-4, with respect to visual impacts (Section 4.1, Aesthetics), marine biological resources and ESHA (Section 4.3, Biological Resources), greenhouse gas emissions (Section 4.6, Greenhouse Gas Emissions), public access/recreation for the coast (Section 4.12, Recreation and 4.13, Transportation and Traffic), water quality, including Ocean Plan compliance (Section 4.9, Hydrology and Water Quality, and Section 4.3, Biological Resources), and coastal hazards (Section 4.9, Hydrology and Water Quality). As part of the Project's final design and permitting process, the Project will need to demonstrate compliance with OPA § 13142.5(b) with respect to ocean desalination intakes and discharge. This process involves inter-agency consultation between the Regional Board, State Water Resources Control Board, CSLC, and Coastal Commission. The process would likely include State Parks, as the landowner for slant wells and related facilities at DSB.

The Phase I Project (up to 5 MGD) has less than significant environmental impacts, in consideration of Project Design Features, existing regulatory requirements, and EIR mitigation measures, as noted in applicable EIR sections summarized above. As part of the encroachment/lease agreement permitting with DSB and/or OC Parks, the Project will likely include one or more concessions for the enhancement and long-term sustainability of coastal recreation facilities (see discussion below, and Mitigation Measure REC-1). Therefore, the Project would result in a less than significant impact concerning potential conflicts with the Coastal Act and LCP.

As part of the Project's Coastal Act compliance, the California Coastal Commission will also make a federal Coastal Zone Management Act (CZMA) determination for the Project. The CZMA determination is required for any project with federal funds or permits, including SRF loans (to meet CEQA-Plus requirements). Note that for any Responsible Agency for which the Project requires a permit or approval, such as the City of Dana Point and the Coastal Commission for Coastal Act compliance, final determination of regulatory compliance rests with the Responsible Agency issuing the permit or approval, and is usually accompanied by additional information developed during a project's final design and permitting process, as well as additional opportunities for public participation. The EIR incorporates input from regulatory agencies through the NOP scoping and EIR consultation process, and as such is intended to fully satisfy the CEQA requirements for Responsible Agencies.

Mitigation Measures

No mitigation measures are required.

California State Lands Commission

The portions of the slant wells that would extend through the shoreline and offshore beneath the Pacific Ocean, and the SJCOO, are within CSLC jurisdiction. Therefore, prior to construction of the intake wells and use of the existing SJCOO for brine disposal system, a new lease would be required for the slant wells and a new or modified lease would be required to allow use of the SJCOO for brine discharge. As part of the Project's permitting process, the District would be required to secure such permits prior to construction; refer also to Section 3.7, Anticipated Permits and Approvals Required. As noted above under the Coastal Commission discussion, the Project would be consistent with the OPA and has been designed to avoid or minimize potential impacts on the environment. Technical analyses of specific issues are addressed in the respective EIR sections and summarized in Tables 4.9-1 and 4.9-4. Once the CSLC permits are secured, the intake wells and brine disposal system would not conflict with an applicable CSLC policy



or regulation adopted to avoid or mitigate an environmental effect. Therefore, a less than significant impact would occur in this regard.

Mitigation Measures

No mitigation measures are required.

Doheny State Beach General Plan

Subsurface intake well and raw water conveyance alignment construction would occur within DSB Park Management Zones and proposed land use change areas. Table 4.9-2, Doheny State Beach General Plan Consistency Analysis (included at the end of this section) analyzes the Project's consistency with the relevant DSBGP guidelines, including those pertaining to these zones/areas. Table 4.9-2 concludes the Project would not conflict with any DSBGP guidelines adopted to avoid/mitigate an environmental effect. As summarized above under the Coastal Commission discussion, the Project has been designed to avoid or minimize impacts to coastal recreation uses including DSB. The District has worked closely with State Parks staff in refining the Project design, phasing and construction schedule, resulting in shifting the slant wells further away from the beach, reducing or eliminating the North Day Use staging area, and limiting construction within DSB to the off season, generally October 1st to May 1st or even a shorter construction window as determined appropriate by State Parks. As part of the lease agreement required from State Parks, the District will support State Parks' efforts toward enhancing DSB consistent with the DSBGP (see detailed discussion in Section 4.12, Recreation). Therefore, the Project would result in a less than significant impact concerning potential conflicts with the DSBGP.

Mitigation Measures

Mitigation Measures related to DSB are addressed throughout the EIR, particularly in Section 4.12, Recreation.

Southern California Association of Governments

The Project would be located entirely within the Coastal Zone, thus, is considered regionally significant and must demonstrate consistency with the 2016 RTP/SCS, which is established through consistency with 2016 RTP/SCS Goals and Adopted Growth Forecasts. The SCAG IGR Section is responsible for performing a consistency review of local plans, projects, and programs with regional plans. Table 4.9-3, SCAG Consistency Analysis (included at the end of this section) analyzes the Project's consistency with the relevant 2016 RTP/SCS Goals and Adopted Growth Forecasts, and concludes the Project would not conflict with the 2016 RTP/SCS Goals and Growth Forecasts adopted to avoid/mitigate an environmental effect. The Project is intended to primarily meet the District's water supply needs, although Phase I Project water may be made available on an emergency or baseload basis to local water agencies consistent with their adopted UWMPs (see Section 6.1, Growth-Inducing Impacts). Additional relevant analysis supporting RTP/SCS consistency is provided in Section 4.13, Transportation and Traffic. Therefore, the Project would result in a less than significant impact concerning potential conflicts with the 2016 RTP/SCS.

Mitigation Measures

No mitigation measures are required.



City of Dana Point General Plan

Table 4.9-4, Dana Point General Plan Consistency Analysis (included at the end of this section) analyzes the Project's consistency with the relevant DPGP policies, and concludes the Project would not conflict with any DPGP policies adopted to avoid/mitigate an environmental effect. Therefore, the Project would result in a less than significant impact concerning potential conflicts with the DPGP.

Construction

Subsurface Intake Wells, Southeast Intake Wells

The DPGP Land Use Map indicates the intake well sites are designated Recreation/Open Space. The portion within DSB is governed by State Parks and the DSBGP (see discussion above). The portion within Capistrano Beach Park is governed by OC Parks (see discussion in Section 4.12, Recreation). No conflicts with the DPGP would occur as a result of subsurface intake well construction at DSB or Capistrano Beach Park. Refer to Table 4.9-4 for additional discussion.

Raw Water Conveyance Alignments – North and South, and Brine Disposal System

The raw water conveyance and brine disposal system connection would traverse various land use designations within the City. Their construction impacts would be temporary, would avoid sensitive resources (occurring within existing roads or via trenchless construction under sensitive habitat and major intersections), and no long-term significant impacts would occur relative to pipeline construction. Because impacts would be temporary, impacts would be less than significant. The brine disposal system utilizes the existing SJCOO, thereby minimizing construction and operational impacts. Following construction, the pipelines and brine disposal system connections will be below ground, with maintenance typical of District water facilities. No land use conflicts would occur concerning these components.

Desalination Facility

The DPGP Land Use Map indicates the desalination facility site is designated Community Facilities and Industrial/Business Park (i.e., northern and southern portions, respectively). The Community Facilities designation includes a wide range of public and private uses, such as public utilities, and the Industrial/Business Park designation includes parcels of land with mixtures of industrial and commercial uses. Therefore, the proposed desalination facility would not conflict with the intended uses for the Community Facilities or Industrial/Business Park designations. Additionally, Public Utility Uses, such as the proposed desalination facility, are allowed in the Community Facilities and Industrial/Business Districts; see Dana Point Municipal Code discussion below.

The Project proposes to replace the existing industrial storage uses within SCWD's San Juan Creek Property with a desalination facility. Construction activities would generate temporary disturbances (i.e., construction-related air emissions/dust, noise, and traffic) for nearby land uses, respectively. However, these impacts would be reduced to less than significant through implementation of the specified mitigation measures; see Sections 4.2, 4.10, and 4.13. Construction would be short-term and would occur entirely within the site boundaries. Therefore, construction would not conflict with nearby industrial/commercial operations, and a less than significant impact would occur in this regard.



Operations

Subsurface Intake Wells, Southeast Intake Wells

See discussion above for DSBGP. There would be no operational impacts or inconsistencies associated with slant well operation within DSB or Capistrano Beach Park.

Raw Water Conveyance Alignments, and Brine Disposal System

Raw water conveyance pipelines and brine disposal system pipeline operations would occur below ground and would result in a less than significant impact relative to the DPGP.

Desalination Facility

The proposed facility would not be significantly dissimilar to the existing industrial and commercial uses to the north, south, and east. Desalination facility operations would occur entirely within the San Juan Creek Property and would not involve an incompatible use or activity. Project operations are physically separated from adjacent uses, by San Juan Creek to the west, PCH to the South and the MetroLink railroad to the east, with other District property bordering the proposed desalination facility to the north. Project operations could result in local air quality, noise, and traffic impacts; however, these would be reduced to less than significant through the specified mitigation measures; see Sections 4.2, 4.10, and 4.13, respectively. The Project would provide a locally-controlled, drought-proof water supply that would ensure the long-term reliability and viability of land uses throughout the City. Additionally, although the DPMC zoning requirements would generally not apply to the Project, the desalination facility is a permitted use within the site's zoning (Industrial/Business and Community Facilities Districts); see discussion below. Therefore, desalination facility operations would result in a less than significant impact concerning potential conflicts with operations onsite or at adjacent uses.

Mitigation Measures

No mitigation measures are required, other than mitigation measures in Sections 4.2, 4.10 and 4.13.

Dana Point Municipal Code

Dana Point's building and zoning ordinances (i.e., DPMC Title 8, *Buildings and Construction*, and Title 9, *Zoning*) would not apply to the Project, pursuant to California Government Code § 53091(d) and (e).⁷ However, SCWD intends to make every effort to comply with all applicable standards, as stipulated in DPMC Titles 8 and 9, in the Doheny Ocean Water Desalination Project's design, construction, and operations. In addition, as part of the Project's Coastal Act compliance, the District would be coordinating very closely with City staff as it relates to site design and the various encroachment permits needed for offsite pipelines and related facilities. Accordingly, an analysis of the Project's consistency with the DPMC is presented below. Notwithstanding any applicable exemptions from local building and zoning codes afforded by California Government Code § 53091(d) and (e), the Project would be subject to compliance with DPMC Chapter 9.27 and § 9.69.020 requirements, as explained below.

⁷ State law preempts local land use building and zoning regulations for the production, transmission, treatment and storage of potable water, which is the case with the Project. However, the City would be actively involved in consultation and review of desalination facility building plans.



DPMC Chapter 9.27 and Section 9.69.020. Pursuant to DPMC § 9.69.020, *Coastal Development Permit Required*, a CDP is required for any development within the Coastal Overlay District and the area of “Coastal Commission Permit Jurisdiction.” Accordingly, the Project would be subject to compliance with DPMC Chapter 9.27, Coastal Overlay District, which establishes procedures for processing CDPs within the City’s Coastal Zone, consistent with the City’s certified LCP. Once the CDP is approved, the Project would result in a less than significant impact concerning potential conflicts with the DPMC. Refer to additional discussion above under Coastal Commission.

Construction and Operations

Subsurface Intake Wells, Southeast Intake Wells, Raw Water Conveyance Alignments – North and South, and Brine Disposal System

DPMC Title 9, Zoning. As noted above, construction within DSB and Capistrano Beach Park would be under the jurisdiction of State Parks and OC Parks, respectively (see discussion above). The raw water conveyance and brine disposal system pipelines are typical of below-ground utilities, and do not pose any conflicts with City zoning or building requirements. The District will obtain encroachment permits from the City for all work in City streets, and comply with applicable local, state and federal regulations with respect to pipeline construction and operation.

Desalination Facility

The desalination facility site is zoned Community Facilities District and Industrial/Business District (i.e., northern and southern portions, respectively). Public Utility Uses, such as the proposed desalination facility, are allowed in the Communities Facilities District, subject to approval of a CUP (DPMC § 9.19.020(b))⁸, and are allowed in the Industrial/Business District by right, if no discretionary review is required (see DPMC § 9.17.020(b)). Although Communities Facilities District and Industrial/Business District development standards (i.e., DPMC Chapter 9.17 and 9.19, respectively) are not applicable to the desalination facility,⁹ every effort would be made to comply with these standards in the facility’s design, construction, and operations. Once the CDP is approved, the desalination facility would result in a less than significant impact concerning potential conflicts with the DPMC.

Mitigation Measures

No mitigation measures are required.

Regional Project

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential land use and planning impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). Expansion at the desalination facility site would have minimal additional impacts on land use and planning,

⁸ Though a public utility use is generally subject to approval of a CUP when allowed in the Communities Facilities District, here the Project is exempt from the City’s zoning ordinances under Government Code section 53091(e).

⁹ The District’s current understanding is that the Project would not require a CDP or building and zoning regulation compliance in light of California Government Code § 53091(d) and (e). A CDP from the City may not be required should the City and Coastal Commission agree to “consolidated permit review.”



since the desalination facility site would have already been graded and the main buildings would already be in place. The Regional Project may require construction of additional regional product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified. Mitigation Measures noted above would apply to the Regional Project, in addition to standard practices to avoid pipeline trenching across natural open space lands to minimize grading and associated potential impacts.

4.9.5 CUMULATIVE IMPACTS

This cumulative impact analysis focuses primarily on the local vicinity surrounding the Project and its facilities within the City of Dana Point, given the Project's consistency with local land use designations, temporary construction timeframe and relatively nominal land use effects. Refer to Section 4.0 for a general discussion of cumulative impact analysis methodology. Table 4-1, Cumulative Local and Regional Projects List, lists past, present and probable future development projects that have the potential to contribute to cumulative impacts when combined with the Project.

This EIR has incorporated by reference the City of Dana Point General Plan Final EIR, which addresses cumulative impacts of City buildout, in addition to the Doheny State Beach General Plan EIR, which addresses cumulative impacts of building out the State Beach. At a regional level, SCAG's 2016 RTP/SCS¹⁰ has been adopted to achieve consistency with State mobility and GHG goals such as AB32, which include regional land use forecasts. The 2016 RTP/SCS Final Program EIR was certified in April 2016, and addresses the regional land use impacts associated with buildout of the SCAG region, which includes the City of Dana Point.¹¹ The land use projections contained in the 2016 RTP/SCS were based on input from local agencies, mostly consisting of local agency general plan development forecasts. Since the Project is consistent with the City of Dana Point and would only provide water consistent with adopted UWMPs, the Project is consistent with the 2016 RTP/SCS (refer to Table 4.9-3 for additional discussion).

Project construction-related impacts would be temporary and are mitigated to less than significant levels. The Project's encroachment permit process and EIR mitigation measures will ensure Project construction activities are coordinated with the City of Dana Point, State Parks and County Parks such that significant temporary cumulative construction impacts do not occur. With respect to long-term land use impacts, the proposed Project would have minimal operational impacts with respect to the below-ground facilities (slant wells, pipelines, and SJCOO connection), and all land use impacts related to desalination facility operation are mitigated to less than significant levels. The Project is not otherwise anticipated to result in a cumulatively considerable contribution to the local area's cumulative land use impacts.

The local land use impacts are addressed by affected jurisdictions, primarily the City of Dana Point, State Parks and OC Parks, through long-term planning programs and mitigation of projects on a case-by-case basis. All future projects are required to evaluate land use impacts as part of the respective agency's

¹⁰ "California Senate Bill 375 (SB 375) requires that the RTP also include an SCS, which outlines growth strategies that better integrate land use and transportation planning and help reduce the state's greenhouse gas emissions from cars and light trucks (California Government Code § 65080 (b)(2)(B)). The RTP is combined with the SCS to form the RTP/SCS, which is further detailed in Chapter 5. For the SCAG region, the California Air Resources Board (ARB) has set greenhouse gas reduction targets at eight percent below 2005 per capita emissions levels by 2020, and 13 percent below 2005 per capita emissions levels by 2035. As we will discuss in this Plan, the region will meet or exceed these targets, lowering greenhouse gas emissions (below 2005 levels) by eight percent by 2020; 18 percent by 2035; and 21 percent by 2040." <http://scaqrtpscs.net/Pages/FINAL2016RTPSCS.aspx> (accessed January 27, 2018).

¹¹ <http://scaqrtpscs.net/Pages/FINAL2016PEIR.aspx> (accessed April 23, 2018).



discretionary review and CEQA compliance process, including General Plan goals and policies of the affected jurisdiction, intended to reduce and/or avoid potential adverse environmental effects.

Therefore, the Project's construction-related and operational impacts are fully mitigated to less than significant levels, and do not represent a cumulatively considerable contribution to local or regional cumulative land use impacts.

4.9.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts to Land Use and Planning have been identified.



Table 4.9-1: Coastal Act & Dana Point LCP Consistency Analysis

Section	Policy	Determination of Consistency
CHAPTER 1: FINDINGS AND DECLARATIONS AND GENERAL PROVISIONS		
Section 30001.2	Legislative Findings and Declarations; Economic Development: The Legislature further finds and declares that, notwithstanding the fact electrical generating facilities, refineries, and coastal-dependent developments, including ports and commercial fishing facilities, offshore petroleum and gas development, and liquefied natural gas facilities, may have significant adverse effects on coastal resources or coastal access, it may be necessary to locate such developments in the coastal zone in order to ensure that inland as well as coastal resources are preserved and that orderly economic development proceeds within the state.	<u>Consistent:</u> As concluded throughout this EIR, compliance with the established regulatory framework and implementation of the specified mitigation measures would ensure the Project results in less than significant adverse effects concerning coastal resources and coastal access (see also Section 30211 below). The Project involves an ocean desalination facility, which is inherently coastal-dependent. The Project is proposed to enable SCWD to provide a drought-proof water supply, independent from vulnerable imported water supplies. Additionally, the Project components have been sited on previously disturbed sites to ensure that inland/coastal resources are preserved. Project components would utilize existing disturbed/ developed areas (i.e., parking lots and picnic areas) within DSB/Capistrano Beach Park and be set back from the beach.
ARTICLE 2: PUBLIC ACCESS		
Section 30211	Development Not to Interfere With Access: Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.	<u>Consistent:</u> As concluded in <u>Section 4.12, Recreation</u> , Project construction would temporarily interfere with access to portions of DSB and Capistrano Beach Park, including access for motorists, bicyclists, skaters, and pedestrians. However, intake wells would be set back from the beach and have been sited to minimize parking impacts. Facility construction would maintain public access to DSB and Capistrano Beach Park, and multiple access points to the sea exist on and around DSB and Capistrano Beach Park. Therefore, Project construction would not significantly interfere with access to the sea. Project construction would be only temporary and access to the sea would be restored upon Project completion. The Project's overall impacts on recreational facilities would be reduced to less than significant.



Table 4.9-1: Coastal Act & Dana Point LCP Consistency Analysis

Section	Policy	Determination of Consistency
Section 30212	New Development Projects: (a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where: (1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources, (2) adequate access exists nearby, or, (3) agriculture would be adversely affected. Dedicated access way shall not be required to be opened to public use until a public agency or private association agrees to accept responsibility for maintenance and liability of the access way.	<u>Consistent:</u> The Project components proposed near the shoreline would be below ground, and given their nature, would not require public access to the shoreline. Additionally, adequate access exists on and around DSB and Capistrano Beach Park; refer also to <u>Section 4.12, Recreation</u> .
Section 30220	Recreation: Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.	<u>Consistent:</u> As concluded in <u>Section 4.12, Recreation</u> , Project construction would have no long-term effects on coastal recreation, as the facilities are below-ground, or would be sited in disturbed/developed portions of the parks. Construction-related coastal recreation impacts have been minimized through various Project Design Features and mitigation measures. The Project's overall impacts on recreational facilities would be reduced to less than significant through implementation of Mitigation Measures REC-1, REC-2, and REC-3.
Section 30221	Recreation: Oceanfront land; protection for recreational use and development. Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.	<u>Consistent:</u> See Section 30220, above.
ARTICLE 4: MARINE ENVIRONMENT		
Section 30230	Marine Resources; Maintenance: Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will	<u>Consistent:</u> As concluded in <u>Section 4.3, Biological Resources</u> , compliance with the established regulatory framework and implementation of the specified mitigation measures would ensure the Project results in a less than significant impact concerning marine resources. The Project proposes the preferred methods for ocean water intake (subsurface



Table 4.9-1: Coastal Act & Dana Point LCP Consistency Analysis

Section	Policy	Determination of Consistency
	maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.	intakes) and brine discharge (commingled with a wastewater outfall) to avoid marine life impingement and entrainment, and minimize adverse effects from brine discharge. The Project would comply with the Ocean Plan Amendment for Desalination Facilities.
Section 30231	Biological productivity; water quality: The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.	<u>Consistent:</u> As concluded in <u>Section 4.3, Biological Resources</u> , and <u>Section 4.8, Hydrology and Water Quality</u> , compliance with the established regulatory framework and implementation of the specified mitigation measures would ensure the Project results in less than significant impacts concerning biological productivity and the quality of coastal waters, streams, and wetlands. The Project would comply with the Ocean Plan Amendment for Desalination Facilities. Project construction avoids direct impacts to San Juan Creek Lagoon.
Section 30232	Oil and Hazardous Substance Spills: Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.	<u>Consistent:</u> As concluded in <u>Section 4.7, Hazards and Hazardous Materials</u> , the Project desalination facility would include appropriate containment measures. Additionally, the Project must adhere to Federal, State, and local regulations for transport, handling, storage, and disposal of such substances. Compliance with strict standards enforced by the EPA, DTSC, and OCEHD (the designated CUPA) would be required. Compliance with the established regulatory framework and implementation of the specified mitigation measures would ensure the Project results in less than significant impacts concerning hazardous materials.
Section 30233	Diking, Filling or Dredging; Continued Movement of Sediment and Nutrients: a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this	<u>Consistent:</u> The regulatory permits required for the Project are outlined in <u>Table 3-10, Anticipated Permits and Approvals Required</u> . Project design avoids diking, filling or dredging through use of subsurface intakes. The Project would require U.S. Army Corps of Engineers (USACE) approval for slant well construction, pursuant to the Rivers and Harbors Act.



Table 4.9-1: Coastal Act & Dana Point LCP Consistency Analysis

Section	Policy	Determination of Consistency
	<p>division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:</p> <ol style="list-style-type: none"> (1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities. (2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps. (3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities. (4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines. (5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas. (6) Restoration purposes. (7) Nature study, aquaculture, or similar resource dependent activities. <p>(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for these purposes to appropriate beaches or into suitable longshore current systems.</p> <p>(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional</p>	<p>Compliance with regulatory permit requirements would ensure that the Project's adverse environmental impacts are reduced to less than significant. Refer also to Section 4.8, Hydrology and Water Quality.</p>



Table 4.9-1: Coastal Act & Dana Point LCP Consistency Analysis

Section	Policy	Determination of Consistency
	<p>capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.</p> <p>For the purposes of this section, "commercial fishing facilities in Bodega Bay" means that not less than 80 percent of all boating facilities proposed to be developed or improved, where the improvement would create additional berths in Bodega Bay, shall be designed and used for commercial fishing activities.</p> <p>(d) Erosion control and flood control facilities constructed on watercourses can impede the movement of sediment and nutrients that would otherwise be carried by storm runoff into coastal waters. To facilitate the continued delivery of these sediments to the littoral zone, whenever feasible, the material removed from these facilities may be placed at appropriate points on the shoreline in accordance with other applicable provisions of this division, where feasible mitigation measures have been provided to minimize adverse environmental effects. Aspects that shall be considered before issuing a coastal development permit for these purposes are the method of placement, time of year of placement, and sensitivity of the placement area.</p>	
Section 30235	Construction Altering Natural Shoreline: Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and	<u>Consistent</u> : The Project does not require permanent shoreline construction, other than placement of temporary riprap for the



Table 4.9-1: Coastal Act & Dana Point LCP Consistency Analysis

Section	Policy	Determination of Consistency
	other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.	potential beach diffuser at Capistrano Beach Park. Temporary diffuser construction would require permits and approvals from the Coastal Commission and USACE, would be limited in scope and duration, and are necessary for a coastal-dependent use. Refer also to <u>Section 4.3, Biological Resources</u> .
ARTICLE 6: DEVELOPMENT		
Section 30240	Environmentally sensitive habitat areas [ESHA]; adjacent developments: (a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.	<u>Consistent:</u> The Project would not impact an ESHA, as concluded in <u>Section 4.3, Biological Resources</u> . Project construction would avoid direct impacts to San Juan Creek Lagoon and San Juan Creek. See Sections 30211, 30212, and 30220 concerning impacts to recreational areas.
Section 30250	Location; Existing Developed Area: New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land divisions, other than leases for agricultural uses, outside existing developed areas shall be permitted only where 50 percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size of surrounding parcels.	<u>Consistent:</u> The proposed desalination facility would be located within an active SCWD San Juan Creek Property, which is in an urbanized area of Dana Point that could accommodate the proposed facility; see <u>Exhibit 3-6, Desalination Facility-Conceptual Site Plan (Initial & Future Stages)</u> . Because the Project is "coastal dependent," various Project components are within DSB and Capistrano Beach Park, and would utilize existing disturbed/ developed areas (i.e., parking lots and picnic areas) and be set back from the beach.



Table 4.9-1: Coastal Act & Dana Point LCP Consistency Analysis

Section	Policy	Determination of Consistency
	<ul style="list-style-type: none"> a) Where feasible, new hazardous industrial development shall be located away from existing developed areas. b) Visitor-serving facilities that cannot feasibly be located in existing developed areas shall be located in existing isolated developments or at selected points of attraction for visitors. 	
Section 30251	Scenic and visual qualities: The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.	<u>Consistent:</u> The Project has minimal long-term aesthetic impacts along the coast due to use of subsurface intakes and below-ground infrastructure, with the exception of the electrical control building, which would be sited in a developed portion of DSB as required by State Parks. Construction-related visual impacts have been minimized through various Project Design Features and mitigation measures to ensure impacts are less than significant. Refer to <u>Section 4.1, Aesthetics</u> .
Section 30253	Minimization of Adverse Impacts: New development shall do all of the following: <ul style="list-style-type: none"> a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard. b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs. c) Be consistent with requirements imposed by an air pollution control district [APCD] or the State Air Resources Board as to each particular development. d) Minimize energy consumption and vehicle miles traveled [VMT]. 	<u>Consistent:</u> As concluded throughout this EIR, the Project would result in no impact or less than significant impacts concerning the following environmental factors (as presented in Section 30253): <ul style="list-style-type: none"> a) Geologic, flood, and fire hazards; see <u>Sections 4.6, Geology and Soils; 4.8, Hydrology and Water Quality, and 4.7, Hazards and Hazardous Materials, respectively.</u> b) Stability and structural integrity, and erosion: see <u>Sections 4.6 and 4.8, respectively.</u> c) APCD requirements; see <u>Sections 4.2, Air Quality.</u> d) Energy consumption and VMT; see <u>4.5, Greenhouse Gas Emissions, 6.4, Energy Conservation, concerning energy, and Section 4.13, Transportation and Traffic, concerning VMT.</u>



Table 4.9-1: Coastal Act & Dana Point LCP Consistency Analysis

Section	Policy	Determination of Consistency
	e) Where appropriate, protect special communities and neighborhoods that, because of their unique characteristics, are popular visitor destination points for recreational uses.	e) Special communities/neighborhoods: The Project components are not proposed within a special community/neighborhood.
Section 30254	Public Works Facilities: New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the provisions of this division; provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with this division. Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreation, and visitor-serving land uses shall not be precluded by other development.	<u>Consistent:</u> As concluded in Section 6.3, Growth-Inducing Impacts , the Project would reduce dependency on imported water supplies with desalinated water by providing potable water to the SCWD service area. The potable water produced by the Project is accounted for in the 2015 UWMP, which accounts for population projections and their relationship to retail water demands through data provided by SCAG's RTP/SCS; see Table 4.9-3 below. Project water could be provided to local south County water retailers, consistent with adopted Urban Water Management Plans. Any development served by Project water would require local land use approvals, in addition to Coastal Act compliance as determined by the California Coastal Commission and/or local agency with LCP authority.
Section 30255	Priority of Coastal-Dependent Developments: Coastal-dependent developments shall have priority over other developments on or near the shoreline. Except as provided elsewhere in this division, coastal-dependent developments shall not be sited in a wetland. When appropriate, coastal related developments should be accommodated within reasonable proximity to the coastal-dependent uses they support.	<u>Consistent:</u> The Project involves a coastal dependent use, and as such includes components on/near the shoreline and near San Juan Creek. However, no Project component is sited on a wetland; refer to Section 4.3, Biological Resources . Subsurface intake wells and the desalination facility site are in close proximity, which minimizes construction within the Coastal Zone.
ARTICLE 7: INDUSTRIAL DEVELOPMENT		
Section 30260	Location or Expansion: Coastal-dependent industrial facilities shall be encouraged to locate or expand within existing sites and shall be permitted reasonable long-term growth where consistent with this division. However, where new or expanded coastal-dependent industrial facilities cannot feasibly	<u>Consistent:</u> There is not an "existing site" which the Project could be constructed at. The Project is coastal-dependent and the desalination facility is proposed at the existing SCWD San Juan Creek Property. The intake wells and raw water conveyance alignments would be located in DSB and Capistrano Beach Park, and there



Table 4.9-1: Coastal Act & Dana Point LCP Consistency Analysis

Section	Policy	Determination of Consistency
	be accommodated consistent with other policies of this division, they may nonetheless be permitted in accordance with this section and Sections 30261 and 30262 if (1) alternative locations are infeasible or more environmentally damaging; (2) to do otherwise would adversely affect the public welfare; and (3) adverse environmental effects are mitigated to the maximum extent feasible.	are no feasible alternatives to convey subsurface ocean intake water to the desalination facility other than via proposed below-ground pipelines in the Coastal Zone. Additionally, as concluded throughout this EIR, compliance with the established regulatory framework and implementation of the specified mitigation measures would ensure the Project's adverse environmental effects are mitigated to the maximum extent feasible, and the public's welfare is not adversely affected.
Notes: 1. Public Resources Code Division 20 (California Coastal Act) Chapter 3, <i>Coastal Resources Planning and Management Policies</i> , 2013.		

Table 4.9-2: Doheny State Beach General Plan Consistency Analysis

Policy #	Policy	Determination of Consistency
GOAL PD 2: Visitor facilities, park infrastructure, circulation, access, and adequate staff visibility of all park use areas continue to be improved to keep pace with increases in park day use attendance.		
Guideline PD 2.1:	Overall park circulation and access for motorists, bicyclists, skaters, and pedestrians shall be evaluated prior to any substantial park improvements. Locations to be considered for improved access include a crosswalk across Pacific Coast Highway at the existing traffic signal east of Dana Point Harbor Drive and at the Doubletree Doheny Beach hotel on Coast Highway.	<u>Consistent</u> : See Table 4.9-1 Sections 30211 and 30220, above, and <u>Section 4.12, Recreation</u> .
Guideline PD 2.3:	A comprehensive evaluation should be conducted of the condition of the park's day use facilities, such as picnic tables, barbeques, and restroom facilities to identify and prioritize replacement or improvement needs.	<u>Consistent</u> : See Table 4.9-1 Section 30211, above, and <u>Section 4.12, Recreation</u> .
Guideline SDU 2.2:	Pedestrian access along the South Day Use Area beachfront should be established and protected from encroachment by vehicles. As an alternative to a paved walkway, it could be improved with decomposed granite or a composite, synthetic boardwalk.	<u>Consistent</u> : See Table 4.9-1 Section 30211, above, and <u>Section 4.12, Recreation</u> . There would be no long-term effects on DSB access, since Project facilities would be underground. Temporary construction impacts have been minimized, and will be coordinated with DSB as part of the Project's lease/encroachment permit process.
Guideline NDU 3.1:	Nonmotor vehicle circulation should provide access to all areas of the North Day Use Area	<u>Consistent</u> : The Project would have no long-term effects on nonmotor vehicle circulation,



Table 4.9-2: Doheny State Beach General Plan Consistency Analysis

Policy #	Policy	Determination of Consistency
	and provide improved through-park circulation but should limit bicycle riding, skating, skateboarding, and jogging along the beachfront walkway to only very low use days and times.	and temporary impacts are mitigated through Project Design Features and mitigation measures. See Section 30211 discussion, above, and Section 4.12, Recreation .
Guideline PD 5.1:	The focused study in Guideline 5.1 should include a specific design for construction of a sidewalk from the south end of the Pacific Coast Highway bridge to the South Day Use Area. The road is only approximately 24 feet wide with no shoulders available to accommodate pedestrians, who must share the roadway with cars and RVs, bicyclists, and skaters. Recommendations should also be provided for completing other missing links, adequate signage, restrictions or limitations on types of users, and ADA compliance.	<u>Consistent</u> : The Project would have no long-term effects on non-vehicular circulation, and temporary impacts are mitigated through Project Design Features and mitigation measures. See Table 4.9-1 Section 30211, above, and Section 4.12, Recreation . The District will discuss appropriate compensation and mitigation for temporary construction-related impacts and long-term lease valuation.

Table 4.9-3: SCAG Consistency Analysis

Goal #	Goal	Determination of Consistency
Regional Transportation Plan/Sustainable Communities Strategy: Goals¹		
Goal RTP/SCS G1	Align the plan investments and policies with improving regional economic development and competitiveness.	<u>Consistent</u> : The Project would provide for improved water reliability for south Orange County, which is an essential element to sustain economic development. Refer to Section 6.3, Growth-Inducing Impacts .
Goal RTP/SCS G2	Maximize mobility and accessibility for all people and goods in the region.	<u>Consistent</u> : The Project does not involve transportation improvements, and would generate nominal operational traffic. Temporary construction-related traffic impacts are mitigated to less than significant levels; see Section 4.13, Transportation and Traffic .
Goal RTP/SCS G3	Ensure travel safety and reliability for all people and goods in the region.	<u>Consistent</u> : see Goal G2 discussion above.
Goal RTP/SCS G4	Preserve and ensure a sustainable regional transportation system.	<u>Consistent</u> : see Goal G2 discussion above.
Goal RTP/SCS G5	Maximize the productivity of our transportation system.	<u>Consistent</u> : see Goal G2 discussion above.
Goal RTP/SCS G6	Protect the environment and health for our residents by improving air quality and	<u>Consistent</u> : The Project would not have any significant long-term impacts to air quality or



Table 4.9-3: SCAG Consistency Analysis

Goal #	Goal	Determination of Consistency
	encouraging active transportation (e.g., bicycling and walking).	active recreation facilities, with implementation of Project Design Features and mitigation measures; see <u>Sections 4.2, Air Quality, 4.5, Greenhouse Gas Emissions, and 4.12 Recreation.</u>
Goal RTP/SCS G7	Actively encourage and create incentives for energy efficiency, where possible.	<u>Consistent:</u> The Project utilizes state-of-the-art energy recovery devices, and proposes use of rooftop solar panels to further reduce energy demand. In addition, the Project proposes to offset increased emissions to achieve “carbon neutral” emissions. The District continues to explore alternative fuels and renewable resources to further reduce Project-related emissions and increase energy efficiency; see <u>Sections 4.5, Greenhouse Gas Emissions, and 6.4, Energy Conservation.</u>
Goal RTP/SCS G8	Encourage land use and growth patterns that facilitate transit and active transportation.	<u>Consistent:</u> The Project facilities are consistent with existing land use designations, and would involve nominal full-time employees.
Regional Transportation Plan/Sustainable Communities Strategy: Adopted Growth Forecasts for Dana Point		
<p>Adopted Growth Forecasts:</p> <p><u>2020</u> Population: 35,200 Households: 14,900 Employment: 13,200</p> <p><u>2035</u> Population: 35,900 Households: 15,200 Employment: 14,000</p>	<p>Because the Project’s buildout horizon year is 2031, SCAG’s population, household, and employment growth forecasts for 2020 and 2035 were used to estimate Dana Point’s growth forecasts for 2031, as follows:</p> <p><u>2031 Extrapolated</u> Population: 35,713 Households: 15,120 Employment: 13,786</p>	<p><u>Consistent:</u> The Project would not conflict with adopted growth forecasts, in that Project water would be used to improve water reliability and provide water security for existing and planned future development with the SCWD service area. Water may also be provided to other south Orange County water retailers, such that it is consistent with adopted Urban Water Management Plans. Any future development would be subject to local land use agency review and approval and CEQA compliance, as applicable.</p> <p>Refer to <u>Section 6.3, Growth-Inducing Impacts.</u></p>
<p>Notes:</p> <ol style="list-style-type: none"> 1. Southern California Association of Governments Website, <i>2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): Towards a Sustainable Future</i>, http://rtpscs.scag.ca.gov/Pages/default.aspx, Accessed August 1, 2017. 2. Southern California Association of Governments Website, <i>Adopted 2012 RTP Growth Forecast</i>, http://www.scag.ca.gov/forecast/index.htm, Accessed August 1, 2017. 		



Table 4.9-4: City of Dana Point General Plan Consistency Analysis

Policy #	Policy	Determination of Consistency
LAND USE ELEMENT		
Goal 1: Achieve a desirable mixture of land uses to meet the residential, commercial, industrial, recreational, open space, cultural, and public service needs of the City residents.		
Policy 1.1:	Develop standards for building intensity, including standards for ground coverage, setbacks, open space/landscaping, maximum dwellings per acre, floor area, ratios, size and height restrictions.	<u>Consistent</u> : The Project is consistent with zoning and will comply with applicable development standards (refer to <u>Section 4.9, Land Use and Planning</u> , and additional discussion below).
Policy 1.3:	Assure that land use intensities are consistent with capacities of existing and planned public service facilities. Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreation, and visitor-serving land uses shall not be precluded by other development. (Coastal Act/30250, 30254)	<u>Consistent</u> : As concluded in <u>Sections 4.11, Public Services</u> , and <u>4.15, Utilities and Service Systems</u> , the Project would result in less than significant impacts to existing and planned public service facilities. Refer to Coastal Act Section 30254 discussion above.
Policy 1.8:	The location and amount of new development should maintain and enhance public access to the coast by facilitating the provision or extension of transit service, providing non-automobile circulation within the development, providing adequate parking facilities or providing substitute means of serving the development with public transportation, and assuring the potential for public transit for high intensity uses. (Coastal Act/30252)	<u>Consistent</u> : The Project would have no long-term effects on non-vehicular circulation, and temporary impacts are mitigated through Project Design Features and mitigation measures. See Section 30211 discussion, above, and <u>Section 4.12, Recreation</u> .
Policy 1.9:	New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the certified local coastal program. Special districts which include the coastal zone shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with the City of Dana Point certified local coastal program. (Coastal Act/30254)	<u>Consistent</u> : Refer to Coastal Act Section 30254 discussion above.



Table 4.9-4: City of Dana Point General Plan Consistency Analysis

Policy #	Policy	Determination of Consistency
Goal 2: Achieve compatibility and enhance relationships among land uses in the community.		
Policy 2.1:	Consider the impacts on surrounding land uses and infrastructure when reviewing proposals for new development. (Coastal Act/30250)	<u>Consistent</u> : Refer to Coastal Act Section 30250 discussion above.
Policy 2.3:	Develop regulatory mechanisms to mitigate land use conflicts. The portions of the General Plan effectively certified by the Coastal Commission as the Land Use Plan shall take precedence over all other General Plan elements in the area of the City within the Coastal Zone.	<u>Consistent</u> : The Project is consistent with existing land use designations, and would not result in land use conflicts (refer to impact 4.9-1 and 4.9-2 above, and to <u>Section 4.12, Recreation</u>).
Policy 2.7:	Coastal-dependent developments, as defined in Chapter 9.75 of the Zoning Code, shall have priority over other developments on or near the shoreline. Except as provided for in Conservation and Open Space Element Policy 3.6, coastal dependent developments shall not be sited in a wetland. Coastal related developments should be accommodated within the closest feasible proximity to the coastal-dependent uses they support. (Coastal Act/30255)	<u>Consistent</u> : Refer to Coastal Act Section 30255 discussion above.
Policy 2.8:	Coastal water areas suited for water-oriented recreation activities shall be protected for such uses. (Coastal Act/30220)	<u>Consistent</u> : Refer to Coastal Act Section 30220 discussion above.
Policy 2.9:	Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area. (Coastal Act/30221)	<u>Consistent</u> : Refer to Coastal Act Section 30220 discussion above.
Policy 2:10:	The use of private lands suitable for visitor-serving commercial recreational facilities designed to enhance public opportunities for coastal recreation shall have priority over private residential, general industrial, or general commercial development, but not over agriculture or coastal-dependent industry. (Coastal Act/30222)	<u>Consistent</u> : The Project does not propose use of private lands. Refer to Coastal Act Section 30211 discussion above.



Table 4.9-4: City of Dana Point General Plan Consistency Analysis

Policy #	Policy	Determination of Consistency
Policy 2:11:	The location and amount of new development should maintain and enhance public access to the coast by assuring that the recreational needs of new residents will not overload nearby coastal recreation areas through the correlation of the amount of development with local park acquisition and development plans with the provision of on-site recreational facilities to serve the new development. (Coastal Act/30252(6))	<u>Consistent</u> : The Project does not propose any new residential development. Refer to Coastal Act Section 30211 discussion above, and <u>Section 4.12, Recreation</u> .
Goal 3: Direct growth of the community so as to maintain and improve the quality of life.		
Policy 3.1:	Require new development to contribute its share of the cost of providing necessary public services and facilities through equitable development fees and exactions. (Coastal Act/30250)	<u>Consistent</u> : The Project is exempt from local land use fees; however, the District will be providing compensation to State Parks or County Parks for long-term lease of subsurface intake ROW. The Project provides a necessary public service (reliable, locally-controlled potable water) to the City of Dana Point.
Policy 3.11:	Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation. (Coastal Act/30211)	<u>Consistent</u> : Refer to Coastal Act Section 30211 discussion above, and <u>Section 4.12, Recreation</u> .
Goal 4: Encourage the preservation of the natural environmental resources of the City of Dana Point.		
Policy 4.4:	Preserve, maintain and, where feasible, enhance and restore marine resource areas and coastal waters. Special protection shall be given to areas and species of special biological or economic significance. (Coastal Act/30230)	<u>Consistent</u> : Refer to Coastal Act Section 30230 discussion above, and <u>Section 4.3, Biological Resources</u> .
Policy 4.6:	Ensure land uses within designated and proposed scenic corridors are compatible with scenic enhancement and preservation. (Coastal Act/30251)	<u>Consistent</u> : Refer to Coastal Act Section 30251 discussion above, and <u>Section 4.1, Aesthetics</u> .
Policy 4.7:	Coordinate with appropriate Park, Recreation, and Harbor Agencies to enhance Open Space trails and bike paths. (Coastal Act/30210-212.5)	<u>Consistent</u> : Refer to Coastal Act Section 30211 discussion above, and <u>Section 4.12, Recreation</u> .
Policy 4.9:	Encourage the preservation of significant natural areas as cohesive open space.	<u>Consistent</u> : The Project does not affect any significant natural areas. Temporary construction impacts avoid San Juan Creek and



Table 4.9-4: City of Dana Point General Plan Consistency Analysis

Policy #	Policy	Determination of Consistency
		San Juan Creek Lagoon through trenchless construction, and the slant wells have avoided direct impacts to the beach by shifting slant wells further back onto landscaped and parking areas.
Policy 4.10:	Regulate the construction of non-recreational uses on coastal stretches with high predicted storm wave run-up to minimize risk of life and property damage. (Coastal Act/30253)	<u>Consistent</u> : Project design incorporates coastal hazard avoidance and protection, both during construction and for long-term operations. Refer to Coastal Act Section 30253 discussion above, and <u>Section 4.9, Hydrology and Water Quality</u> .
Policy 5.2:	Require geotechnical studies to ensure geological stability in the areas where development is to be permitted and require adequate setbacks from the blufftop areas in accordance with those engineering studies and adopted City regulations. (Coastal Act/30250, 30253)	<u>Consistent</u> : The Project would not be affected by existing coastal bluffs. Refer to Coastal Act Section 30250 and 30253 discussion above, and <u>Section 4.5, Geology and Soils</u> .
Policy 6.4:	Through effective design guidelines encourage building designs, intensity and setbacks to be compatible with the desired scale and character of the area. (Coastal Act/30251)	<u>Consistent</u> : Refer to Coastal Act Section 30251 discussion above, and <u>Section 4.1, Aesthetics</u> .
PUBLIC SAFETY ELEMENT		
Goal 1: Reduce the risk to the community from geologic hazards including bluff instability, seismic hazards and coastal erosion.		
Policy 1.1:	Require review of soil and geologic conditions by a State-Licensed Engineering Geologist under contract to the City, to determine stability prior to the approval of development where appropriate. (Coastal Act/30250, 30253)	<u>Consistent</u> : Refer to Coastal Act Section 30253 discussion above, and <u>Section 4.5, Geology and Soils</u> .
ECONOMIC DEVELOPMENT ELEMENT		
Goal 9: Encourage the development of coastal dependent uses.		
Policy 9.1:	Give priority to the coastal dependent uses on or near the shoreline over other developments. (Coastal Act/30255)	<u>Consistent</u> : Refer to Coastal Act Section 30255 discussion above.
CIRCULATION ELEMENT		
Goal 1: Provide a system of streets that meets the needs of current and future resident and facilitates the safe and efficient movement of people and goods throughout the City. (Coastal Act/30252)		



Table 4.9-4: City of Dana Point General Plan Consistency Analysis

Policy #	Policy	Determination of Consistency
Policy 1.13:	Minimize pedestrian and vehicular conflicts. (Coastal Act/30252)	<u>Consistent</u> : Refer to Coastal Act Section 30211 and 30252 discussion above, and <u>Section 4.14, Transportation and Traffic</u> .
CONSERVATION/OPEN SPACE ELEMENT		
Goal 1: Conserve and protect surface water, groundwater and imported water resources.		
Policy 1.1:	Retain, protect and enhance local drainage courses, channels, and creeks in their natural condition, where feasible and desirable, in order to maximize their natural hydrologic functioning so as to minimize adverse impacts from polluted storm water run-off. (Coastal Act/30231)	<u>Consistent</u> : Refer to Coastal Act Section 30231 and 30252 discussion above, and <u>Section 4.8, Hydrology and Water Quality</u> .
Policy 1.4:	Protect water quality by seeking strict quality standards and enforcement with regard to water imported into the County, and the preservation of the quality of water in the groundwater basin, streams, estuaries, and the ocean. (Coastal Act/30231)	<u>Consistent</u> : The Project reduces reliance upon importing water into the County. Refer to Coastal Act Section 30231 and 30252 discussion above, and <u>Section 4.8, Hydrology and Water Quality</u> .
Policy 1.7:	Maintain and, where feasible, restore the biological productivity and the quality of coastal waters, creeks, and groundwater, appropriate to maintain optimum populations of marine organisms and to protect human health. Measures including, but not limited to, minimizing the adverse effects of waste water discharges, controlling runoff, preventing the depletion of ground water supplies, preventing substantial interference with surface water flow, maintaining vegetation buffer areas protecting riparian habitats, minimizing alteration of natural streams, and street sweeping, shall be encouraged. (Coastal Act/30231)	<u>Consistent</u> : Refer to Coastal Act Section 30231 and 30252 discussion above, <u>Section 4.3, Biological Resources</u> , and <u>Section 4.8, Hydrology and Water Quality</u> .
Policy 1.8:	Coordinate with the appropriate Regional Water Quality Control Board, the County of Orange and other agencies and organizations in the implementation of the National Pollution Discharge Elimination System Permits (NPDES) regulations to minimize adverse impacts on the quality of coastal waters. (Coastal Act/30231)	<u>Consistent</u> : The Project will require permits and approvals from various state agencies including the SDRWQB, SWRCB and Coastal Commission, with respect to water quality and coastal biological resources. The Project proposes the recommended methodology for ocean water intake and brine discharge, pursuant to the Ocean Plan Amendment for Desalination Facilities and related regulations.



Table 4.9-4: City of Dana Point General Plan Consistency Analysis

Policy #	Policy	Determination of Consistency
		The Project avoids impacts to ESHA. Refer to Coastal Act Section 30231 and 30252 discussion above, <u>Section 4.3, Biological Resources</u> , and <u>Section 4.8, Hydrology and Water Quality</u> .
Goal 2: Conserve significant topographical features, important watershed areas, resources, soils and beaches.		
Policy 2.2:	Site and architectural design shall respond to the natural landform whenever possible to minimize grading and visual impact. (Coastal Act/30250)	<u>Consistent</u> : The desalination facility was designed to 'blend' in with the surrounding area's natural Monterey Rock formation. See <u>Section 4.1, Aesthetics</u> for a more detailed analysis of this policy. Refer to Coastal Act Section 30250 and 30251 discussion above.
Policy 2.16:	Identify flood hazard areas and provide appropriate land use regulations, such as but not limited to the requirement that new development shall have the lowest floor, including basement, elevated to or above the base flood elevation, for areas subject to flooding in order to minimize risks to life and property. (Coastal Act/30235, 30253)	<u>Consistent</u> : Refer to Coastal Act Section 30235 and 30253 discussion above, and <u>Section 4.8, Hydrology and Water Quality</u> .
Policy 3.8:	Development in areas adjacent to parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas through, among other methods, creative site planning and minimizing visual impacts, and shall be compatible with the continuance of those parks and recreation areas. (Coastal Act 30240)	<u>Consistent</u> : Refer to Table 4.9-2 discussion above, and <u>Section 4.12, Recreation</u> .

Source: Cotton/Beland/Associates, Inc., *City of Dana Point General Plan*, 1991.



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4.10 NOISE

This section evaluates both construction-related and operational noise and vibration impacts to onsite and surrounding land uses resulting from Project implementation. The Project is located in the City of Dana Point with various other jurisdictions potentially affected by potential future Regional Project offsite underground electrical lines and desalinated water conveyance pipelines. Mitigation measures are recommended to avoid or lessen the Project's noise impacts to a less than significant level

4.10.1 AFFECTED ENVIRONMENT

Environmental Setting

Natural Setting

The Doheny Ocean Desalination Project is located primarily within the City of Dana Point at elevations ranging from below sea level to nearshore beaches (for the subsurface intake wells), to 33 feet above mean sea level (amsl) for the desalination facility and conveyance lines, to higher elevations for potential future Regional Project offsite improvements, discussed further below.

Subsurface Intake Well Area

The intake wells and related facilities would be within Doheny State Beach. Doheny State Beach is located in an urbanized area of Dana Point, with recreational, retail and commercial uses adjacent to the beach. Construction in this area would generally be within developed areas such as beach landscaping and lawn areas, beach access roads, and limited upper beach construction. Slant well construction will also extend below the ocean floor.

Southeast Intake Wells

The southeast intake wells would be located southeast of San Juan Creek along the southeast portion of Doheny State Beach and the northern portion of Capistrano Beach Park. As with the intake wells at Doheny State Beach, these potential intake wells would also be constructed within developed areas such as upper beach, parking and landscaped areas.

Raw Water Conveyance Alignments

The raw water conveyance pipeline would deliver water from the intake wells to the desalination facility. The pipeline alignments are located on beach access roads, maintenance roads, local city streets, and other previously disturbed areas. If the pipelines traverse San Juan Creek (such as with the northern pipeline alignment), this would be done via trenchless construction to avoid direct impacts to San Juan Creek.

Desalination Facility

The proposed desalination facility is within an active District Corporate Yard, is occupied by various storage and commercial tenant uses, and has been previously disturbed. The proposed desalination facility is bounded by Pacific Coast Highway (PCH) to the south, San Juan Creek to the west, the SCRRA rail line to the east, and the existing drainage facility L01S02 to the north. A large stockpile earthen mound is located north of the drainage channel.



Ocean Discharge

The brine disposal system would utilize the existing San Juan Creek Ocean Outfall (SJCOO) to return brine and treated process waste streams to the ocean. The existing ocean outfall also serves the J.B. Latham Wastewater Treatment Plant, which is located on the west side of San Juan Creek.

Regional Project Facilities

Regional Project facilities (as described in Section 3) would be in substantially the same location as the Phase I Project facilities, with the exception of the SDG&E electrical line extensions (which would extend north of the site within existing streets) and the Regional Project product water conveyance, pumping and storage facilities, the location of which is not known at this time.

Characteristics of Noise

Sound is mechanical energy transmitted by pressure waves through a medium such as air or water; the manner in which sound travels through this medium is influenced by the physical properties of the medium (such as temperature, density, and humidity). Noise is often defined as unwanted sound. Of the various noise descriptors used to characterize the loudness of a sound, the sound pressure level has become the most common.

The human ear is not equally sensitive to all frequencies on the audible sound spectrum; for this reason, human response is factored into sound descriptions in a process called “A-weighting,” expressed as “dBA.” The dBA, or A-weighted decibel, is a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies. On this scale, the normal range of human hearing extends from about 0 dBA to about 140 dBA. Sound can vary in intensity by over 1 million times within the range of human hearing; for this reason, the decibel scale is based on logarithms (a system used to shorten calculations in mathematics), which keeps sound pressure measurements within a convenient and manageable range. Because the decibel scale is logarithmic in nature, two noise sources do not combine in a simple additive fashion. For example, if two sources each produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. The noise levels presented in this section are expressed in dBA, unless otherwise indicated.

Stationary noise sources such as idling vehicles or onsite construction equipment are considered “point sources,” and noise originating from these sources “attenuates,” or decreases, based on certain physical principles (e.g., spherical spreading). In accordance with these principles, this analysis assumes that noise originating from a point source within 200 feet of a receiver attenuates at a rate of 6.0 dBA per doubling of distance, and noise from a point source greater than 200 feet away attenuates at a rate of 7.5 dBA per doubling of distance (Caltrans, 2009). Application of these attenuation rates account for such factors as the absorption of noise waves into ground surfaces, vegetation, and intervening structures.

Noise Exposure and Community Noise

The sound pressure level is a measure of noise experienced by an individual at a given moment, and noise exposure is a measure of noise experienced over a period of time. However, consistent noise levels rarely persist over a long period of time. In fact, community noise varies continuously with time and in relation to the contributing sources of sound within the noise environment. Community noise is primarily the product of many distant noise sources that combine to create a relatively stable background noise



environment, and individual contributors to the community noise level are generally unidentifiable. Background noise levels change throughout a typical day, but do so gradually, corresponding with the addition and subtraction of distant noise sources as well as changes in atmospheric conditions. The addition of short duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens) makes community noise constantly variable throughout a day.

To appropriately characterize the community noise environment and evaluate noise impacts, noise exposure must be measured over a period of time. This time-varying nature of environmental noise is characterized using statistical noise descriptors. In addition to dBA, the following noise descriptors are used in this evaluation:

dB	The decibel (dB) scale is used to quantify sound intensity, with 0 dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain.
dBA	A-weighted decibels (dBA) are measured using a filter that de-emphasizes the frequencies below 1,000 hertz (Hz) and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies.
Leq	The energy-equivalent sound level (Leq) provides a single numerical value for noise measured over a specified period of time. The Leq is the average noise exposure level for the given time period.
L _{max}	The instantaneous maximum noise level (L _{max}) measured during the measurement period.
DNL	The day-night average sound level (DNL) is the average of the A-weighted sound levels occurring during a 24-hour period and accounts for the greater sensitivity of most people to noise at night. DNL "penalizes" noise occurring between 10:00 p.m. and 7:00 a.m. by adding 10 dBA to nighttime noise levels.
CNEL	Similar to DNL, the community noise equivalent level treats each evening noise event as though it were three, which adds a 4.77-dB "penalty" for noise events occurring between 7:00 p.m. and 10:00 p.m. Nighttime events are multiplied by ten, which adds a 10-dB penalty to noise events occurring between 10:00 p.m. and 7:00 a.m.

Effects of Noise on People

The effects of noise on people can be placed into three categories: the subjective effects of annoyance, nuisance, and dissatisfaction; interference with activities such as speech, sleep, and learning; and physiological effects such as hearing loss or sudden startling. Environmental noise typically produces effects in the first two categories. Workers at industrial plants often experience noise in the third category. A wide variation exists in the individual thresholds of annoyance, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important method of predicting human reactions to a new noise environment is to compare the new noise level to the existing noise level to which one has adapted (i.e., the ambient noise level). In general, the more a new noise level exceeds the former ambient noise level, the less acceptable the new noise environment will be judged. A California Department of Transportation (2009) study reports the following human responses to changes in noise levels:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived.



- Outside of the laboratory, a 3-dBA increase is considered a “barely perceptible” difference (i.e., the change in noise is perceived but does not cause a human response).
- An increase of at least 5 dBA is required before any noticeable change in human response is expected.
- A 10-dBA increase is subjectively heard as an approximate doubling in loudness.

Groundborne Vibration

Vibration is an oscillatory motion through a solid medium. In contrast to airborne noise, groundborne vibration is not a common environmental problem. It is unusual for individuals to perceive vibration from sources such as buses and trucks, even in locations near major roads. However, some common vibration sources produce groundborne vibration that can be felt (e.g., construction activities such as blasting, pile driving, and operating heavy equipment). There are several methods employed to quantify vibration. The measurement used in this analysis—peak particle velocity (PPV)—is defined as the maximum instantaneous peak of the vibration signal. PPV is used to describe vibration impacts on buildings and structures and is expressed in inches per second (in/sec). Typically, groundborne vibration generated by human activity attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include structures (especially older masonry structures); people (residents, especially the elderly and sick); and locales with vibration-sensitive equipment such as hospitals, research labs, and production facilities for computer-chip manufacturing.

The responses of human receptors and structures to vibration are influenced by a combination of factors, including soil/rock type, distance from the source, duration, and the number of perceived events. Energy transmitted through the ground as vibration can reach levels that cause structural damage; however, humans are very sensitive, and the vibration amplitudes that can be perceived by humans are well below the levels that cause architectural or structural damage. Caltrans (2004) characterizes the annoyance potential of vibration as follows: 0.01 in/sec PPV is “barely perceptible,” 0.04 in/sec PPV is “distinctly perceptible,” 0.1 in/sec PPV is “strongly perceptible,” and 0.4 in/sec PPV is “severe.”

Mobile Sources

Mobile noise sources consist of vehicular traffic traveling on the roadway network in the vicinity of the proposed desalination facility. Mobile source noise is a function of the traffic volume and vehicle speed on the roadways. Del Obispo Street, Dana Point Harbor, PCH, Coast Highway, Doheny Park Road, and Stonehill Drive are sources of mobile source noise adjacent to the proposed desalination facility. Railroad noise from the adjacent MetroLink/BNSF rail lines are a major intermittent noise source for the Project site and adjacent area, and the more distant I-5 freeway (approximately 2,000 feet to the northeast) also contributes noise within the surrounding Project area, particularly north and east of the site closer to the I-5 freeway.

Stationary Noise Sources

The Project area is highly urbanized and consists of a mix of recreational, residential, and industrial uses served by a grid system of arterial and collector streets. The primary sources of stationary noise in the Project vicinity are urban-related activities (i.e., mechanical equipment, parking areas, and recreational areas). The noise associated with these sources may represent a single-event noise occurrence, short-term or long-term/continuous noise. Other noise sources in the Project area include ocean wave noise



and wind. The proposed desalination facility site is located within SCWD's property, which includes various mechanical equipment that produce noise.

Noise Monitoring

The primary off-site noise sources in the Project area are motor vehicles (e.g., automobiles, buses, and trucks) along PCH, and Doheny Park Road. Motor vehicle noise is of concern because it is characterized by a high number of individual events, which often creates sustained noise levels. Ambient noise levels would be expected to be highest during the daytime and rush hour unless congestion slows speeds substantially. The adjacent MetroLink/BNSF rail line also contributes noise to the Project site and surrounding area.

To determine ambient noise levels in the Project area, nine 15-minute noise measurements were taken between 10:40 AM and 3:32 PM on September 25, 2017 using a Type 1 Sound Level Meter. Exhibit 4.10-1, Noise Measurement Locations, shows the locations of noise measurements. Table 4.10-1, Noise Monitoring Results, lists the ambient noise levels (Leqs) measured at these locations.

Table 4.10-1: Noise Monitoring Results

Measurement Location	Time of day	Leq [15] (dBA)	Lmax (dBA)	Lmin (dBA)
1	2:12:32 PM	60.4	81.4	43
2	3:00:23 PM	47.5	65.8	42.1
3	12:13:43 PM	52.2	62.6	43.9
4	11:50:39 AM	51.3	70.7	41.7
5	11:19:00 AM	52.6	68.6	47.2
6	3:32:29 PM	58.7	75.4	47.6
7	10:40:27 AM	58.4	83.6	45.3
8	1:45:30 PM	63.3	88.1	46.6
9	2:34:39 PM	62.2	85.3	48.8
Notes: The equivalent noise level (Leq) is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). For this measurement, the Leq was over a 15-minute period (Leq[15]).				

Source: Appendix 10.12, Noise Data.

Location Descriptions

Location 1: This measurement location is located south of Stonehill Drive at the end of the cul-de-sac on the access road parallel to San Juan Creek. Chain link fences surround the measurement location and noise was heightened when occasional pick-up trucks passed by.

Location 2: This measurement location is in center field of the Del Obispo Community Park baseball field. Chain link fences and trees surround the measurement location and noise was heightened when occasional bicyclists passed by along San Juan Creek Bike Trail.

Location 3: This measurement location is in the center of the Doheny State Beach grass/picnic area in the North Day Use Area. Trees surround the measurement location and noise was limited to environmental factors.

Location 4: This measurement location is in the front of the lifeguard tower on Doheny State Beach next to the outlet of San Juan Creek. The only wall present was that of the lifeguard tower and noise was



heightened when lifeguard pick-up trucks entered and existed the site while opening and closing the garage door.

Location 5: This measurement location is in the South Day Use Area of Doheny State Beach. No walls or fences were present at this location and noise was heightened when pedestrians spoke approximately 15' from the measurement location.

Location 6: This measurement location is located at Capistrano County Beach on the bicycle path. Chain link fences and trees surround the measurement location and noise was heightened when occasional bicyclists passed by along the trail.

Location 7: This measurement location is in the North Day Use Area of Doheny State Beach. No walls or fences were present at this location and noise was heightened when pedestrians or bicyclists passed by.

Location 8: This measurement location is located on the corner of Del Obispo Street and the South Coast Water District access road. A 4-foot concrete wall and trees surrounded a portion of the measurement location and noise was heightened when vehicles were moving along Del Obispo Street. Note: *construction was present on the parcel southeast of the measurement location during data collection.*

Location 9: This measurement location is located just south of Stonehill Drive on the access road parallel to San Juan Creek. Chain link fences surrounded the measurement location and noise was heightened when occasional pick-up trucks passed by.

Sensitive Receptors

Human response to noise varies widely depending on the type of noise, time of day, and sensitivity of the receptor. The effects of noise on humans can range from temporary or permanent hearing loss to mild stress and annoyance due to such things as speech interference and sleep deprivation. Prolonged stress, regardless of the cause, is known to contribute to a variety of health disorders. Noise, or the lack thereof, is a factor in the aesthetic perception of some settings, particularly those with religious or cultural significance. Certain land uses are particularly sensitive to noise, including schools, hospitals, rest homes, long-term medical and mental care facilities, and parks and recreation areas. Residential areas are also considered noise sensitive, especially during the nighttime hours. Additionally, the City of Dana Point has a number of public and private educational facilities, churches, a hospital, a library, senior housing, and park and recreation facilities that are considered noise sensitive. Further discussion of sensitive receptors are discussed later in Table 4.10-5, Distance to Sensitive Receptors.

4.10.2 REGULATORY FRAMEWORK

Federal

40 CFR Part 205

Federal regulations also establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 CFR Part 205, Subpart B. The federal truck pass-by noise standard is 80 decibels (dB) at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers. The Federal Highway Administration (FHWA) regulations for noise abatement must be considered for federal or federally funded projects involving the construction of a new highway or significant modification of an existing freeway when the project would result in a



substantial noise increase or when the predicted noise levels approach or exceed the Noise Abatement Criteria (NAC).

Noise Abatement and Control, Title 24 Code of Federal Regulations, Part 51, Subpart B

The mission of the Department of Housing and Urban Development (HUD) includes fostering “a decent, safe, and sanitary home and suitable living environment for every American.” Accounting for acoustics is intrinsic to this mission, as an environment’s safety and comfort can be compromised by excessive noise. In order to facilitate the creation of suitable living environments, HUD has developed a standard for noise criteria. The basic foundation of the HUD noise program is set out in the noise regulation 24 CFR Part 51 Subpart B, Noise Abatement and Control.

HUD’s noise policy clearly requires noise attenuation measures be provided when proposed projects are to be located in high noise areas. Within the HUD Noise Assessment Guidelines, potential noise sources are examined for projects located within 15 miles of a military or civilian airport, 1,000 feet from a road, or 3,000 feet from a railroad.

HUD exterior noise regulations state that 65 dBA DNL noise levels or less are acceptable for residential land uses and noise levels exceeding 75 dBA DNL are unacceptable. HUD’s regulations do not contain standards for interior noise levels. Rather, a goal of 45 dBA is set forth, and the attenuation requirements are geared toward achieving that goal. It is assumed that, with standard construction, any building will provide sufficient attenuation so that if the exterior level is 65 dBA DNL or less, the interior level will be 45 dBA DNL or less.

Federal Transit Administration Noise and Vibration Guidance

The Federal Transit Administration (FTA) has published the *Transit Noise and Vibration Impact Assessment*¹ report to provide guidance on procedures for assessing impacts at different stages of transit project development. The report covers both construction and operational noise impacts, and describes a range of measures for controlling excessive noise and vibration. The specified noise criteria are an earlier version of the criteria provided by the Federal Railroad Administration’s High-Speed Ground Transportation Noise and Vibration Impact Assessment. In general, the primary concern regarding vibration relates to potential damage from construction. The guidance document establishes criteria for evaluating the potential for damage for various structural categories from vibration.

State

California Government Code

California Government Code § 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services.

The guidelines rank noise land use compatibility in terms of “normally acceptable,” “conditionally acceptable,” “normally unacceptable,” and “clearly unacceptable” noise levels for various land use types. Single-family homes are “normally acceptable” in exterior noise environments up to 60 Community Noise Equivalent Level (CNEL) and “conditionally acceptable” up to 70 CNEL. Multiple-family residential uses are

¹ Federal Transit Administration Office of Planning and Environment, *Transit Noise and Vibration Impact Assessment*, May 2006.



“normally acceptable” up to 65 CNEL and “conditionally acceptable” up to 70 CNEL. Schools, libraries, and churches are “normally acceptable” up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

California Noise Control Act of 1973

The California Noise Control Act (California Health and Safety Code, Division 28, § 46000 et seq), declares that excessive noise is a serious hazard to public health and welfare, and establishes the Office of Noise Control with responsibility to set standards for noise exposure in cooperation with local governments or the state legislature.

Noise Insulation Standards

The California Noise Insulation Standards found in Title 24 of the California Code of Regulations and California Health and Safety Code § 17922.6, set requirements for new multi-family residential units, hotels, and motels that may be subject to relatively high levels of transportation-related noise. For exterior noise, the noise insulation standard is DNL 45 dB in any habitable room and requires an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than DNL 60 dB.

California Streets and Highways Code

The State of California establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the state pass-by standard is consistent with the federal limit of 80 dB. The state pass-by standard for light trucks and passenger cars (less than 4.5 tons gross vehicle rating) is also 80 dB at 15 meters from the centerline. For new roadway projects, Caltrans employs the NAC, promulgated by Title 40 of the Code of Federal Regulations (CFR), as administered by the FHWA (California Vehicle Code, § 23130, 23130.5, 27150 et seq., 27204, and 27206).

Local

City of Dana Point General Plan

Noise Element

California Government Code § 65302(g) requires that a Noise Element be included in the General Plan of each county and city. The Noise Element of the Dana Point General Plan identifies sources of noise and provides objectives and policies designed to incorporate noise control in the planning process. To ensure that different land uses are developed in compatible noise environments, the City’s Noise Element establishes noise guidelines for land use planning, shown in Table 4.10-2, Interior and Exterior Noise Compatibility Standards. The City requires that the interior areas for residences not exceed 45 dBA CNEL and that the exterior active use areas (such as backyards or patios) not exceed 65 dBA CNEL. Other short-term noise impacts, such as construction activities or on-site stationary sources, are regulated by the Noise Ordinance. The following goals and policies are applicable to the proposed Project:

Goal 1: Provide for measures to reduce noise impacts from transportation noise sources.

Policy 1.1: Require construction of barriers to mitigate sound emissions where necessary or feasible.



Policy 1.4: Ensure the effective enforcement of City, State and Federal noise levels by all appropriate City staff.

Policy 1.5: Monitor noise from buses and other vehicular types in residential areas, and, when necessary, consider alternative circulation routes for those types of vehicles.

Goal 2: Incorporate noise considerations into land use planning decisions.

Policy 2.1: Establish acceptable limits of noise for various land uses throughout the community, in accordance with Table N-2.

Policy 2.2: Ensure acceptable noise levels near schools, hospitals, convalescent homes, and other noise sensitive areas, in accordance with Table N-1.

Policy 2.3: Establish standards for all types of noise not already governed by local ordinances or preempted by State or Federal law.

Policy 2.4: Require noise reduction techniques in site and architectural design and construction where noise reduction is necessary.

Goal 3: Develop measures to control non-transportation noise impacts.

Policy 3.2: Evaluate and develop measures to reduce noise generated by construction activities.

Policy 3.3: Establish and maintain coordination among the appropriate agencies involved in noise abatement.

City of Dana Point Municipal Code

The City's Noise Ordinance establishes the maximum permissible noise level that may intrude into a neighbor's property. The Noise Ordinance (added in 1992) establishes noise level standards for various land use categories affected by stationary noise sources. The Code presents permissible noise intrusion levels by land use, as shown in Table 4.10-3, City of Dana Point Noise Standards.

For Noise Zone 1, which includes the entire City, the exterior noise levels shall not exceed 55 dBA for more than 30 minutes in any hour during daytime hours between 7:00 a.m. and 10:00 p.m. For events occurring within shorter periods of time, the noise levels are adjusted upward accordingly. For events lasting equal to or less than 30 minutes but more than 15 minutes, the exterior noise shall not exceed 60 dBA during daytime hours. For events lasting equal to or less than 15 minutes but more than 5 minutes, the exterior noise shall not exceed 65 dBA during daytime hours. For events lasting equal to or less than 5 minutes but more than 1 minute, the exterior noise shall not exceed 70 dBA during daytime hours. At any time during daytime hours, the exterior noise shall not exceed 75 dBA. During the nighttime hours between 10:00 p.m. and 7:00 a.m. the following day, the above noise standard levels are reduced by 5 dBA.



Table 4.10-2, Interior and Exterior Noise Compatibility Standards by Land Use

Land Use	CNEL (dBA)	
	Interior Noise Standard	Exterior Noise Standard
Residential – Single Family Duplex, Multiple Family	45	65
Residential – Mobile Home		65
Hotel, Motel, Lodging	45	x
Commercial Retail, Bank, Restaurant	55	x
Office Building, Research and Development, Professional Offices, City Office Building	50	x
Amphitheater, Concert Hall, Auditorium, Meeting Hall	45	x
Gymnasium (Multipurpose)	50	x
Sports Club	55	x
Manufacturing, Warehousing, Wholesale, Utilities	65	x
Movie Theaters	45	x
Hospital, Schools' classroom	45	65
Church, Library	45	x
Parks	x	65

Source: City of Dana Point General Plan, Noise Element, Table N-2, Interior and Exterior Noise Standards.

In the event the ambient noise level exceeds any of the first four noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

The interior noise levels for Noise Zone 1 areas shall not exceed 55 dBA for events lasting up to 15 minutes but more than 5 minutes during daytime hours. For events lasting equal to or less than 5 minutes but more than 1 minute, the interior noise shall not exceed 60 dBA during daytime hours. At any time during daytime hours, the interior noise shall not exceed 65 dBA. During the nighttime hours between 10:00 p.m. and 7:00 a.m. the following day, the above noise standard levels are reduced by 5 dBA.

In the event the ambient noise level exceeds either of the first two noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the third noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.



Table 4.10-3 City of Dana Point Noise Standards

Land Use Category	Time Period	Noise Level
Residential – Exterior	7 AM to 10 PM	55 dBA
	10PM to 7 AM	50 dBA
Residential - Interior	7 AM to 10 PM	55 dBA
	10PM to 7 AM	45 dBA

Source: City of Dana Point Municipal Code 11.10.010, 11.10.012

The Dana Point City Code recognizes that some forms of noise are required for urban development and maintenance, and are difficult to control. Dana Point City Code § 11.10.014, exempts noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a Federal holiday, with the exception of work on PCH between San Juan Creek Bridge and Crystal Lantern.

The City's Municipal Code Noise Ordinance has not established any upper limits for construction noise because it is temporary and will cease to occur after completion of the project construction. Additionally, § 8.01.250 (Time of Grading Operations) of the City's Municipal Code limits the grading and equipment operations within 0.5 mile of a structure for human occupancy to between the hours of 7:00 a.m. and 5:00 p.m. during the weekdays and not at all on Saturdays, Sundays, and City of Dana Point recognized holidays.

4.10.3 SIGNIFICANCE CRITERIA

Significance Criteria under CEQA

CEQA Guidelines Appendix G, Environmental Checklist Form, includes questions pertaining to noise. The issues presented in the Environmental Checklist have been utilized as thresholds of significance in this section. Accordingly, the Project would have a significant adverse environmental impact if it would:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise level;
- For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.



Methodology and Assumptions

Temporary or Periodic Increases in Ambient Noise Levels

A “substantial” noise increase is defined as one that would interfere with human activities during the day and/or night (as opposed to an absolute, numerical increase over ambient noise levels).

This evaluation uses speech interference as an indicator that construction noise could cause a substantial adverse impact on daytime and evening activities, and sleep interference as an indicator that construction noise could cause a substantial adverse impact on nighttime activities. The speech and sleep interference criteria, which are based on objective research of speech and sleep interference (as opposed to subjective surveys of annoyance), can be used to evaluate a project’s noise impacts. The speech and sleep interference criteria used in this EIR are defined below:

- **Speech Interference.** A speech interference threshold, in the context of impact duration and time of day, is used to identify substantial increases in noise from temporary construction activities. This analysis assumes noise peaks generated by construction equipment could result in speech interference in adjacent buildings if the noise level in the interior of the buildings exceeds 45 dBA. A typical building can reduce noise levels by approximately 25 dBA with the windows closed (USEPA, 1974). This noise reduction could be maintained only on a temporary basis in some cases, since it assumes windows must remain closed at all times. Assuming a 25 dBA reduction with the windows closed, an exterior noise level of 70 dBA L_{eq} would maintain an acceptable interior noise environment of 45 dBA during the day and evening hours. Noise levels would vary depending on the phase of construction and the types of construction equipment being used.

In addition to the decibel level of noise, the duration of exposure at any given noise-sensitive receptor is an important factor in determining an impact’s significance. Generally, temporary construction noise that occurs during the day for a relatively short period of time would not be significant because most people of average sensitivity who live in suburban or rural agricultural environments are accustomed to a certain amount of construction activity or heavy equipment noise from time to time. The loudest construction-related noise levels would be sporadic rather than continuous because different types of construction equipment would be used throughout the construction process. Therefore, an exterior noise level that exceeds 70 dBA L_{eq} during the daytime is used as the threshold for substantial construction noise where the duration of construction noise exceeds two weeks.

- **Sleep Interference.** Based on available sleep data, an interior nighttime level of 35 dBA is considered acceptable for sleeping (USEPA, 1974). Assuming a 25 dBA reduction with the windows closed, an exterior noise level of 60 dBA would maintain an acceptable interior noise environment of 35 dBA at night. Therefore, a significant impact would occur if the proposed project were to generate exterior noise levels above the 60 dBA L_{eq} sleep interference threshold for one or more nights.

This analysis is based on monitored ambient noise levels at sensitive receptors throughout the Project area (see [Table 4.10-5](#)), the anticipated construction work hours for each facility, published equipment noise levels, and the attenuated construction equipment noise levels at the sensitive receptor, calculated using published noise propagation equations (FHWA, 2006). Standard mitigation measures to reduce



construction-related noise levels have been demonstrated to reduce equipment noise by 5 to 10 dBA (Bolt et. al., 1971). Moveable sound barrier curtains can provide 15 dBA of sound attenuation. Static sound barrier curtains can provide sound transmission loss of 16 to 40 dBA, depending on the frequency of the noise source.

Noise Levels Standards

Consistency with local noise standards are determined by comparing the applicable noise level standard to published equipment noise levels. In some cases, this requires calculating noise levels at various distances (i.e., to a property line or sensitive receptor) using widely published noise propagation equations (FHWA, 2006) in order to assess whether a potential conflict could occur.

Groundborne Vibration during Construction

The proposed project would result in significant impacts if it were to generate vibration levels substantial enough to damage nearby structures or buildings, or result in vibration levels that are commonly accepted as an annoyance to sensitive land uses. Caltrans (2004) characterizes the annoyance potential of vibration as follows: 0.01 in/sec PPV is “barely perceptible,” 0.04 in/sec PPV is “distinctly perceptible,” 0.1 in/sec PPV is “strongly perceptible, and 0.4 in/sec PPV is “severe.”

Permanent Increases in Ambient Noise Levels

For the analysis of long-term operational impacts on the existing ambient noise environment, impacts are considered significant if operation of the project facilities would result in a substantial increase in noise levels in the project area. This evaluation uses a 5-dBA increase in noise exposure—which Caltrans identifies as a readily perceptible noise increase (Caltrans, 2009) —to assess the significance of operational noise increases on ambient noise levels in the project vicinity.

Project Design Features

- The Project utilizes subsurface slant intake wells which avoids open ocean marine construction and associated temporary marine construction noise;
- The Project utilizes an existing ocean outfall and existing outfall diffuser, which avoids onshore and marine construction and associated temporary marine construction noise;
- The Project’s desalination facility is ideally situated in close proximity to the source water, ocean outfall and produce water conveyance system, thereby reducing the extent and duration of onshore pipeline trenching and associated temporary construction-related noise;
- The Project’s desalination facility is sited in an existing commercial industrial area adjacent to a regional rail line, thereby reducing potential conflicts and associated potential noise impacts to sensitive receptors;
- Project facilities with higher noise levels (such as construction staging, RO pumps and parking) have been sited away from sensitive receptors;
- The larger RO pumps will be enclosed within the RO building, minimizing noise impacts to sensitive receptors;
- Long lifetime expectancy of equipment results in fewer maintenance and repair trips;



- Submersible (below ground) pumps are used for the subsurface intake wells, reducing the need for pumps on the surface, thereby reducing operational noise of the intake wells.

4.10.4 IMPACTS AND MITIGATION

Impact 4.10-1: Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? *Level of Significance: Less than Significant with Mitigation.*

Construction

Construction activities are temporary, lasting from a few days to several months. Ground-borne noise and other types of construction-related noise impacts would typically occur during the initial site preparation, which can create the highest levels of noise. Generally, site preparation has the shortest duration of all construction phases. Activities that occur during this phase include demolition, excavation, earthmoving, and soils compaction. High ground-borne noise levels and other miscellaneous noise levels can be created by the operation of heavy-duty trucks, backhoes, and other heavy-duty construction equipment.

Noise from construction activities is generated by two primary sources: (1) the noise related to active construction equipment; and (2) the transport of workers, materials, and equipment to construction sites. These noise sources can be a nuisance to local residents and businesses or unbearable to sensitive receptors (i.e., residential, hospital, hotel/motel, schools, parks, and places of worship). The FTA has compiled data regarding noise generating characteristics of specific types of construction equipment and typical construction activities; refer to Table 4.10-4, Construction Equipment per Project Component. Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. For a single point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. These estimates do not take into account any intervening structures that would block noise from construction sites; therefore, these estimates represent a conservative assessment of temporary construction noise levels within the Project area.

Construction of individual Project components affects different jurisdictions, with varying distance to sensitive receptors. Table 4.10-5, Distance to Sensitive Receptors, lists each Project component relative to the jurisdiction, and distance to sensitive receptors.

Subsurface Intake Wells

No offshore marine construction is anticipated with the Project, as the Project will utilize the existing SJCOO and no diffuser modifications are anticipated at this time. Since the Project proposes use of subsurface slant intake wells launched from onshore and bored beneath the ocean floor, no open ocean construction is required. Typical construction equipment for subsurface slant well construction include mobile cranes and bore/drill rigs, with estimated temporary construction noise levels at 50 feet of 81 and 82 dBA L_{max} , respectively.



Table 4.10-4: Construction Equipment per Project Component

Project Component	Vibration Inducing Construction Equipment	Equipment Noise Level at 50 feet (dBA L _{max}) ^a
Subsurface Slant Wells	Bore/Drill Rigs	82
	Mobile Cranes	81
SCWD Desalination Facility	Dozer	82
	Mobile Crane	81
	Dump Truck	76
	Pile Driver	101 ^b
Pipeline Installation (Open Trench Construction)	Backhoe	78
	Compactor	83
	Mobile Crane	81
Pipeline Installation (Trenchless Construction)	Bore/Drill Rigs	84
Pump Station	Backhoe	78
	Dump Truck	76
	Mobile Crane	81
a) Reference noise levels for construction equipment are derived from FHWA, 2006.		
b) Pile driver use, if at all, is only anticipated to occur at the desalination site, and even then, during daytime hours. There will be no pile driving associated with any of the slant well work or pipeline conveyance work.		

Ocean intake well structures could require approximately 24-36 months to complete, and could potentially include:

- Installation of the subsurface slant intake wells and associated vaults;
- construction of the new onshore intake pump station;
- installation of telemetry and related appurtenances for the intake vaults;
- Jack and bore trenchless construction of raw water conveyance pipelines (see below); and
- grading and paving.

Construction activities would cause temporary increased noise in the immediate vicinity of the Project construction area. The intake well construction would occur within the picnic area on the northern portion of Doheny State Beach. The Project intake wells construction would occur approximately 600 feet from new residential apartments located at 34202 Del Obispo Street and 1,300 feet from residences along Village Road (25352 Village Road). Estimated noise levels from construction of the intake wells on Doheny State Beach to the nearby sensitive receptors are shown in Table 4.10-6, Noise Levels at Receptors near Subsurface Intake Wells below.²

² Note that the Doheny Ocean Desalination Test Slant Well was successfully installed and operated at Doheny State Beach, without any noise complaints during construction or operation, even though the test slant well was located on the beach near the volleyball courts on North Beach Day Use Area.



Table 4.10-5: Distance to Sensitive Receptors

Project Component	Jurisdiction	Nearby Sensitive Receptors	Distance of Receptor to Project Component (feet)
Subsurface Intake Wells	-Doheny State Beach	-Future Del Obispo/PCH Apartments (34202 Del Obispo Street) -Residential Units (25352 Village Road)	-600' -1,300'
Southeast Intake Wells	-Capistrano Beach Park (OC parks)	-Residential Units on Bluff (34832 Doheny Place) -Residential Units along Beach Road	-325' -90'
North Raw Water Conveyance Alignment	-City of Dana Point -Doheny State Beach -Capistrano Beach Park (OC Parks)	- Residential Units (25352 Village Road) -Apartments (25611 Quail Run) -Residential Units on Bluff (34832 Doheny Place) - Future Del Obispo/PCH Apartments (34202 Del Obispo Street) - Apartments (25856 Dana Bluff West) - Del Obispo Community Park	-90' -153' -300' -50' -300' -50'
South Raw Water Conveyance Alignment	-City of Dana Point -Doheny State Beach -Capistrano Beach Park (OC Parks) -BNSF/Metrolink RR	- Apartments (25942 Domingo Ave) - Residential Units (34832 Doheny Place) - Apartments (25856 Dana Bluff West)	-350' -300' -300'
Desalination Facility Site	-City of Dana Point	- Apartments at 25942 Domingo Ave - San Clemente Christian School -Apartments (25611 Quail Run) - Mobile homes at 25991 Victoria Blvd - Del Obispo Community Park	-1,200' -1,400' -720' -1,450' -600'
Brine Discharge	SDRWQCB, Coastal Commission, State Lands Commission	Offshore marine environment	Immediate vicinity of brine discharge

Table 4.10-6: Noise Levels at Receptors near Subsurface Intake Wells

Receptor	Distance to Receptor (feet)	Receptor Noise Level (dBA L _{max}) ^a	Ambient Level (dBA Leq) ^b
34202 Del Obispo Street	600	62.9	51.3
25352 Village Road	1,500	56.2	51.3
Doheny State Beach/Campground	50	84.5	51.3/52.6
Notes: a) Based on estimated construction noise level of 84.5 dBA L _{max} from bore/drill rig (82 dBA L _{max}) and a crane (81 dBA L _{max}) at 50 feet away (conservatively assumes the crane and drill rig are operating simultaneously). Noise attenuates at a rate of 6 dBA per doubling of distance (per the inverse square law of sound propagation). Calculated noise levels do not account for additional attenuation from intervening topography, structures, or dense landscaping. b) Refer to the noise monitoring results in Table 4.10-1 .			

Noise levels from subsurface intake well construction may range up to 84.5 dBA L_{max} at Doheny State Beach and 62.9 dBA L_{max} at the closest residential uses adjacent to the north of Project site when drilling occurs at Doheny State Beach. Therefore, the noise generated from the construction of the slant wells would be above the City's daytime exterior noise standard of 55 dBA. Other existing noise sources include vehicle



traffic from PCH, Metrolink Railroad, and ocean surf. However, considering the relatively high ambient noise levels at this location (PCH/Del Obispo intersection, where current ambient noise is estimated to be above 65 CNEL³) the Project's temporary contribution would not be considered significant.

In accordance with § 11.10.014 (Special Provisions) of the Municipal Code, the construction activities would be exempted from the noise limits (Table 4.10-3) provided that the associated construction activities do not occur between 8:00 p.m. and 7:00 a.m. on weekdays and Saturdays, or any time on Sunday or a Federal holiday. However, according to the proposed construction schedule, slant well construction is expected to occur 24 hours a day, seven days a week, and would therefore occur outside the allowable hours under § 11.10.014. Therefore, night time construction noise associated with the subsurface slant wells are not exempt and the City's construction noise limits apply.

Intake well construction would occur in three locations in Doheny State Beach and two locations in the campground. Based on FHWA data, drilling is estimated to be 82 dBA and cranes are 81 dBA at 50 feet for a combined noise level of 84.5 dBA. The closest sensitive receptors to the intake well locations would be recreational areas associated with Doheny State Beach located approximately 50 feet from the well locations. Additionally, as intake well drilling would also be located within the campground at Doheny State Beach, sensitive receptors at the campground could also be located approximately 50 feet of the well construction area. Therefore, well construction would exceed the City's 50 dBA nighttime standard and existing ambient noise levels and mitigation would be required.

Temporary construction noise barriers or enclosures can provide a sound reduction of approximately 25 dBA.⁴ To be effective, a noise enclosure/barrier must physically fit in the available space, must completely break the line of sight between the noise source and the receptors, must be free of degrading holes or gaps, and must not be flanked by nearby reflective surfaces. Noise barriers must be sizable enough to cover the entire noise source, and extend length-wise and vertically as far as feasibly possible to be most effective. The limiting factor for a noise barrier is not the component of noise transmitted through the material, but rather the amount of noise flanking around and over the barrier. In these cases, the enclosure/barrier system must either be very tall or have some form of roofed enclosure if protection of upper-story receptors is a concern.

To address nighttime construction impacts, implementation of Mitigation Measures NOI-1 and NOI-2 are required. Mitigation Measure NOI-1 requires that all construction equipment be properly equipped with state-required noise attenuation devices as well as abide by the construction hours from the City of Dana Point Municipal Code, where feasible. Construction outside of these allowable hours would be subject to City standards. Mitigation Measure NOI-2 requires SWCD to document, investigate, evaluate, and attempt to resolve all Project-related noise complaints as soon as possible. Mitigation Measure NOI-2 also requires installation of noise attenuating panels/barriers that completely surround each drilling site, prior to the drilling phase of the construction. Prior to site mobilization, the drilling contractor should provide a proposed drilling plan that includes a layout and description of the sound barriers to be used. As noted above, temporary construction noise barriers can provide a sound reduction of approximately 25 dBA. Additionally, due to the proximity of drilling activities to potential sensitive receptors at the Doheny

³ The Doheny Hotel EIR (April 2014) estimated ambient noise at this location at 71.8 CNEL, and Year 2015 noise levels (with hotel traffic) at over 75 CNEL (Table 3.10-12 of the Doheny Hotel Draft EIR, <http://www.danapoint.org/home/showdocument?id=12334>, accessed January 27, 2018).

⁴ Behrens and Associates, Inc., E812 Portable Noise Barrier Systems, ENC E812 Portable Acoustic Panel Specification Sheet, undated.



campground, Mitigation Measure NOI-2 also requires campsites within 120 feet of well Pods D and E, respectively, to be closed during active drilling. With attenuation from temporary construction barriers, noise levels at 120 feet from the campground drilling site would be reduced to 51.9 dBA, which is below the existing ambient level of 52.6 dBA (refer to [Table 4.10-1](#)).

With the implementation of Mitigation Measure NOI-2, nighttime drilling noise levels would be reduced to below the City's noise standard or the existing ambient level (Chapter 11.10 [Noise Control] of the Municipal Code provides for standards to be increased to reflect the ambient noise level in the event that ambient levels already exceed the standards). As such, mitigated nighttime construction noise would not exceed the City's exterior nighttime noise standards. The City has also established an interior nighttime noise standard of 45 dBA. Typical construction has an outdoor to indoor attenuation rate of 24 dBA⁵. With the implementation of Mitigation Measure NOI-2, nighttime interior noise levels at the closest residence would be 13.9 dBA (i.e., 62.9 dBA at the closest receptor [refer to [Table 4.10-6](#)] with a 25 dBA reduction from the temporary barriers and a 24 dBA reduction from outdoor to indoor building attenuation) and would not exceed the City's standards. Upon implementation of Mitigation Measure NOI-2, nighttime drilling noise impacts would be less than significant.

Marine Biology Noise Impacts

Construction noise associated with the subsurface intake wells have the potential of impacting marine species. The directional drilling of the slant wells would generate nominal subterranean noise that would transmit into sea floor sediments. As discussed in [Section 3.0, Project Description](#), the slant well noise-generating equipment would be located onshore and the only down hole noise source would be the cutter head and drilling fluid recirculating pump. Available data indicates that a tunnel boring machine (TBM) at much larger diameters (nine feet) produces noise below that which would significantly affect marine mammals.⁶ In the event that some underwater noise reaches the ocean floor, scientific investigations on the potential effect of underwater noise on fish indicate that sound levels below 183 to 187 dB do not appear to result in any acute physical damage or mortality to fish depending on their size. Additionally, underwater noise levels greater than 160 dB are required to result in any behavioral effects on marine mammals.⁷ Any of the drilling noise reaching overlying ocean waters is expected to be below background underwater noise levels and would have no effect on any marine organisms including special-status species. Construction noise impacts would be temporary, and the slant wells would be over one hundred feet below the ocean floor. Additional shoreline noise and wave activity would further mask construction noise from the intake wells. Therefore, impacts to marine species would be less than significant. Refer to [Section 4.3, Biological Resources](#) for additional discussion.

Southeast Intake Wells

The southeast intake wells construction would occur approximately 90 feet from the closest sensitive receptor (along Beach Avenue) and approximately 325 feet from the residential homes across Coast Highway (along Doheny Place). Construction activities would cause increased noise in the immediate vicinity of the Project construction area. Construction of the southeast intake wells would be similar to those used to construct slant wells at Doheny State Beach. Noise levels at 50 feet for mobile cranes and bore/drill rigs are 81 and 82 dBA L_{max} , respectively. [Table 4.10-7, Noise Levels at Receptors near Southeast](#)

⁵ U.S. EPA, *Protective Noise Levels*, 1974.

⁶ CalAm Monterey Peninsula Water Supply Project Draft EIR/EIS, page 4.5-57, ESA, January 2017.

⁷ *Ibid*, page 4.5-58.



Intake Wells Construction shows the noise level from the Southeast Intake well construction to the receptors.

Table 4.10-7: Noise Levels at Receptors near Southeast Intake Wells Construction

Receptor	Distance to Receptor (feet)	Receptor Noise Level (dBA Lmax) ^a	Ambient Level (dBA Leq) ^b
Closest Residence along Beach Road	90	79.4	58.7
Capistrano Beach Park	200	72.5	58.7
Residences on Bluff (est. 34832 Doheny Place)	325	68.2	58.7
Notes:			
a) Based on estimated construction noise level of 84.5 dBA Lmax from bore/drill rig (82 dBA Lmax) and a crane (81 dBA Lmax) at 50 feet away (conservatively assumes the crane and drill rig are operating simultaneously). Noise attenuates at a rate of 6 dBA per doubling of distance (per the inverse square law of sound propagation). Calculated noise levels do not account for additional attenuation from intervening topography, structures, or dense landscaping.			
b) Refer to the noise monitoring results in Table 4.10-1.			

These residential units would potentially be exposed to construction noise reaching 79.4 dBA, thus exceeding the 55 dBA exterior noise standard. Roadway noise from Coast Highway would further mask noise levels from the construction on Capistrano County Beach Park. The bluff would also act as a partial sound barrier to reduce noise levels. Noise from construction vehicles accessing the Project site would also be temporary. In accordance with § 11.10.014 (Special Provisions) of the Municipal Code, the construction activities would be exempted from the noise limits (Table 4.10-3) provided that the associated construction activities do not occur between 8:00 p.m. and 7:00 a.m. on weekdays and Saturdays, or any time on Sunday or a Federal holiday.

As noted in the subsurface intake well discussion, well construction for the southeast intake wells is expected to occur 24 hours a day, seven days a week, and would therefore occur outside the allowable hours under § 11.10.014 of the Municipal Code. Therefore, night time construction noise associated with the subsurface slant wells are not exempt and construction noise limits apply.

Intake well construction would occur in three locations along Capistrano Beach. As discussed above, the combined noise level for drill rigs and cranes is 84.5 dBA at 50 feet. The closest sensitive receptors to the intake well locations would be the residences along Beach Road located approximately 90 feet from the closest well location (H Pod) resulting in noise levels reaching 79.4 dBA. Therefore, southeast intake well construction would exceed the City's 50 dBA nighttime standard and existing ambient noise levels and mitigation would be required.

As described above, Mitigation Measure NOI-2 requires installation of noise attenuating panels/barriers that completely surround each drilling site, prior to the drilling phase of the construction. With implementation of Mitigation Measure NOI-2, nighttime drilling noise levels would be reduced to below the existing ambient level (i.e, the worst-case construction noise level of 79.4 dBA would be reduced to 54.4 dBA, which is below the ambient level of 58.7 dBA). As such, mitigated nighttime construction noise would not exceed the City's exterior nighttime noise standards. The City has also established an interior nighttime noise standard of 45 dBA. Typical construction has an outdoor to indoor attenuation rate of 24 dBA⁸. With the implementation of Mitigation Measure NOI-2, nighttime interior noise levels at the closest

⁸ U.S. EPA, *Protective Noise Levels*, 1974.



residence would be 30.4 dBA and would not exceed the City's standards. Upon implementation of Mitigation Measure NOI-2, nighttime drilling noise impacts would be less than significant.

Marine Biology Noise Impacts

Noise impacts to marine species are similar to those from the subsurface intake wells on Doheny State Beach. Refer to analysis above.

Raw Water Conveyance Alignment - North

The raw water conveyance construction would primarily occur within roadway right-of-way (ROW). Pipeline construction would generally occur in a linear fashion, and would not be confined to one location for an extended period of time (pipeline construction typically proceeds at a rate of approximately 150 to 300 feet per day, depending on specific site conditions); refer to the Project Description for desalinated water conveyance component construction details. The duration of construction activity would vary depending upon the pipeline alignment and particular segment under construction. Construction equipment would include excavators, loaders, haul trucks, compaction equipment, water trucks, cranes, soil sorting and screening equipment, shoring systems, paving equipment, and welding equipment. Sensitive receptors (i.e., residential uses, schools, places of worship, and parks) are located adjacent or within close proximity to the proposed pipeline alignments (within approximately 50 feet). Construction activities would also cause increased noise along access routes to and from the construction areas due to movement of equipment and workers. The proposed northern alignment features pen cut and trenchless pipeline alignments. Typical construction equipment used for these alignment methods are backhoes (78 dBA L_{max}), Compactors (83 dBA L_{max}), Mobile Cranes (81 dBA L_{max}), and Bore/Drill Rigs (84 dBA L_{max}). Noise level calculations assumed the loudest equipment, the bore/drill rigs, to be used throughout the pipeline's construction. Noise levels are shown below in Table 4.10-8, Noise Levels from Receptors near Northern Alignment Construction.

Table 4.10-8: Noise Levels from Receptors near Northern Alignment Construction

Receptor	Distance to Project Component Construction	Noise Level from Bore/Drill Rigs (84 dBA L_{max}) at 50 feet away
Homes at 25352 Village Road	90 feet	78 dBA
Apartments at 25611 Quail Run	153 feet	75 dBA
Residential Units on Bluff (est. 34832 Doheny Place)	300 feet	69 dBA
New Apartments at 34202 Del Obispo Street	50 feet	84 dBA
Apartments at 25856 Dana Bluff West	300 feet	69 dBA
Del Obispo Community Park	50 feet	84 dBA

Construction of the northern alignment would expose nearby sensitive receptors to noise levels over the City's limits. In accordance with § 11.10.014 (Special Provisions) of the Municipal Code, the construction activities would be exempted from the noise limits (Table 4.10-3) provided that the associated construction activities do not occur between 8:00 p.m. and 7:00 a.m. on weekdays and Saturdays, or any time on Sunday or a Federal holiday. The impacts from construction are less than significant, and no mitigation is necessary because of the exemption described above.



Raw Water Conveyance Alignment -South

Similar to the northern alignment, construction of the southern alignment would primarily occur within roadway right-of-way (ROW). The southern alignment is the preferred alignment and is located south of the site and runs 5,800 linear feet (LF) parallel to the existing beach access road. The alignment travels northerly along the access road, crosses San Juan Creek, and catches the three well heads located west of San Juan Creek. The conveyance pipeline would also cut up to PCH, north to Doheny Park Road, west to Las Vegas Avenue, and ultimately to the desalination facility. The majority of this alignment would be constructed using open cut pipeline construction methods. Trenchless construction would occur through San Juan Creek, up to PCH, along Doheny Park Road, and a small portion of the alignment as it enters the desalination facility boundaries. Sensitive receptors are located adjacent or within close proximity to the proposed pipeline alignments (within approximately 50 feet). Typical construction equipment used for the southern alignment is similar to those discussed previously with the northern alignment. Noise level calculations assumed the loudest equipment, bore/drill rigs, to be used throughout the pipeline's construction. Table 4.10-9, Noise Levels from Construction of the Southern Alignment Construction shows noise levels at nearby sensitive receptors from construction of the southern alignment.

Table 4.10-9: Noise Levels from Construction of the Southern Alignment Construction

Receptor	Distance to Project Component Construction	Noise Level from Bore/Drill Rigs (84 dBA L_{max}) at 50 feet away
Apartments at 25942 Domingo Ave	350 feet	67.5 dBA
Residential Units at 34832 Doheny Place	300 feet	69 dBA
Apartments at 25856 Dana Bluff West	300 feet	69 dBA

Construction activities would also cause increased noise along access routes to and from the construction areas due to movement of equipment and workers. In accordance with § 11.10.014 (Special Provisions) of the Municipal Code, the construction activities would be exempted from the noise limits (Table 4.10-3) provided that the associated construction activities do not occur between 8:00 p.m. and 7:00 a.m. on weekdays and Saturdays, or any time on Sunday or a Federal holiday. The impacts from construction are less than significant, and no mitigation is necessary because of the exemption described above.

Desalination Facility

The proposed ocean desalination facility including the pump station would be located on the existing San Juan Creek property owned by SCWD. Construction activities would include construction of pretreatment facilities, seawater reverse osmosis (SWRO), an energy recovery system, posttreatment conditioning, solids handling and disposal, and sanitary sewer connection. Construction equipment would include Mobile Cranes (81 dBA L_{max}), Dozers (82 dBA L_{max}), Dump Trucks (76 dBA L_{max}), and potentially Pile Drives (101 dBA L_{max}). This analysis assumes that the loudest construction tool, Pile Drivers, would only be used for the construction of the desalination facility. Table 4.10-10, Noise Levels from Construction of the Desalination Facility shows receptor noise levels from construction of the desalination facility.



Table 4.10-10: Noise Levels from Construction of the Desalination Facility

Receptor	Distance to Project Component Construction	Noise Level from Pile Drivers (101 dBA L _{max}) at 50 feet away
Apartments at 25942 Domingo Ave	1,200 feet	74 dBA
San Clemente Christian School	1,400 feet	72.5 dBA
Apartments at 25611 Quail Run	720 feet	78 dBA
Mobile homes at 25991 Victoria Blvd	1,450 feet	72.1 dBA
Del Obispo Community Park	600 feet	80 dBA

Noise impacts would exceed residential noise thresholds for residential uses. In accordance with § 11.10.014 (Special Provisions) of the Municipal Code, the construction activities would be exempted from the noise limits (Table 4.10-3) provided that the associated construction activities do not occur between 8:00 p.m. and 7:00 a.m. on weekdays and Saturdays, or any time on Sunday or a Federal holiday. The impacts from construction are less than significant, and no mitigation is necessary because of the exemption described above.

Brine Disposal System

The brine disposal system would be constructed in conjunction with the main desalination facility. The brine facilities would be located at the southern portion of the Project site, as far away from sensitive receptors as possible. Noise impacts from construction of the brine disposal would be similar to construction noise impacts of the desalination facility. Refer to analysis above.

Operation

The permanent facilities proposed by the Project could generate operational noise levels above regulatory standards at nearby sensitive receptors. The following discussion identifies Project impacts related to permanent aboveground facilities at the ocean water desalination facility.

Subsurface Intake Wells

Ocean intake wells would not require the use of noise generating equipment during Project operations. Due to their sub-surface nature, noise levels would be severely muted and would occur below ground. No impact would occur.

Southeast Intake Wells

Ocean intake wells would not require the use of noise generating equipment during Project operations. Due to their sub-surface nature, noise levels would be severely muted and would occur below ground. No impact would occur.

Raw Water Conveyance Alignments – North and South

The raw water conveyance pipelines would not require the use of noise-generating equipment and would operate below ground. Therefore, raw water conveyance components operational noise levels would not expose persons to or generate noise levels in excess of applicable standards. A less than significant impact would occur in this regard.



Desalination Facility

The ocean water desalination facility operations would consist of periodic maintenance visits, nominal increase in employee trips, and mechanical equipment operations. All stationary mechanical equipment (e.g., pumps, generators, etc.) would be housed within enclosed structures, and therefore, noise generated by ocean water desalination facility operation would not adversely affect nearby sensitive receptors. To minimize Project-related operational noise, the media filter backwash, pump station and booster pump station have been sited at the site's southern portion, away from the sensitive receptors. Major ocean water desalination facility components, such as the RO system, would be fully enclosed in a building and thus would not generate operational noise levels, which would not expose persons to or generate noise levels in excess of applicable standards.

To ensure onsite operational equipment noise does not exceed Dana Point's noise standards for residential use at nearby sensitive receptors, review of equipment noise specifications (power ratings, noise ratings, etc.), and enclosure details (refer to Mitigation Measure NOI-3 and NOI-4) would be performed to ensure all equipment adhere to the applicable standards. Therefore, with implementation of Mitigation Measures NOI-3 and NOI-4, the Project's operational noise levels would not expose persons to or generate noise levels in excess of applicable standards. A less than significant impact would occur in this regard, with mitigation incorporated.

Brine Disposal System

A concentrate (brine) disposal system would utilize the existing SJCOO to return brine and treated process waste streams to the ocean. A brine pump station would be used to move discharge into the SJCOO. As discussed previously under the desalination facility discussion, operation of the brine disposal would not adversely affect nearby sensitive receptors. To minimize Project-related operational noise, the noisier Project facilities, such as the media filter backwash pumps pump station and booster pump station, have been sited at the site's southern portion, away from the sensitive receptors. The facility operational noise (media filter backwash pumps pump station and booster pump station) would occur approximately 1,000 feet, respectively, from the nearest sensitive receptors (Del Obispo Community Park) to the west. At these distances, maximum noise levels from the operation of the brine disposal system would be minimal to sensitive receptors. Intervening structures, or topography, would further muffle noise levels. To ensure onsite operational equipment noise do not exceed Dana Point's noise standards for residential use at nearby sensitive receptors, review of equipment noise specifications (power ratings, noise ratings, etc.), and enclosure details (refer to Mitigation Measure NOI-3 and NOI-4) would be performed to ensure all equipment adhere to the applicable standards.

Mitigation Measures

- NOI-1** Prior to construction, SCWD (or its designee) shall ensure that the Grading Plan, Building Plans, and specifications stipulate that:
- All construction equipment, fixed or mobile, is equipped with properly operating and maintained mufflers and other State-required noise attenuation devices.
 - When feasible, construction haul routes shall avoid noise sensitive uses (e.g., residences, convalescent homes, etc.).



- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from the nearest noise sensitive receptors.
- Construction activities that generate noise shall not take place outside of the allowable hours specified by the City of Dana Point Municipal Code Chapter 11.10.014 (8:00 p.m. to 7:00 a.m. on weekdays, including Saturdays, or at any time on Sunday or Federal holiday, with exception on PCH between San Juan Creek Bridge and Crystal Lantern)

NOI-2

Slant Well 24-hour Drilling Noise Mitigation

- a) Construction Hours. SCWD shall conduct construction activities between 7:00 a.m. and 6:00 p.m. Monday through Saturday and 9:00 a.m. to 6:00 p.m. Sunday or for a shorter period if so stipulated in the relevant local noise ordinance. Exceptions shall only apply to drilling operations associated with the proposed slant well construction.
- b) Temporary Noise Barriers. SCWD, the contractor or designee shall install temporary noise barriers between well drilling and sensitive receptors. Temporary noise barriers shall be installed between the drilling rig and nearby receptors such that noise levels at nearby residences and overnight camping sites are reduced. Depending on the length of the noise barrier, it may need to be repositioned after drilling of each well has been completed and the drilling rig has been repositioned. The height and location of the noise barrier shall be determined based on the size of the drilling rig to be used and the location of the proposed wells, and shall be included in a drilling plan submitted to State Parks and County Parks for review and approval. Exceptions shall apply only upon approval by the State or County.
- c) Advanced Notice to Sensitive Receptors. SCWD or its construction contractor shall provide advanced notice, between 2 and 4 weeks prior to construction, by mail to all sensitive receptors and residences within 300 feet of construction sites, staging areas, and access roads. The announcement shall state specifically where and when construction would occur in the area. If construction delays of more than 7 days occur, an additional notice shall be made, either in person or by mail. Notices shall provide tips on reducing noise intrusion; for example, by closing windows facing the planned construction. The notice shall also advise the recipient on how to inform the applicant/contractor if specific noise- or vibration-sensitive activities are scheduled so that construction can be rescheduled, if necessary, to avoid a conflict. SCWD shall also publish a notice of impending construction in local newspapers, stating when and where construction will occur.
- d) Dedication of a Public Liaison. SCWD shall identify and provide a public liaison before and during construction to respond to concerns of neighboring receptors, including residents, about noise construction disturbance. Procedures for reaching the public liaison officer via telephone or in person shall be included in notices distributed to the public. SCWD shall also establish a toll-free telephone



number for receiving questions or complaints during construction and develop procedures for responding to callers. Prior to public notification, procedures included in the notices shall be submitted to State Parks and County Parks for review and approval. SCWD shall provide State Parks and County Parks with a bimonthly letter reporting the number of calls received and a summary of caller concerns and how concerns were addressed.

- e) Use of Appropriate Mufflers. Construction equipment shall be equipped with the appropriate mufflers to reduce noise impacts to less than significant levels in accordance with applicable noise regulations.
- f) Use of the Doheny State Beach campground shall be prohibited within 120 feet of the drilling sites on the (Pods D and E) in order to avoid exposure to construction noise levels in excess of City standards.
- g) Throughout Project construction and operation, SCWD (or its designee) shall document, investigate, evaluate, and attempt to resolve all Project-related noise complaints as soon as possible.

NOI-3

Prior to construction, SCWD (or its designee) shall review noise specifications (noise ratings, power ratings, etc.) for all stationary equipment (microfiltration units, reverse osmosis units, pumps, generators, etc.) and enclosures to confirm that facility noise levels are within the City of Dana Point's acceptable noise standards at nearby sensitive receptors. If noise levels are anticipated to exceed the applicable City noise standards, noise-attenuation measures, such as locating stationary equipment within an upgraded noise enclosure/structure that provides sufficient attenuation and with adequate setback and screening, would be required to achieve acceptable noise levels at the property lines of nearby sensitive receptors (residential uses) in accordance with the Dana Point General Plan and Dana Point Municipal Code Chapter 11.10 (Noise Standards). Once the equipment is installed, noise levels shall be monitored to ensure compliance with the applicable noise standards. If stationary noise exceeds the City of Dana Point's standards, an acoustical engineer shall be retained to install additional noise attenuation measures, in order to meet the applicable noise standard.

NOI-4

Pump Facility Noise. Prior to construction, SWCD (or its designee) shall review noise specifications (noise ratings, power ratings, etc.) for all stationary equipment (conveyance pumps, generators, etc.) to confirm that the Project noise levels are within the City of Dana Point's acceptable noise standards at nearby sensitive receptors. If noise levels are anticipated to exceed the applicable City's noise standards, noise-attenuation measures, such as locating stationary equipment within enclosed structures with adequate setback and screening, would be incorporated into Project design sufficient to achieve acceptable noise levels at the property lines of nearby sensitive noise receptors (residential uses) in accordance the Dana Point General Plan and City's Municipal Code § 11.10.10-12 (Noise Standards). Once the equipment is installed, noise levels shall be monitored to ensure compliance with the City's noise standards. If stationary noise exceeds City's standards, an acoustical



engineer shall be retained to install additional noise attenuation measures, in order to meet the applicable noise standard.

Impact 4.10-2: Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels? *Level of Significance: Less than Significant Impact.*

Construction

Project construction can generate varying degrees of ground-borne vibration, depending on the construction procedure and the construction equipment used. Construction equipment operations generate vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Ground-borne vibrations from construction activities rarely reach levels that damage structures.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibrations is 0.20 inch/second. The types of construction vibration impact include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. Typical vibration produced by construction equipment is illustrated in Table 4.10-12, Typical Vibration Levels for Construction Equipment.

Ground-borne vibration decreases rapidly with distance. As indicated in Table 4.10-12, based on the FTA data, vibration velocities from typical heavy construction equipment operations that would be used during Project construction range from 0.089 to 0.644 inch-per-second peak particle velocity (PPV) at 25 feet from the source of activity.

Subsurface Intake Wells

Intake well offshore construction activities would take place beneath the water surface on Doheny State Beach. Offshore construction vibration impacts would not occur at nearby sensitive receptors. No impact would occur in this regard.

The onshore construction activities would include demolition, excavation, and construction activities that would utilize equipment that could generate ground-borne vibration. However, onshore structures construction for the intake well construction on Doheny State Beach would be minimal as nearest receptors are more than 600 feet away, as shown in Table 4.10-6. Typical construction equipment would include Bore/Drill Rigs, which have a vibration level of 0.089 inch-per-second PPV at 25 feet and 0.032 PPV at 50 feet away. With the closest residential units 600 feet away, maximum vibration levels would be nominal, roughly 0.0008 inch-per-second PPV. Therefore, construction equipment would not generate ground-borne vibration levels above the FTA architectural damage criterion of 0.20 inches/second.



Additionally, at potential recreational uses 50 feet away, vibration levels would be below the 0.04 threshold for perception.⁹ Impacts would be less than significant in this regard.

Table 4.10-12, Typical Vibration Levels for Construction Equipment

Project Component	Vibration Inducing Construction Equipment	Approximate Peak Particle Velocity at 25 feet (inches/second) ^a	Approximate Peak Particle Velocity at 50 feet (inches/second) ^b	Approximate Peak Particle Velocity at 75 feet (inches/second) ^b
Subsurface Slant Wells (Doheny Beach and Capistrano Beach)	Bore/Drill Rig	0.089	0.032	0.017
SCWD Desalination Facility and Brine Disposal System	Pile Driver	0.644	0.2277	0.124
Pipeline Installation (Open Trench Construction)	Roller/Compactor	0.210	0.074	0.040
Pipeline Installation (Trenchless Construction)	Bore/Drill Rig	0.089	0.032	0.017

Notes:

a) PPV (ref) is the reference vibration level in in/sec at 25 feet from Transit Noise and Vibration Impact Assessment Guidelines, May 2006. Table 12-2.

b) Calculated using the following formula:

$$PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}$$

where:

PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance

PPV (ref) = the reference vibration level in in/sec from Table 12-2 of the *FTA Transit Noise and Vibration Impact Assessment Guidelines*

D = the distance from the equipment to the receiver

c) Loaded truck vibration source level of 0.076 was used for dump trucks under the Pump Station Component

Southeast Intake Wells

Intake well offshore construction activities would take place beneath the water surface on Doheny State Beach. Offshore construction vibration impacts would not occur at nearby sensitive receptors. No impact would occur in this regard. The onshore construction activities would include demolition, excavation, and construction activities that would utilize equipment that could generate ground-borne vibration. However, onshore structures construction for the southeast intake wells would occur approximately 393 feet from the nearest residential structure, as discussed in [Table 4.10-7](#). Intake well construction on Capistrano Beach Park would be minimal as nearest receptors approximately 90 feet away. As noted above, Bore/Drill Rigs have a vibration level of 0.032 PPV at 50 feet, which is below thresholds for architectural damage and perception. Therefore, impacts would be less than significant in this regard.

Raw Water Conveyance Alignment - North

SCWD has identified an alignment (North Alignment) that would take raw water from the slant wells northeast along Del Obispo Street, and cross San Juan Creek into the desalination facility at either the

⁹ The Caltrans Transportation and Construction Vibration Guidance Manual (September 2013) identifies 0.01 inches per second as barely perceptible, 0.04 inches per second as distinctly perceptible, 0.10 inches per second as strongly, and 0.4 inches per second as severe for continuous/frequent intermittent sources.



Dana Point Community Center or Del Obispo Park. This alignment will only be considered should the South Alignment (described below) be determined to be infeasible for development.

According to [Table 4.10-8](#), the closest sensitive receptor is located 50 feet away at Del Obispo Community Park. As discussed previously, the northern alignment would feature both pen cut and trenchless alignments, which would involve Bore/Drill Rigs and rollers and compactors. Vibration levels from the Bore/Drill Rigs and compactors would range between 0.089-0.210 inch-per-second PPV at a distance of 25 feet and 0.032-0.074 at 50 feet (see [Table 4.10-12](#)). Therefore, the north raw water conveyance system construction equipment would generate ground-borne vibration levels below the FTA architectural damage criterion of 0.20 inches/second. Additionally, vibration levels would be below the strongly perceptible levels and would have a limited potential for annoyance at Del Obispo Community Park. Therefore, impacts would be less than significant.

Raw Water Conveyance Alignment -South

As discussed previously, the southern alignment would feature both pen cut and trenchless alignments, which would involve a Bore/Drill Rigs. According to [Table 4.10-9](#), the southern raw water conveyance construction could occur as close as approximately 300 feet from residential units located at 34832 Doheny Place and 25856 Dana Bluff West. As discussed previously, the southern alignment would feature both pen cut and trenchless alignments, which would involve Bore/Drill Rigs and rollers and compactors. Vibration levels from the Bore/Drill Rigs and compactors would be 0.00214-0.005 inch-per-second PPV at a distance of 300 feet. Therefore, the south alignment construction equipment would not generate ground-borne vibration levels above the FTA architectural damage criterion of 0.20 inches/second and vibration levels would be barely perceptible. Impacts would be less than significant in this regard.

Desalination Facility

Desalination facility construction would take place within the confines of the SCWD property. A pile driver may be used during construction of the desalination facility. Vibration levels from the pile driver would be 0.644 inch-per-second PPV at 25 feet. According to [Table 4.10-10](#), the nearest sensitive receptor is the Del Obispo Community Park, approximately 600 feet west of the proposed Project site. At 600 feet, vibration levels from the pile driver would be 0.00547 inch-per-second PPV. Therefore, the ocean water desalination facility construction equipment would not generate ground-borne vibration levels above the FTA architectural damage criterion of 0.20 inches/second and vibration levels would be barely perceptible. Impacts would be less than significant in this regard.

Brine Disposal System

The brine disposal construction activities, similar to the construction activities associated with the desalination facility, would include demolition, excavation, and construction activities that would utilize equipment that could generate ground-borne vibration. Therefore, for the purposes of this analysis, the brine disposal ground-borne vibration impacts would assume the same distances to sensitive receptors and construction machinery as the desalination facility above. Vibration levels from the pile driver would be 0.644 inch-per-second PPV at 25 feet. According to [Table 4.10-10](#), the nearest sensitive receptor is the Del Obispo Community Park, approximately 600 feet west of the proposed Project site. At 600 feet, vibration levels from the pile driver would be 0.00547 inch-per-second PPV. Therefore, the brine disposal construction equipment would not generate ground-borne vibration levels above the FTA architectural



damage criterion of 0.20 inches/second and vibration levels would be barely perceptible. Impacts would be less than significant in this regard.

Operation

Subsurface Intake Wells

During Project operation, the intake wells would not involve equipment that would cause ground-bourne vibration. No impact would occur in this regard.

Southeast Intake Wells

During Project operation, the intake wells would not involve equipment that would cause ground-bourne vibration. No impact would occur in this regard.

Raw Water Conveyance Alignments – North and South

During Project operation, the raw and product water conveyance would not involve equipment that would cause ground-bourne vibration. No impact would occur in this regard.

Desalination Facility

During Project operation, the desalination facility would involve equipment that may cause ground-bourne vibration. However, these equipment and facilities would be located within an enclosed building and be located in the southern portion of the site, as far away from other structures as possible. Impacts would be less than significant.

Brine Disposal System

During Project operation, the Brine Disposal System would not involve equipment that would cause ground-bourne vibration. No impact would occur in this regard.

Mitigation Measures

No mitigation measures are required.

Impact 4.10-3: Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? *Level of Significance: Less than Significant with Mitigation.*

Construction

Subsurface Intake Wells

Intake well construction would occur over various months depending on the phase. Construction would be temporary, and noise impacts would cease upon construction completion. Thus, construction of the intake wells would not result in a permanent increase in ambient noise levels in the Project vicinity. There would be no impact in this regard.

Southeast Intake Wells

Intake well construction would occur over approximately various months depending on the phase. Construction would be temporary, and noise impacts would cease upon construction completion. Thus,



construction of the intake wells would not result in a permanent increase in ambient noise levels in the Project vicinity. There would be no impact in this regard.

Raw Water Conveyance Alignments – North and South

Construction of raw water alignments would occur over approximately various months depending on the phase. Construction would be temporary, and noise impacts would cease upon construction completion. Thus, construction of the alignments would not result in a permanent increase in ambient noise levels in the Project vicinity. There would be no impact in this regard.

Desalination Facility

The desalination facility construction would occur over various months depending on the phase. Overall, construction would be temporary, and noise impacts would cease upon construction completion. Thus, construction would not result in a permanent increase in ambient noise levels in the Project vicinity. There would be no impact in this regard.

Brine Disposal System

Refer to Desalination Facility discussion above.

Operation

Subsurface Intake Wells

The feedwater entering the onshore intake and structure would flow by a submersible pump through deep 1,000-foot long pipelines to an intake pump station located at the ocean water desalination facility. Therefore, the ocean intake wells would not require the use of noise-generating equipment such as water pumps. Operations would not result in increased permanent ambient noise levels, a less than significant impact would occur in this regard.

Southeast Intake Wells

Similarly, the design of the intake wells on Capistrano County Beach Park would feature the same design as the intake wells on Doheny State Beach. The feedwater entering the onshore intake and structure would flow by a submersible pump through deep 1,000-foot long pipelines to an intake pump station located at the ocean water desalination facility. Operations would not result in increased permanent ambient noise levels, a less than significant impact would occur in this regard.

Raw Water Conveyance Alignments – North and South

Raw water conveyance pipelines would operate below ground and would not involve noise-generating equipment. Therefore, raw water conveyance components operations would result in no impact concerning permanent ambient noise levels.

Desalination Facility

The desalination facility operations would generate noise levels above regulatory standards at nearby receptors. Operations would consist of periodic maintenance visits, nominal increases in employee trips, and mechanical equipment operations. In addition, as discussed under Impact NOI 4.10-1, Mitigation Measure NOI-2 would require that SCWD (or its designee) document and attempt to resolve all



operational noise complaints as soon as possible. In order to ensure onsite operational equipment noise does not exceed the City of Dana Point's noise standards for residential use at nearby sensitive receptors, SCWD (or its designee) would be required to review equipment noise specifications (power ratings, noise ratings, etc.) and enclosure details to ensure compliance with Municipal Code standards; refer to Mitigation Measure NOI-4 under Impact NOI 4.10-1. With implementation of Mitigation Measures NOI-2 and NOI-4, the desalination facility operations would not result in a substantial permanent increase in ambient noise levels in the Project vicinity. With mitigation, a less than significant impact would occur in this regard.

Brine Disposal System

Refer to impact discussion for desalination facility above.

Mitigation Measures

Mitigation Measures NOI-2 and NOI-4 are applicable.

Impact 4.10-4: **Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? *Level of Significance: Less than Significant with Mitigation.***

Construction

Subsurface Intake Wells

Construction of the intake well would result in increased noise in the immediate vicinity of the onshore beach construction area. In accordance with § 11.10.014 (Special Provisions) of the Municipal Code, the construction activities would be exempted from the noise limits (Table 4.10-3) provided that the associated construction activities do not occur between 8:00 p.m. and 7:00 a.m. on weekdays and Saturdays, or any time on Sunday or a Federal holiday. Due to nighttime construction, Mitigation Measure NOI-2 requires temporary construction barriers to ensure maximum noise levels do not exceed the ambient levels. As construction noise would be reduced to levels below the existing ambient levels, daytime and nighttime construction noise levels would not create a substantial temporary or periodic increase in ambient noise levels above levels existing without the Project and impacts would be less than significant.

Southeast Intake Wells

Similar to the impacts on Doheny State Beach, construction of intake wells on Capistrano Beach Park would result in increased noise in the immediate vicinity of the onshore beach construction area. In addition, traffic noise from Coast Highway and in the immediate vicinity are noise-generating areas that would mask construction equipment noise. Noise from construction vehicles accessing the Project site would also be temporary. Daytime construction would be exempt per § 11.10.014 of the Municipal Code. Due to nighttime construction, Mitigation Measure NOI-2 requires temporary construction barriers to ensure maximum noise levels do not exceed the ambient levels. As construction noise would be reduced to levels below the existing ambient levels, daytime and nighttime construction noise levels would not create a substantial temporary or periodic increase in ambient noise levels and impacts would be less than significant.



Raw Water Conveyance Alignments – North and South

The Project's desalinated water conveyance components construction would occur within roadway ROW and other locations in proximity to sensitive receptors. As discussed above, construction activities would not produce sustained changes in ambient noise levels. Construction equipment would travel throughout the pipeline construction areas and other construction sites, thus not occurring near sensitive receptors for extended periods of time. Accordingly, the raw water conveyance components construction have limited ability to influence the ambient noise levels. The water conveyance components construction would implement noise-attenuating measures that would further minimize potential construction-related noise impacts; refer to Mitigation Measure NOI-1. Finally, Municipal Code Chapter 11.10.014 exempts construction activities from Noise Ordinance standards provided they take place between 7:00 AM and 8:00 PM (Monday through Saturday). Adherence to the applicable requirements and compliance with Mitigation Measures NOI-1 and NOI-2 would minimize construction noise impacts at nearby sensitive receptors. Therefore, with mitigation incorporated, the conveyance components construction would not create a substantial temporary or periodic increase in ambient noise levels in the vicinity of the ocean water desalination facility above levels existing without the Project.

Desalination Facility

Construction of the main facility and desalination facility on the 30 acre SCWD property has the potential to result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity. Implementation of all Project Design Features and feasible mitigation (Mitigation Measures NOI-1 through NOI-4) would reduce noise impacts and would not exceed the City of Dana Point's exterior noise standards. The location of the pumps and noise generating equipment would be located at the southern portion of the site, as far away from sensitive receptors as possible. The nearest sensitive receptor is the Del Obispo Community Park, located 600 feet west across San Juan Creek. Implementation of Mitigation Measure NOI-1 – NOI-4 would further ensure that all construction equipment, fixed or mobile, is equipped with properly operating and maintained mufflers and other State-required noise attenuation devices. Review of noise specifications for all stationary equipment (microfiltration units, reverse osmosis units, pumps, generators, etc.) and enclosures would ensure that facility noise levels are within the City of Dana Point's acceptable noise standards at nearby sensitive receptors. Implementation of Mitigation Measures NOI-1 – NOI-4 and adherence to the City's Municipal Code Chapter 11.10.014 would reduce impacts to a less than significant level.

Brine Disposal System

Construction of the Brine Disposal system falls under the general construction of the desalination facility. Refer to analysis above.

Operation

Subsurface Intake Wells

The feedwater entering the onshore intake structure would flow by a submersible pump through deep 1,000-foot long pipelines to an intake pump station located at the ocean water desalination facility. Furthermore, the pipelines and associated vaults would be located several feet below the surface, masking additional operational noise. Therefore, well intake operations would not result in increased permanent ambient noise levels, a less than significant impact would occur in this regard.



Southeast Intake Wells

Design of the intake wells on Capistrano Beach Park would be similar to those on Doheny State Beach. The feedwater entering the onshore intake structure would flow by a submersible pump through deep 1,000-foot long pipelines to an intake pump station located at the ocean water desalination facility. Furthermore, the pipelines and associated vaults would be located several feet below the surface, masking additional operational noise. Therefore, well intake operations would not result in increased permanent ambient noise levels, a less than significant impact would occur in this regard.

Raw Water Conveyance Alignments – North and South

Raw water conveyance components operations would occur below ground and would not involve noise-generating equipment, thus not resulting in a substantial temporary or periodic increase in ambient noise. A less than significant impact would occur in this regard.

Desalination Facility

The ocean water desalination facility operations could generate temporary ambient noise levels above regulatory standards at nearby receptors. Operations would consist of periodic maintenance visits, nominal increases in employee trips, and mechanical equipment operations. As discussed previously, operational noise impacts would be reduced during Project operation through compliance with Mitigation Measures NOI-2 and NOI-3. Mitigation Measure NOI-2 requires SCWD (or its designee) to document and attempt to resolve all Project related noise complaints as soon as possible. Mitigation Measure NOI-3 requires SCWD (or its designee) to review equipment noise specifications and enclosure details. Furthermore, several Project Design Features such as the location of the noise generating equipment and placement of certain facilities would maximize the distance to nearby sensitive receptors. Therefore, with mitigation (NOI-2 and NOI-3) incorporated, Project components operations would not create a substantial temporary or periodic increase in ambient noise levels in the vicinity of the ocean water desalination facility above levels existing without the Project.

Brine Disposal System

The brine disposal system would be located on the southern portion of the Project site. It includes a brine discharge holding tank, as well as pump skid and discharge pipes. The pump skid may generate temporary ambient noise levels above regulatory standards at nearby sensitive receptors. Noise impacts would be similar to those analyzed previously under the desalination facility. Refer to impact analysis above.

Mitigation Measures

Mitigation Measures NOI-1 to NOI-4 applicable.

Impact 4.10-5: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise level? *Level of Significance: No Impact.*



Construction and Operations

All Components

The nearest airport is John Wayne Airport, located 18 miles north west. The Project site is not within any safety zones or impact zones of the John Wayne Airport. Therefore, the Project would not expose people residing or working in the Project area to excessive noise level. No Impact would occur.

Mitigation Measures

No mitigation measures are required.

Impact 4.10-6: For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? *Level of Significance: No Impact.*

Construction and Operations

All Components

The Project ocean water desalination facility and various facilities and components are not proposed in the vicinity of a private airstrip. Therefore, the Project would not expose people working on the Project site to excessive noise levels associated with a private airstrip. No impact would occur in this regard.

Mitigation Measures

No mitigation measures are required.

REGIONAL PROJECT

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential noise impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). Expansion at the desalination facility site would have no additional significant impacts relative to noise, as the site would have already been graded, and operational equipment would either be within enclosed buildings or otherwise comply with applicable noise regulations. The Regional Project may require construction of additional regional product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified. Mitigation Measures NOI-1 through NOI-4 would apply to the Regional Project, which would further reduce potential noise impacts.

4.10.5 CUMULATIVE IMPACTS

For purposes of noise resource impact analysis, cumulative impacts are considered for cumulative development according to the related projects; see [Table 4-1, Cumulative Local and Regional Projects List](#). Construction-related noise is a localized activity and would only affect land uses that are immediately adjacent to the construction areas due to the fact that noise dissipates as it travels away from its source.



This EIR has incorporated by reference the Dana Point General Plan, which address cumulative impacts of City buildout. All Project impacts are mitigated to less than significant levels, and the Project's contribution toward cumulative impacts is not otherwise considered to be "cumulatively considerable."

The cumulative projects outlined in [Table 4-1](#) include a variety of projects, including hotels, housing developments, new schools, offices, and industrial uses. In addition, commercial uses onsite and in the immediate vicinity are noise-generating land uses that would combine with ocean water desalination facility construction equipment noise. As a result, cumulative projects could generate short- and long-term noise in exceedance of the applicable City's noise standards. The proposed Project would be required to comply with Mitigation Measures NOI-1 through NOI-3 to reduce construction noise and vibration, and ensure that impacts are not cumulatively considerable. Contractors at the job sites of any related cumulative projects would also be required to adhere to the applicable City's Noise standards. Thus, the Project's cumulative contribution to construction noise impacts would be less than significant. Generally, there would be limited cumulative impacts to these residences due to the localized nature of the Project's construction noise. Therefore, cumulative construction-related noise impacts would not be significant and unavoidable.

Long-term stationary noise sources associated with the Project combined with other cumulative projects could cause local noise level increases. Noise levels associated with the proposed Project and related cumulative projects together could result in higher noise levels than considered separately. However, the expected combined cumulative effect within the Project area would be reduced by Mitigation Measures NOI-3 and NOI-4, as well as adherence to the General Plan Policies and compliance with the applicable City's noise standards. Additionally, related cumulative projects would be required to comply with the applicable City's noise level standards and include mitigation measures if this standard is exceeded. Finally, none of the cumulative projects are located in the vicinity of the ocean water desalination facility. Therefore, cumulative noise impacts from stationary noise sources would be considered less than significant.

Similarly, all future development with the potential to impact noise would be required to demonstrate compliance with applicable federal and State regulatory requirements, including General Plan goals and policies of the affected jurisdiction, intended to reduce and/or avoid potential adverse environmental effects. As such, cumulative impacts to noise would be mitigated on a project-by-project level, and in accordance with the established regulatory framework, through the established regulatory review process.

4.10.6 SIGNIFICANT UNAVOIDABLE IMPACTS

None have been identified.



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**EXHIBIT 4.10-1: Noise Measurement Locations**

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn

4.11 PUBLIC SERVICES

This section evaluates potential Project impacts on public services by identifying anticipated demand and evaluating its relationship to existing and planned public services facilities and availability. Per CEQA, the emphasis in this EIR is on impacts to public services by the Project that could require construction or expansion of existing public service facilities resulting in a physical impact on the environment. For purposes of this EIR, public services consist of: fire and police protection, schools, parks and library services. Information provided in this section was primarily obtained from the City of Dana Point General Plan, the Doheny Ocean Desalination Project Preliminary Design Report, and the City of Dana Point Municipal Code.

Refer also to Section 4.12, Recreation, for an expanded discussion concerning existing recreational facilities and an assessment of the degree to which these facilities may be impacted as a result of Project construction and operation.

4.11.1 AFFECTED ENVIRONMENT

Environmental Setting

Natural Setting

The Doheny Ocean Desalination Project is located primarily within the City of Dana Point at elevations ranging from below sea level to nearshore beaches (for the subsurface intake wells), to 0 to 33 feet above mean sea level (amsl) for the desalination facility and conveyance lines, to higher elevations for offsite improvements, discussed further below.

Subsurface Intake Well Area

The intake wells and related facilities would be located at Doheny State Beach. Doheny State Beach is located in an urbanized area of Dana Point, with recreational, retail and commercial uses adjacent to the beach. Construction in this area would generally be within developed areas such as beach landscaping and lawn areas, beach access roads, and limited upper beach construction. Slant well construction will also extend below the ocean floor.

Southeast Intake Wells

The southeast intake wells study area extends southerly beyond Doheny State Beach (DSB), and includes Capistrano Beach Park (while still in the City of Dana Point). These potential intake wells would also be constructed within developed areas such as the bike trail and parking lot area.

Raw Water Conveyance Alignments

The raw water conveyance pipeline would deliver water from the intake wells to the desalination facility. The potential pipeline alignments are located on beach access roads, maintenance roads, local city streets, and other previously disturbed areas. If the pipelines traverse San Juan Creek (such as with the northern pipeline alignment), this would be done via trenchless construction to avoid direct impacts to San Juan Creek.



Desalination Facility

The proposed desalination facility is within an active District Corporate Yard, is occupied by various storage and commercial tenant uses, and has been previously disturbed. The proposed desalination facility is bounded by PCH to the south, San Juan Creek to the west, the Southern California Regional Rail Authority (SCRRA) rail line to the east, and the existing County drainage facility L01S02 to the north. A large stockpile earthen mound is located north of the drainage channel.

Concentrate (Brine) Disposal System

The brine disposal system would utilize the existing San Juan Creek Ocean Outfall to return brine and treated process waste streams to the ocean. The existing ocean outfall also serves the J.B. Latham Wastewater Treatment Plant, which is located on the west side of San Juan Creek.

Regional Project Facilities

Regional Project facilities (as described in Section 3) would be in substantially the same location as the Phase I Project facilities, with the exception of the SDG&E electrical line extensions (which would extend north of the site within existing streets) and the Regional Project product water conveyance, pumping and storage facilities, the location of which is not known at this time.

City of Dana Point Public Services

Fire Protection Services

The Orange County Fire Authority (OCFA) provides regional emergency response to all fires, medical aids, rescues, hazardous materials incidents, wildland fire, aircraft fire and rescue services to John Wayne Airport, and other miscellaneous emergencies. OCFA was created on March 1, 1995, and is governed by a 24-member Board of Directors, with representatives from the 23 cities it protects and the Orange County Board of Supervisors. The OCFA serves a population of 1.68 million in an area of 511 square miles including 178,000 acres of wildland.¹ The cities and unincorporated areas that the OCFA protects are served by 71 fire stations located throughout Orange County. The City is located in Division III, which includes Battalions 6 and 7, and serves the Cities of Dana Point, Mission Viejo, Rancho Santa Margarita, San Clemente, and San Juan Capistrano, along with the unincorporated communities of Coto de Caza, Ladera, Las Flores, Modjeska Canyon, Trabuco Canyon, and Talega.

There are currently two fire stations within the City of Dana Point. The fire station closest to the Project site is Fire Station 29, located approximately 0.30 miles east of the Project site at 26111 Victoria Boulevard. This station is staffed with three battalion chiefs, three captains, three engineers, and six firefighters. The second station is Fire Station No. 30, located 2.1 miles northwest of the Project site. This station is staffed with three captains, three engineers, three firefighters, and reserve firefighters. According to the 2016 OCFA Statistical Annual Report, the two stations received 3,448 calls for service. Table 4.11-1, Fire Station Details includes additional OCFA fire stations that would be available to respond to emergency situations.

¹ www.ocfa.org (accessed February 1, 2018).



Table 4.11-1: Fire Station Details

Fire Station #	Location	Apparatus	Personnel
29	26111 Victoria Boulevard Dana Point, CA 92624	PM Engine 29 Battalion 6	3 - Battalion Chiefs 3 - Captains 3 - Engineers 6 - Firefighters
30	23831 Stonehill Drive Dana Point, CA 92629	PAU Engine 30 Engine 330 Air Utility 30 Patrol 30	3 - Captains 3 - Engineers 6 – Firefighters, and Reserve Firefighters
50	670 Camino de Los Mares San Clemente, CA 92673	Engine 50 Engine 350 Ambulance 50	3 - Captains 3 - Engineers 6 - Firefighters 6 - Emergency Trauma Technician (ETT)
7	31865 Del Obispo San Juan Capistrano, CA 92675	Engine 7, Engine 307, Medic 7 Water Tender 7 Patrol 7	3 - Captains 3 - Engineers 9 – Firefighters and Reserve Firefighters
49	31461 Street of the Golden Lantern Laguna Niguel, CA 92677	PAU Truck 49	3 - Captains 3 - Engineers 6 - Firefighters

Source: OCFA Operations Division 3, 2017.

The OCFA Disaster Preparedness Division implements the City’s Disaster Plan and assists individuals and organizations with Disaster Planning and the formation of evacuation strategies. The City’s General Plan has set the following goal for fire protection: First fire engine to reach emergency scene within 5 minutes and paramedics to reach the scene within 10 minutes for 80 percent of City.

Police Protection Services

The City of Dana Point contracts with the Orange County Sheriff’s Department (OCSD) for law enforcement services. Dana Point Police Services (DPPS) is staffed by 25 full-time deputies, six sergeants, and six parking control officers.² DPPS provides a Special Enforcement Team (SET), the Community Support Unit, bicycle patrol, and the Harbor Patrol Division located at 1901 Bayside Drive in Corona Del Mar. Also, DPPS is supported by a Crime Prevention Specialist and the Volunteers in Police Support (VIPS), a large network of neighborhood watch programs that includes approximately 200 block captains. Additional staff consists of a school resource officer, community support deputies, motor officers, and special enforcement officers, all of whom play a part in the South County Directed Enforcement Team. Deputies respond to over 17,000 calls for service per year in the City. The City’s General Plan has set the following goal for police protection: Deputy at the scene of an emergency call within 5 minutes, 50 percent of the time, and to all emergencies within 8 minutes. Response to non-emergency calls to be 15 minutes or less, 75 percent of the time.

² <http://www.ocsd.org/patrol/dpoint/> (accessed February 1, 2018).



DPPS provides patrol and law enforcement services for the Project area. The Central Justice Center, the main OCSD facility, is located at 700 Civic Center West, Santa Ana, approximately 28.9 miles northeast of the Project site. The South Operations Division, located at 11 Journey, Aliso Viejo, is available for walk-in traffic and four officers there serve as the main facilitators for solving neighborhood problems, code enforcement, and follow-up criminal investigations in the greater north side area.

Schools

The provision of education and school facilities in the City is the responsibility of Capistrano Unified School District (CUSD), which is the second largest school district in the County, encompassing 200 square miles. CUSD includes all or part of the cities of San Clemente, Dana Point, San Juan Capistrano, Laguna Niguel, Aliso Viejo, Mission Viejo and Rancho Santa Margarita, and the communities of Las Flores, Coto de Caza, Dove Canyon, Ladera Ranch, Sendero/Rancho Mission Viejo, and Wagon Wheel. Governed by a seven-member Board of Trustees, CUSD currently (2016–2017 school year) operates 33 elementary schools, 2 kindergarten through 8th grade (K–8) schools, 10 middle schools, 6 comprehensive high schools, 8 alternative education schools and programs, and 5 charter schools.³ The nearest schools to the Project site include Palisades Elementary, R.H. Dana Elementary School, Dana Hills High School, Del Obispo Elementary School, Marco Forster Middle School, and Kinoshita Elementary School. Other private and charter schools are also located in the Project area. The demand for public school facilities is driven by residential land use. As the Project site does not consist of residential land uses, the existing land use is not creating any demand on public school facilities.

Other Public Facilities

The Orange County Public Libraries system provides library services to the County, including the City, and includes 33 branches as well as an outlet in the Orangewood Children's Home. The County library nearest the Project site is the Dana Point branch located at 33841 Niguel Road, approximately 2.1 miles northwest of the Project site. The Dana Point branch is open daily providing library services to the community of Dana Point. According to the City's General Plan Public Facilities/Growth Management Element, Table PF-1, the City uses a library demand of 0.2 square feet (sf) of library space per capita. Since the Project site does not contain residential land uses and does not contribute to the population within the City, the existing land use is not contributing to a demand on public library facilities within the City or the County.

4.11.2 REGULATORY FRAMEWORK

Federal

Federal Emergency Management Act (FEMA)

In March 2003, FEMA became part of the US Department of Homeland Security. FEMA's continuing mission is to lead the effort to prepare the nation for all hazards and effectively manage federal response and recovery efforts following any national incident. FEMA also initiates proactive mitigation activities, trains first responders, and manages the National Flood Insurance Program and the U.S. Fire Administration.

³ <http://capousd.ca.schoolloop.com> (accessed February 1, 2018).



Disaster Mitigation Act of 2000

This Act (42 United States Code [U.S.C.] § 5121) was signed into law to amend the Robert T. Stafford Disaster Relief Act of 1988 (42 U.S.C. § 5121-5207). Among other things, this legislation reinforces the importance of pre-disaster infrastructure mitigation planning to reduce disaster losses nationwide and is aimed primarily at the control and streamlining of the administration of federal disaster relief and programs to promote mitigation activities. Some of the major provisions of this Act include:

- Funding pre-disaster mitigation activities;
- Developing experimental multi-hazard maps to better understand risk;
- Establishing state and local government infrastructure mitigation planning requirements;
- Defining how states can assume more responsibility in managing the hazard mitigation grant program; and
- Adjusting ways in which management costs for projects are funded.

The mitigation planning provisions outlined in § 322 of this Act establish performance-based standards for mitigation plans and require states to have a public assistance program (Advance Infrastructure Mitigation [AIM]) to develop county government plans. The consequence for counties that fail to develop an infrastructure mitigation plan is the chance of a reduced federal share of damage assistance from 75 percent to 25 percent if the damaged facility has been damaged on more than one occasion in the preceding 10-year period by the same type of event.

Federal Fire Safety Act (FFSA)

The 1992 FFSA is different from other laws affecting fire safety as the law applies to federal operations, and there is no requirement for local action unless a private building owner leases space to the federal government. The FFSA requires federal agencies to provide sprinkler protection in any building, whether owned or leased by the federal government that houses at least 25 federal employees during the course of their employment.⁴

State

Fire Protection and Emergency Services

2016 California Fire Code

California Code of Regulations (CCR) Title 24, Part 9 (2016 California Fire Code) contains regulations relating to construction and maintenance of buildings, the use of premises, and the management of wildland-urban interface area, among other issues. The California Fire Code is updated every three years by the California Building Standards Commission and was last updated in 2016 (adopted January 1, 2017). The Fire Code sets forth regulations regarding building standards, fire protection and notification systems, fire protection devices such as fire extinguishers and smoke alarms, high-rise building standards, and fire suppression training. It contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the code also include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use,

⁴ Understanding the Federal Fire Safety Act, <https://www.congress.gov/bill/102nd-congress/house-bill/3360> (accessed June 11, 2017).



provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. Development under the proposed Project would be subject to applicable regulations of the California Fire Code.

Title 8 California Code of Regulations Sections 1270 and 6773

In accordance with CCR, Title 8 § 1270 “Fire Prevention” and 6773 “Fire Protection and Fire Equipment,” the California Occupational Safety and Health Administration (Cal-OSHA) has established minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hosing sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance, and use of all firefighting and emergency medical equipment.

2016 California Building Standards Code

California building standards are published in the California Code of Regulations, Title 24, also known as the California Building Standards Code (CBSC). The CBSC, which applies to all applications for building permits, consists of 12 parts that contain administrative regulations for the California Building Standards Commission and for all State agencies that implement or enforce building standards. Local agencies must ensure the development complies with the guidelines contained in the CBSC. Cities and counties have the ability to adopt additional building standards beyond the CBSC including the CBSC Part 2, named the California Building Code which is based upon the 2016 International Building Code, and Part 11, named the California Green Building Standards Code, also called the CalGreen Code. The City of Dana Point adopted Title 24, Parts 1-12 in 2016.

California Health and Safety Code

State fire regulations are set forth in California Health and Safety Code § 13000 *et seq.*, and include provisions concerning building standards, fire protection and notification systems, fire protection devices, and fire suppression training, as also set forth in the 2016 CBSC and related updated codes.

Mutual Aid Agreements (MAA)

The Emergency Managers Mutual Aid (EMMA) system is a collaborative effort between city and county emergency managers in the Office of Emergency Services (OES) in the coastal, southern, and inland regions of the state. EMMA provides service in the emergency response and recovery efforts at the Southern Regional Emergency Operations Center (REOC), local Emergency Operations Centers (EOCs), the Disaster Field Office (DFO), and community service centers. The purpose of EMMA is to support disaster operations in affected jurisdictions by providing professional emergency management personnel. In accordance with the MAA, local and state emergency managers have responded in support of each other under a variety of plans and procedures.

California Governor’s Office of Emergency Management Agency (Cal-EMA)

In 2009, the State of California passed legislation creating the Cal-EMA and authorizing it to prepare a Standardized Emergency Management System (SEMS) program (Title 19 CCR § 2400 *et seq.*), which sets forth measures by which a jurisdiction should handle emergency disasters. Non-compliance with SEMS



could result in the state withholding disaster relief from the non-complying jurisdiction in the event of an emergency disaster.

Cal-EMA serves as the lead state agency for emergency management in the state. Cal-EMA coordinates the state response to major emergencies in support of local government. The primary responsibility for emergency management resides with local government. Local jurisdictions first use their own resources and, as these are exhausted, obtain more from neighboring cities and special districts, the county in which they are located, and other counties throughout the state through the statewide mutual aid system. In California, the SEMS provides the mechanism by which local government requests assistance. Cal-EMA serves as the lead agency for mobilizing the state's resources and obtaining federal resources; it also maintains oversight of the state's mutual aid system.

Police Protection

California Penal Code

All law enforcement agencies within the State of California are organized and operated in accordance with the applicable provisions of the California Penal Code. This code sets forth the authority, rules of conduct, and training for peace officers. Under state law, all sworn municipal and county officers are state peace officers. There are no relevant State regulations pertaining to police protection.

Schools

California Education Code Section 17620

California Education Code § 17620, *et seq.* allows school district governing boards to collect impact fees from developers of new commercial/industrial building space.

Assembly Bill 2926

The State of California has traditionally been responsible for the funding of local public schools. To assist in providing facilities to serve students generated by new development projects, the State passed Assembly Bill 2926 (AB 2926) in 1986. This bill allowed school districts to collect impact fees from developers of new residential and commercial/industrial building space. Development impact fees were also referenced in the 1987 Leroy Greene Lease-Purchase Act, which required school districts to contribute a matching share of project costs for construction, modernization, or reconstruction.

California Government Code Section 65995 and Education Code

California Government Code, § 65995 is found in Government Code, Title 7, Chapter 4.9. Government Code § 65995 authorizes school districts to collect impact fees from developers of new residential and commercial/industrial building space. Senate Bill 50 (SB 50) amended Government Code § 65995 in 1998. Under the provisions of SB 50, schools can collect fees to offset costs associated with increasing school capacity as a result of development.

The provisions of SB 50 prohibit local agencies from denying either legislative or adjudicative land use approvals on the basis that school facilities are inadequate, and reinstate the school facility fee cap for legislative actions (e.g., General Plan amendments, specific plan adoption, zoning plan amendments) as



was allowed under the *Mira*,⁵ *Hart*,⁶ and *Murrieta*⁷ court cases. The provisions of Chapter 4.9 are the exclusive means of considering as well as mitigating school impacts caused by new development. Accordingly, these provisions limit the scope of impact review in an EIR, the mitigation that can be imposed, and the findings a lead agency must make in justifying its approval of a project (Government Code § 65995-65996). According to Government Code §65996, the provisions of Chapter 4.9, including development fees authorized by SB 50, are deemed to be “full and complete school facilities mitigation....” These provisions remain in place as long as subsequent State bonds are approved and available.

Local

Fire Protection and Emergency Services

City of Dana Point General Plan

Public Facilities and Growth Management goals and policies are included in the Public Facilities/Growth Management Utilities Element of the City’s General Plan. The following goals and policies are applicable to the proposed Project:

Goal 4: Maintain desirable levels of police, fire, and emergency medical services in the City.

Policy 4.1: Periodically evaluate services and service criteria to ensure the City has adequate police, fire, and emergency medical services.

Policy 4.5: Coordinate with the Orange County Sheriff’s and Fire Departments for the continued provision of adequate law enforcement and fire protection.

City of Dana Point Municipal Code

Section 8.24.001 of the City’s Municipal Code establishes the adoption of the California Fire Code. The City Council of the City of Dana Point adopted by reference the California Code of Regulations Title 24, Part 9, known and designated as the 2013 California Fire Code (CFC), based on the International Fire Code, 2012 Edition. The provisions of the CFC constitute the fire code regulations for development within the City.

Police Protection

City of Dana Point General Plan

Goal 4: Maintain desirable levels of police, fire, and emergency medical services in the City.

Policy 4.1: Periodically evaluate services and service criteria to ensure the City has adequate police, fire, and emergency medical services.

Policy 4.5: Coordinate with the Orange County Sheriff’s and Fire Departments for the continued provision of adequate law enforcement and fire protection.

⁵ *Mira Development Corp. v. City of San Diego* (1988) 205 Cal. App. 3d 1201 (*Mira*).

⁶ *William S. Hart Union High School Dist. v. Regional Planning Comm.* (1991) 226 Cal. App. 3d 1612 (*Hart*).

⁷ *Murrieta Valley Unified School Dist. v. County of Riverside* (1991) 228 Cal. App. 3d 1212 (*Murrieta*).



Schools

City of Dana Point General Plan

Goal 5: Encourage adequate community facilities including libraries, schools, civic and cultural facilities.

Policy 5.8: Coordinate the approval of new development with the capacity of the Capistrano Unified School District.

Other Public Facilities

City of Dana Point General Plan

Goal 5: Encourage adequate community facilities including libraries, schools, civic and cultural facilities.

Policy 5.1: Cooperate with the Orange County Public Library to periodically assess library service needs for the community.

4.11.3 SIGNIFICANCE CRITERIA

Significance Criteria under CEQA

Appendix G of the State CEQA Guidelines contains the Initial Study Checklist form, which includes questions related to public services. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this section. Accordingly, a project may create a significant environmental impact if one or more of the following occurs:

Public Services

- Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services;
 - Fire protection;
 - Police protection;
 - Schools;
 - Parks;
 - Other public facilities.

Methodology and Assumptions

The proposed Project and associated project design features (PDFs) are evaluated against the aforementioned significance criteria, as the basis for determining the level of impacts related to public services. In addition to PDFs, this analysis considers existing regulations, laws and standards that serve to avoid or reduce potential environmental impacts. Where significant impacts remain, feasible mitigation measures are recommended, where warranted, to avoid or lessen the Project's significant adverse impacts. Further details regarding methods are provided in Appendix 10.1 of this EIR.



Project Design Features

- The slant wells, conveyance lines and related appurtenances, once constructed, would have negligible effect on public services as they are below-ground water facilities;
- The desalination facility site is within an existing industrial area, surrounded by commercial facilities with adequate public service and infrastructure.

4.11.4 IMPACTS AND MITIGATION

Impact 4.11-1: 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: *Level of Significance: Less than Significant Impact.*

i) Fire protection?

Construction

All Components

The Project does not propose construction of any new or physically altered fire protection facilities. The Project construction activities would create a temporary incrementally increased demand for fire protection services for the construction sites. All construction activities would be subject to compliance with applicable emergency response and fire safety requirements of OCFA, the California Fire Code, and City of Dana Point requirements.⁸ Project construction would be temporary and would not result in adverse physical impacts associated with the provision of new or physically altered fire protection facilities or the need for new or physically altered fire protection facilities and would not adversely affect service ratios, response times, or other performance objectives. Impacts would be less than significant in this regard. Compliance with applicable local and state design regulations would ensure that the Project construction would result in a less than significant impact to fire protection services.

Operation

All Components

Several of the Project components would be located below ground and thus would not create a demand for additional fire protection. Specifically, the slant well operations, raw water conveyance pipeline operations, and brine disposal operations would occur below ground. Given that these operations would occur below ground, it is not anticipated that the proposed Project operations would result in the need

⁸ Note that, pursuant to Government Code § 53091 and § 53096, Project facilities that are for the production, generation, storage or treatment of water are not subject to local land use control, including building and grading permits, and improvement plans. However, the proposed Administration Building is subject to City plan check review, and offsite pipeline trenching or other facilities requiring City encroachment permits are subject to ministerial review as part of the encroachment permit process. All facilities within the Coastal Zone are also subject to review by the City of Dana Point and/or the California Coastal Commission. All facilities located on other agency property, such as Doheny State Beach and Capistrano Beach Park, are subject to review and approval by those agencies as part of the encroachment permit or lease process.



for additional new or altered fire protection services. These components also would not alter acceptable service ratios or response. No impact would occur in this regard.

Desalination Facility

The Project's desalination facility operations would create a slight increase in demand for fire protection services; however, this increase would be minimal as compared to existing conditions. The Project would be designed to comply with the City's Municipal Code Title 8, which specifies that the City has adopted the 2016 California Fire Code (CFC), the 2016 California Building Code (CBC), and the 2012 International Fire Code (IFC). Pursuant to Title 8, all development within the City must comply with specified standards to ensure adequate emergency access during operations, and fire hydrant, fire sprinkler, and fire alarm system availability.⁹ Additionally, preparation of a Traffic Control Plan would be required to further ensure that adequate circulation, including for emergency vehicles, is maintained; refer to Section 4.13, Transportation and Traffic. Due to the nature of the facility, operation of an ocean water desalination facility is not anticipated to increase response times to the Project site or surrounding vicinity, or require the construction of new or physically altered fire protection facilities.

Mitigation Measures

No mitigation measures are required.

Impact 4.11-1: 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: *Level of Significance: Less than Significant Impact.*

ii) Police protection?

Construction

All Components

The proposed Project does not include or require construction of any new or physically altered police protection facilities. The Project construction activities would create a temporary incrementally increased demand for police protection services to the construction site. All construction activities would demonstrate compliance with City's Municipal Code Title 8 Chapter 2 which incorporates by reference the CBC, and would ensure adequate emergency access is implemented during Project demolition and construction. Prior to commencement of demolition/construction, the Project plans would be reviewed by applicable local agencies to ensure compliance with the City's Municipal Code as well as all applicable regulations to ensure adequate site signage, lighting and other crime safety preventative measures.¹⁰ Preparation of a Traffic Control Plan would be required to further ensure that adequate circulation, including for emergency vehicles, is maintained during Project construction; refer to Section 4.13, Transportation and Traffic.

⁹ Refer to preceding footnote regarding California Government Code § 53091 and § 53096 exemption of local land use control for water facilities.

¹⁰ Ibid.



Construction of the proposed Project would be temporary and would not result in adverse physical impacts associated with the provision of or need for new or physically altered police protection facilities, and would not adversely affect service ratios, response times, or other performance objectives. Impacts would be less than significant in this regard. Compliance with applicable local regulations would ensure that proposed Project construction would result in a less than significant impact to police protection services.

Operation

All Components

The proposed Project operations would not create a demand for police protection services. The Project would be designed to comply with the City's Municipal Code Title 8, Chapter 2 which incorporates by reference the CBC, requiring all development in the City to comply with specified standards to ensure adequate safety during operations. The proposed Administration Building or other structures not directly related to water production, treatment, storage or conveyance, would be subject to City plan check review to ensure adequate signage, lighting, parking and other applicable safety measures.¹¹ Additionally, preparation of a Traffic Control Plan, as described within Section 4.13, Transportation and Traffic, would be required to further ensure that adequate circulation, including for emergency vehicles, is maintained. Due to the nature of the facility, the proposed Project operations are not anticipated to substantially increase response times to the Project site or surrounding vicinity, or require the construction of new or physically altered police protection facilities. The desalination site is currently utilized by a variety of independent tenants and operators, primarily for commercial/industrial business maintenance and storage activities. The proposed desalination facility and related structures will include substantially improved access, security and safety features, as well as consolidating site operations under a single operator (SCWD or its designee), which is anticipated to result in no more than a nominal increase and likely a decrease in site-related police response calls. Therefore, the proposed Project's operations would result in a less than significant impact to police protection services.

Mitigation Measures

No mitigation measures are required.

Impact 4.11-1: **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: *Level of Significance: Less than Significant Impact.***

iii) Schools?

¹¹ *Ibid.*



Construction

All Components

Construction of various Project components would not impact school facilities or student capacities at CUSD. Further, construction would be temporary. The nearest schools discussed previously would not be physically altered during the construction phase of the Project. Therefore, there would be no impact.

Operation

All Components

The proposed Project does not propose construction or require expansion or modification of any new or physically altered school facilities. The nature of the Project would not disrupt school services, during construction or operations. The nature of the Project does not involve a land use that would impact CUSD enrollment (i.e., residential uses). The CUSD has developed student generation rates for various land uses in order to project the number of school-age children that would be generated by a particular project. The Project involves development of up to 4,800 square feet (SF) of administrative office floor space with potential to generate a student population increase. As indicated in Table 4.11-2, Estimated Student Generation – Local Projection, using CUSD student generation rates, the Project is not anticipated to generate any new students. Therefore, the Project would have no impact to student capacity at CUSD.

Table 4.11-2, Estimated Student Generation – Phase 1 Project

School	Office Use (SF) ¹	Student Generation Rate (Student per TSF) ^{1,2}	Students Generated
Elementary	4,800	0.0150	0.072
Middle		0.0082	0.03936
High School		0.0113	0.05424
Total			<1
Notes:			
1. SF = Square Feet; TSF = Thousand Square Feet.			
2. Dolinka Group (for Capistrano Unified School District), <i>Commercial/Industrial Development School Fee Justification Study</i> , Table 13, (Total Student Generation Impacts per 1,000 Square Feet CID). March 10, 2016.			

Project implementation would not result in substantial adverse physical impacts associated with the provision of new or physically altered school facilities, or need for new or physically altered school facilities, the construction of which could cause significant environmental impacts. CUSD collects development impact fees for schools, with industrial projects set at \$0.56/SF. If the fee is required by SCWD, this would be an estimated \$2,700. No significant impacts to schools are anticipated.

Mitigation Measures

No mitigation measures are required.

Impact 4.11-1: 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: *Level of Significance: Less than Significant with Mitigation.*

iv) Parks?

Refer to Section 4.12, Recreation. As identified in Section 4.12, with the implementation of Mitigation Measures REC-1 and REC-2, impacts would be less than significant.

Impact 4.11-1: 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: *Level of Significance: Less than Significant Impact.*

v) Other public facilities?

Construction

All Components

The proposed project does not include new housing which would require the construction or expansion of additional public facilities such as libraries facilities. According to the Public Facilities/Growth Management Element of the General Plan, the City designates library resources be provided based on a ratio of 0.2 sf of library space per capita. The proposed Project would have a minimal effect on the City's Library Criteria of 0.2 square feet of library space per capita. Therefore, the proposed Project impact in relation to other public facilities would be less than significant.

Operation

All Components

The proposed Project does not propose construction of any new or physically altered public facilities, such as libraries. The nature of the Project would not disrupt public facilities. Therefore, there would be no impact.

Mitigation Measures

No mitigation measures are required.

REGIONAL PROJECT

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential public services impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). Expansion at the desalination facility site would have no additional significant impacts on public services, since the desalination facility site would have already been graded, and there would be a relatively nominal increase in employees. The Regional Project may require construction of additional regional product water



conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified, and for which specific impacts would be speculative to address.

4.11.5 CUMULATIVE IMPACTS

For purposes of fire and police protection, cumulative impacts are considered for cumulative projects located within Dana Point; see Table 4-1, Cumulative Local and Regional Projects List. For purposes of school facilities, cumulative impacts are considered for projects located in the CUSD.

As discussed below, all Project impacts to public services would be less than significant without the need for mitigation, and the Project's contribution toward cumulative impacts is not considered to be cumulatively considerable.

As concluded above, the Project would result in a nominal increase in demands on the City's fire and police protection services. Given the nature and scope of the proposed Project, and compliance with Municipal Code Title 8 requirements, the Project would result in a less than significant impact to fire and police protection services. Therefore, because the Project would result in less than significant impacts, and since SCWD (or its designee) would pay all applicable development impact fees, which are designed to alleviate cumulative impacts to the City, the Project's incremental effects to fire and police protection services would not be cumulatively considerable. Further, although cumulative development would similarly result in increased demands on existing fire and police protection services, each cumulative project would be reviewed on a case-by-case basis by various City departments for compliance with applicable standards. Each cumulative Project would be subject to compliance with all applicable regulations and payment of development impact fees to finance public facilities attributable to the new development, including fire suppression and law enforcement facilities, vehicles, and equipment. Such fees would minimize, to the greatest extent practicable, the cumulative developments' impact on Dana Point's public services. Cumulative development projects would pay their fair share of the costs of providing such public services. Therefore, the combined cumulative impacts to fire and police protection services associated with the Project's incremental effects and those of the cumulative projects would be less than significant.

As concluded above, the Project would not generate any student population growth for CUSD. SCWD (or its designee) would pay any applicable development impact fees pursuant to Education Code § 17620 *et seq.* which would reduce any impact on school facilities. Because payment of applicable developer impacts fees are deemed to be full mitigation (and in consideration of the lack of student population generation), the Project's incremental effects to school facilities are not cumulatively considerable. Further, although cumulative development would similarly generate student population growth in the CUSD, each cumulative project would be subject to compliance with Education Code § 17620 and payment of development impact fees. Therefore, the combined cumulative impacts to school facilities associated with the Project's incremental effects and those of other contributing cumulative projects would be less than significant.

Similarly, all future development with the potential to impact public services would be required to demonstrate compliance with applicable federal and State regulatory requirements, including General Plan goals and policies of the affected jurisdiction, intended to reduce and/or avoid potential adverse environmental effects. The City of Dana Point General Plan EIR evaluated public service cumulative impacts within the City and developed policies and mitigation measures to address cumulative impacts to public services. As such, cumulative impacts to public services would be mitigated on a project-by-project



level, and in accordance with the established regulatory framework, through the established regulatory review process

4.11.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant and unavoidable impacts related to public services have been identified.



4.12 RECREATION

This section describes the environmental and regulatory setting of recreation, as it pertains to implementation of the proposed Project. Information given in this section is based on resource information obtained from available public resources including, but not limited to, the *Doheny State Beach General Plan* and the *City of Dana Point General Plan*. The analyses for each Project component are considered with respect to the applicable plan, policy, or regulation of the agency with jurisdiction over that Project component. All Phase I Project components are located in the City of Dana Point in Orange County California (the potential future Regional Project, if implemented, would include offsite underground electrical line extensions in Laguna Niguel or San Juan Capistrano, and could include regional product water conveyance, pumping or storage facilities in other south Orange County jurisdictions).

The environmental setting discussion is based largely on review of relevant documents and information, review of aerial photographs and field observations of the area conducted from Summer of 2016 through early 2018, and renderings and maps of the proposed Project and its surroundings. Other information in this section, such as regulatory framework, is derived from the various planning documents including the City of Dana Point Zoning Code, Orange County General Plan, and pertinent State of California Building Codes.

4.12.1 AFFECTED ENVIRONMENT

Environmental Setting

Natural Setting

Project facilities would be located on and around Doheny State Beach (located immediately east of Dana Point Harbor), north of PCH, San Juan Creek, and Capistrano Beach Park. San Juan Creek empties into a freshwater lagoon at Doheny State Beach, dividing parking and recreational facilities to the west and a recreational vehicle campground to the east.

Subsurface Intake Wells

Doheny State Beach is located in an urbanized area of Dana Point. Retail shops and stores, restaurants, hotels, and other primarily visitor-serving commercial uses are located adjacent to the State Beach. Dana Point Harbor is at the northwest end of the State Beach and provides recreational boating, sport fishing, whale watching trips, and marina facilities. Service commercial, equipment storage and maintenance, and industrial uses are also located nearby on the west side of Doheny Park Road, north of Pacific Coast Highway (PCH). In addition to being located on Doheny State Beach, Project facilities would be located near the Beach Access Road Class III bikeway (which shares use of Park Lantern within DSB), the Dana Point Harbor Drive Class II bikeway, and the San Juan Creek Trail Class I bikeway.

Southeast Intake Wells

This component of the Project would be located at Capistrano Beach Park. Parking lots are situated between the railroad and the beach. Doheny State Beach and Dana Point Harbor are visible from this beach. A short off-road Class I bike trail connects PCH bicyclists to the Class II Beach Access Road within DSB, running from Palisades Drive to the south end of DSB.



Raw Water Conveyance Alignments

Raw water conveyance lines would carry subsurface slant well source water from the slant well vaults to the desalination facility via one of two proposed alignments. Raw water conveyance lines would be located within existing beach access roads and landscape areas at Doheny State Beach and/or Capistrano Beach Park. The South alignment would traverse Doheny Park Road and PCH. The North alignment option would be within Dana Point Harbor Drive and Del Obispo Street. In addition to general beach recreational use and access, the raw water conveyance lines could impact the Class I Bikeway/Beach Access Road Class III bikeway (which runs from Palisades Drive to DSB, connecting to the San Juan Creek Bike Trail), the Dana Point Harbor Drive Class II bikeway, and the San Juan Creek Trail Class I bikeway. Orange County Parks has indicated plans for a potential future bikeway along the south bank of San Juan Creek within the County Flood Control District's access road, which could also be impacted.

Desalination Facility

The desalination facility site is an industrial, developed property owned by SCWD, and does not contain recreational resources. The primary recreational facility potentially affected by the desalination facility is the existing San Juan Creek Class I bikeway, located across San Juan Creek from the desalination facility site, along the west bank of San Juan Creek. Also across San Juan Creek, west of the site, are a sports complex consisting of three baseball fields and tennis courts, and the Dana Point Community Center. South of the desalination site is PCH, and further south is Doheny State Beach.

Concentrate (Brine) Disposal System

The brine disposal system would be connected from the desalination facility to the existing San Juan Creek Ocean Outfall, via a connection located at the southwest corner of the desalination facility site.

Regional Project Facilities

Regional Project facilities (as described in [Section 3, Project Description](#)) would be in substantially the same location as the Phase I Project facilities, with the exception of the SDG&E electrical line extensions (which would extend north of the site within existing streets) and the Regional Project product water conveyance, pumping and storage facilities, the location of which is not known at this time.

Natural and Open Space Features

The dominant natural features in the Project area is San Juan Creek, the beaches at Doheny State Beach and Capistrano Beach Park, and the adjacent Pacific Ocean. Doheny State Beach is a protected beach that is part of the parks system of the State of California, which includes the freshwater lagoon created by San Juan Creek. This lagoon is typically separated from the open ocean by a narrow sandbar, although the sandbar is breached during major storm events, allowing San Juan Creek to flow directly into the Pacific Ocean. Doheny State Beach and Capistrano Beach Park are described further below.

Scenic Highways

Pacific Coast Highway is designated as a Scenic Highway corridor on the Dana Point Circulation Element and a Viewscape Corridor on the Orange County Circulation Element. PCH runs throughout the City of Dana Point. It traverses the area located between the proposed intake wells and desalination facility and



would be traversed by the conveyance system. PCH is also designated as an eligible California State Scenic Highway.

Local Parks

In addition to Doheny State Beach, Capistrano Beach Park and the bike trails noted above, the Project area includes various local parks that could be affected by the Project. These include:

- **Del Obispo Park** – located across San Juan Creek from the proposed desalination facility
- **Sycamore Creek Trail and Creekside Park** – located further north, across San Juan Creek from the desalination facility
- **Louise Leydon Park** – a blufftop park above and northeast of PCH, overlooking the Doheny State Beach South Day Use area
- **Palisades Gazebo Park** – a blufftop park above and northeast of PCH, overlooking the northern end of Capistrano Beach Park, north of southeast intake well pod “G”
- **Pines Park** – a blufftop park above and east of PCH, overlooking the southern end of Capistrano Beach Park, directly above southeast intake well pod “H”

Orange County Parks Regional Trails

OC Parks encompasses regional wilderness and historical facilities, as well as coastal areas through Orange County. OC Parks owns a facility, a Class III bike trail, at Capistrano Beach Park. The Class III bike trail connects Doheny State Beach to Capistrano Beach Park and terminates at the service road outside Beach Road.

Doheny State Beach Characteristics

Doheny State Beach¹ is a State Recreation Unit of the California Department of Parks and Recreation and is further classified as a State Beach pursuant to § 5019.56(c) of the California Public Resources Code. Under this classification, State Beaches are defined as “consisting of areas with frontage on the ocean, or bays designed to provide swimming, boating, fishing, and other beach-oriented recreational activities.” Doheny State Beach (SB) is accessed by Park Lantern, which is the Park’s main entry road extending from Dana Point Harbor Drive to the park entrance kiosk. A secondary exit from the Park is available to southbound PCH. A short bicycle path (Class I Bikeway) in Capistrano Beach Park provides access to Doheny State Beach at the southern end, and a regional bicycle path (Class I Bikeway) along the west side of San Juan Creek provides access from areas north of PCH (with a PCH undercrossing). A bicycle lane (Class II Bikeway) is located on Dana Point Harbor Drive west of the park entrance and continues along Del Obispo Street northeast of PCH. Pedestrian access is also provided via the bike paths from the east and north, as well as from the pedestrian bridge over PCH and the railroad at the downcoast end of the park. Pedestrians also access the park from the County parking lot on Dana Point Harbor Drive at the west end of the park, located in Dana Point Harbor.

¹ http://www.parks.ca.gov/?page_id=645 (accessed January 30, 2018).



Visitor data recorded since 1990 shows an increase in visitors throughout the years. The 2015/2016 fiscal year (FY) Park data shows over 1.3 million visitors, including 782,517 paid day users, 373,233 free day users, and 144,436 campers.² Frequent visitors include surfers who primarily congregate in the North Day Use Area to surf at “boneyards.” Many of the surfers and other local beachgoers park at the adjacent Dana Point Harbor parking lot at hourly rates rather than paying the park’s day use fee while making use of the restrooms, showers, and other facilities at Doheny State Beach. Other local residents and guests at hotels in the area can park nearby and walk into the park at the downcoast end or via parking and pay the park’s day use fee, particularly on summer weekends and holidays when park users frequently fill up all available parking spaces.

The Park offers a wide variety of community groups for its educational facilities and wildlife. This includes local school field trips, groups from seniors’ facilities and organizations, church groups, the South Coast Audubon Society, and members of the Doheny State Beach Interpretive Association.

The park’s picnic facilities are popular with families and groups, including businesses and other organizations, since they can be reserved for events such as birthday parties, wedding or reception events, family reunions, and other events such as baby showers, anniversaries, graduations, and reunions.

The park also accommodates visitors for special events, including two music festivals each year, surf contests, outrigger canoe races, and other local events. These special event activities are particularly beneficial to the tourism economy of Dana Point and its restaurants, lodging, retail, and recreational boating businesses.

Capistrano Beach Park Characteristics

Capistrano Beach Park³ is a County-owned and operated public park located southeast of Doheny State Beach, adjacent to PCH and the SCRRA MetroLink line, with the Capistrano bluffs located inland and above the park. Facilities include public restrooms, outside showers, seven volleyball courts, a basketball court with lighting and fire rings. A large section of the beach is bordered by private homes, to the south. The park includes parking for 140 cars, and is a popular destination to enjoy the beach or utilize the bikeway that runs along the beach.

4.12.2 REGULATORY FRAMEWORK

State

California Coastal Act of 1976

The California Coastal Act (Coast Act) (California Public Resources Code § 30000 et seq.) was enacted by the State Legislature in 1976 to provide long-term protection of California’s 1,100-mile coastline for the benefit of current and future generations. The Coastal Act created a partnership between the State (acting through the California Coastal Commission [Commission]) and local county and city governments to manage the conservation and development of coastal resources through a comprehensive planning and regulatory program.

² <http://www.parks.ca.gov/pages/795/files/15-16%20Statistical%20Report%20FINAL%20ONLINE.pdf> (accessed January 30, 2018).

³ <http://www.ocparks.com/beaches/capistrano/> (accessed January 30, 2018).



Portions of the Project would be located in the California Coastal Zone, as defined in the California Coastal Act (§ 30103). Land use decisions within the Coastal Zone are subject to the provisions of the Coastal Act, which is administered by the California Coastal Commission. The Coastal Act requires local governments in the Coastal Zone to prepare a Local Coastal Program (LCP) that contains a land use plan and land use regulations. The Commission works with local governments to shape each LCP and ensure it conforms to Coastal Act goals and policies. Once this is achieved, the Commission may “certify” the LCP, thereby transferring permit-issuing authority to the local government, subject to the terms of the certified LCP. For other areas, such as local jurisdictions without a certified LCP, the Commission retains permit issuing authority under the Coastal Act. As stated in Coastal Act § 30251, a key objective of the Coastal Commission is to protect the scenic and visual character of the California coast. The Commission applies this standard to its review of applications for coastal development permits as well as to LCP certifications.

Doheny State Beach and Capistrano Beach Park are located in the Coastal Zone, and the Doheny State Beach General Plan and City of Dana Point LCP serve to achieve the policies of the Coastal Act by providing public access to the beach, protecting and enhancing the recreational and educational resources of its marine environment, protecting sensitive habitat values of its coastal lands, and by preserving the park’s scenic and visual qualities.

California State Lands Commission

The California State Lands Commission (CSLC) provides protection and enhancement of lands and natural resources by issuing leases for use or development, championing public access, resolving boundaries between public and private lands, and implementing regulatory programs to protect state waters from oil spills and invasive species introductions. The actions of the CSLC secure and safeguards the public’s access rights to waterways and the coastline and preserves irreplaceable natural habitats for wildlife, vegetation, biological communities.

California State Parks - Doheny State Beach General Plan

Goal PD 2: Visitor facilities, park infrastructure, circulation, access, and adequate staff visibility of all park use areas continue to be improved to keep pace with increases in park day-use attendance.

Guideline PD 2.1: Overall park circulation and access for motorists, bicyclists, skaters, and pedestrians shall be evaluated prior to any substantial park improvements. Locations to be considered for improved access include a crosswalk across Pacific Coast Highway at the existing traffic signal east of Dana Point Harbor Drive and the Doubletree Doheny Beach hotel on Pacific Coast Highway.

Guideline PD 2.3: A comprehensive evaluation should be conducted of the condition of the park’s day use facilities, such as picnic tables, barbeques, and restroom facilities to identify and prioritize replacement or improvement needs.

Goal SDU 2: Improved separation of pedestrian and nonmotorized vehicle routes from driving lanes are provided in the parking areas.

Guideline SDU 2.2: Pedestrian access along the South Day Use Area beachfront should be established and protected from encroachment by vehicles. As an alternative to a paved



walkway, it could be improved with decomposed granite or a composite, synthetic boardwalk.

Goal NDU 3: Activities and circulation routes are designed and managed to provide an appropriate level of separation between user groups in order to minimize conflicts, while accommodating a free flow of visitors between park activity areas and amenities.

Guideline NDU 3.1: Nonmotor vehicle circulation should provide access to all areas of the North Day Use Area and provide improved through-park circulation but should limit bicycle riding, skating, skateboarding, and jogging along the beachfront walkway to only very low use days and times.

Goal PD 5: Safe pathways are provided in the park, which are adequately separated from motor vehicle lanes.

Guideline PD 5.1: The focused study in Guideline 4.1 should include a specific design for construction of a sidewalk from the south end of the Pacific Coast Highway bridge to the South Day Use Area. The road is only approximately 24 feet wide with no shoulders available to accommodate pedestrians, who must share the roadway with cars and RVs, bicyclists, and skaters. Recommendations should also be provided for completing other missing links, adequate signage, restrictions or limitations on types of users, and ADA compliance.

Local

City of Dana Point General Plan - Land Use Element

Goal 2: Achieve compatibility and enhance relationships among land uses in the community.

Policy 2.8: Coastal water areas suited for water-oriented recreation activities shall be protected for such uses. (Coastal Act § 30220)

Policy 2.9: Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area. (Coastal Act § 30221)

Policy 2.11: The location and amount of new development should maintain and enhance public access to the coast by assuring that the recreational needs of new residents will not overload nearby coastal recreation areas through the correlation of the amount of development with local park acquisition and development plans with the provision of on-site recreational facilities to serve the new development. (Coastal Act § 30252(6))

Goal 4: Encourage the preservation of the natural environmental resources of the City of Dana Point.

Policy 4.7: Coordinate with appropriate Park, Recreation, and Harbor Agencies to enhance Open Space trails and bike paths. (Coastal Act § 30210-212.5)



Policy 4.9: Encourage the preservation of significant natural areas as cohesive open space.

Policy 4.10: Regulate the construction of non-recreational uses on coastal stretches with high predicted storm wave run-up to minimize the risk of life and property damage. (Coastal Act § 30253)

City of Dana Point General Plan - Conservation/Open Space Element

Before the City of Dana Point's incorporation, the planning and operation of local parks were largely the responsibility of the Capistrano Bay Park and Recreation District – a special and independent entity separate from the County. The City of Dana Point owns and controls 65.7 acres of public parkland at twenty-one (21) sites, ranging in size from 1,000 square feet (Chloe Luke Overlook) to twenty-seven acres (Sea Terrace Park, Phase I and II). Del Obispo Community Park is the cornerstone of the park system, with its 15,232 square foot Community Center building, baseball fields, and tennis courts.⁴

City of Dana Point General Plan – Conservation/Open Space Element

GOAL 7: Encourage the development and maintenance of a balanced system of public and private park and recreation facilities in cooperation with the Capistrano Bay Park and Recreation District.

Policy 7.1: Encourage the provision of a range of recreational facilities and programs to meet the needs of City residents and visitors.

Policy 7.2: Utilize utility easements as open space linkages where feasible.

Policy 7.3: Preserve public and private open space lands for active and passive recreational opportunities. (Coastal Act § 30213)

Policy 7.5: Coordinate park and open space planning with the appropriate State and County agencies.

Policy 7.6: Encourage the development of parks and acquisition of open space areas to serve the needs of visitors as well as local residents.

City of Dana Point Bicycle and Pedestrian Trails Master Plan

A safe and effective bikeway and pedestrian trail network enhances the quality of life for residents and visitors to the City. The City's Bicycle and Pedestrian Trails Master Plan serves as a resource document to guide the development and maintenance of a bicycle and pedestrian trail network, support facilities and other programs for Dana Point over the next 20 years. The Plan address important issues related to the City's bikeways and pedestrian trails, such as planning, community involvement, utilization of existing resources, facility design, multi-modal integration, safety and education, support facilities as well as specific programs, implementation, maintenance, and funding.

⁴ <http://www.danapoint.org/home/showdocument?id=3157> (accessed January 30, 2018).



4.12.3 SIGNIFICANCE CRITERIA

Significance Criteria under CEQA

Appendix G of the State CEQA Guidelines contains the Initial Study Checklist form, which includes questions related to recreation resources. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this section. Accordingly, a project may create a significant environmental impact if one or more of the following occurs:

Recreation

- 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;
- 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?

Methodology and Assumptions

Approach to Analysis

This analysis of impacts on recreation examines the temporary (i.e., construction) and permanent (i.e., operational) effects of the proposed Project based on the application of the significance criteria outlined above. Each set of criteria is discussed in the context of Project components that share similar characteristics and/or geography. The impact conclusions consider the potential for changes in environmental conditions as well as consistency with applicable policies and regulations enacted to protect the environment. The cumulative effects of the proposed Project, when considered together with the effects of other past, present, are discussed at the end of this section.

The impact analysis is based on field observations conducted by Kimley-Horn in April 2017 and January 2018; review of Project maps and drawings; analysis of aerial and ground-level photographs; and review of a variety of data available in public records, including local planning documents.

Project Design Features

- The subsurface nature of the intake wells, raw water conveyance alignment, brine disposal system, and the product water conveyance alignment would not impact recreational uses of existing recreational facilities, including bicycle paths, during operation;
- The District is no longer pursuing Pod F due to potential impacts to the Class I bike trail connecting PCH to the DSB Class III bicycle route along Park Lantern;
- Construction of the subsurface intake wells would not take place on the beaches and instead would take place on upland areas of Doheny State Beach or Capistrano Beach Park, including landscaped and paved areas;
- Subsurface intake wells and related facilities within Doheny State Beach and Capistrano Beach Park (including raw water conveyance lines) would be constructed during the off-season of peak beach recreational use, reducing recreational impacts;



- The desalination facility would be located in an existing developed industrial area with no existing recreational uses;
- Raw water conveyance lines that traverse regional recreational facilities (such as San Juan Creek Bike Trail) would be accomplished through trenchless construction to avoid disruptions to recreational facilities.

4.12.4 IMPACTS AND MITIGATION

Impact 4.12-1: 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? *Level of Significance: Less Than Significant with Mitigation.*

Construction

Subsurface Intake Wells

Doheny State Beach

When considering the potential environmental impacts of slant well construction, it is important to recognize several key points as explained further in the Section 3.0, Project Description and Appendix 10.1, Preliminary Design Report:

- not all wells would be installed concurrently;
- slant well “pods” are shown conceptually, and are likely to be shifted during final design, consultation with regulatory permitting agencies, and even during construction to make spot refinements based on actual field conditions;
- not all wells would be needed for Phase I (up to 5 MGD). In fact, for the Doheny wells, depending on specific pod location, it is possible that only one of the five well pods would be needed;
- for the southeast intake wells, it is likely that two well pods would be required, as this area generally has lower production capacity than the offshore area at Doheny State Beach;
- it is possible that SCWD may decide, for Phase I, to install all wells at Doheny State Beach, or all wells at Capistrano Beach Park, or to have the initial Phase I wells split between Doheny State Beach and Capistrano Beach Park.

Within Doheny State Beach, installation of the subsurface slant wells would generally take place in the “North Day Use Area” (Pods A, B and C, which are north, or landward, of the boardwalk within the picnic area) or within the campground (Pods D and E) or South Day Use Area. See discussion below for southeast intake wells and potential impacts to Capistrano Beach Park.

The drill rig area enclosed area and nearby staging area would have a temporary significant impact on Doheny State Beach recreational areas. The Project has been designed to minimize this impact by siting the slant wells inland of the beaches, and by having construction occur during the off-season, between October 1 and May 1. However, even with these Project Design Features, the temporary slant well construction would result in temporary loss of beach parking (see Section 4.13, Transportation and



Traffic), as well as temporary impacts to park visitors and campers due to the construction lighting and noise (addressed in Sections 4.1, Aesthetics, and 4.10, Noise, respectively).

Within the North Day Use Area (Pods A-C), slant well construction would result in direct temporary loss of at least one of the picnic table areas and an estimated 10,000 SF area of picnic and lawn area. Contractor parking and laydown would temporarily reduce parking, occupying an area of approximately 80 parking stalls, currently conceptually planned at the southeast end of the main North Day Use parking area (the District has shifted the majority of DSB staging to the San Juan Creek Property, and could further reduce the North Day Use staging area if required by State Parks). Contractor parking and laydown areas would be sited in consultation with State Park's staff to minimize temporary impacts to parking and circulation. The slant well engineer has direct experience with State Park's staff in slant well construction at Doheny State Beach, and was able to install the Temporary Slant Test Well in the active beach recreation area without significant impacts to beach recreation. As the North Day Use Area is not used at night, and the day-time temporary recreational impacts would be mitigated through measures noted below and in close coordination with State Park's staff, the temporary recreation impacts in the North Day Use Area (Pods A-C) are not considered significant with Project Design Features and incorporation of mitigation measures REC-1 and REC-2 below.

Within the Campground (Pods D and E), slant well construction is currently planned to be 24-hours a day drilling for approximately three months per well. Even though this will be off-season, this will temporarily displace approximately 50 campsites to allow for the drill rig work area and a suitable surrounding area for safety and for distance due to noise and lighting during night-time drilling. There are 122 campsites at the campground. Final drill rig siting, phasing and construction measures are subject to further discussions with State Park's staff and final design. Based on discussions with State Parks staff, the electrical control building and potential temporary slant well development water connection would be in the amphitheater portion of the DSB campground, in close proximity to the amphitheater, campground host, and one of the campground restrooms. Temporary construction here (for the electrical control building and potentially for the SOCWA vault connection) would require temporary closure of this area during construction, which would occur during the off season. In addition, this construction could occur during normal campground hours and would not require night-time construction. Temporary campsite loss will "increase" the use of remaining Doheny State Beach campground sites, and may temporarily increase the demand for other coastal campsites, although not to the extent that it would require the construction of new recreational facilities. In fact, as part of the Project, to offset temporary and long-term recreational use impacts at Doheny SB, the District's lease agreement with State Parks will include provisions for appropriate compensation and other measures that State Parks can use to enhance Doheny State Beach recreational facilities (see Mitigation Measure REC-1). The temporary loss of use of these campground sites is not considered a significant recreation impact, with implementation of measures REC-1 and REC-2.

It is possible that a slant well pod may be sited further south of the campground within the South Day Use Area, which would have similar effects as the Capistrano Beach Park slant wells below. This would include temporary displacement of day use parking spaces, estimated to be 24-30 stalls to allow for the enclosed drill rig work area and sufficient space for a one-lane access around the enclosure for park visitors.

In addition to noted Project Design Features (avoiding peak beach season and well construction as inland from the beach as possible), Mitigation Measures REC-1 and REC-2, together with mitigation noted in



other EIR sections for lighting, noise and parking, would reduce temporary slant well construction impacts within Doheny State Beach to less than significant levels.

Southeast Intake Wells

Capistrano Beach Park

Slant well construction at Capistrano Beach Park would be similar to slant well construction at Doheny State Park North Day Use Area. The Park closes at 10 PM, so night-time drilling would be less of an issue than at the Doheny State Beach campground (although informal public use of the adjacent beach does occur in the evening after 10 PM, and would experience some disruption due to nighttime drilling with respect to lighting and noise). No campsites would be displaced. The slant well drill rig and associated 100' x 75' enclosure would require temporary displacement of approximately 30 parking stalls, in addition to parking stalls displaced for contractor parking and lay down. SCWD met with County Parks staff in October 2017, resulting in relocating Pod H further south in the parking lot to minimize access and parking lot conflicts. Furthermore, as a result of consultation with State Parks and County Parks, Pod F has been eliminated from consideration as this narrow beach section north of Palisades Drive would require beach construction and blockage of the Class I bike trail that connects PCH with the Class III bike route within DSB. Additional design modifications through consultation resulted in the District examining shifting Pod G further south, south of the basketball courts, to minimize temporary disruption to beach access and parking. Given that well construction would occur during the off-season, and with implementation of Mitigation Measures REC-1 and REC-2, impacts would be mitigated to less than significant levels.

Raw Water Conveyance Alignment – North

Note: The “North” alignment includes raw water conveyance lines necessary to carry source water from the southeast intake wells to the desalination facility, and as such requires pipeline construction within Capistrano Beach Park and the southern portion of Doheny State Beach.

Capistrano Beach Park

The Project includes raw water conveyance lines from the slant wells to the main raw water conveyance alignments that carry source water to the desalination facility. Within Capistrano Beach Park, these raw water conveyance lines would be located within existing developed areas, primarily Park Lantern (the main access road through the park). Pipeline construction may also temporarily displace parking, as the pipeline trenching process gradually moves through the park (estimated at about 300 feet per day, representing approximately 30 parking spaces displaced at any time for the pipelines). Where Park Lantern is utilized as a Class III bike path, and also in consideration for continued Park access during construction, pipeline construction will allow for continued access around the trench/excavation area during pipeline installation. The short stretch of Class I bike trail may require temporary rerouting and detours while the pipeline is trenched in this location, although this would only require a few days to complete. In consultation with County Parks and the Capistrano Bay Community Services District (CSD), the pipeline could parallel the Class I bike trail within the CSD's maintenance road north of Palisades Drive, thereby avoiding disruption to this Class I bike trail segment (subject to approvals by County Parks, State Parks and the CSD). This construction would occur during regular construction hours, and as such no nighttime disruption to park users would be anticipated for the raw water pipelines. Given that pipeline



construction within the Park would occur during the off-season, and with implementation of Mitigation Measures REC-1 and REC-2, impacts would be mitigated to less than significant levels.

Doheny State Beach

Similar to the discussion above for raw water conveyance lines in Capistrano Beach Park, the raw water lines in Doheny State Beach would be designed such that access is maintained for the existing bike paths and pedestrian circulation. The main bike paths along the boardwalk and San Juan Creek bike trail would be avoided. From the slant well vaults to the main raw water conveyance lines leading to the desalination facility, the raw water conveyance lines may require trenching across State Beach landscaped areas and parking areas until reaching Park Lantern, which would connect to either Dana Point Harbor Drive (North Alignment) or Doheny Park Road (South Alignment). There may be some temporary disruption to Doheny State Beach campers during the pipeline installation, but this would be during the day and also off-season. As with bicycle facilities in Capistrano Beach Park, the on-road Class III bike route of Park Lantern would have maintained access during construction. Given that pipeline construction would occur during the off-season, and with implementation of Mitigation Measures REC-1 and REC-2, impacts would be mitigated to less than significant levels.

City of Dana Point

Outside of Doheny State Beach and Capistrano Beach Park, raw water conveyance lines would avoid the County's San Juan Creek Class I bike trail along San Juan Creek (by trenchless construction). Exiting Doheny State Beach, the raw water conveyance lines (for the North Alignment) would traverse on-street Class II bike lanes in Dana Point Harbor Drive and Del Obispo Street. As noted in REC-1, on-street bike lanes may require temporary closure and rerouting during the relatively brief period of pipeline construction, which would affect an estimated 300 feet of bike lane at any one time. With implementation of REC-1 and REC-2, this is not considered a significant impact. No significant physical deterioration of existing recreational facilities is anticipated as a result of the Project.

Raw Water Conveyance Alignment -South

Note: The "South" alignment includes raw water conveyance lines necessary to carry source water from the slant wells at the Doheny State Beach North Day Use Area (Pods A-C), and as such requires pipeline construction within the northern portion of Doheny State Beach including crossing San Juan Creek (via trenchless construction).

Capistrano Beach Park

Refer to Impact analysis under the North Alignment, as the South Alignment would traverse Capistrano Beach Park and portions of Doheny State Beach, primarily within Park Lantern, before existing Doheny State Beach to Doheny Park Road. Pipelines within the parks would only be constructed during the off-season, and would maintain vehicular, pedestrian and bicycle access during construction. No significant impacts are anticipated with implementation of Mitigation Measures REC-1 and REC-2.

Doheny State Beach

Refer to Impact analysis under the North Alignment, as the South Alignment would traverse portions of Doheny State Beach, primarily within Park Lantern, before existing Doheny State Beach to Doheny Park



Road. Pipelines within the parks would only be constructed during the off-season, and would maintain vehicular, pedestrian and bicycle access during construction. The Class I San Juan Creek bike trail would be avoided using trenchless construction. No significant impacts are anticipated with implementation of Mitigation Measures REC-1 and REC-2.

City of Dana Point

Refer to Impact analysis under the North Alignment, as the South Alignment would traverse portions of Doheny State Beach, primarily within Park Lantern, before existing Doheny State Beach to Doheny Park Road. Doheny Park Road is not on the City's Bicycle and Pedestrian Trails Master Plan. With implementation of REC-1 and REC-2, this is not considered a significant impact. No significant physical deterioration of existing recreational facilities is anticipated as a result of the Project.

Desalination Facility

Construction of the desalination facility is not expected to adversely impact any recreational facilities, as none are located on the desalination site. Impacts would be less than significant.

Brine Disposal System

The brine disposal system consists of pipelines and appurtenances wholly within the proposed desalination facility site, and as such is not expected to adversely impact any recreational facilities, as none are located on the desalination site. Impacts would be less than significant.

Operation

Subsurface Intake Wells

Once excavation and construction are completed, the wellhead vaults will be buried with access provided by a steel plate covering a vault entrance. However, the roof of each vault will be removable in the event that large scale maintenance and infrastructure replacement is required. The vault covering would not be fenced or lit, and would not otherwise obstruct recreational use. To the extent practical, the vaults will be located at existing concrete or paved surfaces to minimize loss of landscaped areas. No significant long-term effects would occur.

Southeast Intake Wells

Similar to the slant well operation at Doheny State Beach, no long-term effects would occur due to the nature of the subsurface intake wells. Impacts would be less than significant in this regard.

Raw Water Conveyance Alignments

Similar to the subsurface intake wells, once excavation and construction are completed, the raw water conveyance alignment would be buried with access via a man cover. No significant long-term effects would occur due to the below-ground nature of the raw water conveyance alignment. Impacts would be less than significant.



Desalination Facility

Ongoing operations and maintenance of the desalination facility and its associated facilities is not anticipated to have significant recreational use impacts. As mentioned above, the desalination facility would be located in an industrial area that would not impact recreational use.

Brine Disposal System

The disposal pipe would be subsurface located within the desalination facility site. Once construction activities are completed, there would no impacts to parks and recreational facilities.

CONCLUSION

In consideration of Project Design Features and Mitigation Measures REC-1 and REC-2, the Phase I Project will not have any significant recreational impacts, nor will it otherwise cause the substantial physical deterioration of existing recreational facilities. The potential future Regional Project may impact recreational facilities, although Mitigation Measure REC-3 would reduce the potential for Regional Project impacts to less than significant levels.

Mitigation Measures

REC-1

Minimize Construction Impacts on Parks and Recreational Facilities. As part of final design and permitting, SCWD shall review detailed design plans with affected recreational agencies, in order to refine facility layout, design, staging, construction and operational details. Prior to obtaining encroachment permits or other approvals from State Parks, County Parks and the City of Dana Point, SCWD shall demonstrate that:

- SCWD has considered potential recreational impacts in its decision for slant well phasing, such that prioritization of Pods A-C and Pods G and H shall be higher for purposes of recreational facility impacts, recognizing that other pods may be more favorable for design purposes, well production capacity, operational/maintenance consideration, or other factors;
- Pod F has been eliminated from consideration;
- Pod G has been shifted south of the basketball courts;
- If pipeline trenching across Palisades Drive is necessary (for Pods G and H), use of the CSD maintenance road or other methods have been explored to minimize temporary disruption of the Class I bike trail;
- The Project has incorporated appropriate mitigation measures to reduce recreational impacts, related to aesthetics/lighting, noise, and parking/access (as set forth in Section 4.1, 4.10 and 4.13);
- Project construction shall maintain pedestrian/bicycle access for routes within the State Park and County Park, through either avoidance or temporary rerouting;
- Where Project construction affects existing on-street Class I bike lanes (such as Dana Point Harbor Drive and Del Obispo Street), temporary bicycle lane closures



shall include advanced notice of closures and applicable temporary rerouting (see REC-2 below);

- Appropriate signage and advance notification is provided to the affected agency for dissemination to the public and posting on-site; and
- Where practical, Project construction shall be timed with any other planned improvements to minimize disruption of recreational facilities.

REC-2

Provide Construction Updates and Detour Information for Bicyclists. If the use of bicycle facilities must be temporarily impacted due to construction of the proposed Project, SCWD or its designee shall coordinate with the affected agency (State Park, County Park and/or the City of Dana Point) to ensure:

- Project construction activities are minimized during peak-use periods for any impacted facilities, to the extent practical;
- The bicycle facility is restored to its original condition following construction; and
- Appropriate advance notification is provided to the affected agency and public, in addition to on-site signage and notices for temporary detours and rerouting of bikeways.

Impact 4.12-2: 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? *Level of Significance: No Impact.*

Construction

All Components

The Project facilities would not involve a recreational facility or require construction or expansion of recreational facilities. Therefore, no significant impact would occur.

Operations

All Components

The Project facilities would not involve a recreational facility or require construction or expansion of recreational facilities. Therefore, no significant impact would occur.

Mitigation Measures

No mitigation measures are required.

Regional Project

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential recreational facility impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines).



Expansion at the desalination facility site would have no impacts on recreational facilities. The Regional Project may require construction of additional regional product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified. Mitigation Measures REC-1 and REC-2 would reduce potential significant impacts to recreational facilities.

4.12.5 CUMULATIVE IMPACTS

As discussed further below, all Project impacts are mitigated to less than significant levels, and the Project's contribution toward cumulative impacts is not otherwise considered to be "cumulatively considerable."

The Project involves the construction and operation of an ocean water desalination facility and related water infrastructure and does not include a recreational component. Further, housing and employment-generating land uses are not proposed; thus, the Project is not anticipated to create an increased demand for parks and recreational facilities.

All of the Project's impacts would be mitigated, and would also be temporary, as no permanent significant impacts have been identified. Based on discussions with State Park and County Parks staff, there are not other major projects with the potential to create significant cumulative impacts to the parks. Projects throughout the City will on occasion require temporary impacts to existing City bikeways and other recreational facilities. The City's General Plan EIR discusses cumulative impacts to recreational resources as part of City buildout. Future recreational facility improvements are identified in the City's Pedestrian and Bicycle Trails Master Plan, the Doheny State Beach General Plan, and the County of Orange Parks and Recreation Master Plan.⁵ With mitigation incorporated, Project impacts to recreational facilities would be reduced to less than significant. As such, the Project's incremental effects are not considered cumulatively considerable and a less than significant impact would occur in this regard.

As with the Project, all cumulative development in the Project Area would undergo environmental and design review on a project-by-project basis pursuant to CEQA to evaluate potential impacts to parks and recreational facilities. Cumulative development would be subject to the numerous existing federal, State, regional, and local laws, ordinances, regulations, and standards in place to minimize and/or avoid the effects of past, current, and probable development. In addition, each cumulative development project would be required to address impacts to parks and recreation based on each respective jurisdiction's parkland policies/standards.

4.12.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts to Recreation have been identified following implementation of Mitigation Measures REC-1 and REC-2.

⁵ <https://www.orangecountyfl.net/Portals/0/Resource%20Library/culture%20-%20parks/OCPR%20Master%20Plan.pdf>
(accessed January 31, 2018).



4.13 TRANSPORTATION AND TRAFFIC

This section addresses transportation and traffic issues related to the Project, including the existing transportation system, significance criteria for transportation and traffic impacts, and potential Project impacts resulting from Project implementation. Information presented in this section was obtained from the *City of Dana Point General Plan* (1991), including the *City of Dana Point General Plan* Circulation Element (1995), and the City of Dana Point Municipal Code, among other sources. Traffic data concerning construction-related and operational impacts was derived from the Preliminary Design Report ([Appendix 10.1](#)) and air quality/greenhouse gas emissions modeling assumptions ([Appendix 10.3](#)), which includes estimated daily construction worker commute trips, materials deliveries, and truck soil import/export trips that would occur during the construction phase.

4.13.1 AFFECTED ENVIRONMENT

Environmental Setting

The City of Dana Point and the surrounding area are urbanized and largely built out. The Project area supports a variety of commercial, residential, and industrial-type uses dominant in the site's immediate vicinity. Refer to [Section 4.9, Land Use and Planning](#), for a more detailed discussion concerning the surrounding land uses. The existing transportation system is described below.

Existing Transportation System – Roadway Characteristics

Interstate 5 - I-5 is located east of the proposed Project site and provides regional access from Los Angeles County to San Diego County. Access to I-5 can be obtained via the Pacific Coast Highway exit, located approximately 1.2 miles to the east of the desalination facility site. Existing average daily trips (ADT) volumes on I-5 are 240,000 ADT south of PCH, and 237,000 ADT north of PCH (OCTA 2016).¹

Pacific Coast Highway (SR-1) - PCH is a City facility with a speed limit of 35 miles per hour (mph). It is a divided six-lane, east-west arterial highway adjacent to the project site. It is designated as a Major Arterial Highway in the City's General Plan Circulation Element and Orange County Master Plan of Arterial Highways (MPAH). It is also a *2015 Orange County Congestion Management Program* (CMP) facility. Curbside parking is permitted on both sides of the highway in select locations. The highway experiences 42,000 ADT (Caltrans, 2014).

Del Obispo Street/Dana Point Harbor Drive - This street runs in a north-south direction with two lanes of travel in each direction (total of 4 lanes). Del Obispo Street starts north of PCH while Dana Point Harbor runs south of PCH. Del Obispo Street is a divided four-lane roadway which runs in a north-south direction located west of Doheny State Beach. The speed limit is 40 mph. It is designated as a Secondary Arterial in the City's General Plan Circulation Element and Orange County MPAH. Curbside parking is permitted on both sides of the roadway in select locations. Del Obispo Street experiences approximately 15,000 ADT while Dana Point Harbor Drive carries approximately 16,000 ADT (OCTA 2016).

Park Lantern - This roadway runs in an east-west direction and is not classified in the City of Dana Point General Plan Circulation Element. West of Dana Point Harbor Drive, Park Lantern is a two-lane roadway (one lane eastbound and one lane westbound) that terminates into a cul-de-sac at the entrance of the

¹ <http://www.octa.net/News-and-Resources/Open-Data/Annual-Traffic-Volume-Maps/>



Marriot Hotel. To the east of Dana Point Harbor Drive, Park Lantern is the entrance to Doheny State Beach and is divided into four lanes (two lanes eastbound and two lanes westbound) for a short distance, then reduces to two lanes (one eastbound one westbound) before crossing San Juan Creek parallel to PCH. Park Lantern continues parallel through Doheny State Beach Campground and along the coastline shortly before Palisades Drive and the site of the southeast intake wells, where the road loops around in a dead end. A pedestrian path that connects Park Lantern and Palisades Drive is located directly south of the proposed Project site and has a posted speed limit of 25 mph. Parallel parking is permitted along the eastbound and westbound sides of Park Lantern west of Dana Point Harbor Drive between the eastern boundary of Lantern Bay Park to the entrance for the Marriot Hotel at the cul-de-sac terminus. Beach parking with designated spaces along each side perpendicular to the road are found east of Doheny State Beach Campground.

Stonehill Drive – Stonehill Drive is a four-lane, divided roadway, which runs in an east-west direction located north of the Project site. It is designated as a Primary Arterial in the City’s General Plan Circulation Element and Orange County MPAH. The posted speed limit is 40 mph. Curbside parking is permitted on both sides of the roadway in select locations.

Doheny Park Road – This street runs in a north-south direction with two lanes of travel in each direction (total of 4 lanes). The speed limit is 35 mph. According to the Doheny Village Specific Plan Traffic Report,² Doheny Park Road has an ADT of 18,132 during weekdays, 17,994 on Saturdays, and 14,583 on Sundays.

Las Vegas Avenue – This road runs in an east-west direction with one lane of travel in each direction, ending in a cul-de-sac near the Southern California Regional Rail Authority (SCRRA) railroad. There are parking spaces along each side of the road. Access to Las Vegas Avenue is provided by Doheny Park Road. According to the Doheny Village Specific Plan Traffic Report, Las Vegas Avenue has an ADT of 539 during weekdays, 324 on Saturdays, and 149 on Sundays.

Coast Highway – This road runs east-west and has approximately 14,000 ADT (OCTA, 2016). It runs parallel to Park Lantern and later expands into a four-lane highway after passing the SCRRA railroad.

Railways

An existing Southern California Regional Rail Authority rail line used for Metrolink commuter service, Amtrak, and freight service lies adjacent to the southeasterly Doheny State Park boundary and runs along the inland side of Capistrano Beach Park. The SCRRA/MetroLink railroad line runs parallel to the eastern border of the proposed desalination facility site, down toward the beach where it runs parallel with Coast Highway. The nearest Metrolink stops are in San Juan Capistrano and San Clemente (stops at the San Clemente station occur on weekends only).

Bus Service

Bus service to the Doheny State Beach is available on Orange County Transportation Authority (OCTA) routes 1, 90, and 91. The nearest bus stop to the park is on PCH at Dana Point Harbor Drive and is served by OCTA routes 1 and 91.³

² Linscott Law & Greenspan Engineers. 2017. Doheny Village Specific Plan Traffic Support.

³ <http://www.octa.net/ebusbook/CompleteBusBook.pdf>.



- **Route 1:** Route 1 originates at the Long Beach Transit Gallery (Shelter D) and ends in San Clemente while passing through Dana Point along PCH. The bus operates between 5:30 a.m. and 10:40 p.m., Monday through Friday, and between 5:30 a.m. and 9:30 p.m. on weekends and holidays.
- **Route 91:** Route 91 originates at the Laguna Hills Transportation Center and ends in San Clemente. The bus operates between 4:58 a.m. and 10:51 p.m., Monday through Friday, and between 6:55 a.m. and 8:01 p.m. on weekends and holidays.

Bicycle and Pedestrian Paths

The City of Dana Point offers multiple bicycle paths and pedestrian walkways to the beach area. Bike lanes are broken down into 3 categories: Class I (exclusive bike paths and trails), II (on-street striped lanes), and III (shared right-of-way). A short bicycle path (Class I Bikeway) in Capistrano Beach Park provides access to Doheny State Beach at the downcoast end, and a regional County bicycle path (Class I Bikeway) along the west side of San Juan Creek provides access from areas north of PCH. A bicycle lane (Class II Bikeway) is located on Dana Point Harbor Drive west of the park entrance and continues along Del Obispo Street northeast of PCH. Pedestrian access is also provided via the bike paths from the east and north, as well as from the pedestrian bridge over Coast Highway and the railroad at the downcoast end of the park. Pedestrians also access the park from the County parking lot on Dana Point Harbor Drive at the west end of the park.

Regional Project Facilities

Regional Project facilities (as described in [Section 3.0.0, Project Description](#)) would be in substantially the same location as the Phase I Project facilities, with the exception of the SDG&E electrical line extensions (which would extend north of the site within existing streets) and the Regional Project product water conveyance, pumping and storage facilities, the location of which is not known at this time.

4.13.2 REGULATORY FRAMEWORK

Federal

Federal rules and regulations may affect certain aspects of a city's traffic and circulation system including: transportation planning and programming; funding; and facility design, construction, and operation, among others. As applicable, a city is required to comply with all applicable rules and regulations of the Federal Highway Administration (FHA), Urban Mass Transit Administration (UMTA), Federal Railroad Administration (FRA), and Federal Aviation Administration (FAA), among other federal agencies. In addition, a city coordinates with federal resource agencies where appropriate in achieving environmental clearance (i.e., permitting) for transportation facilities and associated improvements.



State

California Department of Transportation

The California Department of Transportation (Caltrans) has jurisdiction over the improvement and operation of State highways. Caltrans is responsible for establishing maximum load limits for trucks and for safety requirements for oversized vehicles that travel on such highways. Caltrans implements the following regulations and manuals:

- *California Vehicle Code Division 15, Chapters 1 through 5 (Size, Weight, and Load)*] - Provides regulations pertaining to licensing and the size, weight, height, and load of vehicles operating on State highways.
- *California Vehicle Code § 13369, 15275, and 15278* - Requires licensing of drivers and specific license classifications for operation of particular vehicle types. Section 13369 applies to passenger transportation vehicles, hazardous materials, school buses, school pupil activity buses, youth buses, general public paratransit vehicles, farm labor vehicles, and vehicles used to transport persons with developmental disabilities. Section 13369 grants the Department of Motor Vehicles the right to refuse to issue or renew, or revoke, a driver's certificate of endorsement. Section 15275 identifies the endorsements necessary to operate vehicles (including those transporting hazardous materials) and grants the Department of Motor Vehicles the authority to deny, suspend, revoke or cancel a commercial vehicle endorsement or a hazardous materials endorsement when the applicant does not meet the qualifications for issuance or retention of an endorsement or poses a security threat. Section 15278 requires that a driver obtain an endorsement from the Department of Motor Vehicles to operate any commercial motor vehicle including: double trailer; passenger transportation vehicle; school bus; tank vehicle, and vehicles carrying hazardous materials, as defined in § 353.
- *California Vehicle Code § 35550-35551* – Provides regulations regarding weight limitations for vehicles traveling on freeways and highways. Section 3.05550 stipulates the maximum wheel load for vehicles travelling on highways. Section 3.05551 stipulates the maximum total gross weight imposed on the highway by any group of two or more consecutive axles.
- *California Streets and Highways Code § 660–711* - Requires that a project applicant obtain Caltrans-issued permits for any activity that encroaches into the right-of-way (ROW) of a State highway. Regulations pertaining to the maintenance and protection of State and County highways and provisions for the issuance of written permits (required when a vehicle load exceeds weight, length, or width standards established by Caltrans for public roadways and State highways) are also provided.
- *California Department of Transportation California Manual of Uniform Traffic Control Devices (MUTCD) Part 6 (Traffic Manual)* - Provides guidance and standards for traffic control and continuity of roadway function. Caltrans revised the MUTCD in December 2015 to provide uniform standards and specifications for all official traffic control devices in California (known as "Revision 1"). MUTCD Revision 1 incorporates the Federal Highway Administration's 2009 MUTCD (revised in 2012), and incorporates policies on traffic control devices issues by the Department since November 7, 2014.



Office of Planning and Research (OPR) Senate Bill (SB) 743 Guidance

On September 27, 2013, Governor Jerry Brown signed SB 743 into law and started a process that could fundamentally change transportation impact analysis as part of CEQA compliance. These changes will include elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts in many parts of California (if not statewide). Further, parking impacts will not be considered significant impacts on the environment for select development projects within infill areas with nearby frequent transit service. According to the legislative intent contained in SB 743, these changes to current practice were necessary to “...more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.”

On January 20, 2016, the Governor’s OPR released the *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA*. Of particular relevance to this project is the text of the proposed new Section 15064.3 that relates to the determination of the significance of transportations impacts, alternatives and mitigation measures. The following excerpt is taken directly from the *Revised Proposal* document:

(b) Criteria for Analyzing Transportation Impacts.

Lead agencies may use thresholds of significance for vehicle miles traveled recommended by other public agencies or experts provided the threshold is supported by substantial evidence.

(1) **Vehicle Miles Traveled and Land Use Projects.** A development project that results in vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, development projects that locate within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor may be presumed to cause a less than significant transportation impact. Similarly, development projects that decrease vehicle miles traveled in the project area compared to existing conditions may be considered to have a less than significant transportation impact.

California Coastal Commission

The California Coastal Act (Public Resources Code § 30000 et seq.) provides for the long-term management of lands within California’s coastal zone boundary. Of primary relevance to traffic and transportation are Coastal Act policies concerning minimizing vehicle miles traveled, protecting public access, and maintaining recreational opportunities within the coastal zone. Final determinations regarding project consistency are reserved for the Coastal Commission.

Regional and Local

Southern California Association of Governments

The Southern California Association of Governments (SCAG) functions as the Metropolitan Planning Organization (MPO) for six counties in the surrounding region, including Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial counties. SCAG is mandated by the federal government to research and formulate plans for transportation, growth management, hazardous waste management, and air quality. Additional State-imposed mandates also exist at the State level. SCAG is responsible for



ensuring a comprehensive, coordinated planning process and for development of demographic projections for future area growth. Additionally, SCAG is responsible for integrated programs, measures, and strategies to address regional transportation, land use, housing, and employment evaluated in the South Coast Air Quality Management District's (SCAQMD) *2012 Air Quality Management Plan for the South Coast Air Basin* (2012 AQMP). The SCAQMD adopted the 2016 AQMP in March 2017, which is a comprehensive and integrated plan primarily focused on addressing the ozone and PM_{2.5} standards. The 2016 AQMP incorporates the latest scientific and technical information and planning assumptions, including the latest applicable growth assumptions, Regional Transportation Plan/Sustainable Communities Strategy, and updated emission inventory methodologies for various source categories.

SCAG adopted the 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): *Towards a Sustainable Future* in April 2016. The Plan is intended to provide guidance for increasing mobility for the region's residents and visitors, while emphasizing sustainability and integrated planning. The RTP/SCS encompasses three key principles for the region's future: mobility; economy; and, sustainability. The 2016 RTP/SCS emphasizes a commitment to reducing emissions from transportation sources in conformance with SB 375 (see footnote 7, below), improving public health, and meeting the Federal Clean Air Act (CAA) National Ambient Air Quality Standards (NAAQs).

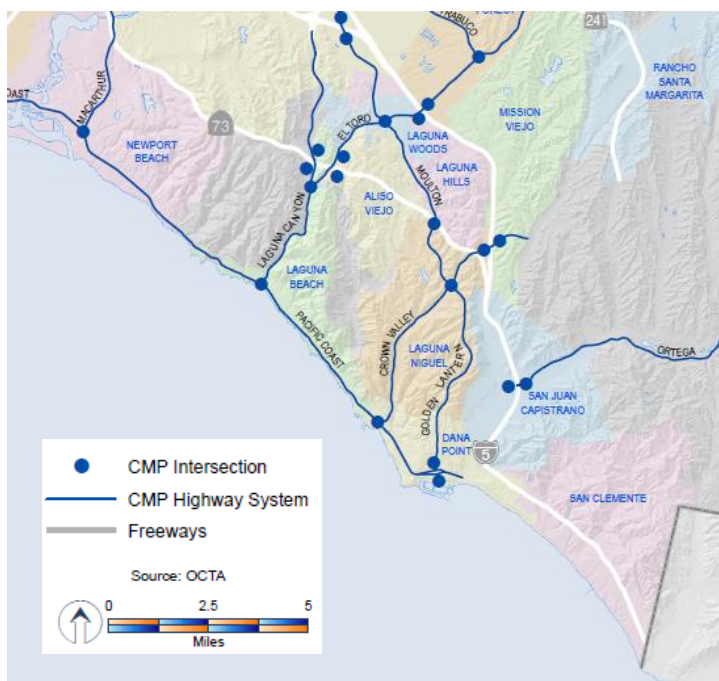
Orange County 2015 Congestion Management Plan

The *2015 Orange County Congestion Management Program* is intended to address the impact of local growth on the regional transportation system. It is OCTA's goal to comply with statutory requirements of the CMP, including monitoring LOS on the CMP Highway and Roadway network, measuring frequency and routing of public transit, implementing the Transportation Demand Management and Land Use Analysis Program Ordinances and helping local jurisdictions meet their responsibilities under the CMP. The CMP requires that a Traffic Impact Analysis (TIA) be conducted for any project generating 2,400 or more daily trips, or 1,600 or more daily trips for projects that directly access the CMP Highway System. Per the CMP guidelines, this number is based on the desire to analyze any impacts that comprise 3 percent or more of the existing CMP Highway System facilities' capacity. The CMP Highway System includes specific roadways, including State highways, smart streets, and CMP arterial monitoring locations/intersections. Therefore, the CMP TIA requirements relate only to the designated CMP Highway System. The CMP system in the City consists of the following roadways: Crown Valley Parkway, Street of the Golden Lantern, PCH, and Del Prado Avenue as shown in Figure 4.13-1: CMP Highway System.

- Crown Valley Parkway
- Del Prado Avenue
- Street of the Golden Lantern
- PCH (CMP southerly segment terminates at PCH/Del Obispo)



Figure 4.13-1: CMP Highway System



City of Dana Point General Plan

Urban Design Element

The City's General Plan Urban Design Element establishes goals and policies that encourage public improvements and high-quality design for new developments. The following policy presented in the General Plan Urban Design Element related to transportation/traffic is applicable to the proposed Project:

Policy 4.3: Develop stronger pedestrian, bicycle and visual linkages between public spaces and to and along the shoreline and bluffs. (Coastal Act/30210, 30212)

Circulation Element

The City's General Plan Circulation Element establishes goals and policies that address circulation improvements needed to relieve traffic congestion and establishes strategies aimed at improving mass transit services in the City. The following goals and policies presented in the General Plan Circulation Element related to transportation/traffic are applicable to the proposed Project:

Goal 1: Provide a system of streets that meets the needs of current and future residents and facilitates the safe and efficient movement of people and goods throughout the City. (Coastal Act/30252)

Policy 1.1: Develop and maintain a road system that is based upon and is in balance with the Land Use Element of the General Plan. (Coastal Act/30250)

Policy 1.3: Coordinate roadway improvements with applicable regional, State and Federal transportation plans and proposals.



- Policy 1.4:** Develop thresholds and performance standards for acceptable levels of service. (See "Performance Criteria" in next chapter in the General Plan Circulation Element).
- Policy 1.5:** Develop a program to identify, monitor and make recommendations for improvements to roadways and intersections that are approaching, or have approached, unacceptable levels of service or are experiencing higher than expected accident rates.
- Policy 1.6:** Develop a transportation network that is capable of meeting the needs of projected increases in the population and in non-residential development. (Coastal Act/30252)
- Policy 1.7:** Provide for the safe and expeditious transport of hazardous materials.
- Policy 1.8:** Work with the appropriate entities to improve rail and other public transit systems to serve the resident and visitor population of the area. (Coastal Act/30213)
- Policy 1.9:** Limit driveway access on arterial streets to maintain a desired quality of flow.
- Policy 1.10:** Design local and collector streets to discourage their use as through traffic routes.
- Policy 1.11:** Require that proposals for major new developments include a future traffic impact analysis which identifies measures to mitigate any identified project impacts. (Coastal Act/30250)
- Policy 1.12:** Encourage new development which facilitates transit services, provides for non-automobile circulation and minimizes vehicle miles traveled. (Coastal Act/30252)
- Policy 1.13:** Minimize pedestrian and vehicular conflicts. (Coastal Act/30252)
- Policy 1.14:** Establish landscaping buffers and building setback requirements along all roads where appropriate. (Coastal Act/30252)
- Policy 1.15:** Develop a circulation system which highlights environmental amenities and scenic areas. (Coastal Act/30251)
- Policy 1.16:** Provide public access and circulation to the shoreline, through private dedications, easements, or other methods including public transportation. (Coastal Act/30211,30212, 30212.5, 30221)
- Goal 2:** Support development of a network of regional transportation facilities which ensures the safe and efficient movement of people and goods from within the City to areas outside its boundaries, and which accommodates the regional travel demands of developing areas outside the City.



Policy 2.5: Work toward a multi-modal transportation network which provides viable transportation alternatives such as Amtrak, LOSSAN (Metrolink), shuttle access to airport facilities, and congestion management techniques.

Goal 3: Maximize the efficiency of the circulation system through the use of Transportation System Management and Demand Management strategies.

Policy 3.2: Implement intersection capacity improvements where feasible.

Policy 3.3: Encourage the implementation of employer Transportation Demand Management (TDM) requirements included in the Southern California Air Quality Management District's Regulation XV of the Air Quality Management Plan. Participate in regional efforts to implement (TDM) requirements.

Policy 3.6: Promote ridesharing through publicity and provision of information to the public.

Goal 4: Support development of a public transportation system that provides mobility to all City residents and encourages use of public transportation as an alternative to automobile travel.

Policy 4.2: Require new development to fund transit facilities, such as bus shelters and turn-outs, where deemed necessary.

Policy 4.4: Encourage employers to reduce vehicular trips by offering employee incentives.

Policy 4.5: Promote new development that is designed in a manner that (1) facilitates provision or extension of transit service, (2) provides on-site commercial and recreational facilities to discourage mid-day travel, and (3) provides non-automobile circulation within the development. (Coastal Act/30213, 30252)

Policy 4.6: Encourage developers to work with agencies providing transit service with the objective of maximizing the potential for transit use by residents and/or visitors.

Policy 4.7: Encourage the provision of safe, attractive and clearly identifiable transit stops and related high-quality pedestrian facilities throughout the community. (Coastal Act/30252)

Goal 5: Encourage non-motorized transportation, such as bicycle and pedestrian circulation.

Policy 5.1: Promote the safety of pedestrians and bicyclists by adhering to national standards and uniform practices.

Policy 5.3: Ensure accessibility of pedestrian facilities to the elderly and disabled.

Policy 5.4: Support and coordinate the development and maintenance of bikeways in conjunction with the County of Orange Master Plan of Countywide Bikeways to assure that local bicycle routes will be compatible with routes of neighboring jurisdictions.



Policy 5.5: Encourage the provision of showers, changing rooms and an accessible and secure area for bicycle storage at all new and existing developments and public places. (Coastal Act/30213)

Policy 5.6: Develop programs that encourage the safe utilization of easements and/or rights-of-way along flood control channels, public utility rights-of-way, railroad rights-of-way, and street rights-of-way wherever possible for the use of bicycles and/or hiking trails.

Policy 5.7: Explore possible link-up of trails within the City to regional trail systems.

Policy 5.8: Improve the safety of pedestrians crossing Pacific Coast Highway. (Coastal Act/30252)

Policy 5.9: Support and coordinate the development and maintenance of bikeways and trails in conjunction with the master plans of the appropriate agencies.

Policy 5.11: Consider the provision of unique non-motorized circulation methods for special events.

Policy 5.12: Provide for a non-vehicular circulation system that encourages mass-transit, bicycle transportation, pedestrian circulation. (Coastal Act/30252, 30253)

Goal 6: Provide for well-designed and convenient parking facilities.

Policy 6.1: Consolidate parking, where appropriate, to reduce the number of ingress and egress points onto arterials.

Policy 6.2: Maintain public access to the coast by providing better transit and parking opportunities. (Coastal Act/30252)

Policy 6.3: Provide sufficient off-street parking. (Coastal Act/30250)

Policy 6.4: Encourage the use of shared parking facilities, such as through parking districts or other mechanisms.

Goal 7: Provide for a truck circulation system that provides for the effective transport of commodities while minimizing the negative impacts throughout the City.

Policy 7.1: Provide primary truck routes on selected arterial streets to minimize the impacts of truck traffic on residential areas.

Policy 7.4: Provide loading areas and access ways that are designed and located so as to avoid conflicts with efficient traffic circulation.

Policy 7.5: Consider safety regulations addressing trucks hauling materials within the City.



4.13.3 SIGNIFICANCE CRITERIA

Significance Criteria under CEQA

Appendix G of the State CEQA Guidelines contains the Initial Study Checklist form, which includes questions related to transportation and traffic. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this section. Accordingly, a project may create a significant environmental impact if one or more of the following occurs:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access;
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Methodology and Assumptions

The proposed Project and associated project design features (PDFs) are evaluated against the aforementioned significance criteria, as the basis for determining the level of impacts related to transportation and traffic. In addition to PDFs, this analysis considers existing regulations, laws and standards that serve to avoid or reduce potential environmental impacts. Where significant impacts remain, feasible mitigation measures are recommended, where warranted, to avoid or lessen the Project's significant adverse impacts. Further details regarding methods are provided in [Appendix 10.1](#) of this EIR.

Project Design Features

- The Project proposes uses of trenchless pipeline construction under sensitive transportation facilities, including Class I bike paths, PCH, and SCRRRA MetroLink ROW;
- The proposed desalination facility displaces numerous small and disconnected commercial/industrial operators, with net operational traffic likely similar to current conditions;
- Project facilities are in close proximity to local and regional truck routes, reducing the travel time on local City streets during construction and for ongoing operational deliveries;



- Proposed staging areas are located within Doheny State Beach and immediately adjacent to the desalination facility, substantially reducing construction-related traffic on local streets.

4.13.4 IMPACTS AND MITIGATION

Impact 4.13-1: Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? *Level of Significance: Less than Significant with Mitigation.*

The volume of automobile and truck traffic associated with Project-related construction activities would vary throughout the construction phases, as different activities occur. To provide a conservative analysis, potential concurrent employment on the Project site and potential concurrent truck activity are included in the construction traffic volumes assumed and evaluated herein. Additionally, pursuant to the existing regulatory requirements, the construction-related traffic would be required to utilize established truck routes that involve Major and Secondary Arterials, thus avoiding local streets, particularly those that traverse residential neighborhoods. During the construction phase, the Project would generate vehicle trips in the vicinity of the ocean water desalination facility and within the jurisdictions traversed by the desalinated water conveyance pipelines. These trips would be associated with construction workers commuting, transport of materials and equipment to and from the site during construction. Although temporary and limited to Major/Secondary arterials, the addition of Project-related construction traffic to affected roadways and intersections could temporarily conflict with an adopted plan, ordinance, or policy which establishes measures of effectiveness for performance by reducing the existing LOS or creating increased intersection delays.

The following analysis addresses Project construction-related traffic. Note that these estimates are considered conservative, do not account for reductions associated with proposed construction worker shuttling, and are generally not additive (i.e., the ocean water desalination facility site trips occur in the vicinity of the SCWD, the intake wells construction occurs on the beaches and ocean, and the water conveyance line construction occurs on local streets).

Construction

Note that, for Phase I construction, not all facilities would be constructed, and not all Phase I facilities would be constructed concurrently. Although the slant well pods could be located anywhere within the slant well study area (Doheny State Beach to Capistrano Beach Park), not all proposed slant well pods would be constructed in Phase I (no more than two to three slant well pods are anticipated in Phase I).

Subsurface Intake Wells

Doheny State Beach

Construction of the subsurface intake wells would impact Doheny State Beach roadways, primarily within the north parking lot and Park Lantern Road. Further, these components would likely be constructed concurrent with the ocean water desalination facility, which would result in a greater amount of construction-related trips at any given time. Construction of the slant well facilities will include



mobilization, excavation, vault construction, mechanical piping installation, electrical/controls installation, commissioning, and demobilization. To facilitate these activities and provide access in a tight area, a construction zone around the drill rig of at minimum 130 feet by 75 feet will be required, as well as a staging area of approximately 240 feet by 125 feet located near slant well Pods A-C, towards the southeastern portion of the North Day Use parking lot.

The slant well construction area itself is not anticipated to significantly impact State Beach parking or circulation, representing a temporary loss of landscaped area. The North Day Use parking lot staging area would displace approximately 80 parking stalls. The staging area would be sited such that Park Lantern Road is not obstructed. Siting the staging area within the State Beach parking area substantially reduces construction-related traffic on local streets outside the State Beach. In addition, slant well construction would only occur in the off season, between October 1 and May 1, thereby reducing potential conflicts with parking demand by State Beach visitors. Review of historic aerial photography indicates that the North Day Use parking area typically has ample unused parking areas. However, during occasional off-season special events hosted in the North Day Use picnic or beach area, the temporary loss of an estimated 80 parking stalls could adversely affect parking availability, causing State Beach visitors to seek parking outside the North Day Use area. This would be a temporary condition, and only occasionally occurring during the off-season at Doheny State Beach. Mitigation Measure TRF-1 requires SCWD to develop a Parking and Staging Plan for review and approval by State Parks, County Parks and the City of Dana Point, prior to commencing construction activities. The Parking and Staging Plan requires demonstration of adequate motorist, pedestrian and bicycle access during construction, as well as provisions for Doheny State Beach special event off-site parking. The special event parking may require use of adjacent County or City parking lots (which currently occurs during special events), as well as use of SCWD-funded parking shuttles to larger off-site parking lots. In addition, advance coordination with affected agencies will allow special events to be scheduled outside of the slant well construction window, to the extent practical. In consideration of Project Design Features and mitigation measures required below, construction-related traffic and parking impacts at Doheny State Beach would be less than significant.

City of Dana Point/Caltrans

Intake well structures construction would require heavy/oversized truck deliveries to transport equipment and machinery to the site. Truck haul routes would likely affect Park Lantern, Dana Point Harbor Drive, Coast Highway, PCH, and I-5. Municipal Code 12.04.115 exempts truck limitations for use on designated truck routes and necessary travel from local streets to the nearest truck route, which include Del Prado (north end to south end), Del Obispo (from PCH to Northern City Boundary), and PCH (from San Juan Creek to Camino Capistrano). In addition, all commercial trucks are allowable for use in the construction or maintenance of a public utility, which applies to the Project.

During Phase 1, an estimated four 1,000 feet slant wells would be constructed, resulting in an estimated 772 cubic yards (CY) of exported materials (beach sands and offshore drilling spoils).⁴ Assuming 16 CY per truck load, 48 one-way trips are expected to occur. The number of truck trips per day and/or week would vary, based upon the stage and type of construction being undertaken. Assuming a 10-hour construction day (truck haul trips generally taper off after 5 PM in order to reach local landfills), construction activity

⁴ SCWD or its designee will explore the potential for locally reusing the beach sands and drilling spoils resulting from slant well construction, to reduce off-site haul trucks, and potentially to provide a localized replenishment of beach materials.



at Doheny State Beach is anticipated to add an estimated five one-way trucks per hour to local intersections in route to final disposal locations in local landfills. Truck trips would utilize PCH to I-5, with initial travel along Park Lantern and Dana Point Harbor Drive to PCH. This is not considered a significant impact, given the temporary nature, occurrence during off-peak visitor season for Dana Point, and implementation of required mitigation measures.

Several mitigation measures would be required to address the construction impacts associated with the intake wells, including a Parking and Staging Plan (TRF-1), and a Traffic Control Plan (TRF-2). The Parking and Staging Plan and the Traffic Control Plan (TCP) would require review and approval by all affected jurisdictions to ensure traffic control and public safety during all stages of construction. The TCP measures include redirecting traffic with a flag person; establishment of construction work hours and arrival/departure times outside of peak hours; temporary travel lane closure; access to surrounding properties; and timing of heavy construction equipment and building materials deliveries, among other control measures.

In consideration of Project Design Features, and with implementation of Mitigation Measures TRF-1 and TRF-2, temporary construction-related impacts associated with the slant well construction at Doheny State Beach would be reduced to less than significant levels.

Southeast Intake Wells

Capistrano Beach Park

Conceptual locations for subsurface intake wells at Capistrano Beach Park are represented as slant well Pods F, G and H. These slant well locations are conceptual, subject to refinement as part of final design and regulatory permitting agency review and approval. As with Doheny State Beach slant wells, slant well construction at Capistrano Beach Park would only occur during the off-season from October 1 to May 1, thereby minimizing disruption to park visitor parking. Access to this area would be via Park Lantern Road to/from the proposed staging area at Doheny State Beach North Day Use area, or via the traffic signal on PCH and the park entry at Palisades Drive. SCWD would maintain public access and have appropriate traffic controls for any construction traffic using State Beach or Capistrano Beach Park public roads.

Depending on final siting for slant well pods and associated construction work enclosure (estimated to require an enclosed area approximately 75 feet deep and 100 feet long), the temporary slant well work zone would displace approximately 30 parking stalls (if sited south of Palisades Drive within the Capistrano Beach Park parking area). The County parking lot has approximately 140 parking stalls. Review of historical aerial photo imagery indicates that this parking lot typically has considerable available spaces during the off-season. At the request of County Parks staff, SCWD shifted the slant well pod H away from the park entrance at Palisades to minimize disruption of park access and parking disruption, and shifted Pods F and G north of Palisades to the south end of Doheny State Beach. Pod F is now the lowest priority of all slant well pod locations due to coastal hazards, beach construction and conflicts with the Class I bike trail. In addition, a pipeline connecting the slant well to the beach diffuser would require trenching across a small section of the parking lot, estimated to require less than one week to complete. The temporary loss of these parking stalls is not considered significant, given the off-season timing, Project Design Features, and required mitigation, including TRF-1 (Parking and Staging Plan).



The “Capistrano Beach Rail Trail” is identified as a High Priority Project in the City of Dana Point’s Bicycle and Pedestrian Trails Master Plan (listed as Priority Project 12), a Class I off-road bikeway proposed from Palisades Drive to Doheny State Beach. As this planned future improvement is intended to use railroad right-of-way and the slant well construction would not utilize rail right-of-way (and would be temporary), the Project would not conflict with this future planned City bike trail improvement.

Similar to the slant wells proposed at Doheny State Beach, the southeast intake wells would require quantities of export materials (beach sands and drilling spoils), estimated to represent approximately five one-way truck trips per hour (48 trips over a 10-hour day). Construction traffic would likely primarily utilize the Capistrano Beach Park entrance at Palisades Drive, which provides quick access to the I-5 freeway, located less than one mile from Palisades Drive at Doheny Park Road.

SCWD will consult with County Parks as part of ongoing discussions in preparation for final design and agency review and approval of construction plans. In consideration of Project Design Features, and with implementation of Mitigation Measures TRF-1 and TRF-2, temporary construction-related impacts associated with the slant well construction at Capistrano Beach Park would be reduced to less than significant levels.

City of Dana Point/Caltrans

As with slant wells at Doheny State Beach, potential Capistrano Beach Park slant wells would not have significant construction-related traffic impacts. As noted above, Capistrano Beach Park has direct access to PCH, which is a designated truck route with ready access to I-5. Export volumes would be similar to those noted at Doheny State Beach. Capistrano Beach Park slant wells would also require a beach diffuser, similar to the beach diffuser utilized during well development for the temporary Test Slant Well constructed at Doheny State Beach. Construction of the beach diffuser may require importing rip rap to protect the diffuser, since slant well construction would occur during the winter off-season when coastal wave hazards are higher. These inbound import trips would be brief in duration. In consideration of Project Design Features, and with implementation of Mitigation Measures TRF-1 and TRF-2, temporary construction-related impacts associated with the slant well construction in the City would be reduced to less than significant levels.

Raw Water Conveyance Alignment – North

Doheny State Beach

The North alignment would carry raw ocean water from any of the slant well pods to the desalination facility, which would require traversing portions of Doheny State Beach. As discussed in Section 4.12, Recreation, pipeline construction may also temporarily displace parking, as the pipeline trenching process gradually moves through the park (estimated at about 300 feet per day, representing approximately 30 parking spaces displaced at any time for the pipelines). Where Park Lantern is utilized as a bike path, and also in consideration for continued Park access during construction, pipeline construction will allow for continued access around the trench/excavation area during pipeline installation. Raw water pipeline construction in Doheny State Beach would avoid direct impacts to the Class I San Juan Creek Bike Trail, either through trenchless construction or potentially by placing the pipeline in the existing Park Lantern bridge deck over San Juan Creek. This construction would occur during regular construction hours, and as such no nighttime disruption to park users would be anticipated for the raw water pipelines. Pipeline



trenching within Doheny State Beach will require exporting excess trench spoils that are not usable for trench backfilling. These nominal truck trips would have similar but reduced impacts as noted above for slant well construction within Doheny State Beach, and would not otherwise be considered significant.

Given that pipeline construction within the Park would occur during the off-season, and with implementation of Mitigation Measures TRF-1 and TRF-2, impacts would be mitigated to less than significant levels.

Capistrano Beach Park

Impacts at Capistrano Beach Park would be similar as those described above for Doheny State Beach, except that raw water pipelines could also affect portions of the Capistrano Beach Park parking areas, estimated at 30 lost stalls at any one time as the pipeline construction moves through the parking area. Through access would be maintained for all open portions of the parking lot. Considering Project Design Features and required mitigation measures, no significant impacts related to raw water pipeline construction are anticipated within Capistrano Beach Park.

City of Dana Point

This component of the Project includes construction of a raw water conveyance pipeline extending from Doheny State Beach and Capistrano Beach Park onto public roads and across San Juan Creek. The North Alignment would require temporary construction and lane closures along portions of Dana Point Harbor Drive and Del Obispo Street, estimated at approximately 300 feet per day at any one time. During this time, temporary lane closures would be required, and bicycle lanes and/or sidewalks may require temporary closure and detours for relatively brief periods as the pipeline construction progresses. This is a fairly common impact with utility trenching, and SCWD would develop appropriate traffic control measures as part of the encroachment permit process with the City of Dana Point (see TRF-2). As noted in Section 3.0.0, Project Description, the North Alignment is presently not the preferred alignment, due to an existing repaving moratorium on Del Obispo Street. Should the South Alignment be determined as infeasible or otherwise undesirable, SCWD would pursue the North Alignment and resolve appropriate compensation or other design strategies to allow temporary use and repaving of Del Obispo Street (see Section 3.0.0, Project Description)

SCWD will implement mitigation measure TRF-2, as well as implement standard construction practices established by decades of pipeline construction experience and successful coordination with City staff prior to and during pipeline construction. Considering Project Design Features and required mitigation measures, no significant impacts related to raw water pipeline construction are anticipated within the City of Dana Point.

Raw Water Conveyance Alignment -South

Within Doheny State Beach and Capistrano Beach Park, impacts of the South Alignment would be similar to those described above for the North Alignment, as either alignment could require traversing the length of both parks to collect raw ocean water from the slant wells and convey the raw ocean water to the desalination facility. The primary difference between the two alignments is how the raw water conveyance pipeline conveys water from Doheny State Beach Park to the desalination facility. With the South Alignment, this would be accomplished by exiting Doheny State Beach south of San Juan Creek Lagoon. This alignment proposes trenchless construction under the SCRRA railroad right-of-way and



Caltrans' PCH right-of-way, proceeding north along Doheny Park Road to Las Vegas Avenue (trenchless construction would be utilized under the SCRRA and PCH crossings, as well as a required second SCRRA crossing after the terminus of Las Vegas Avenue).

City of Dana Point

Construction of the raw water pipeline is expected to result in approximately 5,725 CY of excess trench spoils for the Phase 1 project. Assuming each truck can carry 16 CY loads, construction of the raw water pipeline would generate an estimated total of 358 one-way trips. These vehicle trips would be distributed across Las Vegas Avenue, Doheny Park Road, and Interstate 5, estimated typically at five export trucks per hour. This is not anticipated to represent a significant traffic impact, as the construction traffic would be temporary and during normal City construction hours. Appropriate traffic control measures would be employed as developed through the encroachment permit process with the City, SCRRA and Caltrans. Through access would be maintained at all times (at least one through lane), although bicycle lanes and/or sidewalks may require temporary closure and rerouting.

Considering Project Design Features and required mitigation measures, no significant impacts related to raw water pipeline construction are anticipated within the City of Dana Point.

Desalination Facility

City of Dana Point

The desalination facility construction would temporarily increase vehicular traffic in the Project area. Construction of the desalination facility would involve moving large earthwork quantities, up to 76,000 CY. Approximately 9,000 CY of earthworks would be exported while 64,600 CY would be imported into the SCWD site. Assuming a truck load of 16 CY per truck, construction of the SCWD site would result in 4,190 inbound (import) trips and 560 outbound (export) trips, totaling an estimated 4,750 one-way trips spread out over the duration of desalination facility grading. The desalination facility construction may occur concurrently with the slant well and raw water conveyance components, although these other Project elements would be geographically separated and utilize different local streets. In addition, the export trips would occur first (for site clearing and grubbing), so these trips would generally not be additive to the import trips. Assuming a 10-hour construction day (truck haul trips generally taper off after 5 PM in order to reach local landfills), the desalination facility would involve approximately 50 one-way trips per day, requiring approximately 85 days of soil import.

Following soil import, the Project would require materials delivery, contractor staging and typical activities associated with municipal water facility construction. The proposed staging area, immediately adjacent to the desalination facility site, would substantially reduce construction-related traffic on local streets. In addition, the Project's close proximity to truck routes and the I-5 freeway would similarly reduce construction traffic on local streets. Construction traffic to/from the desalination facility site would generally utilize the existing SCWD access road running along the east side of San Juan Creek within the SCWD property (not within County flood control right-of-way). This SCWD access road is a two-lane paved road at its northern limits within the SCWD property, then connects with Stonehill Drive. From Stonehill Drive, construction traffic only need pass through one intersection (Camino Capistrano, in the City of San Juan Capistrano) to reach the I-5 northbound on-ramp. Construction vehicles traveling on the I-5 southbound would likely travel south on Camino Capistrano Road to the I-5 southbound onramp from



Doheny Park Road. Construction traffic impacts following soil export/import are anticipated to be similar or less than that described above for soil importation.

The desalination facility demolition and construction activities would require heavy/oversized truck deliveries to transport equipment and machinery to the site. To ensure public safety and minimize potential impacts on existing circulation patterns and LOS, all Project-related truck deliveries would utilize adopted truck routes, including Interstate 5 and PCH as identified in *Caltrans Truck Networks on California State Highways*. Truck deliveries would occur intermittently throughout the day, and consistent with Dana Point Municipal 11.10.014, Exemptions, which allows construction activities to occur between the hours of 7:00 AM and 8:00 PM, Monday through Saturday, and also outright exempts construction traffic for a municipal utility facility such as the Project. The number of truck trips per day and/or week would vary, based upon the stage and type of construction being undertaken. Heavy/oversized deliveries may be shipped to the Project site via rail, or may be transported during nighttime hours to minimize traffic congestion effects, pursuant to City and Caltrans requirements.

Mitigation Measure TRF-2 requires that SCWD (or its designee) prepare a Traffic Control Plan (TCP) to specify construction related haul routes. The TCP would include such measures as redirecting traffic with a flag person; establishment of construction work hours and arrival departure times outside of peak hours; temporary travel lane closure; access to surrounding properties; and, timing of heavy construction equipment and building materials deliveries, among other control measures. Mitigation Measure TRF-2 also requires that SCWD (or its designee) obtain necessary transportation permits to allow for proper operation of all construction vehicles with respect to vehicle weight, size and transportation routes. Implementation of the TCP would minimize the potential for the Project's construction-related traffic to result in traffic delays or impacts on existing circulation patterns and intersection/roadway LOS. In consideration of Project Design Features, and with implementation of Mitigation Measures TRF-1 and TRF-2, all temporary ocean water desalination facility construction-related impacts to traffic/circulation would be reduced to a less than significant level.

Brine Disposal System

This Project component is within the larger construction phase of the desalination facility, as discussed above. Therefore, refer to the above analysis.

Operation

Subsurface Intake Wells

Intake well maintenance and operations would include periodic, scheduled inspections, the replacement of any equipment that reaches the end of its lifetime or failed during use, and the periodic application of chemical cleaning solutions to control biofouling. These Project components would not require routine staffing and, as such, it is not anticipated that operation of these facilities would generate substantial new traffic in the area or significantly impact LOS in the Project area. A less than significant impact would occur in this regard.

Southeast Intake Wells

As with the slant wells at Doheny State Beach, these Project components would not require routine staffing and, as such, it is not anticipated that operation of these facilities would generate substantial new



traffic in the area or significantly impact LOS in the Project area. A less than significant impact would occur in this regard.

Raw Water Conveyance Alignments – North and South

Periodic maintenance and inspections of the alignment pipeline would not require routine staffing which would generate vehicle trips. Operation of the raw water conveyance pipeline would not generate new traffic in the area due to their subsurface nature, and periodic maintenance would not hinder roadway performances. Therefore, impacts would be less than significant.

Desalination Facility

City of Dana Point

Given the nature of the proposed land use (i.e., an ocean water desalination facility), the Project would generate only nominal operational traffic volumes, and would not require operational improvements to any roadways or intersections. The ocean water desalination facility would operate 24 hours a day, 365 days a year, and would be staffed 24 hours a day. Routine chemical deliveries to the site and hauling of residual materials from the site would occur during normal day-shift working hours, during the traditional work week. The ocean water desalination facility would employ an anticipated total staff of approximately 4-6 full-time personnel for the Phase I Project, and an estimated 12-15 full-time employees for the potential future Regional Project, with the facility being fully staffed eight hours per day, five days per week, and partially staffed at other times. Therefore, the desalination facility operations would generate nominal operational traffic volumes, and would not require operational improvements to any roadways or intersections. Occasionally visitors would utilize the Administration Building's conference room (approximately 2,000 SF), although the conference room use is anticipated to be infrequent, and the site will have adequate parking to accommodate visitors. Further, desalination facility operations would not substantially increase vehicle miles traveled (i.e., per capita, per service population, or other measure) and therefore would not result in adverse impacts on the circulation system in this regard.

Brine Disposal System

The desalination facility, including the brine disposal operations, would generate only nominal operational traffic volumes, and would not require operational improvements to any roadways or intersections. Impacts would be less than significant.

Mitigation Measures

TRF-1

Prior to commencing Project construction, SCWD (or its designee) shall develop and implement a **Parking and Staging Plan** for all phases of construction to require that all Project-related parking occurs on-site or in pre-designated off-site parking areas. The Staging Area⁵ shall maintain through park access for motor vehicles, bicycles and pedestrians. To accommodate peak parking demand for Special Events during the off-season, SCWD (or its designee) shall coordinate with State Parks to reschedule Special Events to alternate venues or to outside the off-season construction period, and if

⁵ If State Parks determines that an off-site Staging Area is needed, either to supplement or replace the North Day Use Staging Area, the off-site staging area shall be sited such that it is on existing developed or disturbed property, not adjacent to residential uses, and with adequate traffic control to avoid significant temporary construction impacts, to the satisfaction of the City of Dana Point. The District's San Juan Creek Property is the preferred location for any staging required outside of DSB.



not possible, shall arrange for sufficient off-site parking and shuttles such that the displaced parking stalls are offset. The contractor shall utilize shuttles to transport workers to and from any off-site staging/parking areas (if utilized) and Project construction areas. At least 60 days prior to start of site mobilization, SCWD (or its designee) shall submit the Plan to each affected jurisdiction for review and approval.

TRF-2

Prior to construction, SCWD (or its designee) shall submit for review and approval a **Construction Traffic Control Plan (TCP)** to each affected jurisdiction (including State Parks, Caltrans, County Parks, and City of Dana Point), as part of the encroachment permit or related approval process. The TCP shall address, at minimum, the following issues:

- Controlling construction traffic flow by use of a flag person at construction site entrances on public roads, including Stonehill Drive/SCWD Access Road, Dana Point Harbor Drive/Park Lantern, and Palisades Drive/PCH;
- Signage, lighting, and traffic control device placement if required;⁶
- Need, if any, for construction work hours and arrival/departure times outside of peak traffic periods;
- Maintaining access for emergency vehicles;
- Advanced notice to local agencies, transit providers, school districts, and emergency service providers regarding the anticipated schedule, location, and duration of any temporarily reduced through lanes, including clear plans for temporary detours and alternate routes, if applicable;
- Main through access in each direction on any public road;
- Maintain access to adjacent properties during the construction;
- Specify construction related haul routes for any material import/export;
- Timing of heavy equipment and building materials deliveries;
- Identify specific contractor training and related safety procedures for construction vehicles exiting and entering work areas from public roads.

Impact 4.13-2: Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? Level of Significance: Less than Significant Impact.

The Project is not anticipated to affect any CMP facility or otherwise conflict with the CMP. The nearest CMP facility is a short segment of PCH extending from Golden Lantern southerly to Del Obispo (the intersection of PCH/Del Obispo is not a CMP intersection). The majority of Project traffic would utilize PCH south of Del Obispo to I-5, Dana Point Harbor Drive south of PCH, and PCH south to Palisades Drive. In addition, both construction and operational traffic volumes fall well below the CMP threshold of 2,400 trips per day, with construction traffic estimated at 50 one-way trips per day for the desalination facility construction, and operational traffic typically far below that. A less than significant impact is anticipated

⁶ SCRRRA made comments on the Amended NOP (letter dated December 18, 2017), requesting consideration of a signal at the intersection of Stonehill Drive and the SCWD access road paralleling San Juan Creek. However, SCWD had previously investigated the potential for a permanent signal at this location and determined it to be infeasible due to the short distance (less than 700 feet) between the access road and Camino Capistrano, as well as potential turning movement conflicts with the hotel and commercial center driveways located less than 200 feet from the SCWD access road.



in regard to CMP facilities and no mitigation is required. Project Design Features would further reduce Project-related traffic impacts.

Mitigation Measures

None required.

Impact 4.13-3: **Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? *Level of Significance: No Impact.***

Construction and Operations

All Components

The proposed Project is located in the City of Dana Point, situated approximately 3 miles southwest of San Juan Capistrano and 6 miles northwest of San Clemente. The nearest airport is John Wayne Airport, located 18 miles northwest. The Project site is not within any safety zones of the John Wayne Airport. The Project involves no residential development and a nominal increase in employment. Given the Project's nature, scope, and location, the Project would not result in any changes in air traffic patterns or safety. No impact would occur.

Mitigation Measures

No mitigation measures are required.

Impact 4.13-4: **Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? *Level of Significance: Less than Significant Impact with Mitigation.***

Construction

All Components

Project construction would not represent a significant traffic-related safety hazard, in consideration of Project Design Features and the required Parking and Staging Plan (TRF-1) and Traffic Control Plan (TRF-2). There are no incompatible land uses, such as farm equipment, that represent a potential significant construction traffic safety hazard. All staging and construction areas would have appropriate signage and standard safety control measures as implemented by SCWD through standard construction practices. Trenching under sensitive locations such as Class I bike lanes, the SCRRA rail right-of-way, and PCH, would be accomplished through trenchless construction to avoid potential safety issues. TRF-2 requires use of construction traffic flagmen, signage and other measures subject to local agency review and approval, to ensure safe construction practices. In consideration of Project Design Features and Mitigation Measures TRF-1 and TRF-2, potential construction-related traffic impacts would be reduced to a less than significant level.



Operation

All Components

The Project does not have features that require substantial new or modified roadways, or other improvements that represent a potentially significant traffic safety hazard during operations. Many of the Project facilities are below-ground and therefore have no traffic safety implications. Other facilities, such as the slant well electrical vault, are small, within parking or landscaped areas, and would not otherwise represent traffic safety issues. The desalination facility will utilize the existing SCWD access road, and does not require public roadway or signal modifications, or other features that could represent a significant traffic safety issue. No significant impacts are anticipated in this regard.

Mitigation Measures

Mitigation Measure TRF-1 and TRF-2.

Impact 4.13-5: Would the project result in inadequate emergency access? *Level of Significance: Less than Significant with Mitigation.*

Construction

The Project is not anticipated to result in any significant emergency access impacts during construction. Refer to the impact 4.13-1 above for a discussion concerning construction impacts.

The slant well construction would occur on State Parks or County Parks property, which limits the potential for emergency access disruption on local streets. The desalination facility will be constructed on SCWD property using an existing SCWD access road, for which emergency access to the site will be maintained at all times. Raw water conveyance pipeline construction does have the potential for limited, temporary effects on emergency response, as pipeline construction may require temporary lane closures and detours for affected roadway segments. However, Project Design Features (such as use of trenchless construction under PCH) minimize emergency access impacts, and Mitigation Measures TRF-1 and TRF-2 will further reduce potential impacts to less than significant levels, by requiring such measures as adequate signage, emergency service provider notification, and traffic control during construction, in addition to maintaining at least one lane open to through traffic on all public streets.

In consideration of Project Design Features and Mitigation Measures TRF-1 and TRF-2, potential construction-related emergency access impacts would be reduced to a less than significant level.

Operation

All Components

The Project does not have features that require substantial new or modified roadways, or other improvements that represent a potentially significant emergency access impact during operations. Many of the Project facilities are below-ground and therefore have no emergency access implications. Other facilities, such as the slant well electrical vault, are small, within parking or landscaped areas, and would not otherwise represent emergency access issues. The desalination facility will utilize the existing SCWD access road, and does not require public roadway or signal modifications, or other features that could



represent a significant emergency access issue. No significant impacts are anticipated in regard to emergency access impacts during Project operations.

Mitigation Measures

Mitigation Measures TRF-1 and TRF-2 are applicable to construction-related emergency access mitigation.

Impact 4.13-6: **Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? *Level of Significance: Less than Significant with Mitigation.***

Construction

All Components

The Project is not anticipated to have any significant impacts to transit, bicycle or pedestrian facilities during construction. This issue is discussed in detail above (temporary construction-related impacts and associated Project Design Features and mitigation measures that avoid or reduce potential temporary impacts to less than significant levels). Potential construction-related impacts to bicycle and pedestrian access are discussed in Section 4.12, Recreation.

OCTA Route 91 is the only public bus route that could be affected by Project construction. The Route 91 segment along PCH will not be affected, as Project construction will use trenchless construction to avoid direct effects on PCH. Trenchless construction would also be used to avoid direct impacts to the MetroLink rail line and associated transit service. The Route 91 segment along Del Obispo Street would be affected, if the Northern Raw Water Alignment is implemented (currently, the South Alignment is the preferred alignment). However, as discussed above, this potential impact to transit would be temporary and mitigated through Project Design Features and Mitigation Measures TRF-1 and TRF-2, which require adequate advance notification to transit providers, signage, detours where needed, and maintaining through traffic on all public roads.

In consideration of Project Design Features and Mitigation Measures TRF-1 and TRF-2, potential construction-related impacts to public transit, bicycles and pedestrian facilities would be reduced to a less than significant level.

Operation

All Components

Project operations are not anticipated to significantly impact public transit, pedestrian or bicycle facilities. Refer to Section 4.12, Recreation for a detailed discussion regarding the Project's potential impacts to pedestrian and bicycle facilities. With respect to transit facilities, Project operations will not directly impact any public transit facility. The Project's employment population is so low (4-6 employees for the Phase I Project and 12-15 employees for the Regional Project) that the Project does not meet the rideshare and transit thresholds of local or regional transit planning policies.

The desalination facility site plan includes provision for transit parking (such as visitor buses), in addition to standard design practices to accommodate bicycles. The desalination site is in close proximity to an



existing OCTA bus stop, located at the PCH intersection with Dana Point Harbor Drive/Del Obispo. The MetroLink San Juan Capistrano train station is only 2.5 miles north of the desalination facility site.

In consideration of the above, no significant operational impacts are anticipated with respect to public transit, pedestrian or bicycle facilities.

Mitigation Measures

Mitigation Measures TRF-1 and TRF-2 are applicable (to reduce construction-related traffic impacts), as are Mitigation Measures REC-1 and REC-2 (to reduce construction-related impacts on recreational facilities including pedestrian facilities and bicycle lanes).

Regional Project

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential transportation and traffic impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). Expansion at the desalination facility site would have substantially less construction-related traffic impacts since the site would have already been graded. Operational traffic would be similar, but well within the capacity of local roads given relatively low volume of operational traffic and employees. The Regional Project may require construction of additional regional product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified.

4.13.5 CUMULATIVE IMPACTS

This cumulative impact analysis focuses primarily on the local vicinity surrounding the Project and its facilities within the City of Dana Point, given the Project's temporary construction timeframe and relatively nominal operational traffic. Refer to Section 4.0 for a general discussion of cumulative impact analysis methodology. Table 4-1, Cumulative Local and Regional Projects List, lists past, present and probable future development projects that have the potential to contribute to cumulative impacts when combined with the Project.

This EIR has incorporated by reference the City of Dana Point General Plan Final EIR, which addresses cumulative impacts of City buildout, in addition to the Doheny State Beach General Plan EIR, which addresses cumulative impacts of building out the State Beach. At a regional level, SCAG's 2016 RTP/SCS⁷ has been adopted to achieve consistency with State mobility and GHG goals such as AB32. A recent cumulative traffic analysis for the City of Dana Point indicated that buildout traffic conditions on local

⁷ "California Senate Bill 375 (SB 375) requires that the RTP also include an SCS, which outlines growth strategies that better integrate land use and transportation planning and help reduce the state's greenhouse gas emissions from cars and light trucks (California Government Code § 65080 (b)(2)(B)). The RTP is combined with the SCS to form the RTP/SCS, which is further detailed in Chapter 5. For the SCAG region, the California Air Resources Board (ARB) has set greenhouse gas reduction targets at eight percent below 2005 per capita emissions levels by 2020, and 13 percent below 2005 per capita emissions levels by 2035. As we will discuss in this Plan, the region will meet or exceed these targets, lowering greenhouse gas emissions (below 2005 levels) by eight percent by 2020; 18 percent by 2035; and 21 percent by 2040" (<http://scaqrtpscs.net/Pages/FINAL2016RTPSCS.aspx>; accessed January 27, 2018).



roads would meet City Level of Service targets of LOS D or better, for key intersections near the Project (PCH/Del Obispo, PCH/Doheny Park Road and Camino Capistrano/I-5 NB Ramp).⁸

Project construction-related impacts would be temporary and are mitigated to less than significant levels. The Project's encroachment permit process and EIR mitigation measures will ensure Project construction activities are coordinated with the City of Dana Point, State Parks and County Parks such that significant temporary cumulative construction impacts do not occur. With respect to long-term operational traffic impacts, the proposed Project would not generate significant operational traffic, and all traffic-related impacts are mitigated to less than significant levels. The Project is not otherwise anticipated to result in a cumulatively considerable contribution to the local area's cumulative traffic impacts.

The local traffic impacts are addressed by affected jurisdictions, primarily the City of Dana Point and OCTA, through long-term planning programs and mitigation of projects on a case-by-case basis. All future projects are required to evaluate traffic impacts as part of the respective agency's discretionary review and CEQA compliance process, including General Plan goals and policies of the affected jurisdiction, intended to reduce and/or avoid potential adverse environmental effects.

Therefore, the Project's construction-related and operational impacts are fully mitigated to less than significant levels, and do not represent a cumulatively considerable contribution to local or regional cumulative traffic impacts.

4.13.6 SIGNIFICANT UNAVOIDABLE IMPACTS

None of have been identified.

⁸ 43202 Del Obispo Street Project Traffic Study, Table E (LSA, July 2014). The Doheny Hotel Project Final EIR (Draft EIR Table 3.12-13; Final EIR certified April 2014) reached similar conclusions (this project is located at the corner of PCH and Del Obispo).



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4.14 TRIBAL CULTURAL RESOURCES

This section provides an assessment of potential impacts related to tribal cultural resources that could result from implementation of the proposed Project.

4.14.1 TRIBAL CULTURAL RESOURCE TERMINOLOGY

“Tribal cultural resources” are defined as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either included or determined to be eligible for inclusion in the California Register of Historical Resources (California Register) or included in a local register of historical resources, or a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant. A cultural landscape that meets these criteria is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape. Historical resources, unique archaeological resources, or non-unique archaeological resources may also be tribal cultural resources if they meet these criteria. Definitions of all key tribal cultural resources terms used in this section are provided in [Section 4.4, Cultural Resources](#).

4.14.2 AFFECTED ENVIRONMENT

Environmental Setting

Natural Setting

The following is summarized from the Environmental Setting in [Section 4.4, Cultural Resources](#). Refer to Section 4.4 for further detail related to the Natural Setting of the Project site. The Doheny Ocean Desalination Project site is located primarily within the City of Dana Point at elevations ranging from below sea level to nearshore beaches and adjacent areas (for the subsurface intake wells), to 0 to 33 feet above mean sea level (amsl) for the desalination facility and conveyance lines, to higher elevations for offsite improvements.

Ethnographic and Archaeological Contexts

Please refer to [Section 4.4, Cultural Resources](#), which provides the ethnography of Native American tribes within the Project’s Area of Potential Effect (APE), as well as the history of the Project area. This information is summarized below.

The Project area was historically occupied by the Juaneño, people who were associated with Mission San Juan Capistrano during the Spanish Period in California. While some scholars distinguished the Juaneño from their southern neighbors, the Luiseño, based on the fact that the Luiseño were associated with the Mission San Luis Rey, the two groups are hypothesized to be one ethnic group. Today, many of the Juaneño and Luiseño prefer to identify themselves as descendants of the Acjachemen Nation. In this section, the term Luiseño is used to refer to both groups for consistency in nomenclature.

The Luiseño occupied territory along the coast between Aliso Creek and Agua Hedionda Creek that extended inland to Santiago Peak on the north and the east side of Palomar Mountain on the south, including Lake Elsinore and the Valley of San Jose. The Luiseño language belongs to the Cupan group of the Takic subfamily of languages (previously known as Southern California Shoshonean), along with their northern and eastern neighbors, the Gabrielino and Cahuilla.



Luiseño social structure was more rigid than other Takic-speaking groups, possibly in part because of a higher population density. They were strongly patrilineal and resided in permanent villages with a few dozen to several hundred people. Each village was politically independent and claimed its own territory, including seasonal camps. Ties between villages were maintained through various economic, religious, and social networks.

Plant foods were by far the largest part of the traditional inland diet, with acorns representing the most important staple item. Villages were located near reliable water sources, as large quantities of water were necessary to process acorn products. The Luiseño ate a wide variety of other plant foods, including grasses, seeds, cactus fruits, yucca, bulbs, roots, tubers, mushrooms, and other items. The Luiseño also hunted and trapped game animals such as deer, rabbit, and birds. The sea was a very important source of protein, possibly providing up to 60 percent of protein for coastal villages. The Luiseño caught sea mammals and fish and gathered shellfish such as abalone, mussels, clams, and scallops.¹

Existing Tribal Cultural Resources

Methods Used to Identify Known Cultural Resources

Records Search

A search was conducted of cultural resource records housed at the California Historical Resources Information System (CHRIS), South Central Coastal Information Center (SCCIC) located at California State University, Fullerton. The search included a review of the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), the California Points of Historical Interest list, the California Historical Landmarks list, the Archaeological Determinations of Eligibility list, and the California State Historic Resources Inventory list. The records search also included a review of all available historic USGS 7.5- and 15-minute quadrangle maps.

Field Survey

A pedestrian survey of the APE was conducted by Rincon Consultants, Inc. on November 11, 2016. Survey of the proposed raw water conveyance pipeline study area consisted of a windshield survey for portions that follow existing roads and a pedestrian survey for portions through Doheny State Beach.

The desalination facility site was surveyed using transects spaced 15 meters apart (approximately 49 feet) when possible; however, much of the site was not accessible due to fencing and/or restricted ground visibility because of the area's use as a storage yard. Although access was limited, these methods were adequate based on the ground visibility within the inaccessible areas, which was fair, and the survey of a representative sample of areas within the desalination facility site. Orientation of the transects varied based on surface visibility.

Exposed ground surfaces were examined for artifacts, soil discoloration that might indicate the presence of a cultural midden, soil depressions, and features indicative of the former presence of structures of buildings or historic debris. Ground disturbances, such as animal burrows and drainages, were visually inspected as these areas can expose subsurface deposits.

¹ *Appendix 10.5, Doheny Desalination Project Cultural Resources Report, Rincon Consultants, Inc., December 2017, page 12.*



Native American Consultation

The Native American Heritage Commission (NAHC) was contacted in February 2016 to request a review of the Sacred Lands File (SLF) as part of the Notice of Preparation. The NAHC responded on March 3, 2016 that the search of the SLF was completed for the APE “with negative results.” The NAHC also provided a contact list for tribal groups or individuals who may have knowledge of cultural resources within the APE. Letters were mailed to each of these contacts requesting any information they may have on Native American cultural resources within the APE. As of May 2018, one response has been received (see [Appendix 10.5.2, AB52 Correspondence](#)).

Cultural Resources Results

Records Search

Within a 0.5-mile radius of the APE, the SCCIC records search identified 61 previous studies, 21 of which included a portion of the APE (see [Table 4.4-1](#) in [Section 4.4](#)), and 31 previously recorded cultural resources, 11 of which are within or adjacent (directly sharing a border) to the APE (see [Table 4.4-2](#) in [Section 4.4](#)). No tribal cultural resources were identified with the review of the Sacred Lands File.

Field Survey

The pedestrian survey of the APE did not result in the identification of any newly recorded resources. One prehistoric archaeological site is discussed below.

One prehistoric archaeological site was previously recorded within the Project APE (CA-ORA-188). The Southern Alignment and shared alignment crosses CA-ORA-188, but the resource was not observed during the survey, and subsequent research indicates the resource was incorrectly mapped, and was actually located on the bluffs above the Project area. The resource was described as a shell midden with numerous artifacts. CA-ORA-188 was completely destroyed during the development of the Dana Bluffs project according to SCCIC Report Number OR-2527 (ca. 1973).

4.14.3 REGULATORY FRAMEWORK

Federal

Native American Graves Protection and Repatriation Act of 1990

The Native American Graves Protection and Repatriation Act of 1990 sets provisions for the intentional removal and inadvertent discovery of human remains and other cultural items from federal and tribal lands. It clarifies the ownership of human remains and sets forth a process for repatriation of human remains, associated funerary objects, and sacred religious objects to the Native American groups claiming to be lineal descendants or culturally affiliated with the remains or objects. It requires any federally funded institution housing Native American remains or artifacts to compile an inventory of all cultural items within the museum or with its agency and to provide a summary to any Native American tribe claiming affiliation.



State

Native American Heritage Commission (NAHC)

Public Resources Code § 5097.91 established the NAHC, the duties of which include inventorying places of religious or social significance to Native Americans and identifying known graves and cemeteries of Native Americans on private lands. Public Resources Code § 5097.98 specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a county coroner.

California Public Records Act

Sections 6254(r) and 6254.10 of the California Public Records Act (Government Code § 6250 *et seq.*) were enacted to protect archaeological sites from unauthorized excavation, looting, or vandalism. Section 6254(r) explicitly authorizes public agencies to withhold information from the public relating to “Native American graves, cemeteries, and sacred places and records of Native American places, features, and objects...maintained by, ..., the Native American Heritage Commission....” § 6254.10 specifically exempts from disclosure requests for “records that relate to archaeological site information and reports maintained by, or in the possession of, the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the [NAHC], another state agency, or a local agency, including the records that the agency obtains through a consultation process between a California Native American tribe and a state or local agency.”

Assembly Bill (AB) 52

On July 1, 2015, California Assembly Bill 52 of 2014 (AB 52) was enacted and expands CEQA by defining a new resource category, “tribal cultural resources.” Assembly Bill 52 establishes that “A project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment.” (Public Resources Code § 21084.2). It further states that the lead agency shall avoid damaging effects to a tribal cultural resource, when feasible. (Public Resources Code § 21084.3). Public Resources Code § 21074 (a)(1) and (2) defines tribal cultural resources as “[s]ites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe” and meets either of the following criteria:

- 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 § 5020.1(k), or
- 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 § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

AB 52 also established a formal consultation process for California tribes regarding those resources. The consultation process must be completed before a CEQA document can be certified. AB 52 requires that lead agencies “begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project” if requested. (Public Resources Code § 21080.3.1(b)). Native American tribes to be included in the process are those that have requested notice



of projects proposed within the jurisdiction of the lead agency. The Notice of Preparation for this Project was issued on March 14, 2016; therefore, AB 52 applies to this Project. As of May 2018, one response has been received through the AB 52 consultation process and the process has been determined by the District to have been completed pursuant to AB 52 (see discussion below).

4.14.4 SIGNIFICANCE CRITERIA

Significance Criteria under CEQA

CEQA Guidelines Appendix G, Environmental Checklist Form, includes questions pertaining to tribal cultural resources. The issues presented in the Environmental Checklist have been utilized as thresholds of significance in this section. Accordingly, the Project would have a significant adverse environmental impact if it would:

- Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 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 § 5020.1(k), or
 - 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 § 5024.1. The lead agency shall consider the significance of the resource to a California Native American tribe.

As noted in Public Resources Code § 21084.2, a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. Section 21084.3 states that:

- a) Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.
- b) If the lead agency determines that a project may cause a substantial adverse change to a tribal cultural resource, and measures are not otherwise identified in the consultation process provided in § 21080.3.2, the following are examples of mitigation measures that, if feasible, may be considered to avoid or minimize the significant adverse impacts:
 - 1. Avoidance and preservation of the resources in place, including, but not limited to, planning and construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
 - 2. Treating the resource with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
 - A. Protecting the cultural character and integrity of the resource.



- B. Protecting the traditional use of the resource.
- C. Protecting the confidentiality of the resource.
3. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
4. Protecting the resource.

Methodology and Assumptions

The proposed Project and associated project design features (PDFs) are evaluated against the aforementioned significance criteria, as the basis for determining the level of impacts related to tribal cultural resources. In addition to PDFs, this analysis considers existing regulations, laws and standards that serve to avoid or reduce potential environmental impacts. Where significant impacts remain, feasible mitigation measures are recommended, where warranted, to avoid or lessen the Project's significant adverse impacts. Further details regarding methods are provided in [Appendix 10.5](#) of this EIR.

Project Design Features

- Proposed subsurface intake facilities are located in active urban developed areas in an erosive environment with generally limited archaeological resources along the beaches;
- The desalination facility is proposed at an existing District San Juan Creek Property site, which avoids disturbance to existing natural terrain and is compatible with existing zoning;
- The desalination facility is located within one mile of the subsurface intake wells, which minimizes raw water conveyance facility construction;
- Product water conveyance facilities are generally within existing access roads or streets, which avoids construction in undisturbed sensitive locations;
- Construction staging and laydown areas would use existing disturbed or developed sites to avoid disruption to existing sensitive resources; and
- The project has been designed such that the first phase (potable water nominal production capacity of up to 5 million gallons per day) could be constructed and then, subject to future CEQA review and regulatory permitting, the project could be expanded in phases up to 15 million gallons per day with minimal additional construction and grading impacts, thereby reducing the environmental impacts and community disruption.

4.14.5 IMPACTS AND MITIGATION

Impact 4.14-1: Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 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 § 5020.1(k) or 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 (PRC) § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe? *Level of Significance: Less than Significant with Mitigation.*

In compliance with Public Resource Code § 21080.3.1(b), formal notification has been provided to California Native American tribal representatives which may have interest in projects within the geographic area traditionally and culturally affiliated with the tribe. Native American groups may have knowledge about cultural resources in the area and may have concerns about adverse effects from development on tribal cultural resources as defined in Public Resources Code § 21074. The following tribal representatives were contacted based on information provided by the Native American Heritage Commission (NAHC):

- Gabrieleño Band of Mission Indians – Kizh Nation
- Juaneño Band of Mission Indians – Acjachemen Nation

Correspondence to the tribal representatives is included in [Appendix 10.5.2](#). One response was received for a tribal representative - Ms. Joyce Stanfield Perry of the Juaneño Band of Mission Indians – Acjachemen Nation requested that Native American tribal and archaeological monitoring be provided during all ground-disturbing activities.

While most of the Project site has been extensively altered by prior ground disturbance and development/infrastructure improvements, there is the potential for Project implementation to affect previously unidentified tribal cultural resources during construction activities including grading, trenching, and excavation. The District has implemented several Project Design Features to avoid or minimize tribal cultural resource impacts. In addition, Mitigation Measures CUL-1, CUL-2, and CUL-3 in [Section 4.4](#) of this EIR are applicable to tribal cultural resources. Specifically, CUL-3 identifies that the District shall retain a Cultural Resources Specialist to be present during deep excavations. This mitigation measure explicitly satisfy Ms. Perry’s request for tribal and archaeological monitoring during ground disturbing activities. Compliance with these measures would mitigate potential impacts to tribal cultural resources to a less than significant level.

Mitigation Measures

Please refer to Mitigation Measures CUL-1, CUL-2, and CUL-4 in [Section 4.4, Cultural Resources](#).

4.14.6 CUMULATIVE IMPACTS

For purposes of tribal cultural resource impact analysis, cumulative impacts are considered for cumulative development according to the related projects (see [Table 4.0-1](#)). All Project impacts would be mitigated to less than significant levels, and the Project’s contribution toward cumulative impacts is not otherwise considered to be “cumulatively considerable.”

The potential exists for undiscovered tribal cultural resources to be adversely impacted during Project construction. With implementation of the specified mitigation measures, construction would not cause a substantial adverse change in the significance of these resources; a less than significant impact would occur in this regard.



Additionally, future cumulative development projects could encounter tribal cultural resources. Thus, the potential exists for cumulative development to result in the adverse modification or destruction of tribal cultural resources. Potential tribal cultural resource impacts associated with the individual developments would be specific to each site. As with this Project, all cumulative development in the area would undergo environmental and design review on a project-by-project basis pursuant to CEQA to evaluate potential impacts to tribal cultural resources. All new development would be subject to compliance with the existing federal, state, and local regulatory framework concerning the protection of tribal cultural resources on a project-by-project basis. Additionally, implementation of site-specific mitigation measures would reduce potential project impacts to as-yet unidentified tribal cultural resources to less than significant levels.

Similarly, all future development with the potential to impact tribal cultural resources would be required to demonstrate compliance with applicable federal and state regulatory requirements, including General Plan goals and policies of the affected jurisdiction, intended to reduce and/or avoid potential adverse environmental effects (refer to [Section 4.0](#) for applicable prior CEQA documents that provide analysis and mitigation for cumulative impacts within the jurisdiction of the affected agency). As such, cumulative impacts to tribal cultural resources would be mitigated on a project-by-project level, and in accordance with the established regulatory framework, through the established regulatory review process.

Therefore, the combined cumulative impacts to tribal cultural resources associated with the Project's incremental effects and those of the cumulative projects would be less than significant with mitigation incorporated.

Regional Project

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential tribal cultural resource impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). Expansion at the desalination facility site would have no impacts on tribal cultural resources. The Regional Project may require construction of additional regional product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified. Mitigation Measures CUL-1 through CUL-4 would apply to the Regional Project, in addition to standard practices to avoid pipeline trenching across natural open space lands where the potential for tribal cultural resources is greater.

4.14.7 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts related to tribal cultural resources have been identified given the specified Project Design Features and implementation of Mitigation Measures CUL-1 through CUL-4.



4.15 UTILITIES & SERVICE SYSTEMS

This section evaluates potential Project impacts on utilities by estimating demand and evaluating its relationship to existing and planned supplies and capacities. This section addresses the following utilities: water; wastewater; stormwater facilities; and solid waste. Electrical service is addressed in Sections 3.0, Project Description, 6.4, Energy Conservation, and throughout Section 4.0 concerning the need for new on-site electrical service and off-site underground electrical line extensions. Natural gas service is discussed in Section 6.4, Energy Conservation. This section is organized according to utility, rather than by federal, State, and local regulations, as in other Draft EIR sections.

4.15.1 AFFECTED ENVIRONMENT

Environmental Setting

Water

Water to the desalination facility site is currently supplied by the South Coast Water District (District, or SCWD). SCWD receives its water from two main sources: San Juan Basin, which is managed by the San Juan Basin Authority (SJBA), and imported water from the Municipal Water District of Orange County (MWDOC). The Metropolitan Water District of Southern California (MWD) supplies imported water to MWDOC, which then supplies it to its member agencies, which include SCWD.

SCWD provides water to a population of approximately 38,641 persons throughout its 8.3-square mile service area. SCWD distributes 7.0 million gallons of drinking water daily to its customers through 147 miles of pipelines and 11 pump stations. Its 15 reservoirs have capacity to store 22 million gallons of water. The SCWD also maintains 1,500 fire hydrants in its service area.

Water Demand

As indicated in Table 4.15-1, Total Water Demands, the total 2015 water demand for SCWD retail customers was approximately 6,774 acre-feet (AF). Future retail water demand is expected to increase to 7,645 AF in 2040.

Table 4.15-1: Total Water Demands (AF)

	2015	2020	2025	2030	2035	2040
Potable and Raw Water	5,915	5,460	5,503	5,870	6,219	6,295
Recycled Water Demand	859	1,149	1,350	1,350	1,350	1,350
Total Water Demand	6,774	6,609	6,853	7,220	7,569	7,645
Notes: Potable demands include the GRF						

Source: SCWD 2015 UWMP, Table 2-6 (Arcadis, 2015)

SCWD is projecting a 11.4 percent increase in demand in the next 25 years accompanying a projected 7.0 percent population growth.



Imported Water

In 2015, the SCWD supplemented its local groundwater through 5,737 AFY of imported water purchased wholesale by Metropolitan through MWDOC. The breakdown of demand from each water supplier is shown in Table 4.15-2, Water Supplies, Actual. The District's Groundwater Recovery Facility (GRF), a groundwater desalter utilizing brackish water reverse osmosis, was shut down in October 2014 due to stress conditions in the groundwater basin. Imported water represents approximately 85 percent of the SCWD's total current water supply. MWD's principal water sources are the Colorado River via the Colorado River Aqueduct (CRA) and the Lake Oroville watershed in Northern California through the State Water Project (SWP).

The CRA, which is owned and operated by MWD, transports water from the Colorado River to its terminus at Lake Mathews in Riverside County, California. The actual amount of water per year that may be conveyed through the CRA to MWD's member agencies is subject to the availability of Colorado River water for delivery. MWD has a basic entitlement of 550,000 AFY of Colorado River water.

The SWP consists of a series of pump stations, reservoirs, aqueducts, tunnels, and power plants operated by the California Department of Water Resources (DWR) and is an integral part of the effort to ensure that business and industry, urban and suburban residents, and farmers throughout much of California have sufficient water.

As of April 24, 2018, most of Southern California is listed as being in "moderate" to "severe" drought by the U.S. Drought Portal.¹ As of January 29, 2018, the available SWP allocations are estimated at 20 percent of the SWP contractor's requested Table A amounts, based in part on "regulatory constraints" facing the State's imported water supply conditions.² Table A amounts show the volume of water that is allocated and delivered under SWP contract. The amount of SWP water made available to a SWP contractor for delivery during the year is determined by the annual allocation. Maximum Table A Amounts determine the maximum amount of water a contractor may request in any year from DWR.³ As discussed in Section 3.2, Project Goals and Objectives, in addition to ongoing drought conditions, reduced SWP allocations, and regulatory constraints, the imported water supply relied upon by SCWD is at risk due to damage from major seismic events or other potential causes of temporary or longer-term shutdowns.

Groundwater

Currently, five agencies, including the SCWD, have groundwater rights to San Juan Basin and use this water for either municipal purposes or irrigation. SCWD's groundwater allocation is 1,300 AFY. However due to stress in the basin, the GRF was shut down in October 2014. Groundwater demand in 2015 totaled 0 AF. The GRF resumed operations in February 2017.

Recycled Water

One of the SCWD's major water conservation program components is its recycled water program. The SCWD provides additional treatment to a portion of its secondary treated wastewater. The recycled water

¹ National Integrated Drought Information System, Summary of Drought in California, available at: <https://www.drought.gov/drought/states/california>, accessed April 30, 2018.

² Department of Water Resources California State Water Project, Notice to State Water Project Contractors 2018 Allocation Increase – 20 Percent, available at: <http://wdl.water.ca.gov/swpao/docs/notices/18-02.pdf>, accessed April 30, 2018.

³ AECOM, State Water Project Supply Allocation Settlement Agreement Initial Study/ Proposed Negative Declaration, available at: <http://scwa2.com/Home/ShowDocument?id=126>, accessed March 5, 2018.



is then used for landscape irrigation services. Demands for recycled water continue to increase as new and existing potable water irrigation services are continually being connected to the recycled water system. In 2015, the SCWD used 859 AF of recycled water. Table 4.15-2 shows the three main water supply sources for SCWD and actual 2015 demand/use.

Table 4.15-2: Water Supplies, Actual (AF)

Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume	Water Quality
Purchased or Imported Water	MWDOC	5,737	Drinking Water
Recycled Water		859	Recycled Water
Groundwater	GRF	0 ¹	Drinking Water
Total		6,596	
Notes: 1) The District's Groundwater Recovery Facility (GRF) did not produce potable water due to unfavorable conditions in the San Juan Groundwater Basin between October 2014 and February 2017. Note, in the 2015 SCWD UWMP, the total groundwater extracted is 178 AF. This value represents amount extracted from Fiscal Year 2014-2015. This table reflects calendar 2015 extraction; therefore the 178 AF is not included in the summary. February 2018 GRF production was 62.81 AF, well below the maximum production capacity (4/26/18 monthly report).			

Source: SCWD 2015 UWMP, Table 3-4

A summary of the future planned SCWD water sources is shown in Table 4.15-3, Water Supplies, Projected.

Table 4.15-3: Water Supplies, Projected (AF)

Water Supply		Projected Water Supply				
		Report to the Extent Practicable				
		2020	2025	2030	2035	2040
	Additional Detail on Water Supply	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater	GRF	1,040	1,040	1,040	1,040	1,040
Recycled Water		1,252	1,472	1,472	1,472	1,472
Imported Water	MWDOC	6,223	6,223	6,223	6,223	6,223
Total		8,515	8,735	8,735	8,735	8,735

Source: SCWD 2015 UWMP, Table 3-5

Wastewater (Sewer)

The SCWD owns, operates, and maintains the sewer system within the City of Dana Point. Wastewater is conveyed via the sanitary sewer system, consisting of 133 miles of pipes, 14 lift stations, and 3.0 miles of force mains, all of which are accessible by 3,048 manholes across the SCWD's service area.⁴ The system directs wastewater from the City of Dana Point to the J.B. Latham Treatment Plant at 34156 Del Obispo Street. The J.B. Latham Treatment Plant is managed by the South Orange County Wastewater Authority

⁴ <http://www.scwd.org/services/wastewater/default.htm> (accessed January 30, 2018).



(SOCWA). The purpose of SOCWA is to ensure that the requirements of the Clean Water Act and applicable National Pollutant Discharge Elimination System (NPDES) permits are met. Wastewater undergoes pre-treatment, primary treatment, and secondary treatment, before it safely enters the ocean miles offshore through the San Juan Creek Ocean Outfall (SJCOO). The treated wastewater (effluent) meets the Federal Clean Water Act quality standards for offshore discharge. According to SOCWA⁵, the J.B. Latham Treatment Plant has a total design capacity of 13 million gallons per day (MGD) and currently treats an average wastewater flow of 6.7 MGD. Table 4.15-4, Wastewater Collected Within Service Area in 2015, shows total wastewater collected by SCWD in 2015.

Table 4.15-4: Wastewater Collected Within Service Area in 2015 (AF)

Wastewater Collection			Recipient of Collected Wastewater		
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected in 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?
SCWD	Estimated	3,485	SOCWA	JB Latham Plant/CTP	Yes
Total Wastewater Collected from Service Area in 2015:		3,485			

Source: SCWD 2015 UWMP, Table 6-1

Stormwater

The City of Dana Point, in conjunction with the County of Orange, operates and maintains a storm drain system that includes approximately 70,000 linear feet of storm drains, 13 diversion facilities, including four Continuous Deflective Separation (CDS) units, and nine urban runoff systems.⁶ The City's storm drain system consists of regional facilities, including the San Juan and Salt Creek storm channels, and local storm drains. The Salt Creek Channel through Dana Point has been improved, while the San Juan Creek Channel is undergoing a series of improvements by Orange County Public Works to safely convey the 100-year flood.⁷

Two major Orange County Public Works Flood Division underground storm drain systems (i.e., L01S02 and L01S03) convey runoff from the upper watershed. These facilities and other local facilities are depicted on Exhibit 4.15-1, Existing Infrastructure, and described below. Currently, the desalination facility site is mostly leased to various tenants for outdoor storage. The site is relatively flat, with mostly dirt and gravel surfaces. At the southern portion of the desalination facility site, a 54-inch diameter (54") Reinforced Concrete Pipe (RCP) runs in parallel with PCH. This pipeline collects runoff from the desalination facility site and the watersheds east of the railroad tracks, and discharges to San Juan Creek. A vegetated swale (South Drainage Swale) located at the northern portion of the desalination facility site collects local runoff

⁵ <https://www.socwa.com/infrastructure/jb-latham-treatment-plant/> (accessed January 30, 2018).

⁶ City of Dana Point Public Works and Engineering, Utilities, available at: <http://www.danapoint.org/departments/public-works-engineering/utilities> (accessed January 30, 2018).

⁷ Orange County Public Works Flood Division, San Juan Creek Levee Improvement Project, Available at: http://www.ocflood.com/nfc/projects_a/sjcleveeimp (accessed January 29, 2018).



and discharges to the L01S02 system. The South Drainage Swale and the 54" RCP have gates to prevent backflow from San Juan Creek.⁸

- **L01:** The San Juan Creek Channel. This creek acts as the primary receiving water for runoff generated within the San Juan Creek watershed, including all stormwater generated at the desalination facility site.
- **L01S02:** The Capistrano Beach Storm Drain. This facility primarily collects stormwater from the upper watersheds, generally bounded by Stonehill Drive on the north and PCH on the south, and extending east of the San Diego Freeway (I-5), and conveys flows west towards San Juan Creek. This facility also collects stormwater conveyed from facility L01S03, and the northern and southern drainage swales described below. East to west, this facility is an 8-foot diameter (8') RCP pipe, connects to an 8' x 8' double concrete box culvert, a 7.5' x 12' railroad crossing, open concrete rectangular channel, then a double 11' x 11.5' box culvert and outfalls to San Juan Creek.
- **L01S03: System** L01S03 collects stormwater generated from the northern portion of the local watershed located within Stonehill Drive and the I-5. It also collects runoff generated from east of the I-5 through a box culvert, located at the upstream of the pipe terminus; see Exhibit 4.15-1. North to south, this facility is composed of a 6.5' RCP pipe, an 8' RCP pipe, a 6.5' x 13' concrete box railroad crossing, and an 8' RCP pipe that discharge to L01S02.
- **North Drainage Swale:** This swale is located directly north of facility L01S02, and drains the surrounding properties. The outlet has a 3' RCP culvert that connects to facility L1S02, with a flap gate to prevent backwater flow from San Juan Creek.
- **South Drainage Swale:** This swale is located at the northern portion of the desalination facility site, and drains runoff generated in areas both north and south of the swale. The eastern portion of the swale shown on Exhibit 4.15-1 is connected to a storm drain that extends eastwards toward the developments on the east side of the railroad track. The outlet of the swale is connected to a 4' RCP pipe which connects with facility L01S02.
- **54" RCP Pipe:** This pipe collects stormwater generated in the southern portion of the watershed bound by the I-5 and PCH. The pipe discharges to San Juan Creek at the upstream of PCH bridges.

Solid Waste

The City of Dana Point contracts with CR&R to handle all solid waste and recycling within the City limits. Nonhazardous solid and liquid wastes within Dana Point are currently deposited in the Prima Deshecha Landfill, located in an unincorporated area of the County, adjacent to the City of San Juan Capistrano. Prima Deshecha is one of three landfills operated by the County Integrated Waste Management Department. The Prima Deshecha Landfill, which is permitted to receive a daily maximum of 4,000 tons per day (tpd), receives an average of approximately 1,400 tpd. It encompasses approximately 1,530 acres with 697 acres permitted for refuse disposal (CalRecycle, 2017).⁹

⁸ GHD Inc, *Draft Local Hazard Conditions and Drainage Study*, 2017.

⁹ California Department of Resources Recycling and Recovery (CalRecycle). 2012a. *Solid Waste Facility Permit for the Prima Deshecha Landfill*. Available at: <http://www.calrecycle.ca.gov/SWFacilities/Directory/30-AB-0019/Detail/> (accessed January 30, 2018).



4.15.2 REGULATORY FRAMEWORK

Water

Refer to [Section 3.0, Project Description](#), for additional background regarding the proposed Project and relationship to existing and proposed water supply.

Urban Water Management Plan Act

The Urban Water Management Plan (UWMP) Act was passed in 1983 and codified as California Water Code § 10610 through § 10656. Since its passage in 1983, the Act has been amended on several occasions. In 2004, the Act was amended to require additional discussion of transfer and exchange opportunities, non-implemented demand management measures, and planned water supply projects. Most recently, in 2005, the Act was amended to require water use projections (required by California Water Code § 10631) to include projected water use for single-family and multi-family residential housing needed for lower income households. In addition, Government Code § 65589.7 was amended to require local governments to provide a copy of the adopted housing element to water and sewer providers. The Act requires every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet per year (AFY), to prepare and adopt, in accordance with prescribed requirements, an urban water management plan. Urban water suppliers must file these plans with the DWR every five years describing and evaluating reasonable and practical efficient water uses, reclamation, and conservation activities. The DWR released the 2015 Urban Water Management Plans on July 1, 2016. Additional discussion regarding the UWMP Act is provided in [Section 4.8, Hydrology and Water Quality](#).

Water Conservation Act of 2009

Senate Bill X7-7, the Water Conservation Act of 2009 (WCA) creates a framework for future planning and actions by urban (and agricultural) water suppliers to reduce California's water use. The law requires urban water suppliers to reduce statewide per capita water consumption by 20 percent by 2020. Additionally, the State is required to make incremental progress towards this goal by reducing per capita water use by at least 10 percent by December 31, 2015. Each urban retail water supplier was required to develop water use targets and an interim water use target by July 1, 2011. Additionally, each urban retail water supplier was required, by July 2011, to include in their water management plan the baseline daily per capita water use, water use target, interim water use target, and compliance daily per capita water use. Additional discussion regarding the WCA is provided in [Section 4.8, Hydrology and Water Quality](#).

Efficiency Standards

California Administrative Code Title 24 contains the California Building Standards, including the California Plumbing Code (Part 5), which promotes water conservation. Title 20 addresses Public Utilities and Energy and includes appliance efficiency standards that promote water conservation. In addition, a number of State laws listed below require water-efficient plumbing fixtures in structures:

- Title 20, California Administrative Code, § 1604(h) establishes efficiency standards that give the maximum flow rate of all new showerheads, lavatory faucets, sink faucets, and tub spout diverters.



- Title 24, California Administrative Code, § 25352(i) and § 25352 (j) address pipe insulation requirements, which can reduce water used before hot water reaches equipment or fixtures. Insulation of water-heating systems is also required.

South Coast Water District 2015 Urban Water Management Plan

The Project site is located within SCWD jurisdiction. In compliance with legislative requirements, SCWD prepared the 2015 Urban Water Management (2015 UWMP), which details how SCWD manages its water supplies and demands under all hydrology conditions. The 2015 UWMP also demonstrates how SCWD proposes to meet its service area's retail demands over the next 25 years and provides long-term water reliability. Additional discussion regarding the 2015 UWMP is provided in Section 4.8, Hydrology and Water Quality.

City of Dana Point General Plan

Public Facilities/Growth Management Element

Goal 1: Encourage adequate water and sewer service.

Policy 1.2: Encourage the use of drought resistant landscaping to reduce overall water use.

Policy 1.3: Support public education programs for water conservation.

Policy 1.4: Support the appropriate regional agencies in developing and utilizing reclaimed water facilities.

Policy 1.6: Support the efforts of water and sewer agencies to encourage recycling of wastes and proper disposal of household wastes and waste oil.

Policy 1.7: Evaluate the varying levels of service provided by the water and sewer districts serving the City and support increased coordination among these districts in order to provide consistent service levels.

City of Dana Point Municipal Code

Dana Point Municipal Code (DPMC) Title 9, Chapter 9.55.030 includes provisions for landscape water use and design standards. DPMC Title 9 Chapter 9.55.030 highlights water conservation through the appropriate use and groupings of plant materials that are well adapted to particular sites and to local climatic, geological, or topographical conditions, as well as the proper maintenance on irrigation systems to prevent water line breaks or runoff conditions.

Wastewater

Federal Clean Water Act (33 USC Sections 1251, et seq.)

The primary goals of the Clean Water Act (CWA) are to restore and maintain the chemical, physical, and biological integrity of the nation's waters and to make all surface waters fishable and swimmable. The CWA forms the basic national framework for the management of water quality and the control of pollution discharges; it provides the legal framework for several water quality regulations, including the National Pollutant Discharge Elimination System (NPDES), effluent limitations, water quality standards,



pretreatment standards, anti-degradation policy, nonpoint-source discharge programs, and wetlands protection.

In California, the State Water Resources Control Board (SWRCB) administers the NPDES permitting program and is responsible for developing NPDES permitting requirements. The SWRCB works in coordination with the Regional Water Quality Control Boards (RWQCB) to preserve, protect, enhance, and restore water quality. The City lies within the jurisdiction of the San Diego RWQCB (SDRWQCB). On April 11, 2012, the SDRWQCB adopted Order No. R9-2012-0012, NPDES No. CA0107417 (amended December 11, 2014 as Order No. R9-2014-0105), establishing waste discharge requirements for SOCWA to discharge up to 38.78 MGD of treated municipal wastewater, waste brine, and dry weather nuisance discharges into the Pacific Ocean through the SJCOO, located off the south Orange County coast.¹⁰

Additional discussion regarding the CWA is provided in Section 4.8, Hydrology and Water Quality.

South Orange County Wastewater Authority (SOCWA)

SOCWA's Industrial Waste Management Program (Ordinance 2015-1) empowers industrial users to be proactive about their wastewater and help protect the environment and sewer systems. This practice, called pretreatment, helps industrial users remove pollutants from their wastewater before discharging into the public sewer system. Any user discharging non-domestic, industrially, or commercially generated wastewater is required to apply for a Wastewater Discharge (WD) Permit from SOCWA.

City of Dana Point General Plan

Public Facilities/Growth Management Element

Goal 1: Encourage adequate water and sewer service.

Policy 1.6: Support the efforts of water and sewer agencies to encourage recycling of wastes and proper disposal of household wastes and waste oil.

Policy 1.7: Evaluate the varying levels of service provided by the water and sewer districts serving the City and support increased coordination among these districts in order to provide consistent service levels.

City of Dana Point Municipal Code

DPMC Title 9, Chapter 9.41.140 requires that facilities generating wastewater be in areas with adequate sewer capacity to accommodate the expected wastewater discharge. If sewers are not available, the site should be evaluated for ease of connecting to a sewer or for the feasibility of discharge directly into a stream or the ocean.

¹⁰ California Regional Water Quality Board San Diego Region, Order No. R9-2014-0105 Waste Discharge Requirements for the South Orange County Wastewater Authority, available at: https://www.waterboards.ca.gov/sandiego/board_decisions/adopted_orders/2014/R9-2014-0105.pdf (accessed January 30, 2018).



Stormwater Facilities

City of Dana Point General Plan

Public Facilities/Growth Management Element

Goal 2: Maintain and improve portions of the storm drainage system for which the City is responsible and encourage adequate maintenance of other portions of that system.

Policy 2.1: Identify local storm drainage deficiencies and develop a capital improvements program for the correction and replacement of aging or inadequate drainage system components. (Coastal Act/30233, 30235, 30236, 30253)

Policy 2.2: Work with the Orange County Flood Control District in ensuring the adequacy of regional storm drainage facilities. (Coastal Act/30235, 30236, 30253)

City of Dana Point Municipal Code

The City of Dana Point Municipal Code (DPMC) Title 15 Water and Sewers contains provisions to implement and enhance the General Plan. The purpose and intent of this chapter “is to protect the health and safety of the waters of the State of California and the United States, for those who use the waters for recreation and food sources, and for the marine habitats and ecosystems existing in the waters” by:¹¹

- a) Effectively prohibiting non-storm water discharges into the Municipal Separate Storm Sewer System (MS4);
- b) Reducing pollutant loads in surface runoff, including in storm water, to the maximum extent practicable;
- c) Establishing minimum requirements for surface runoff management, including source control requirements, to prevent and reduce pollution;
- d) Establishing requirements for development and redevelopment project site designs to reduce surface runoff pollution and erosion; and
- e) Establishing requirements for development and redevelopment project site designs to reduce surface runoff pollution and erosion and to protect and enhance existing water-dependent habitats.

Solid Waste

Resource Conservation and Recovery Act of 1976

The Resource Conservation and Recovery Act of 1976 (RCRA) (Title 40 of the Code of Federal Regulations), Part 258, contains regulations for municipal solid waste landfills and requires states to implement their own permitting programs incorporating the federal landfill criteria. The federal regulations address the location, operation, design (liners, leachate collection, run-off control, etc.), groundwater monitoring, and closure of landfills.

¹¹ Dana Point Municipal Code Title 15 Water and Sewers, Chapter 15.10 Storm Water/Surface Runoff Water Quality.



Assembly Bill 939 and Senate Bill 1016 – California Integrated Waste Management Act and Per Capital Disposal Measurement System

In 1989, the legislature adopted the California Integrated Waste Management Act of 1989 (AB 939). The act requires every city and county in the State to prepare a source reduction and recycling element in addition to a solid waste management plan to identify how the jurisdiction would meet mandatory goals of 50 percent solid waste diversion by the year 2000 and 75 percent solid waste diversion by 2010. The Act also established the framework for State inspection and enforcement of solid waste facilities and regulates safe transportation and disposal of solid waste. Projects that would have an adverse effect on waste diversion goals are required to include waste diversion mitigation measures to assist in reducing these impacts to less-than-significant levels. With the passage of Senate Bill 1016 (the Per Capita Disposal Measurement System) in 2006, only per capita disposal rates are measured to determine if a jurisdiction's efforts are meeting AB 939's intent.

City of Dana Point General Plan

Public Facilities/Growth Management Element

Goal 3: Provide necessary control of solid waste.

Policy 3.2: Identify and evaluate alternatives to reduce solid waste in accordance with AB 939.

City of Dana Point Municipal Code

DPMC Chapter 6.10 addresses the general provisions regarding solid waste handling to protect the public health, safety, and welfare, and meet the City's obligations under AB 939.

4.15.3 SIGNIFICANCE CRITERIA

Significance Criteria under CEQA

CEQA Guidelines Appendix G, Environmental Checklist Form, includes questions pertaining to utilities and service systems. The issues presented in the Environmental Checklist have been utilized as thresholds of significance in this section. Accordingly, the Project would have a significant adverse environmental impact depending on whether or not it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board (see Impact 4.15-1);
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (see Impact 4.15-2);
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (see Impact 4.15-3);
- Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed (see Impact 4.15-4);



- 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 (see Impact 4.15-5);
- Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs (see Impact 4.15-6); or
- Comply with federal, state, and local statutes and regulations related to solid waste (see Impact 4.15-7).

Methodology and Assumptions

The proposed Project and associated project design features (PDFs) are evaluated against the aforementioned significance criteria, as the basis for determining the level of impacts related to utilities and service systems. In addition to PDFs, this analysis considers existing regulations, laws and standards that serve to avoid or reduce potential environmental impacts. Where significant impacts remain, feasible mitigation measures are recommended, where warranted, to avoid or lessen the Project's significant adverse impacts. Further details regarding methods are provided in [Appendix 10.9](#) of this EIR.

Project Design Features

- The Project facilities are located in existing urban areas with existing infrastructure, reducing the need for new infrastructure or major extensions of infrastructure to the Project facilities;
- The desalination facility site is relatively flat, and in close proximity to existing potable water distribution lines and the SJCOO, minimizing the extent of new infrastructure construction.

4.15.4 IMPACTS AND MITIGATION MEASURES

Impact 4.15-1: Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? Level of Significance: *Less than Significant Impact*.

Construction and Operations

All Components

The Project involves a desalination facility that would produce up to 15 MGD of potable drinking water. The District intends to construct a facility with an initial capacity of up to 5 MGD, with potential for future expansions up to 15 MGD. Desalination facility operations would generate RO concentrate (brine), which would be discharged to the ocean, as detailed in [Section 3.0, Project Description](#). Refer to [Section 4.3, Biological Resources](#), and [Section 4.8, Hydrology and Water Quality](#), for detailed discussions concerning brine discharge to the ocean.

Dewatering associated with Project construction would result in wastewater discharges to the SCWD sanitary sewer. As discussed in detail in [Section 4.8](#), Project construction may require dewatering for deep excavations where high groundwater exists. Dewatering may encounter contaminated groundwater, and as such may require on-site treatment and/or disposal prior to discharge as regulated by the SDRWQCB and others; refer to [Section 4.7, Hazards and Hazardous Materials](#), for further discussion. Options considered for disposal of construction-related dewatering discharge include onsite treatment then discharge to sanitary sewer, among others (i.e., discharge to barge tanks then haul offsite or treat onsite



then discharge to groundwater (recharge wells and trenches)). If the sanitary sewer option is used, dewatering operations must comply with applicable State and local water quality regulations and meet the conditions of any existing NPDES permits issued by the SDRWQCB. All dewatering discharge options would require on-site treatment/disposal, as regulated by the SDRWQCB and SOCWA, and would be conveyed to an existing local SCWD sewer line as depicted in Exhibit 3-6, Desalination Facility – Conceptual Site Plan.

Slant well construction would also require temporary discharge during well development, returning the subsurface ocean water back to the ocean. This discharge is not “wastewater,” but well development water that is proposed to be discharged through a beach diffuser, similarly to what was done with the Doheny Ocean Desalination test slant well, which was constructed at Doheny State Beach (alternately, well development water could be discharged via the existing SJCOO connection at DSB or it could be conveyed to the proposed desalination facility for treatment and discharge to SJCOO). This is discussed in greater detail in Section 3.0, Project Description and Section 4.8, Hydrology and Water Quality.

Project operations would generate wastewater from two sources: up to 1,500 GPD of typical domestic, human-related wastewater; and up to 20,000 GPD of neutralized RO Clean-in-Place (CIP) Waste during a periodic CIP event, not to occur more than once every three months; see also Table 4.15-5, Estimated Wastewater Generation, and Appendix 10.1, Preliminary Design Report.

Table 4.15-5, Estimated Wastewater Generation during Operation

Local & Regional Project Component	Number of employees	Generation Rate per person (GPD)	Total Generation (GPD)
Phase 1 (up to 5 MGD Capacity)	6	100	600
Regional Project (up to 15 MGD Capacity)	15	100	1500
Clean-in-Place	--	--	20,000
<i>Total for Phase 1 (up to 5 MGD Capacity)</i>			<i>20,600</i>
<i>Total for Regional (up to 15 MGD Capacity)</i>			<i>21,500</i>

Source: Correspondence with Mark Donovan, GHD, 3/2/2018.

Wastewater originating from Project operations would be treated at the J.B. Latham Treatment Plant, which is managed by SOCWA. SOCWA is a Joint Powers Agency, which includes SCWD. Discharges from the Treatment Plant are regulated by SOCWA’s current NPDES Permit (Order No. R9-2014-0105).¹² For point source discharges, such as sewer outfalls, each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. The NPDES Permit waste discharge requirements contain components regarding effluent limitations, receiving water limitations, and standard provisions, among others.

Wastewater flows from the Project treated at the J.B. Latham Treatment Plant would be subject to compliance with SOCWA’s Industrial Waste Management Program (Ordinance 2015-1), which involves specific regulations and effluent limitations. The Project would discharge industrial wastewater to the SCWD’s sewer system, which would ultimately be conveyed to the Treatment Plant, and therefore would be required to obtain a WD Permit from SOCWA.

¹² https://www.waterboards.ca.gov/sandiego/board_decisions/adopted_orders/2012/R9-2012-0012_Amended.pdf (accessed February 22, 2018).



Project brine discharge would be conveyed directly to SOCWA's existing SJCOO via a connection within the Desalination Facility Site boundaries. The SJCOO conveys treated wastewater from various treatment plants in the San Juan Creek watershed. The Project's municipal sanitary sewer discharge, treated at the J.B. Latham Treatment Plant, and the Project's brine discharge, would each be conveyed in the existing SJCOO to the Pacific Ocean. SOCWA's NPDES Permit regulates discharges from the SJCOO. The SJCOO currently experiences average daily flows of 11.3 MGD, with a permitted capacity of approximately 38.78 MGD, and a designed capacity of up to 80 MGD.¹³ The Project's daily flows, under the Regional Project condition, would be up to 15 MGD of brine and 21,500 GPD of municipal sanitary sewage conveyed to the treatment plant. Considering the region's continued trend toward reuse of treated wastewater through recycled water programs and advanced water treatment (such as the proposed San Juan Basin Watershed Project), the J.B. Latham Treatment Plant and SJCOO appear to have adequate capacity to accommodate Project discharges.

From a water treatment discharge water quality perspective, the Project would require compliance with the Clean Water Act, Porter-Cologne Water Quality Control Act, and California Ocean Plan, among other local, state and federal regulations. This will require a new or amended NPDES Permit through the SDRWQCB, as discussed in detail in Section 4.8, Hydrology and Water Quality. The Project has been designed to comply with these regulations, and its raw water intake and brine discharge concept follow the preferred approaches set forth in the California Ocean Plan.

Given the Project would be subject to compliance with the permit requirements described above, Project construction and operations is not anticipated to alter the J.B. Latham Treatment Plant's design capacities or cause the effluent from the SJCOO to violate permitted limits. Therefore, Project implementation would not cause SDRWQCB wastewater treatment requirements to be exceeded and a less than significant impact would occur in this regard.

Mitigation Measures

Refer to Section 4.8, Hydrology and Water Quality.

Impact 4.15-2: **Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? *Level of Significance: Less than Significant Impact.***

Construction and Operations

All Components

The SCWD's ultimate goal with ocean water desalination is to further enhance water supply reliability for service area customers by adding a locally produced, drought-proof potable water source to the SCWD's water supply portfolio. Thus, the construction of an ocean water desalination facility and its appurtenant facilities is the subject of this Draft EIR. Refer to Draft EIR Sections 4.1 through 4.15 for a detailed discussion of the potential environmental impacts that may occur if the proposed Project is implemented. The desalination and conveyance facilities have been designed such that the Project could be constructed and then, subject to future CEQA review and regulatory permitting, the Project could be expanded in

¹³ <https://www.socwa.com/infrastructure/san-juan-creek-ocean-outfall/> (accessed February 22, 2018).



phases with minimal additional construction and grading impacts, thereby reducing environmental impacts and community disruption.

The Project utilizes existing wastewater discharge facilities owned by SOCWA, including the J.B. Latham Treatment Plant and the SCJOO. Neither of these will require expansion as a result of the Project. The Project will require minor on-site connections to the existing SCWD sewer lift station and the existing SJCOO. As such, the Project would not result in significant impacts related to the construction or expansion of water or wastewater facilities, other than that addressed for the Project itself throughout this EIR.

Mitigation Measures

No mitigation measures are required.

Impact 4.15-3: Would the project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? *Level of Significance: Less than Significant Impact.*

The analysis of storm drainage is based on the Local Hazard Conditions and Drainage Study, dated June 2017, as amended May 2018, (Appendix 10.9) and the Preliminary Design Report (Appendix 10.1). With the exception of the desalination facility site itself, construction and operation of Project facilities would have nominal effect on existing stormwater drainage systems, as these facilities would generally be below-grade, with stormwater runoff handled on-site without construction or expansion of new off-site facilities. Temporary construction-related water quality impacts that may be associated during rainfall events are discussed in Section 4.8, Hydrology and Water Quality.

Project construction has been designed to avoid conflicts with existing major stormwater drainage facilities, including San Juan Creek and County stormdrain facility L01S02 (shown on Exhibit 4.15-1, Existing Infrastructure). Project raw water conveyance construction will use trenchless technology to avoid direct impacts to San Juan Creek and San Juan Creek Lagoon. Similarly, to avoid impacts to the County stormdrain facility L01S02 north of the desalination facility site, Project construction vehicles will use the existing access road connecting the desalination site to the proposed staging area located immediately north of the County facility. Product water connection to the existing Water Importation Pipeline (WIP), which crosses L01S02, would occur either in the existing access road deck or via trenchless construction.

The desalination facility site design has also minimized impacts to San Juan Creek, as the selected flood control solution would elevate the desalination facility site rather than participate in various upstream physical improvements to San Juan Creek and related facilities. This approach substantially reduces Project effects on existing drainage facilities. The Project will require relatively minor on-site (within the existing San Juan Creek Property) drainage improvements, including a relocated drainage inlet and a detention basin. Development of the San Juan Creek Property has already been addressed in the District's San Juan Creek Property EIR (certified November 2002). These improvements are within the footprint of the San Juan Creek Property, and are not considered a significant environmental impact.

Mitigation Measures

No mitigation measures are required.



Impact 4.15-4: Would the project have insufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? Level of Significance: *Less than Significant Impact*.

As indicated in [Section 3.0, Project Description](#), the Project itself is a water supply project, which would increase the local water supply through the production of between up to 5 to 15 MGD of potable water. As such, the Project would create a beneficial long-term water supply. On a temporary basis, the Project would require relatively nominal amounts of construction water for grading and for workers, which will be provided by SCWD through its existing distribution system.

The Project may require new or modified groundwater rights, due to the slight draw upon San Juan Basin from the proposed slant wells. However, the affected groundwater would be saline-impacted, and may not require any water rights since the affected water is not usable (this is discussed in greater detail in [Section 4.8, Hydrology and Water Quality](#)). SCWD is also considering intake wells at Capistrano Beach Park southeast of Doheny State Beach. These southeast intake wells are hydrologically separate from the onshore portions of the San Juan Basin, and would not result in any effects on San Juan Basin groundwater resources.

Mitigation Measures

No mitigation measures are required.

Impact 4.15-5: Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity, including treatment and/or outfall capacity, to accommodate the project's projected demand in addition to the provider's existing commitments? Level of Significance: *Less than Significant Impact*.

Construction and Operations

All Components

Refer to the Impact 4.15-1 discussion above. Dewatering associated with ocean water desalination facility construction could result in wastewater discharges to the local sanitary sewer. Additionally, Project operations would generate wastewater from two sources: typical domestic, human-related wastewater; and neutralized spent CIP waste flow. As indicated in [Table 4.15-5, Estimated Wastewater Generation](#), Project ocean water desalination facility operations would generate a peak flow of approximately 20,600 GPD of wastewater during the Phase 1 up to 5 MGD capacity, including approximately 600 GPD from typical domestic sources and a maximum of 20,000 GPD from spent CIP waste flow. Wastewater generation increases to 21,500 GPD when the capacity of the desalination facility reaches up to 15 MGD under the Regional Project.

While a RO CIP event is relatively brief, the spent CIP solutions would be captured in onsite holding tanks and would be neutralized on a batch basis and then pumped at a low rate to the existing sanitary sewer system. CIP Project operations would produce approximately 80,000 gallons per year of spent CIP flow, assuming a CIP event occurs once per quarter at 20,000 gallons per event. Therefore, the maximum total wastewater generation for the Project is 20,600 GPD during the Phase 1 up to 5 MGD capacity and 21,500 MGD for the Regional Project (up to 15 MGD capacity).



A sanitary sewer connection for domestic waste is located at the northern portion of the site. A CIP waste to sewer line would run from the RO membrane buildings, and connect with the domestic waste sewer, and run east toward the sewer lift station.

As discussed previously, the system directs wastewater to the J.B. Latham Treatment Plant at 34156 Del Obispo Street. The J.B. Latham Treatment Plant has a total design capacity of 13 MGD and currently treats an average wastewater flow of 6.7 MGD. The Project would generate up to 0.0215 MGD of wastewater at full buildout; therefore, the J.B. Latham Treatment Plant has adequate capacity to serve the Project.

With respect to SJCOO capacity, as noted above, the existing SJCOO has adequate capacity to convey the Project's brine discharge and its incremental share of municipal wastewater treated at the J.B. Latham Treatment Plant. Impacts would be less than significant in this regard.

Mitigation Measures

No mitigation measures are required.

Impact 4.15-6: Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? Level of Significance: *Less than Significant Impact*.

Construction

All Components

The proposed Project would result in solid waste generation during construction consisting primarily of spoils, rock, and other excavated materials¹⁴. The Project site is located within the Orange County Waste & Recycling (OCWR) service area, which manages the Prima Deshecha Landfill. For the purpose of this analysis, it is assumed that solid waste generated by construction would be disposed of at the Prima Deshecha Landfill, in the City of San Juan Capistrano. The Prima Deshecha Landfill is approximately 4.4 miles east of the Project site, and is the closest active landfill to the Project site. As previously discussed, the Prima Deshecha Landfill receives an average of 1,400 tpd of refuse with a permitted maximum capacity of 4,000 tpd and is not scheduled to close until approximately 2067. Due to the economic value of clean excavated soil and the cost of landfill disposal, it is expected that much of the Project's excavated materials during construction would be diverted for reuse. Nevertheless, this analysis conservatively assumes that all excess spoils and construction debris would be disposed of at the Prima Deshecha Landfill.

The Prima Deshecha Landfill has an estimated remaining capacity of 87,384,799 CY and a maximum permitted capacity of 172,900,00 CY. Construction of the proposed Project would generate approximately 15,039 CY (or 22,558 tons) of excess spoils and construction debris.

Based on the assumption that excess spoils and construction debris would be hauled to the landfill Monday through Friday over the 18-month construction duration, Project construction could generate up to 41.5 tons per day of materials requiring disposal. Even under this worst-case scenario, the waste generated by Project construction would be well below the Prima Deshecha Landfill's available daily capacity, and the total amount of waste generated by Project construction represents approximately less

¹⁴ GHD Doheny Dirt Haul Summary.



than 0.02 percent of the landfill's remaining ultimate capacity. Therefore, the proposed Project's generated construction waste would be less than significant, and would be adequately served by the Prima Deshecha Landfill.

Operations

Desalination Facility

A pretreatment system is anticipated due to initially high levels of iron and manganese in the subsurface slant well intake water, indicated previously by the test slant well. As described under Impact 4.15-1, an on-site solid handling system allows for the mechanical dewatering of the high salinity, high iron and high manganese sludge streams generated by the pretreatment processes. This system reduces the volume and increases the solids content of the waste that needs to be shipped to third party waste processors. Due to the nature of a subsurface intake, water quality would not vary with dry/wet weather or storm events, however modeling done indicates water quality would vary in concentration of iron and manganese, with initially high levels that decrease with pumping to a steady state after 36 months. Calculated values for the amount of waste that would require landfill disposal are shown in Table 4.15-6, Operational Solids Handling System Generation, at 18 months out (after pumping begins) and 36 months out (steady state) for the up to 5 MGD initial phase, assuming a plant utilization of 95 percent. The Regional Project assumes only a steady state (36 months out) intake water quality as no scenario is planned in which the initial phase would be up to a 15 MGD facility.

The calculations assumed 20 percent dry solids by weight in the sludge going to landfill given the design assumption of a clarifier/centrifuge solids handling treatment process train.

Table 4.15-6: Operational Solids Handling System Generation

Operating Conditions	Utilization Factor	Dry Solids Weight (lb/day)	Percent Dry Solids (%) by Weight	Landfill Disposal	
				Daily Weight (lb/day)	Annual Weight (lb/yr)
Phase 1 (up to 5 MGD) 18 Months Out	0.95	291	20%	1,455	504,521
Phase 1 (up to 5 MGD) 36 Months Out		61	20%	305	105,759
Ultimate Phase (up to 15 MGD) 36 Months Out		183	20%	915	317,276

Source: Email conversation with GHD, 1/3/2018.

As shown above, 504,521 pounds per year, or 252.26 tons per year of sludge is estimated to be produced given worst case projections of iron and manganese concentrations at 18 months out for the maximum operating capacity of the Phase 1 Project. This annual waste generation equates to roughly one 20-ton truckload every month. This volume of waste would be managed by the nearest qualified landfill and the impact to the facility would be less than significant.

The total amount of sludge generated by the Project represents a very small fraction of the landfill's remaining capacity. Therefore, even under the worst-case scenario that assumes all of the proposed Project's excess spoils and construction debris would be disposed of at the Prima Deshecha Landfill, the



amount of waste by Project construction would not exceed or substantially deplete the landfill capacity. Therefore, the proposed Project's waste generation would be less than significant, and would be adequately served by the Prima Deshecha Landfill.

Mitigation Measures

No mitigation measures are required.

Impact 4.15-7: Would the project comply with federal, state, and local statutes and regulations related to solid waste? *Level of Significance: Less than Significant with Mitigation.*

Construction and Operations

All Components

Construction and operation of the Project would be required to demonstrate compliance with federal, State and local statutes and regulations related to solid waste. Several construction-related Project Design Features would be implemented to ensure construction of the Project complies with statutes and regulations related to solid waste. For example, the construction sites, material storage areas, and access roads would be kept in an orderly condition throughout the construction period, and approved enclosed refuse containers would be used at the construction site of each Project component. In addition, construction refuse and trash would be removed from the sites and disposed of in an approved manner, consistent with applicable federal, State, and local statutes and regulations regarding solid waste, and oils or chemicals would be hauled to a disposal facility authorized to accept such materials. Additionally, open burning of construction trash would be prohibited.

Construction and operation of Phase 1 of the Project would also be required to demonstrate compliance with the 50 percent diversion of solid waste requirement pursuant to the California Integrated Waste Management Act of 1989 (AB 939). In addition, the Project would be required to comply with the City's C&D ordinance for diverting solid waste. Compliance with AB 939, along with the City's Construction and Demolition (C&D) ordinance, would ensure Project compliance with the statutes and regulations in place relative to solid waste disposal.

To further ensure compliance with existing solid waste statutes and regulations, Mitigation Measure UTIL-1 would be implemented, which requires SCWD to submit to the City of Dana Point and/or any other applicable agency, a Waste Management Plan for all waste generated during construction and operation of the Project. Compliance with Mitigation Measure UTIL-1, along with the various statutes and regulations pertaining to solid waste disposal, would ensure the Project's construction and operation-related impacts would be less than significant.

Mitigation Measures

UTIL-1 Prior to the start of both site mobilization and project operation, SCWD (or its designee) shall prepare and submit to the City of Dana Point, and/or any other applicable local agency, for review and comment, a Waste Management Plan (WMP) for all wastes generated during construction and operation of the Doheny Ocean Desalination Project. At a minimum, the WMP shall contain the following:



- A description of all waste streams, including projections of frequency, amounts generated and hazard classifications;
- Requirements in the demolition/construction contracts that all materials that can feasibly be recovered be salvaged and recycled. The contractor(s) shall submit a recycling plan to the District for review and approval prior to commencing demolition or construction; and
- Methods of managing each waste, including storage, treatment methods and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.

REGIONAL PROJECT

Due to the lack of specific Regional Project facilities identified at this time, and uncertainty regarding Regional Project funding, partners and end users, it would be speculative to provide a detailed evaluation of potential utilities and service system impacts of a potential future Regional Project. Generally, expansion of various Phase I project components would have similar impacts as described above (with respect to construction and operation of additional slant wells and additional raw water conveyance lines). Expansion at the desalination facility site would have no additional significant impacts on utilities and services, given the relatively minor increase in facility employees and related service. From a water supply perspective, the Regional Project would provide additional reliable, locally-controlled potable water for the south County area. The Regional Project may require construction of additional regional product water conveyance, pumping and storage facilities, the location or alignment of which has yet to be identified. Mitigation Measure UTIL-1 would apply to the Regional Project.

4.15.5 CUMULATIVE IMPACTS

Wastewater Treatment and Capacity

Construction and operation activities related to the Project are not anticipated to exceed wastewater treatment requirements of the SDRWQCB through Project compliance with relevant project design features, and existing laws, ordinances, and regulations; refer to Impact UTIL 4.15-1. Under discharge scenarios considered for the Project, discharges would undergo multiple processes to meet SDRWQCB and *2015 California Ocean Plan* requirements. Additional sources of onsite wastewater at the ocean water desalination facility would include CIP waste flow, which would be neutralized and discharged into the existing sanitary sewer system. On a cumulative basis, all future development would be subject to review by the affected jurisdictions for their potential to conflict with applicable regulations pertaining to wastewater treatment and to degrade water quality. All such future development would be required to demonstrate conformance with appropriate requirements established by the RWQCB and SWRCB, including those thresholds identified in the *2015 California Ocean Plan* implemented through the NPDES permits issued by the RWQCBs for discharges into the State's ocean waters for desalination facilities, as applicable. For the reasons above, cumulative impacts related to exceedance of RWQCB wastewater permit requirements would be less than significant.

Similarly, all future development with the potential to impact wastewater treatment would be required to demonstrate compliance with applicable federal and State regulatory requirements, including General Plan goals and policies of the affected jurisdiction, intended to reduce and/or avoid potential adverse



environmental effects. SCWD has an Infrastructure Master Plan and Capital Improvement Program to ensure adequate water and wastewater facilities to accommodate existing and future growth, and recently adopted an Mitigated Negative Declaration for the Infrastructure Master Plan Update (SCH No. 2017081049, adopted November 16, 2017). Similarly, SOCWA has a Capital Improvement Program¹⁵ that includes ongoing improvements to the J.B. Latham Treatment Plant and SJCOO, in order to meet existing and future demands and regulatory agency requirements. These improvements are largely funded by payments from SOCWA member agencies including SCWD.

Stormwater Drainage Facilities

A significant cumulative impact to stormwater drainage facilities would occur if the Project, in combination with cumulative development, caused an increased demand on stormwater drainage facilities such that new facilities or the expansion of existing facilities would be required, the construction of which would cause a significant environmental effect. The Project would result in a slight increase in demand on existing storm drain facilities serving the Project; however, the Project would not substantially increase the amount of stormwater runoff or exceed the remaining capacity of the existing storm drain system. The Project would demonstrate compliance with the existing laws, ordinances, and regulations requiring minimizing stormwater runoff and onsite treatment requirement. As such, the Project would not necessitate the construction of new stormwater drainage facilities or the expansion of existing facilities, other than relatively minor on-site improvements typical of capital projects.

Future cumulative development would also increase demands on stormdrain facilities within the City of Dana Point and other surrounding jurisdictions. All such development projects would be required to evaluate potential effects on existing facilities to determine the adequacy of affected systems to accommodate development being proposed. The City of Dana Point maintains the local stormdrain system through its Capital Improvement Program,¹⁶ to ensure adequate stormwater facilities for existing and future development. The County of Orange Public Works Department and other local agencies maintain San Juan Creek through the Project area, and have ongoing programs to further enhance flood protection provided by San Juan Creek.¹⁷

Based on the above, the Project's impact to stormwater drainage facilities is not significant, nor does the Project represent a "cumulatively considerable" impact to cumulative storm drain facility impacts.

Water Supplies

Significant cumulative impacts to water supplies would occur if implementation of the Project, in combination with cumulative development, resulted in an increased demand for water supplies in excess of water availability. The proposed Project would result in a minimal increase in demand on water supplies with implementation of the Project, due to temporary water needed during construction, and nominal operational water demands for employees, visitors and site maintenance. These minor demands are de

¹⁵ <https://www.socwa.com/wp-content/uploads/2016/05/2010TYP.pdf> (accessed February 23, 2018).

¹⁶ <http://www.danapoint.org/departments/public-works-engineering/construction-capital-improvement-projects> (accessed February 23, 2018).

¹⁷ "The San Juan Creek Watershed is part of the South Orange County Watershed Management Area (WMA). The County of Orange, cities, water and wastewater agencies of South Orange County formed the South Orange County IRWM Group in 2004 and subsequently developed and adopted the South Orange County IRWM Plan. The IRWM Group established the South Orange County IRWM region as a cooperative framework for planning and implementing water management strategies in the region to improve water quality, integrate flood management, restore natural resources, and increase water supply and reliability", <http://www.ocwatersheds.com/programs/ourws/sanjuancreek/sjreportsstudies> (accessed February 23, 2018).



minimis in light of the Project itself provide a new source of potable water, which will more than offset any increased water demand. SCWD's Urban Water Management Plan, MWDOC's Urban Water Management Plan, and recent water reliability studies conducted by MWDOC and SCWD show that the south Orange County area will have adequate water supplies with the addition of a reliable supply from the proposed Project. The Project therefore does not represent a significant individual or cumulative impact with respect to water supplies or need for new water facilities (beyond those proposed by the Project).

Solid Waste

Significant cumulative impacts to solid waste would occur if implementation of the Project, in combination with cumulative development, generated solid waste volumes in excess of available landfill capacity, or if the disposal of those materials violated applicable solid waste regulations. The solid waste generated from implementation of the Project would increase the disposal demands for local landfills and would be mitigated to a less than significant level through compliance with existing laws, ordinances, and regulations, as well as relevant Project Design Features and implementation of Mitigation Measure UTIL1. As such, the Project's impact is not significant or cumulatively considerable given the small volumes in comparison to remaining landfill capacity. Future cumulative development would be required to demonstrate compliance with Dana Point's C&D ordinance, which reduces the amount of solid waste disposed of at local landfills.¹⁸ Mitigation Measure UTIL-1 requires the District and its contractors to salvage and recycle solid waste associated with Project construction. For these reasons, the combined cumulative impacts to landfill capacity would be less than significant.

4.15.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts related to utilities and service systems have been identified.

¹⁸ <http://www.danapoint.org/department/public-works-engineering/solid-waste-recycling/construction-and-demolition-waste-recycling>
(accessed February 23, 2018).



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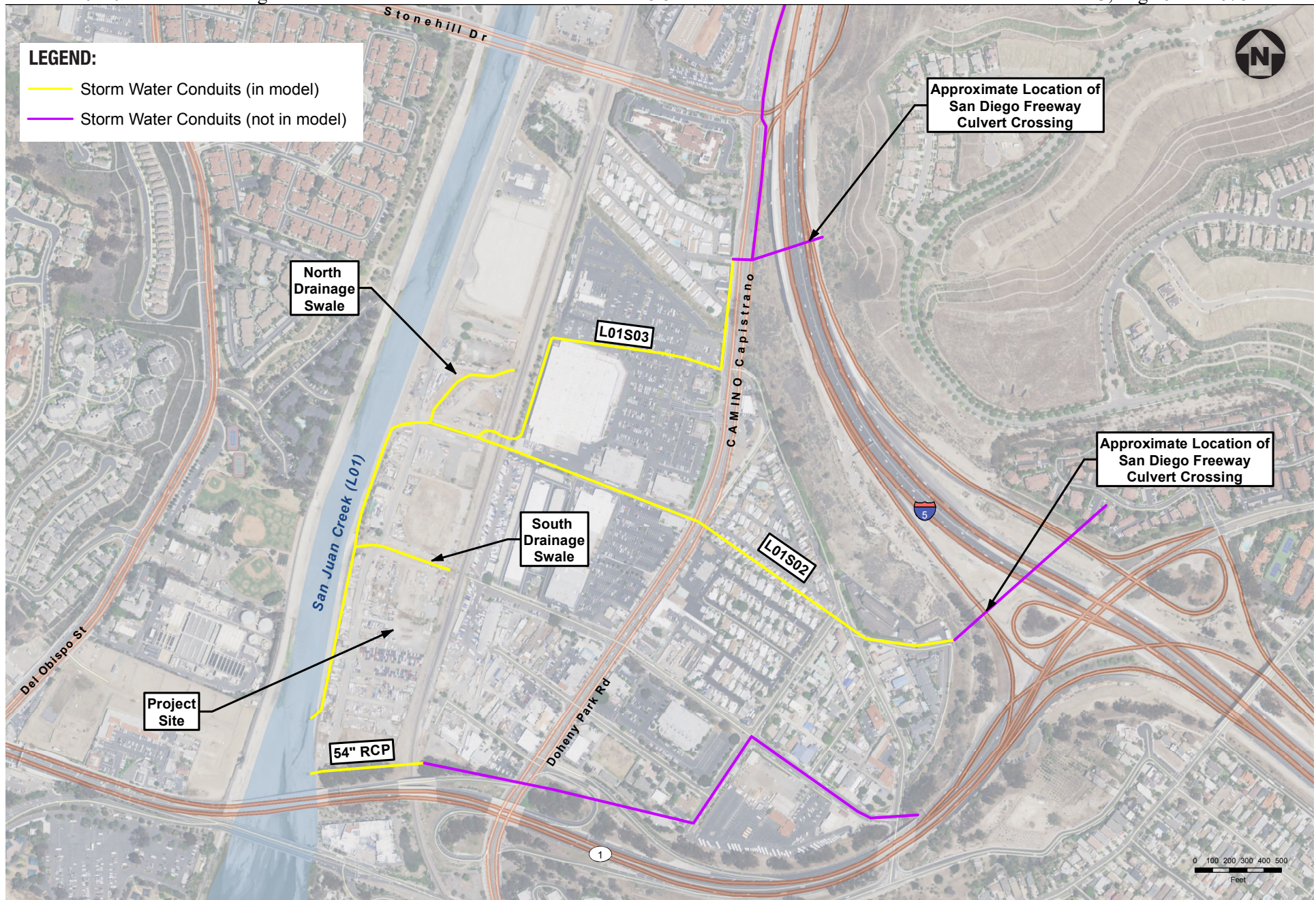


EXHIBIT 4.15-1: Existing Infrastructure

South Coast Water District
Doheny Ocean Desalination Project



Kimley»Horn

5.0 Alternatives to the Proposed Project

The following section evaluates the alternatives to the South Coast Water District's (District, or SCWD) proposed Doheny Ocean Desalination Project (Project) in Dana Point, California. The desalination facility would produce up to 15 million gallons per day (MGD) of potable drinking water. The District intends to initially construct up to 5 MGD for the Phase I Project, with potential future expansions of up to 15 MGD. Only the Phase I Project is evaluated at the project level in this EIR and is being considered by the District for approval and subsequent construction. The Regional Project could be considered by the District or others in the future, although its nature is speculative at this time, due to uncertainties regarding Regional Project partners and specific facilities. The alternatives in this section (excluding the "No Project" Alternative) are evaluated based on their ability to feasibly attain most of the basic objectives of the Project while avoiding or substantially reducing any of its significant impacts.

CEQA REQUIREMENTS

The California Environmental Quality Act (CEQA) requires that "an EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives" (State CEQA Guidelines § 15126.6(a)). This section identifies potential alternatives to the proposed project and evaluates them, as required by CEQA.

Key provisions of the State CEQA Guidelines on alternatives (§ 15126.6(a) through (f)) are summarized below to explain the foundation and legal requirements for the alternatives analysis in the Draft EIR.

- "[T]he discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly." (§ 15126.6(b)).
- "The specific alternative of 'no project' shall also be evaluated along with its impact" (§ 15126.6(e)(1)). "The 'no project' analysis shall discuss the existing conditions at the time the notice of preparation is published, ..., as well as what would reasonably be expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." (§ 15126.6(e)(2)).
- "The range of alternatives required in an EIR is governed by a 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project." (§ 15126.6(f)).
- "Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (...), and whether the proponent



can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent).” (§ 15126.6(f)(1)).

- For alternative locations, “[o]nly locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR.” (§ 15126.6(f)(2)(A)).
- “An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative.” (§ 15126.6(f)(3)).

Per the State CEQA Guidelines § 15126.6(d), additional significant effects of the alternatives are discussed in less detail than the significant effects of the project as proposed. For each alternative, the analysis: 1) describes the alternative; 2) analyzes the impact of the alternative as compared to the proposed Project; 3) identifies the impacts of the Project which would be avoided or lessened by the alternative; 4) assesses whether the alternative would meet most of the basic project objectives; and 5) evaluates the comparative merits of the alternative and the Project.

PROJECT DESCRIPTION

The Project consists of all actions related to the construction and operation of an ocean water desalination facility and associated desalination subsurface intake system. Initially, the facility would be designed to provide up to 5 MGD of potable drinking water; this EIR also considers possible expansion of the Regional Project, up to 15 MGD. The Project would further reduce SCWD’s dependency on imported water supply by integrating desalinated ocean water with the existing local water supply portfolio. More specifically, the Project consists of:

- **A subsurface water intake system** consisting of subsurface slant wells that draw ocean water from offshore subsurface alluvial material (located below the ocean floor), while providing natural sand bed filtration and eliminating the entrainment and impingement of marine biota. This subsurface intake system is the recommended approach by state and federal regulators, and is consistent with the State Water Resource Control Board’s (State Board or SWRCB) recently adopted Ocean Plan Amendment. The slant wells would be located and fully buried near the beach, in a study area encompassing Doheny State Beach and Capistrano Beach Park.
- **A raw (ocean) water conveyance pipeline** that would deliver the subsurface intake system’s ocean water to the desalination facility site.
- **A desalination facility** that would receive ocean feedwater at up to approximately 10 to 30 MGD, with a recovery rate of ~50% resulting in up to 5 to 15 MGD of potable drinking water (for the Phase I and Regional Project, respectively).
- **A concentrate (brine) disposal system** that would utilize the existing San Juan Creek Ocean Outfall (SJCOO), to return brine and treated process waste streams to the ocean with negligible impact on coastal and marine water quality. This would be achieved in part through blending in the outfall pipe with the existing wastewater stream from the J.B. Latham Wastewater Treatment Plant, and other regional treatment plants. Mixing desalination brine with existing wastewater treatment plant flow (a “comingled discharge”) is the preferred method by state and federal regulators and is consistent with the State Board’s Ocean Plan Amendment.



- **A product water storage tank and distribution system** that would feed into the District's local distribution system and, depending on plant capacity and District demands, other adjacent local and regional transmission pipelines that are located adjacent to the site. Desalinated product water from the Phase I project could be conveyed entirely using existing District infrastructure with no off-site improvements other than a short connection to the District's existing local transmission lines.
- **All appurtenant facilities** (e.g., pump stations, valves, and metering) as well as all construction, operation and maintenance activities associated with all project facilities.
- **Offsite Electrical Transmission Facilities** provided by San Diego Gas & Electric Company (SDG&E). At this time, SDG&E has indicated that electrical service can be provided to the Phase I project using existing facilities, with a short connection from the desalination site to underground electrical lines in Stonehill Drive.

Note that Section 3, Project Description also describes a potential future Regional Project of up to 15 MGD. However, the District is not seeking approvals for any facility greater than 5 MGD and this EIR is not intended for use for any facility greater than 5 MGD. Therefore, the Regional Project is neither an alternative to be considered nor are alternatives to the Regional Project appropriate, given that it is not being pursued and would require separate CEQA documentation at such time a specific Regional Project is identified.

In addition to Alternatives described below, the District considered and incorporated numerous design and siting modifications into the Project, which are reflected in the Project Descriptions and throughout the EIR. These include, but are not limited to:

- Expanding the subsurface intake study area to include the southeast intake wells (an "alternative site"), considered throughout the EIR and potentially chosen for slant well construction;
- Evaluation of the broader San Juan Creek Property site for the desalination facility, settling on the southern portion (Lots D, E and F), for a variety of reasons, including proximity to the slant wells, regional distribution facilities, and SJCOO connection;
- Evaluating multiple alternative slant well pod locations throughout the EIR (pods A-H), including eliminating Pod F from further consideration, and shifting Pod G to south of the basketball courts;
- Evaluating multiple staging area concepts and modifying the staging area locations based on consultation with State Parks and County Parks;
- Incorporating a raw water conveyance "study area" to allow flexibility in final alignment selection, with two potential alignments discussed throughout the EIR;
- Considering alternative power supply options and incorporating solar photovoltaic (PV) into the Project; and
- Evaluating alternative slant well development water discharge options, and identifying three options within the EIR.



PROJECT OBJECTIVES

The need for the proposed Project was recognized over a decade ago in the 2004 South Orange County Reliability Study, published by the Municipal Water District of Orange County (MWDOC). This study highlighted the vulnerability of South Orange County to prolonged interruptions of imported water deliveries, and was prompted in part by the December 13, 1999 failure of the Allen-McColloch Pipeline (AMP), which interrupted imported water delivery to various South County communities and took eight days to repair.

Since that time, the concern over reliable supply of imported water to South Orange County has only increased. The State of California experienced a record multi-year drought, and recent State mandates for conservation coupled with restrictions on imported water allocations from Metropolitan Water District of Southern California (MWD) further highlight the region's vulnerability. The SCWD service area, located at the southerly end of MWDOC's imported water delivery system, is particularly vulnerable to water supply interruptions from maintenance or repair to regional water importation infrastructure, such as may occur due to a major seismic event. Numerous publications have cited the water supply system vulnerability to major earthquakes, which affect virtually all regional water importation pipelines (refer to Figure 3-3, in Section 3.0, Project Description).

To address this concern, the District commissioned an independent, local stakeholder-driven Water Supply Reliability Study (finalized in December 2017).¹ Just to meet the minimum capacity required to provide resiliency in the event of a 60-day system failure, the District would need an estimated 3.9 MGD of new water supplies. However, this would not be able to provide emergency supplies to other water agencies, nor would it fully meet the District's objective to provide for greater local control and hydrologically independent water supplies. Of all of the reasonably available water supplies, the December 2017 study found that the proposed Doheny Ocean Desalination Project is by far the preferred approach (see Section 3.2, Project Goals and Objectives, for additional discussion).

As discussed in the Project Description, the following Project Objectives have been identified:

- To create a drought-proof, hydrologically independent, reliable and high-quality source of potable drinking water for the District.
- To further diversify the District's water supply portfolio through a locally-controlled supply, combining conservation, recycling and local supplies to reduce dependence on imported water supplies.
- To provide emergency back-up water supplies, should an earthquake, system shutdown, or other event disrupt the delivery of imported water to the south Orange County area.

To meet these Project objectives, the District has identified the need for a 5 MGD Phase I Project, consistent with its Urban Water Management Plan (UWMP) and Strategic Plan.

¹ https://www.scwd.org/about/governance/water_reliability_working_group/default.htm (accessed May 3, 2018).



SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS OF THE PROPOSED PROJECT

This Draft EIR discloses that the proposed Project would not have any significant and unavoidable environmental impacts. However, the proposed Project would require mitigation for impacts, as noted throughout this EIR.

Per § 15126.6(b) of the State CEQA Guidelines, the discussion of alternatives shall focus on alternatives to a project (or its location) which are capable of avoiding or substantially lessening any significant effects of a project, even if the alternatives would impede to some degree the attainment of the project objectives or would be more costly. This alternatives analysis, therefore, focuses on project alternatives that could avoid or substantially lessen environmental impacts of the proposed project related to the environmental categories.

ALTERNATIVES SELECTION PROCESS

The range of feasible alternatives identified under this EIR has been selected and discussed in a manner intended to foster meaningful public participation and informed decision making. The range of potential alternatives to the proposed Project focuses on those that could feasibly accomplish most of the basic objectives of the Project and could avoid or substantially lessen one or more of the significant effects. Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, General Plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site (or the site is already owned by the proponent). Only locations that would avoid or substantially lessen any of the Project's significant effects need be considered for inclusion. An alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative need not be considered. The alternatives selection process involved the following sequence of steps:

- Identification of the Project Objectives;
- Identification and development of the Project, including siting and design analysis;
- Identification of the potentially significant impacts of the Project;
- Initial Screening of alternatives (including water supply and conservation options);
- Development of CEQA alternatives;
- Evaluation of alternatives; and
- Identification of those alternatives that passed the initial screening evaluation, and an explanation of why alternatives were rejected and determined infeasible.

Specifically, as discussed above, per the State CEQA Guidelines § 15126.6(d), additional significant effects of the alternatives are discussed in less detail than the significant effects of the Project. For each alternative, the below analysis describes the alternative, analyzes the impacts of the alternative as compared to the proposed Project, identifies significant impacts of the proposed Project that would be avoided or lessened by the alternative, assesses the alternative's ability to meet most of the Project Objectives, and evaluates the comparative merits of the alternative and the proposed Project.



ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Section 15126.6(c) of the State CEQA Guidelines permits the elimination of an alternative from detailed consideration due to:

- Failure to meet most of the basic project objectives;
- Infeasibility; and
- Inability to avoid significant environmental impacts.

Section 15126(f)(1) of the State CEQA Guidelines states that “Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries...and whether the proponent can reasonably acquire control or otherwise have access to the alternative site. No one of these factors establishes a fixed limit on the scope of reasonable alternatives.” In addition, the California Supreme Court has stated that lead agencies, not project opponents, have the burden to formulate alternatives for inclusion in an EIR.

ALTERNATIVE SITES

The key question and first step in the decision whether to include in the EIR an analysis of alternative sites is whether any of the significant impacts of the Project would be avoided or substantially lessened by relocating the Project. Only locations that would avoid or substantially lessen any of the significant impacts of the Project need be considered for inclusion in the EIR (State *CEQA Guidelines*, § 15126.6[f][2][A]). If it is determined that no feasible alternative locations exist, the EIR must disclose the reasons for this conclusion (State *CEQA Guidelines*, § 15126.6[f][2][B]).

With respect to the first question (is there an alternative site that could achieve the basic project objectives and avoid or substantially lessen the project’s significant impacts), this DEIR has concluded that the Phase I Project does not have any significant environmental impacts with incorporation of EIR mitigation measures, and in consideration of Project Design Features (PDFs) that already avoid or lessen potential impacts. The Project has been designed to avoid or lessen environmental impacts. The intake and discharge systems are the preferred methods recommended by the Ocean Plan Amendment and state regulators. The desalination facility site itself is on a highly urbanized District-owned property, located nearby the source water. Refer to Section 4.9, Land Use and Planning, for a more extensive discussion regarding the Project’s environmentally sound design as reflected in various PDFs. The District has also made several important modifications to the original design, in response to stakeholder input, that further reduces the potential for significant impacts, including shifting the slant wells further from the beach, and shifting slant well locations to minimize temporary beach recreation and parking impacts.

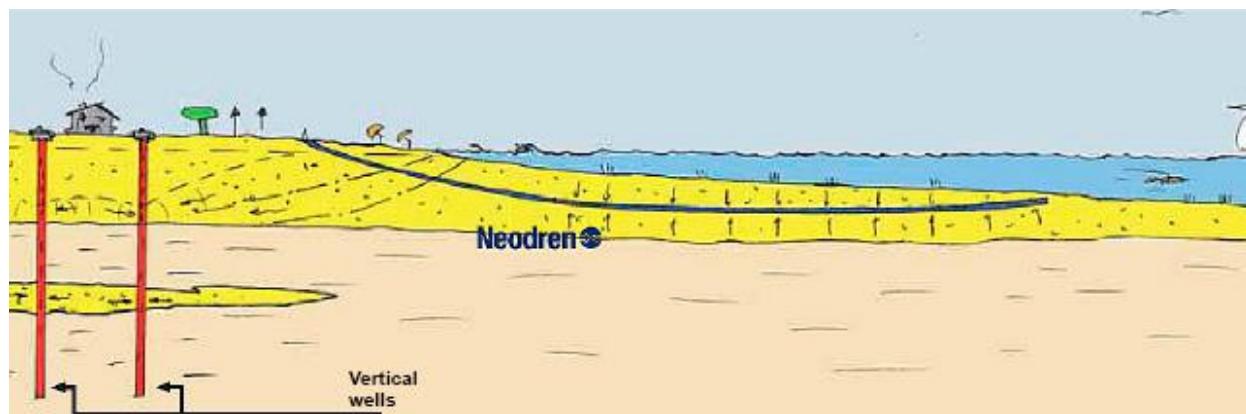
The District and others (including MWDOC) have been exploring a desalination site at Doheny State Beach since early 2000, and the Project site has been identified in numerous policy, planning and facility siting studies (see Section 3.3, Project History). The District is not aware of any feasible alternative to the desalination facility site being identified in any prior studies, and is not aware of any feasible alternative location that would avoid or substantially lessen significant effects of the Project. The District already owns the San Juan Creek Property. No significant and unavoidable impacts would occur with implementation of the proposed project at the Project site. Alternative sites located inland are infeasible



as the Project must be in close proximity to the ocean. The District has already incorporated various siting and design options as part of the Project, most notably the addition of the southeast intake well study area to explore potential additional feasible subsurface intake well locations. In consideration of the above, the District does not believe an “alternative site” is necessary or relevant to the Doheny Ocean Desalination Project.

SHALLOW NEODREN TECHNOLOGY ALTERNATIVE

Neodren® is the trademarked name of a patented subsurface ocean water intake system, using horizontal directional drilling (HDD) technology to install porous HDPE pipe (high density polyethylene).² HDD drilling is a proven, well understood technology for trenchless construction in a variety of settings, including installing pipe below the ocean floor. Porous HDPE pipes are also commercially available for numerous purposes, including water intake and filtering applications such as subsurface intakes.³ The Neodren® patent was developed by a Spanish company, Catalana de Perforacions, and has been installed at several locations, but only in Spain.



Source: <http://www.catalanadeperforacions.com>

The Neodren® system has possible advantages over slant wells, including longer well lengths (of 2,000 feet or more), which allow the ability to launch further back from the beach or further out into the ocean. The use of flexible HDPE pipe and HDD drilling allow the well to stay relatively shallow, rather than dive deeper on a fixed angle. However, the District has not identified any unavoidable significant impacts associated with slant well construction or operation, and as such this technology is not necessary at this site. Furthermore, the Neodren® method has never been operationally demonstrated in North America (current installations are limited to Spain), and its HDD construction method typically requires the HDD drill to penetrate the ocean floor at the terminus to “pull” the porous HDPE pipe back through the borehole, which represents a new impact not found with slant wells (although a new “push” method has been advocated by some, which could avoid ocean floor construction, the District is not aware of this method ever being successfully demonstrated for similar applications). The Project’s proposed use of slant wells has been demonstrated at two locations along the California Coast (Doheny State Beach and Marina, CA), uses well understood well drilling technology, and meets all relevant Ocean Plan Amendment and other regulations. For these reasons, the District has elected to not consider Neodren® technology for

² <http://www.catalanadeperforacions.com/pdf/Neodren%20English.pdf> (accessed May 1, 2018).

³ http://ru.pall.com/pdfs/misc/WFC08_80cmx200cm.pdf (accessed May 1, 2018).



the Project. The District may pilot test the Neodren© technology as part of future subsurface intake well design studies, which would require separate regulatory permitting and CEQA review.

VERTICAL WELL TECHNOLOGY ALTERNATIVE

A “vertical well” is, in contrast to the Project’s proposed “slant wells,” traditional groundwater wells drilled perpendicular to the ground. A vertical well that is used to withdraw saline-impacted groundwater is referred to as “brackish desalination,” since the high salinity content of groundwater wells requires desalination to produce potable water. Vertical wells have been considered for other ocean desalination projects, and are utilized as part of brackish ocean desalination projects throughout California. Possible advantages of vertical wells include typically lower cost to install, less complex construction methods, and ability to locate the vertical wells away from the beach where coastal hazard and beach recreation conflicts may occur.

However, the Project’s proposed slant wells have been designed to avoid or fully mitigate potential impacts associated with coastal hazards and beach recreation. In addition, the potential cost savings of vertical wells is in itself not grounds for switching to a different intake technology. The extensive field work and modeling done for the Project demonstrates that the slant wells have more than enough capacity to generate the required feedwater for the desalination facility. Slant wells, or other horizontal well technologies, are more common methods for larger ocean desalination facilities such as the Project, while vertical wells are more typically associated with smaller brackish desalination facilities, such as those at Morro Bay and Sand City, due to the higher production rate from slant wells. The San Juan Basin is carefully managed in extractions to avoid undesirable results such as seawater intrusion and basin overdraft. Therefore, additional supplies cannot come from extracting additional water from the already carefully managed basin. Vertical wells would draw more water from the onshore portion of the groundwater basin whereas slant wells are designed to extract water from offshore. Vertical wells may also be subject to increased variability in groundwater quality, likely requiring additional pretreatment.

Therefore, because the Project’s slant wells have been shown to meet or exceed source water intake requirements with all impacts mitigated to less than significant levels, alternate technologies such as vertical wells are not being considered.

ALTERNATIVES TO THE PROPOSED PROJECT

ALTERNATIVE 1: “NO PROJECT” ALTERNATIVE

Description of Alternative

Consistent with State *CEQA Guidelines* § 15126.6, the “No Project” Alternative assumes that the existing land uses and condition of the project site at the time the Notice of Preparation (NOP) was published (March 14, 2016) would continue to exist without changes. The setting of the proposed Project site at the time the NOP was published is described as part of the existing conditions noted throughout Section 4.0 of this Draft EIR with respect to individual environmental issues and forms the baseline of the impact assessment of the proposed Project.

The District receives its potable water supply from two main sources, local well water from the San Juan Groundwater Basin (Basin), which is managed by the San Juan Basin Authority (SJBA), and imported water from the MWDOC. MWDOC is Orange County’s wholesale supplier and is a member agency of MWD.



MWDOC's imported water supplies come from the State Water Project (SWP) and the Colorado River Aqueduct (CRA), which are influenced by climate conditions in northern California and the Colorado River Basin, respectively. Both regions recently suffered a multi-year drought with record low precipitation that directly impacted water supplies to southern California. The following provides a summary of the SWP and CRA, including a brief overview of supply interruptions associated with a catastrophic event such as an earthquake. In addition, the baseline water assumptions for the "No Project" Alternative is provided.

State Water Project

The primary purpose of the SWP is to divert and store water during wet periods in northern and central California and distribute it to areas of need in northern California, the San Francisco Bay area, the San Joaquin Valley, the Central Coast, and southern California. The availability of water supplies from the SWP can be highly variable. Currently, SWP contractors are limited to receiving 20% of their SWP allocations due to ongoing drought concerns as well as regulatory restrictions on the volume of water that may be diverted from the bay delta.

A wet water year may be followed by a dry or critically dry year, and fisheries issues can restrict the operations of the export pumps even when water supplies are available. In addition, ongoing regulatory restrictions, such as those imposed by federal biological opinions on the effects of SWP and the federal Central Valley Project (CVP) operations on certain marine life, also contribute to the challenge of determining the SWP's water delivery reliability to the District. SWRCB has also set water quality objectives that must be met by the SWP including minimum Delta outflows, limits on SWP and CVP Delta exports, and maximum allowable salinity level. Absent implementation of the proposed Project, the District's water supply would remain heavily dependent on imported water from the SWP, and would not provide the needed additional water supplies to supplement SWP water delivery during critically dry years or when environmental restrictions or catastrophic events reduce the availability of supplies.

Colorado River Aqueduct

The actual amount of water per year that may be conveyed through the CRA to MWD's member agencies is subject to the availability of Colorado River water for delivery. MWD has a basic entitlement of 550,000 acre-feet-per-year (AFY) of Colorado River water, plus surplus water up to an additional 662,000 AFY, although MWD has not received surplus water for a number of years. The Colorado River supply faces current and future imbalances between water supply and demand in the Colorado River Basin due to long-term drought conditions. Over the past 16 years (2000-2015), there have only been three years when the Colorado River flow has been above average (MWD, 2015 UWMP, June 2016). The long-term imbalance in future supply and demand is projected to be approximately 3.2 million acre feet (MAF) by the year 2060. Approximately 40 million people rely on the Colorado River and its tributaries for water with 5.5 million acres of land using Colorado River water for irrigation. Climate change will affect future supply and demand as increasing temperatures may increase evapotranspiration from vegetation along with an increase in water loss due to evaporation in reservoirs, therefore reducing the available amount of supply from the Colorado River and exacerbating imbalances between increasing demands from rapid growth and decreasing supplies.



Catastrophic Supply Interruptions

California's water supply and distribution systems are highly complex. Having been constructed over the last century using varying materials and construction techniques, many of these systems are approaching the end of their design life. It is anticipated that a large seismic event will cause severe delivery system disruptions.

The potential loss of SWP and CRA conveyance aqueducts located throughout California would be catastrophic for large metropolitan areas such as San Diego and Los Angeles, including many local communities reliant on imported water, such as SCWD service area. Under a catastrophic failure scenario, a complete cutoff from existing SWP water supplies could potentially result, and water delivery outages of up to 18 months have been forecast. However, existing local water storage capacity has been estimated to be limited to six months.⁴

According to the District's 2015 UWMP, the District should be able to sustain itself for approximately seven days should there be an interruption in its source of supply. This is an estimate based upon the District's normal usage and storage levels with the addition of water conservation measures and the curtailment of potable irrigation. Several factors have a direct bearing upon how long the District can survive without additional supplies. These include the weather, time of day, time of year, amount of water actually in storage at the time of the interruption, coincidental firefighting, conservation measures, and the integrity of the District's internal distribution system. As such, the District desires to maintain potable water supply supplementation to accommodate up to a 60-day outage of MWDOC water deliveries.

The District's existing water supply is 85 percent to 100 percent dependent on imported water, as described above and in greater detail in Sections 3.1 and 3.2, with some supply from recycled water and shallow, brackish groundwater treated by the District's Groundwater Recovery Facility (GRF). The GRF supply is constrained due to the San Juan Basin pumping constraints, with the GRF only producing 62.81 acre-feet during February 2018.⁵ The majority of the District's water supply (up to 100%) is from imported supplies, which are vulnerable to interruption of 60 days or more in the event of a major system failure such as a major earthquake.⁶ Just to meet the minimum capacity required to provide resiliency in the event of a 60-day system failure, the District would need an estimated 3.9 MGD desalination facility.⁷ However, this would not be able to provide emergency supplies to other water agencies, nor would it fully meet the District's objective to provide for greater local control and hydrologically independent water supplies.

"No Project" Alternative Assumptions

Under the "No Project" Alternative, the District would continue to receive water from its current sources, and no additional water would be generated by the desalination facility. In the absence of a desalination

⁴ Stanley, Mark, 2015. *Seismic Considerations for Water Distribution Resiliency in California*.

⁵ SCWD Board of Directors Meeting, April 26, 2018, Agenda Item 8.

⁶ Need for new system capacity during an extended outage (up to 60 days) of MWD's deliveries caused by an earthquake or emergency. For system gap, demands and supplies are presented in million gallons per day (MGD) as opposed to acre-feet per year (AFY) in order to account for shortages that are less than a year (South Coast Water District – Water Reliability Study, Technical Memorandum Report, December 21, 2017, page 13).

⁷ Although the minimum desalination facility capacity of 3.9 MGD has been recommended based on the above imported water supply system reliability issues, the District desires to construct up to a 5 MGD facility with the intent to create further reliability of local water security given the projected favorable costs (in comparison to other water supply alternatives), added local control of District water supplies, and opportunity to provide emergency or baseload water supplies to neighboring water agencies.



facility, the District would likely pursue even more aggressive conservation and recycling, although these approaches are not sufficient to meet the District's objectives as discussed further below in the "Enhanced Recycling" and "Enhanced Conservation" alternatives. In the absence of desalination, the District would likely pursue one or more different (alternative) water supplies, such as those set forth in the 2017 Water Supply Reliability Study, each of which would not meet the Project objectives as effectively,⁸ and would not provide reliable water that is locally controlled, as other supplies are dependent on other agencies or parties to manage and allocate.

With the "No Project" Alternative the construction and operation of the desalination facility and related Project elements would not occur. The Project site has a zoning designation of Industrial / Business (I/B) and Community Facility (CF), and is designated Industrial / Business Park (I/BP) and Community Facility (CF) in the City of Dana Point General Plan. Thus, if the Project is not developed, it is likely the District would continue to pursue appropriate alternate uses for the San Juan Creek Property, such as those outlined in the San Juan Creek Property EIR, which could include boat storage, multi-tenant uses, mixed use/office development, industrial development or other similar uses.

CONCLUSION

The "No Project" Alternative would eliminate all of the potentially significant impacts associated with the environmental categories discussed. As such, it could be considered "environmentally superior" to the Proposed Project. However, as documented throughout Section 4.0 of this Draft EIR, all impacts of the proposed Project would be less than significant after mitigation. Furthermore, "elimination" of Project impacts should be understood as countered by some level of likely future development impact on the District's San Juan Creek Property should the desalination facility not be constructed (see the 2002 San Juan Creek Property Final EIR). In addition, failure to implement the Project would be in direct conflict with the District's UWMP and Strategic Plan, would completely fail to meet any of the Project Objectives, implementation of one or more alternative water supply sources, each of which would have its own environmental impacts. The No Project Alternative would leave the District vulnerable to catastrophic water supply shortages in the event of a major system failure or seismic damage, potentially resulting in extraordinary financial impacts to this area and associated tourism-based economy. For these reasons, the District has rejected the No Project Alternative and intends to pursue the proposed Project.

ALTERNATIVE 2: "ENHANCED CONSERVATION" ALTERNATIVE

Description of Alternative

The District's 2015 UWMP outlines detailed conservation measures needed to meet aggressive conservation goals. The identification of conservation measures in the 2015 UWMP would occur with or without the proposed Project. As noted in the UWMP, the District's projected water demand already includes aggressive conservation goals. Therefore, even with success in achieving these goals, the need for water supply reliability and diversity achieved by the proposed Project still exists. The proposed Project will reduce the District's reliance on the SWP and/or California's allotment of CRA water. This supply flexibility increases reliability. Availability of imported water supplies in the future in average and dry years

⁸ As described in detail in the District's Water Reliability Working Group final report, available here (<https://www.scwd.org/civicax/filebank/blobdload.aspx?blobid=8044>), accessed May 17, 2018.



continues to be uncertain for Southern California water agencies. Concerns for escalating costs of future water in dry years also affects supply reliability.

As described in the District's 2015 UWMP, water conservation strategies are being implemented in accordance with state laws and local ordinances. Financial incentives and low flow fixtures form the foundation of the efficiency measures. Even with implementation of the conservation goals set out by the state and local jurisdictions, water supply diversity is needed to augment reliability and dry year supply. Reducing demands does not obviate the need for diverse water sources that enhance reliability and protect against declines during dry years.

The District Board of Directors adopted Water Conservation and Water Supply Shortage Ordinance No. 206 on April 23, 2009 (updated and adopted as Ordinance 222 on March 10, 2016), which established a staged water conservation program that will encourage reduced water consumption within the District through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within the District (refer to [Table 5-1](#), below). Stage 1 is in effect at all times unless a mandatory conservation stage has been implemented by the Board of Directors.

Table 5-1. Stages of Water Shortage Contingency Plan

Retail Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction ¹	Water Supply Condition
1	Up to 20%	Enacted when the District experiences up to a 20% shortage in imported water supplies and determines the need to further reduce consumer usage by up to 20%.
2	20-40%	Enacted when the District experiences up to a 40% shortage in imported water supplies and determines the need to further reduce consumer usage by up to 40%.
3	>40%	Enacted when the District experiences more than a 40% shortage in imported water supplies and determines the need to further reduce consumer usage by up to 40%.

1. One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.

Source: SCWD, 2015 Urban Water Management Plan.

Additional mandatory restrictions in effect since 2009 include: No hosing or washing down vehicles, including but not limited to automobiles, trucks, vans, buses, motorcycles, boats or trailers except when using an automatic shut-off nozzle; prohibition of hosing or washing down hard or paved surfaces, such as sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys; and all decorative water fountains and water features must re-circulate water. Between June 2015 and June 2016, the District has reduced water use by 26 percent, and currently experiences less than 2 percent water system losses. The District has also implemented an Automated Meter Reading (AMR) Leak Detection Program and Landscape Efficiency Program.

The baseline conservation scenario utilized in the District's 2015 UWMP assumes the implementation of future passive measures affecting new developments, including the Model Water Efficient Landscape,



plumbing code efficiencies for toilets, and expected plumbing code requirements for high-efficiency clothes washers. It also assumes the implementation of future active measures, including the implementation of MWDOC incentive programs at historical annual levels seen in Orange County. The District's 2015 UWMP also includes other water conservation enhancements including the following: public education and outreach, water conservation program coordination and staffing support, residential and commercial water efficiency programs, and landscape programs (i.e., turf removal, water-smart landscaping, including various irrigation infrastructure rebate programs).

Under the "Enhanced Conservation" Alternative, water users within the District would be required to conserve at least an additional 4,400 AFY to meet the identified minimum additional supply needed for water reliability of 3.9 MGD. Adding an extra 3.9 MGD of annual conservation to conservation efforts that are currently occurring within the District would essentially require nearly tripling the District's future water conservation efforts. To triple the future conservation efforts of the District in such a relatively short period of time (to maintain the District's desired schedule) would require, at a minimum, the imposition of prescriptive water conservation standards for activities, like outdoor residential irrigation, that are today considered discretionary consumptive water use, or the enactment of the District's Water Conservation and Water Supply Shortage program (Stage 2 or Stage 3) outside of the water supply condition thresholds identified in Table 5-1 in Section 5.0 of the EIR. To achieve a long-term reliable and drought-proof supply similar to the proposed project, Stage 2 and/or Stage 3 water shortage contingency provisions would likely have to be enacted and ultimately enforced on a permanent basis. Enforcement effectiveness at such high conservation targets would likely be challenging.

Conclusion

The "Enhanced Conservation" Alternative would not provide a new, diversified water supply portfolio, and would not provide a hydrologically independent water supply in the event of continued drought. The "Enhanced Conservation" Alternative is not considered a permanent and sustainable method to close the existing minimum additional 3.9 MGD water supply gap while meeting the stated objective of providing an immediate and reliable emergency water source for District customers in the event of a catastrophic failure of water infrastructure or regional distribution facilities such as SWP and CRA facilities. As a result, the "Enhanced Conservation" Alternative would not improve the overall supply diversity to the area or improve the protection of public health and welfare during supply shortages that could be caused by outage of the imported system or curtailments in imported water supply due to drought or other emergency outage of the system. As such, the "Enhanced Conservation" Alternative would fail to meet the water reliability needs of the District to the same degree as the proposed project.

ALTERNATIVE 3: "ENHANCED RECYCLED WATER" ALTERNATIVE

One of the major components of the District's water conservation program is its recycled water program. The District provides additional treatment to a portion of its secondary treated wastewater. The recycled water is then used for landscape irrigation services. Demands for recycled water continue to increase as new and existing potable water irrigation services are continually being connected to the recycled water system.

Southern California discharges treated wastewater to the ocean every day that could potentially be reused, reducing reliance on imported water sources. Reuse opportunities have continued to grow with public acceptance and decreased imported water deliveries. Recycled water provides flexibility and



reliability during drought conditions as imported water supplies diminish. Recycled water is wastewater that is purified through primary, secondary and tertiary treatment and is acceptable for most non-potable water purposes such as irrigation, commercial and industrial processes per Title 22 requirements. The District's existing recycled water system provides the service area with a supplemental irrigation supply. The District's Board of Directors plans to expand the recycled water system, further reducing dependence on imported water.

The District currently supplies 800 to 850 AFY of recycled water to its customers in South Laguna Beach and Dana Point, with plans to expand to 1,350 AFY. The District's planned supply reliability and enhancement projects are identified in the District's Five Year Capital Improvement Program and 2017 Infrastructure Master Plan including the recycled water projects.

- **Recycled Water Extensions and Conversions**—This project consists of correcting existing pressure deficiencies in the recycled water distribution system and extending the recycled water distribution system to serve planned conversion customers. Improvements, extensions and conversions are planned in Del Obispo Street, Golden Lantern, Crown Valley Parkway and Stonehill Drive. The District's recycled water demand is projected to be 1,350 AFY upon completion of these conversions.

Overall, an additional demand of 8550 AFY has been targeted for conversions. Recycled water demands could continue to increase beyond that limit if other existing potable water users are converted. This results in a total projected recycle water demand of 1,350 AFY.

Future recycled water use within the District can be increased by requiring dual piping in new developments, retrofitting existing landscaped areas and constructing recycled water pump stations and transmission pipelines to reach areas that are further from treatment plants. Gains in implementing some of these projects have been made throughout the county. However, additional costs, large energy requirements, and capital costs for facilities all contribute to the high costs of such projects. In order to determine if additional projects are feasible, studies must be performed to determine if the project should be pursued. Feasibility studies should include evaluation of alternatives with a present worth analysis consisting of capital costs (design, environmental reviews, construction, etc.) and operations and maintenance costs (electrical costs for pumps and equipment and maintenance required for the system).

Description of Alternative

Under the "Enhanced Recycled Water" Alternative, the District would need to construct additional recycled water treatment facilities and infrastructure to create a supplemental water supply of at least 3.9 MGD (4,400 AFY) to offset potable water shortages during a catastrophic outage. Under the "Enhanced Recycled Water" Alternative, the proposed desalination facility, subsurface water intake system, and raw (ocean) water conveyance pipeline would not be constructed and the existing minimum necessary additional potable water supply gap of 3.9 MGD would be supplemented from existing potable water supplies that would become available through the increased recycled water production.

Conclusion

Full implementation of the recycled water facilities envisioned in the District's 2015 UWMP would result in a total projected recycled water demand of 1,350 AFY, which approaches the District's existing 1,350



AFY of available recycled water to supply to customers. Implementation of the “Enhanced Recycled Water” Alternative would require the District to supply an additional 3,350 AFY, or more than four times the District’s current recycled production of 850 AFY, by year 2020. This also assumes that recycled water could be used in direct “flange to flange” potable water applications, which there is no current regulatory pathway in California for this. In addition, the “Enhanced Recycled Water” Alternative would itself require new infrastructure including pipelines and wastewater treatment facilities, which would have similar impacts to the Project, at least for onshore facilities. All of the Project’s impacts can be mitigated to less than significant levels, so this Alternative does not reduce any unavoidable significant impacts.

Regardless, the District has insufficient recycled water production potential to make this alternative feasible. In addition, given the time necessary for regulations to allow for this, to investigate, finance, and construct a number of facilities above and beyond those identified in the District’s 2015 UWMP, implementation of the “Enhanced Recycled Water” Alternative would fail to produce sufficient recycled water offsets to create a minimum additional 3.9 MGD (4,400 AFY) of reliable water supply and eliminate the existing projected supply gap in a timely manner.

The “Enhanced Recycled Water” Alternative would also fail to meet basic Project objectives, as it would not provide an immediate and reliable emergency water source for District customers in the event of a catastrophic failure of water infrastructure or regional distribution facilities such as SWP and CRA facilities. As a result, this Alternative would not improve the overall supply diversity to the area or improve the protection of public health and welfare during supply shortages that could be caused by outage of the imported system or curtailments in imported water supply due to drought or other emergency outage of the system. As such, the “Enhanced Recycled Water” Alternative would fail to meet the water reliability needs of the District to the same degree as the proposed Project, and is not being considered by the District.

ALTERNATIVE 4: “REDUCED CAPACITY” ALTERNATIVE

Description of Alternative

A minimum desalination facility capacity of 3.9 MGD has been recommended based on certain specific system reliability parameters (including the minimum capacity needed to meet a 60-day imported water supply interruption). However, the District desires to construct up to a 5 MGD facility with the intent to create further reliability and local water supply security, particularly given the difficulty and cost of developing alternative new water supplies for a water-scarce south Orange County. For the purposes of CEQA alternatives, the EIR evaluates a “Reduced Capacity Alternative”, which is hypothesized to be a 3.9 MGD facility to meet the minimum identified 60-day imported water supply shortage gap. This Alternative is assumed to be at the same site and with the same general facility locations, with the exception of reduced source water intake, brine discharge, raw water treatment and desalination and equipment (corresponding to roughly 20 percent reduction in impacts related to source water production, treatment and discharge). Depending on individual slant well production, one of the estimated three to four Phase I Project slant wells could be avoided with a 20 percent reduction in production capacity. The desalination facility site would have similar impacts to the Project, since the entire desalination site would require grading, and the structures would be similar in size as those required for the Project.



Evaluation of Alternative

Overall, the “Reduced Capacity” Alternative would result in a slight reduction in Project impacts, including approximately a 20 percent reduction in subsurface intake of ocean water, reverse osmosis treatment and associated pretreatment and posttreatment processes, greenhouse gas emissions, and brine discharge volume. However, in each of these cases, the Project’s impacts can be fully mitigated, and the “Reduced Capacity” Alternative would therefore not avoid any unavoidable significant impacts. Comparing effects on the San Juan Creek Lagoon, Appendix 10.10 shows little to no effect by reducing slant well pumping by 20 percent.

The “Reduced Capacity” Alternative would achieve the basic Project objectives, albeit 20 percent less as effective as the proposed Project. As a result, this alternative would partially improve the overall supply diversity to the area and partially improve the protection of public health and welfare during supply shortages that could be caused by outage of the imported system or curtailments in imported water supply due to drought or other emergency outages of the system. However, the “Reduced Capacity” Alternative would not avoid any unavoidable significant impacts. This Alternative may still be considered by the District. Alternative 5: “SEAWATER INTRUSION MINIMIZATION (DSB ONLY)” ALTERNATIVE

The District has evaluated a specific alternative to the Phase I Project, involving focusing the initial slant wells in the immediate vicinity of San Juan Creek Lagoon (such as Pods C and D). This Alternative would achieve all of the Project objectives and provide the desired full Phase I production capacity of up to 5 MGD. The overall impacts would therefore be similar to the proposed Project, with the exception of seawater intrusion, and temporary slant well construction impacts.

In the SCWD Stonehill Well, total dissolved solids (TDS) concentrations begin to rise after approximately 15 years (compared to the 13.5 years under Baseline conditions), and reach a concentration of roughly 4,000 mg/L by the end of year 2045 (1976 hydrology). This is approximately 3,000 mg/L less than the concentration under Baseline conditions and indicates that slant well pumping at DSB establishes control over ocean water intrusion through the pumping trough created by the feed water system (Appendix 10.10.2, page 9).

Therefore, this Alternative would further reduce seawater intrusion compared to the Project (where slant wells could be located anywhere within the Study Area, from Pods A – H). Furthermore, this Alternative involves wells closest to the San Juan Creek Lagoon where slant well production capacity is estimated to be highest, thereby likely reducing the total number of slant wells and associated temporary construction-related impacts (rather than an assumed three to four wells with the Project, this Alternative may only require two to three slant wells due to higher production capacity). In addition, slant wells sited at San Juan Creek Lagoon would have a shorter total conveyance pipeline length to the desalination facility, thereby reducing pipeline construction-related impacts. Also, slant well facilities would be entirely within DSB, thereby avoiding impacts at Capistrano Beach Park (including greater coastal erosion potential and temporary loss of parking), and reducing the total number of agencies required for permitting and approvals (avoiding a long-term lease and encroachment permits from County Parks). This Alternative would be in closer proximity to the San Juan Creek Lagoon and would focus slant well construction within DSB, although these temporary impacts could be mitigated as discussed in Section 4.3, Biological Resources, and Section 4.12, Recreation.



Therefore, the “Seawater Intrusion Minimization (DSB Only)” Alternative would reduce potential Project impacts, would further reduce seawater intrusion, and would meet all of the Project objectives. This Alternative is considered “Environmentally Superior” to the proposed Project, and may be considered by the District, pending further consultation with State Parks and other regulatory agencies and stakeholders.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires an EIR to identify the environmentally superior alternative. The environmentally superior alternative is the one that would result in the fewest or least significant environmental impacts. The context of an environmentally superior alternative is based on the consideration of several factors including the reduction of environmental impacts to a *less than significant* level, the project objectives, and an alternative’s ability to fulfill the objectives with minimal impacts to the existing site and surrounding environment. The No Project Alternative would be the environmentally superior alternative because it would eliminate all of the potentially significant impacts of the proposed project. However, while the “No Project” Alternative is the environmentally superior alternative, it is not capable of meeting any of the basic objectives of the proposed Project. Section 15126.6(e)(2) of the State CEQA Guidelines states that if the “No Project” alternative is found to be environmentally superior, “the EIR shall also identify an environmentally superior alternative among the other alternatives.”

Therefore, the environmentally superior alternative to the proposed Project is the one that would result in the fewest or least significant environmental impacts while meeting most (or all) of the basic Project objectives. As discussed above, based on the evaluation undertaken, the “Seawater Intrusion Minimization (DSB Only)” Alternative is the environmentally superior alternative, and may be considered by the District, pending further consultation with State Parks and other regulatory agencies and stakeholders.



6.0 Additional CEQA Considerations

This EIR section provides a discussion of additional CEQA impact considerations, including Significant Unavoidable Impacts, Significant Irreversible Environmental Changes, Growth-inducing Impacts, and Energy Conservation.

6.1 SIGNIFICANT UNAVOIDABLE IMPACTS

Section 15126.2(b) of the CEQA Guidelines requires that an EIR identify significant environmental effects that cannot be avoided by the proposed Project, including those that can be mitigated, but not to a less than significant level. Impacts are analyzed for all Project elements for both construction and operations. In many cases, potentially significant impacts are avoided through adherence to existing laws, ordinances, regulations or standards. Where necessary and feasible, Project Design Features and mitigation measures have been identified to further reduce potentially significant impacts to less than significant levels.

The District has designed the proposed Project to avoid or minimize potentially significant impacts, including siting the desalination facility at the District's San Juan Creek Property in close proximity to the slant wells (source water), use of subsurface intake slant well technology to avoid marine life impingement and entrainment impacts, blending brine through an existing ocean outfall, and use of trenchless construction under key sensitive recreation, resource and transportation features. These and other Project Design Features are summarized in Section 3, Project Description, are summarized in each impact section (4.0 through 4.15), and are reflected in the Preliminary Design Report (Appendix 10.1).

Potentially unavoidable significant impacts are addressed in each impact section, in Section 4 of this EIR, and are summarized in Section 1.6, Unavoidable Significant Environmental Impacts, as well as in Section 5.1, CEQA Process (for Alternatives). No unavoidable significant impacts have been identified for the Phase I Project (up to 5 MGD). For the Regional Project (up to 15 MGD), although the District and its partners would endeavor to site and design Regional Project facilities that avoid sensitive resources and significant impacts, in the absence of specific Regional Project designs (particularly for the regional product water conveyance system improvements that would be required), the potential future Regional Project expanded facilities could result in unavoidable significant impacts. Should the Project (Phase I or Regional Project) result in any unavoidable significant impacts, CEQA Guidelines § 15093 requires that the District adopt a Statement of Overriding Considerations to set forth the benefits that outweigh potentially significant unavoidable impacts.

6.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA Guidelines § 15126.2(c) requires that an EIR address any significant irreversible environmental changes that would occur should the proposed Project be implemented. As stated in CEQA Guidelines § 15126.2(c):

“Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the



project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified."

Construction activities for the Project would require the commitment of renewable and non-renewable sources. Renewable resources include energy resources that have abundant supply or can be replaced quickly, including renewable energy such as solar power, water, wind, biomass and geothermal energy, and biomass sources such as wood and soil. Non-renewable energy sources are available in limited quantity or are consumed faster than they can be replaced, such as fossil fuels (coal, oil and natural gas), sand and gravel, and metals such as steel and aluminum. Construction activities would require the consumption of non-renewable resources and renewable resources, including: lumber and other forest resources; aggregate materials (sand and gravel); used in concrete and asphalt; metals; and water. Also, during construction, petroleum products including, but not limited to, gasoline, diesel fuel, crankcase oil, and lubricants may also be used to fuel, lubricate, and clean vehicles and equipment, and to fuel transportation of construction equipment and workers. Construction-related consumption of renewable and non-renewable resources would be consistent with the uses designated for the desalination site, and similar in scale and quantity as other municipal or industrial developments. As discussed in [Section 3](#), Project Design Features would minimize the Project's construction requirements. Therefore, the Project construction is not considered to represent a significant commitment of non-renewable resources during construction.

The primary natural resource consumed during Project operations is ocean water, which is considered a renewable resource, which the Project would "reclaim" for potable use, thereby reducing pressure on scarcer (arguably "non-renewable") freshwater resources that are constrained either due to over demand, regulatory restrictions, or over-use causing water quality limitations. The Project's primary operational use of non-renewable energy resources would include fossil fuels used for construction, heating and cooling of buildings, transportation of people and goods, lighting, treatment of desalinated water, brine disposal, and the movement of water between the District service areas. However, as indicated in [Section 4.15, Utilities and Service Systems](#), while the operation of the proposed desalination facility would result in an increased use of energy and natural gas, it would not require substantial new or expanded energy or natural gas supplies or distribution facilities, or conflict with applicable energy standards (the Project would include minor underground electrical lines extended to the site, and equipment powered by electricity or natural gas). The Project would implement a number of environmental design features that would reduce energy demand, including a commitment to offset the additional energy consumed by the Project in comparison to baseline conditions. With energy savings from the Project Design Features, together with EIR mitigation measures, the Project would not represent a significant long-term increase in non-renewable resource consumption (see further discussion in [Section 6.4](#) below).

The proposed desalination facility and associated Project components would handle some quantities of hazardous materials or engage in activities that have the potential to result in environmental accidents. However, these chemicals and their use, storage and transportation would be typical of municipal water treatment facilities, would comply with applicable local, state, and federal regulations, and would not otherwise represent a significant potential risk of accident (as indicated in [Section 4.7, Hazards and Hazardous Materials](#)).



6.3 GROWTH-INDUCING IMPACTS

CEQA Guidelines § 15126.2(d) requires that growth inducing impacts of a proposed project be considered. Growth inducing impacts are characteristics of a project that could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. According to the CEQA Guidelines, such projects include those that would remove obstacles to population growth (e.g., a major expansion of a wastewater treatment plant) and those that would encourage/facilitate other activities that could significantly affect the environment, either individually or cumulatively. In addition, as set forth in the CEQA Guidelines, population increases may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. The CEQA Guidelines also state that it must not be assumed that growth in an area is necessarily beneficial, detrimental, or of little significance to the environment. Induced growth is considered a significant impact only if it directly or indirectly affects the ability of agencies to provide needed public services or if it can be demonstrated that the potential growth, in some other way, significantly affects the environment, i.e., that it would result in construction that would adversely affect the environment. It is noted that the CEQA Guidelines do not require that an EIR predict (or speculate) specifically where such growth would occur, in what form it would occur, or when it would occur. The answers to such questions require speculation, which CEQA discourages. See CEQA Guidelines § 15145.

This section analyzes potential growth-inducing impacts, based on the criteria outlined below, as suggested in the CEQA Guidelines. In general terms, a project may foster spatial, economic, or population growth in a geographic area, if it meets any one of the following criteria:

- Fostering of economic expansion or growth (e.g., changes in revenue base and employment expansion);
- Fostering of population growth which may tax existing community service facilities (e.g., construction of additional housing or employment-generating land uses), either directly or indirectly; and
- Removal of an impediment to growth (e.g., a major expansion of a waste water treatment plant or establishment of an essential public service).

Should a project meet any one of the above-listed criteria, it may be considered growth inducing. The Project's potential growth-inducing impacts are evaluated below against these criteria.

6.3.1 IMPACT ANALYSIS

As previously discussed, the District proposes the Doheny Ocean Desalination Project (Project), with the Phase I Project (up to 5 MGD) addressed at a Project level and proposed for construction. Later potential future expansions up to 15 MGD (a "Regional Project") are addressed at a programmatic level of detail, and are not proposed for implementation at this time, as there are no specific Regional Project partners identified nor are there specific Regional Project facilities identified (making a detailed analysis speculative for the Regional Project). Both the Phase 1 and Regional Project capacities would be available for the District and local water agencies to provide a high quality, locally-controlled, drought-proof potable drinking water supply. The desalination facility would also provide emergency back-up water supplies, should an earthquake, system shutdown, or other event disrupt the delivery of imported water to the area.



In compliance with CEQA Guidelines § 15126.2(d), the Project's potential growth-inducing impacts are evaluated below.

6.3.2 ECONOMIC GROWTH

The Project construction would employ various temporary construction personnel over a several-year period, with breaks in construction between various Project phases. Due to the temporary nature of this employment, this is not considered a significant impact with respect to growth. Project operations would require full-time staffing of approximately 4-6 employees for the Phase I Project and approximately 12-15 employees for the Regional Project. However, the nominal staffing levels and water utility land use does not represent a significant economic expansion and would not otherwise result in significant growth inducing impacts. The Project would provide a reliable drought-proof water supply, which will allow for continued economic activity and future economic expansion, consistent with Dana Point's General Plan (see "Removal of Impediment to Growth" discussion below).

6.3.3 POPULATION GROWTH

Population growth can be induced either directly (i.e., through the provision of new homes or businesses) or indirectly (i.e., through roadway extensions or other infrastructure improvements). The Project would not provide new homes, and thus, would not directly induce population growth. The Project would not provide new infrastructure that enables increased population growth (increased water supply is discussed below). Essential public services and utility/service systems are already readily available in the area, and development would occur primarily as infill given the existing built-out nature of the Project area and SCWD area. Therefore, the utility/service systems upgrades/extensions necessary to accommodate the Project would not induce substantial population growth. Therefore, in this respect, the Project does not represent a significant growth-inducing impact.

6.3.4 REMOVAL OF IMPEDIMENT TO GROWTH

The Project would reduce dependency on imported water and groundwater supplies with desalinated water, through its provision of up to 15 MGD of potable water to the South Orange County service area. The Phase I Project's water supply of up to 5 MGD is included in the District's 2015 UWMP, which notes that the Phase I Project is specifically included in the District's Five Year Capital Improvement Program.¹ The Phase I Project is necessary to provide a reliable, hydrologically-independent (drought-proof), locally-controlled water supply, as substantiated by MWDOC's OC Water Reliability Study (2016) and the District's 2015 UWMP. The 2015 UWMP also notes that the Project could provide up to 15 MGD, providing potable water for other local water agencies, a goal identified in local, regional and state water supply planning studies.² MWDOC's 2016 study assumed an 11 MGD Doheny Ocean Desalination Project in one scenario, and concluded that "South Orange County needs new water investments...", specifically identifying the Doheny Ocean Desalination Project as one of the key next steps for South Orange County water supply reliability. The District's recently completed Water Reliability Study (December 2017) further substantiated the need for the Project, given the region's reliance on imported water, hydrologic

¹ 2015 UWMP, page 7-3.

² Ibid, page 7-5.



uncertainties due to prolonged drought conditions, and system vulnerability to interruption due to unplanned maintenance or seismic-induced damage.

Despite a few recent rainfall events, Southern California remains in a drought condition and far below normal rainfall levels, with the region continuing to be at risk with respect to ensuring a reliable water supply for residents, business, agriculture, tourism and environmental purposes.³ The Project will provide a new source of potable water, although this water will replace imported water supplies. Strictly speaking, improving the reliability of local water supplies may be considered “growth-inducing” in that it may remove one “impediment” to growth. However, this is not considered a significant environmental impact for several reasons. First, given the fragile and unreliable nature of imported water, and growing pressure on already constrained freshwater and groundwater resources, the provision of ocean desalination is not anticipated to significantly “increase” regional water supplies (it may free up these scarce imported water supplies for use by other water agencies, or simply replace diminishing imported supplies available over time). Second, the District or other water suppliers (for the Regional Project) do not have land use approval authority, and as such any future “growth” would be subject to local land use agency review and approval and appropriate CEQA compliance (in fact, numerous local, state and federal agencies have either land use approval or discretionary permit approval authority over any future development). Finally, with the Phase I Project and the Regional Project, any potable water provided by the Project would not be expected to increase the water supply portfolio of a given water provider; rather, the Project would allow the District or other water providers to develop a balanced water supply portfolio that places less demand on scarce imported water, freshwater and groundwater resources.

Therefore, in consideration of the above, although the Project would provide a new source of potable water, the Project’s desalinated water supply would replace existing imported or other constrained water supplies and as such is not considered a significant growth-inducing impact.

6.4 ENERGY CONSERVATION

6.4.1 REGULATORY SETTING

This section has been prepared to address energy conservation in accordance with CEQA Guidelines Appendix F. The section includes a description of State and local environmental laws and policies that are relevant to the CEQA review process. Refer to Sections 4.2, Air Quality and 4.6, Greenhouse Gas Emissions for additional regulatory background and environmental analysis regarding the Project’s energy consumption.

Federal

Energy Policy Act of 2005

On August 8, 2005, President George W. Bush signed the National Energy Policy Act of 2005 (Public Law 109-58) into law. This comprehensive energy legislation contains several electricity-related provisions that aim to:

³ http://droughtmonitor.unl.edu/services/data/summary/html/usdm_summary_20180213.html (accessed February 21, 2018).



- Help ensure that consumers receive electricity over a dependable, modern infrastructure;
- Remove outdated obstacles to investment in electricity transmission lines;
- Make electric reliability standards mandatory instead of optional; and
- Give Federal officials the authority to site new power lines in Department of Energy-designated national corridors in certain limited circumstances.

The Renewable Fuel Standard (RFS) program was created under the Energy Policy Act of 2005, and established the first renewable fuel volume mandate in the United States. The program regulations were developed in collaboration with refiners, renewable fuel producers, and many other stakeholders. As required under Energy Policy Act, the original RFS program (RFS1) required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act (EISA; Public Law 110-140) was signed into law by President George W. Bush on December 19, 2007. The Act's goal is to achieve energy security in the United States by increasing renewable fuel production, improving energy efficiency and performance, protecting consumers, improving vehicle fuel economy, and promoting research on greenhouse gas capture and storage. Under the EISA, the RFS program (RFS2) was expanded in several key ways:

- EISA expanded the RFS program to include diesel, in addition to gasoline.
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022.
- EISA established new categories of renewable fuel, and set separate volume requirements for each one.
- EISA required EPA to apply lifecycle greenhouse gas performance threshold standards to ensure that each category of renewable fuel emits fewer greenhouse gases than the petroleum fuel it replaces.

RFS2 lays the foundation for achieving significant reductions of greenhouse gas emissions from the use of renewable fuels, for reducing imported petroleum, and encouraging the development and expansion of our nation's renewable fuels sector.

The EISA also includes a variety of new standards for lighting and for residential and commercial appliance equipment. The equipment includes residential refrigerators, freezers, refrigerator-freezers, metal halide lamps, and commercial walk-in coolers and freezers.

State of California

California Building Energy Efficiency Standards: 2013 Title 24, Part 6 (California Energy Code)

The Code California Energy Code (Title 24, Part 6) was created as part of the California Building Standards Code (Title 24 of the California Code of Regulations) by the California Building Standards Commission in 1978 to establish statewide building energy efficiency standards to reduce California's energy



consumption.⁴ These standards include provisions applicable to all buildings, residential and nonresidential, which describe requirements for documentation and certificates that the building meets the standards.⁵ These provisions include mandatory requirements for efficiency and design of the following types of systems, equipment, and appliances:

- Air conditioning systems
- Heat pumps
- Water chillers
- Gas- and oil-fired boilers
- Cooling equipment
- Water heaters and equipment
- Pool and spa heaters and equipment
- Gas-fired equipment including furnaces and stoves/ovens
- Windows and exterior doors
- Joints and other building structure openings (“envelope”)
- Insulation and cool roofs
- Lighting control devices

The standards include additional mandatory requirements for space conditioning (cooling and heating), water heating, and indoor and outdoor lighting systems and equipment in non-residential, high-rise residential, and hotel or motel buildings. Mandatory requirements for low-rise residential buildings cover indoor and outdoor lighting, fireplaces, space cooling and heating equipment (including ducts and fans), and insulation of the structure, foundation, and water piping. In addition to the mandatory requirements, the standards call for further energy efficiency that can be provided through a choice between performance and prescriptive compliance approaches. Separate sections apply to low-rise residential and to non-residential, high-rise residential, and hotel or motel buildings. In buildings designed for mixed use (e.g., commercial and residential), each section must meet the standards applicable to that type of occupancy.

The performance approach set forth under these standards provides for the calculation of an energy budget for each building and allows flexibility in building systems and features to meet the budget. The energy budget addresses space-conditioning (cooling and heating), lighting, and water heating. Compliance with the budget is determined by the use of a CEC-approved computer software energy model. The alternative prescriptive standards require demonstrating compliance with specific minimum efficiency for components of the building such as building envelope insulation R-values, fenestration (areas, U-factor and solar heat gain coefficients of windows and doors) and heating and cooling, water

⁴ California Building Standards Commission. History. Available at: http://www.bsc.ca.gov/abt_bsc/history.aspx (accessed 26 June 2015).

⁵ California Energy Commission. 2013 Building Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: <http://www.energy.ca.gov/2012publications/CEC-400-2012-004/CEC-400-2012-004-CMF-REV2.pdf> (accessed August 20, 2015).



heating and lighting system design requirements. These requirements vary depending on the building's location in the state's 16 climate zones.

California's Building Energy Efficiency Standards are updated on an approximately three-year cycle as technology and methods have evolved. As a result of new law under AB 970, passed in the fall of 2000 in response to the state's electricity crisis, an emergency update of the standards went into effect in June 2001. The CEC then initiated an immediate follow-on proceeding to consider and adopt updated standards that could not be completed during the emergency proceeding. The 2013 Standards went into effect July 1, 2014. The 2016 Standards went into effect on January 1, 2017, and continue to improve upon the current 2013 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings.

The 2013 Standards focus on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings, and include requirements that will enable both demand reductions during critical peak periods and future solar electric and thermal system installations.

California Green Building Standards

The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development. CALGreen standards require new residential and commercial buildings to comply with mandatory measures under five topical areas: planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt which encourage or require additional measures in the five green building topics. The most recent update to the CALGreen Code was adopted in 2016 and went into effect January 1, 2017.⁶

Appendix F to CEQA Guidelines

Public Resources Code § 21100(b)(3) and CEQA Guidelines § 15126.4 require EIRs to describe, where relevant, the wasteful, inefficient, and unnecessary consumption of energy caused by a project. In 1975, largely in response to the oil crisis of the 1970s, the California State Legislature adopted Assembly Bill 1575 (AB 1575), which created the California Energy Commission (CEC). The CEC's statutory mission is to forecast future energy needs, license thermal power plants of 50 megawatts or larger, develop energy technologies and renewable energy resources, plan for and direct state responses to energy emergencies, and—perhaps most importantly—promote energy efficiency through the adoption and enforcement of appliance and building energy efficiency standards. AB 1575 also amended Public Resources Code § 21100(b)(3) to require EIRs to consider the wasteful, inefficient, and unnecessary consumption of energy caused by a project. In addition, CEQA Guidelines § 15126.4 was adopted in 1998 which requires that an EIR describe feasible mitigation measures which would minimize the inefficient and unnecessary consumption of energy. Thereafter, the State Resources Agency created CEQA Guidelines Appendix F.

⁶ <http://www.bsc.ca.gov/Home/CALGreen.aspx> (accessed February 21, 2018).



Pursuant to Appendix F, an EIR must include a “discussion of the potential energy impacts of proposed projects,....”⁷ However, because lead agencies have not consistently included such analysis in their EIRs, California's Natural Resources Agency amended Appendix F to the CEQA Guidelines in 2009 “to ensure that lead agencies comply with the substantive directive in § 21100(b)(3).” CEQA Guidelines Appendix F lists environmental impacts and mitigation measures that an EIR **may** include. What is **required** is a “discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy (see Public Resources Code § 21100(b)(3)).” Potential impacts that **may** be discussed include:

- The project’s energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance, and/or removal. If appropriate, the energy intensiveness of materials may be discussed.
- The effects of the project on local and regional energy supplies and on requirements for additional capacity.
- The effects of the project on peak and base period demands for electricity and other forms of energy.
- The degree to which the project complies with existing energy standards.
- The effects of the project on energy resources.
- The project’s projected transportation energy use requirements and its overall use of efficient transportation alternatives.

State CEQA Guidelines Appendix F assists EIR preparers in determining whether a project will result in the inefficient, wasteful, and unnecessary consumption of energy. The discussion below analyzes the proposed Project’s effect on energy consumption impacts on energy resources.

6.4.2 ENVIRONMENTAL SETTING

Pursuant to Appendix F of the CEQA Guidelines, the environmental setting may include “existing energy supplies and energy use patterns in the region and locality.” Energy consumption is analyzed in this EIR due to the potential direct and indirect environmental impacts associated with the Project. Such impacts include the depletion of nonrenewable resources (e.g., oil, natural gas, coal, etc.) and emissions of pollutants during both Project construction and operations. Refer to Sections 4.2, Air Quality and 4.6, Greenhouse Gas Emissions for additional regulatory background and environmental setting regarding the Project’s energy consumption.

Existing Electricity and Natural Gas Supplies

Electricity

The Project site is located within San Diego Gas and Electric (SDG&E) electrical service area. SDG&E is a regulated public utility that provides energy service to 3.6 million people through 1.4 million electric meters in San Diego and southern Orange counties. Its service area spans 4,100 square miles.

⁷ http://resources.ca.gov/ceqa/guidelines/Appendix_F.html (accessed May 1, 2018).



Natural Gas

SoCalGas, the service provider for the Project site, services approximately 21 million people in a 20,000-square mile service territory. SoCalGas has four storage fields-Aliso Canyon, Honor Rancho, La Goleta, and Playa del Rey- and a combined storage capacity of 134.1 billion cubic feet. According to the California Energy Commission (CEC), natural gas demand in the SoCalGas service area was 7,431 million therms (or 743,100 million cubic feet [cf]) in 2010. The CEC prepared three scenarios for forecasting future growth in natural gas demand between 2012 and 2022: a high-energy demand case, a low-energy demand case, and a mid-energy demand case. The low-demand scenario, which incorporates relatively high economic/demographic growth, relatively low electricity and natural gas rates, and relatively low efficiency program and self-generation impacts, estimates that natural gas demand in the SoCalGas service area would be 7,951 million therms in 2022 (the latest year in the demand forecast).

Natural gas provides almost a third of California's total energy requirements and will continue to be a major fuel in California's energy supply. Only 13.5 percent of the natural gas California used came from in-state production in 2006; the rest was delivered by pipelines from several production areas in the western United States and western Canada. Once the gas arrives in California, it is distributed by the State's three major gas utilities that provide a collective of 98 percent of the State's natural gas.

Energy Usage

Energy usage is typically quantified using the British Thermal Unit (BTU). Total energy usage in California was 7,676 trillion BTU in 2015 (the most recent year for which this specific data is available), which equates to an average of approximately 201 million BTU per capita. Of California's total energy usage, the breakdown by sector is 11 percent transportation, 5.9 percent industrial, 8.1 percent commercial, and 6.6 percent residential. Electricity and natural gas in California are generally consumed by stationary users such as residences and commercial and industrial facilities, whereas petroleum consumption is generally accounted for by transportation-related energy use.⁸ In 2016, taxable gasoline sales (including aviation gasoline) in California accounted for 15,297,030,909 gallons of gasoline.⁹

The electricity consumption attributable to Orange County from 2008 to 2015 is shown in Table 6-1, Electricity Consumption in Orange County 2008-2015. As indicated in Table 6-1, energy consumption in Orange County remained relatively constant between 2008 and 2015, with no substantial increase.

6.4.3 SIGNIFICANCE THRESHOLDS AND CRITERIA

Significance Criteria under CEQA

In accordance with State CEQA Guidelines, the effects of a project are evaluated to determine whether they would result in a significant adverse impact on the environment. An EIR is required to focus on these effects and offer mitigation measures to reduce or avoid any significant impacts that are identified. The criteria used to determine the significance of impacts may vary depending on the nature of the project.

⁸ California State Profile and Energy Estimates, EIA (US Energy Information Administration), updated April 16, 2015, <http://www.eia.gov/state/data.cfm?sid=CA#ConsumptionExpenditures> (accessed August 1, 2017).

⁹ California Board of Equalization, Net Taxable Gasoline Sales, 2016, http://www.cdtfa.ca.gov/taxes-and-fees/MVF_10_Year_Report.pdf (accessed August 1, 2017).



Table 6-1: Electricity Consumption in Orange County 2008-2015

Year	Electricity Consumption (GWh)
2008	21,524
2009	20,646
2010	19,785
2011	19,874
2012	20,443
2013	20,224
2014	20,715
2015	20,887

Source: California Energy Commission, Electricity Consumption by County, <http://www.ecdms.energy.ca.gov/elecbycounty.aspx> (accessed August 1, 2017).

The natural gas consumption attributable to nonresidential land uses in Orange County from 2008 to 2015 is shown in Table 6-2, Non-Residential Land Use Natural Gas Consumption in Orange County 2008-2015. Similar to energy consumption, natural gas consumption in Orange County remained relatively constant between 2008 and 2015, with no substantial increase.

Table 6-2: Non-Residential Land Use Natural Gas Consumption in Orange County 2008-2015

Year	Natural Gas Consumption (in millions of therms)
2008	237
2009	225
2010	231
2011	231
2012	231
2013	238
2014	225
2015	227

Source: California Energy Commission, Electricity Consumption by County, <http://www.ecdms.energy.ca.gov/gasbycounty.aspx> accessed August 1, 2017).

Automotive fuel consumption in Orange County from 2007 to 2015 is shown in Table 6-3, Automotive Fuel Consumption in Orange County 2007-2016 (projections for the year 2016 are also shown). As shown in Table 6-3, automotive fuel consumption in Orange County has declined steadily, since 2007.

According to State CEQA Guidelines Appendix F, the proposed Project would have a significant impact related to energy, if it would:

- Include wasteful, inefficient and unnecessary consumption of energy during the project construction, operation, maintenance and/or removal that cannot be feasibly mitigated.



Table 6-3: Automotive Fuel Consumption in Orange County 2007-2016

Year	On-Road Automotive Fuel Consumption (Gallons)	Off-Road Automotive Fuel Consumption (Construction Equipment) (Gallons)
2007	1,403,083,084	139,055,699
2008	1,343,307,810	140,962,964
2009	1,335,436,262	130,526,813
2010	1,342,598,905	118,572,627
2011	1,329,546,336	121,946,393
2012	1,304,150,281	128,731,296
2013	1,288,610,110	132,391,898
2014	1,288,476,555	136,506,102
2015	1,278,664,155	140,126,848
2016	1,270,494,314	151,612,836

Source: California Air Resources Board, EMFAC2014.

The following impact analysis focuses on the three sources of energy that are relevant to the proposed Project: electricity; natural gas; and transportation fuel for vehicle trips associated with new development as well as the fuel necessary for Project construction. It is noted that the Project would not directly consume natural gas, as all the pumps and treatment equipment would be powered by electricity (as noted in [Sections 3 and 4.6](#), the District is considering use of natural-gas powered fuel cells, which would utilize but not “combust” natural gas, producing far less emissions than conventional natural gas powered electrical power plants).

Energy Consumption

Construction-Related Energy Consumption

Project construction would consume energy in two general forms: (1) the fuel energy consumed by construction vehicles and equipment; and (2) bound energy in construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass.

Fossil fuels used for construction vehicles and other energy-consuming equipment would be used during site clearing, grading, and construction. Fuel energy consumed during construction would be temporary and would not represent a significant demand on energy resources. In addition, the Project would be required to comply with Mitigation Measure AQ-1, which requires that all internal combustion engines/construction equipment operating on the Project site meet EPA-Certified Tier 4 emissions standards. The emission reduction measures required under Mitigation Measure AQ-1 would both effectively reduce construction vehicle fleet exhaust emissions and improve fuel consumption. Further, some incidental energy conservation would occur during construction through compliance with State requirements that equipment not in use for more than five minutes be turned off. Project construction equipment would also be required to comply with the latest EPA and CARB engine emissions standards. These emissions standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary fuel consumption. Due to increasing transportation costs and fuel prices, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction. There is growing recognition among developers and retailers that



sustainable construction is not prohibitively expensive, and that there is a significant cost-savings potential in green building practices and materials.

The Project-related incremental increase in the use of energy bound in construction materials such as asphalt, steel, concrete, pipes and manufactured or processed materials (e.g., lumber and gas) would not substantially increase demand for energy compared to overall local and regional demand for construction materials. It is reasonable to assume that production of building materials such as concrete, steel, etc., would employ all reasonable energy conservation practices in the interest in minimizing the cost of doing business.

As indicated in Table 6-4, Summary of Energy Consumption, the Phase 1 Project's and Regional Project's overall fuel consumption would be 590,640 gallons and 52,118 gallons respectively, which would increase fuel use in Orange County by 0.42 percent. As such, Project construction would have a nominal effect on the local and regional energy supplies. It is noted that construction fuel use is temporary and would cease upon completion of construction activities. There are no unusual Project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in the region or State. Therefore, construction fuel consumption would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature. As such, a less than significant impact would occur in this regard.

Operational -Related Energy Consumption

Transportation Energy Demand

Pursuant to the Federal Energy Policy and Conservation Act of 1975, the National Highway Traffic and Safety Administration (NTSA) is responsible for establishing additional vehicle standards and for revising existing standards. Compliance with Federal fuel economy standards is not determined for each individual vehicle model. Rather, compliance is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the United States. Table 6-4, Summary of Energy Consumption provides an estimate of the daily fuel consumed by vehicles traveling to and from the Project site. Project operations are estimated to consume approximately 7,053 gallons of fuel per year, which would increase Countywide automotive fuel consumption by less than 0.01 percent. Therefore, the proposed Project would not result in any unusual characteristics that would result in excessive operational fuel consumption. Fuel consumption associated with Project-related vehicle trips would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region.

The Project would be subject to compliance with all Federal, State, and local requirements for energy efficiency. As shown Table 6-4, Summary of Energy Consumption, the increase in electricity, natural gas, and automotive fuel consumption over existing conditions is minimal (less than 1 percent). For the reasons described above, the Project would not place a substantial demand on regional energy supply or require significant additional capacity, or significantly increase peak and base period electricity demand, or cause wasteful, inefficient, and unnecessary consumption of energy during Project construction, operation, and/or maintenance, or preempt future energy development or future energy conservation.



Table 6-4: Summary of Energy Consumption

Energy Type	Project Annual Energy Consumption	Orange County Annual Energy Consumption	Percentage Increase Countywide ⁶ (with GHG Mitigation)
Electricity Consumption (Phase 1 up to 5 MGD)	27,058 MWh ¹	20,887,000 MWh	0.13% (zero)
Electricity Consumption (up to 15 MGD Regional Project) ¹	81,000 MWh	20,887,000 MWh	0.39% (zero)
Natural Gas Consumption ²	N/A	N/A	N/A
Automotive Fuel Consumption ^{3, 4,5,6,7}			
Construction (Off-Road) (Phase 1 up to 5 MGD Project)	590,640 gallons	151,612,836 gallons	0.39%
Construction (Off-Road) (up to 15 MGD Regional Project)	52,118 gallons	151,612,836 gallons	0.03%
Project Operations	7,053 gallons	151,612,836 gallons	< 0.01%
Notes: 1. Power Supply Requirements, Alternative Power Supply Analysis, GHD, May 2017. 2. The Project would not consume natural gas as all the pumps and treatment equipment are electrical. 3. Construction fuel consumption is based on California Emissions Estimator Model (CalEEMod v. 2013.2.2) 4. Project operations would generate nominal average daily vehicle trips. 5. Countywide fuel consumption is from the California Air Resources Board EMFAC2014 model. 6. The Project increases in electricity and natural gas consumption are compared with the total consumption in Orange County in 2015. The Project increases in automotive fuel consumption are compared with the countywide fuel consumption in 2016. 7. Fuel used by vehicle hauling trips assumed to be diesel. Carbon Dioxide Equivalent Emissions: See Section 3.4; Conversion Ratios: Climate Registry 2015			

Electricity Demand

Electrical energy use was estimated for the desalination system and ancillary systems based on the descriptions, drawings and design criteria summarized in this report. Selecting different pumps, RO unit size, membranes, or energy recovery devices will change estimated energy use for the proposed Project.

The projection includes energy use for slant well intake water pumping, plant treatment systems, product water pumping and brine disposal during typical operations following startup. Ancillary loads have been included and account for small process equipment (e.g., chemical metering pumps, instruments, etc.), and non-process electrical loads (e.g., building and site lighting, computers, laboratory instruments, etc.). The projected average energy use is anticipated to be approximately 15.61 kilowatt hours (kWh) per 1,000 gallons of treated water during Phase 1 (5 MGD potable water production), as summarized in [Table 6-5, Projected Electrical Energy Use – Normal Operation \(5 MGD Potable Water Production Capacity\)](#).



**Table 6-5: Projected Electrical Energy Use – Normal Operation
(5 MGD Potable Water Production Capacity)**

Process / System Description	kWh/kgal	MWh/year	% of Total
Slant Well Pumping	0.93	1606.78	6
Pre-treatment (including backwashing, backwash water recycling), Solids Handling	0.77	1341.55	5
RO Transfer Pumps	0.85	1474.41	5
High Pressure RO Pumps and ERS Booster Pumps	9.15	15857.95	59
2nd Pass RO HP Pumps	0.74	1287.89	5
Post-treatment	0.23	400.34	1
Product Water Pumping	2.09	3628.04	12
Brine Disposal via Ocean Outfall Pumping	0.22	387.87	1
Ancillary	0.62	1074.03	4
Total Estimated Energy Use	15.61	27058.86	100

Source: Preliminary Design Report (Appendix 10.1)

It is envisioned that the proposed Project may be developed in Phases over time. Table 6-6, Power Requirements at Various Project Sizes, provides the power supply requirements for various phases of the proposed Project.

Table 6-6: Power Requirements at Various Project Sizes

Desal Plant Capacity	Total Connect Load (kw)	Operating Load (kw)	Estimated Annual Power Consumption (MWh/year)
Up to 5 MGD	5,500	3,900	27,059
Up to 15 MGD	12,900	11,000	82,600

Source: Preliminary Design Report (Appendix 10.1)

Preliminary design work for the proposed Project has shown that there may be approximately 15,000 square feet of footprint available within the Doheny Desalination Facility boundaries for a variety of alternative power supply equipment, as identified in Table 6-7, Onsite Power Generation Technology Options.

Table 6-7: Onsite Power Generation Technology Options

Technology	15,000 ft ² On-Site Available Footprint Constraints	Pros/Cons
Internal Combustion Engine	No constraints up to ~15 MGD	Pros: Mature Technology, Inexpensive/abundant Fuel Supply
		Cons: Emissions control requires additional Capital Expenditure (CapEx)
Natural Gas Turbine	No constraints up to ~15 MGD	Pros: Mature Technology, Inexpensive/abundant Fuel Supply
		Cons: Lower overall efficiency than IC Engines



Table 6-7: Onsite Power Generation Technology Options

Technology	15,000 ft ² On-Site Available Footprint Constraints	Pros/Cons
Natural Gas Fuel Cell	Possible constraints at ~15 MGD	Pros: Lower GHG emissions than combustion technology, Inexpensive/abundant Fuel Supply Cons: Newer Technology
Solar Photovoltaic	Severely Constrained	Pros: Technology continues to advance Cons: Off-site generation decreases overall system reliability compared to on-site generation
Wind	Severely Constrained	Pros: Mature Technology Cons: A suitable off-site location may be difficult to find; lacks reliability
Waste-to-Energy	High variable, but likely constrained even at 5 MGD	Pros: Environmentally Friendly Cons: Securing a reliable long term supply of fuel may be problematic

While some alternative power supply technologies could be implemented within this footprint, others require considerably more space. Therefore, the options for off-site power generation were evaluated, and it was determined that there are two viable options based on regulatory and market constraints, as identified in [Table 6-8, Off-site Power Supply Options](#).

Table 6-8: Off-site Power Supply Options

Off-site Power Supply Option	Description	Near Term Viability for Project
Schedule RES-BCT	Schedule RES-BCT enables local government customers like the District to lower their electricity bills by crediting one account with excess electricity generated from another account. As an example, excess electricity generated from a District solar project could be transferred to offset the energy charge portion of the Desalination Project.	Potentially Viable for less than 5 MW
SB 1755 Wheeling Exemption	Based on California SB 1755, the District <i>may</i> not be constrained by the normal prohibition against wheeling power to itself using utility transmission and distribution lines. One of the purposes enumerated by SB 1755 is “desalinization operations.”	Potentially Yes

Source: Alternative Power Supply Analysis, GHD May 2017

SCWD is currently evaluating all options to provide electricity to the Project site, and the ultimate means by which the proposed Project is powered is undetermined. As indicated in [Table 6-4](#), operational energy consumption for a 5 MGD facility would represent an approximate 0.13 percent increase in electricity consumption over the current Countywide usage based on 2015 energy consumption levels. The Project’s electrical energy demand is estimated at approximately 27 MW during the 5 MGD operations and 81 MW during full buildout of the Project. The reverse osmosis process would represent the largest proportion of



operational energy consumption, due to the high pressures required to separate salts from seawater. Other Project operations with electrical energy demands would include uses typical of public facility/office building energy demands, including those required for indoor and outdoor lighting, climate control, and other daily activities necessary for ocean water desalination facility operations.

SCWD has also incorporated several Project Design Features (PDFs) to minimize the Project's building, electrical, and process energy treatment energy demands. In addition, the Project would be required to comply with Mitigation Measures GHG-1 and GHG-2 which would reduce operational energy consumption through a GHG Emissions Reduction Plan, as well as utilizing renewable energy and energy-saving equipment. Refer to Section 4.6, Greenhouse Gas Emissions.

The electricity provider to the Project, SDG&E, is subject to California's Renewables Portfolio Standard (RPS). The RPS requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020 and to 50 percent of total procurement by 2030. Renewable energy is generally defined as energy that comes from resources, which are naturally replenished within a human timescale such as sunlight, wind, tides, waves, and geothermal heat. The increase in reliance of such energy resources further ensures projects will not result in the waste of the finite energy resources. As noted in Section 3.0, Project Description, SCWD is committed to pursuing reasonable and feasible energy minimization and efficiency as part of the Project, including use of energy recovery devices (for the first pass RO Process); as well as consideration of different energy options as well.

As indicated in Table 6-4, Summary of Energy Consumption, operational energy consumption would represent an approximate 0.13 (5 MGD capacity) or 0.39 (full buildout) percent increase in electricity consumption over the current Countywide usage. These are unmitigated factors as noted above, as GHG measures would further reduce operational related electricity consumption and these electricity providers are required to further reduce emissions from power generation pursuant to SB350 and other state and federal regulations. The proposed Project would not require natural gas and the proposed water treatment equipment would incorporate the most energy efficient technology available. Therefore, the proposed Project would not result in the inefficient, wasteful, or unnecessary consumption of building energy. Additionally, the Project would not result in a substantial increase in demand or transmission service, resulting in the need for new or expanded sources of energy supply or new or expanded energy delivery systems or infrastructure.

Natural Gas Demand

It is noted that the Project would not directly consume natural gas, as all the pumps and treatment equipment would be powered by electricity. Therefore, no natural gas would be used during Project operations. Should the District elect to pursue one of the alternative on-site power supply options such as fuel cells or natural-gas driven engines, this would be evaluated under separate CEQA documents and is not anticipated to represent a substantial increase in regional natural gas consumption.

6.4.4 CONCLUSION

The Project consists of an ocean water desalination facility, and does not include any growth-inducing land uses that would substantially increase energy consumption (when considering Project Design Features and mitigation measures that reduce electricity-related emissions to less than significant levels).



Rather, the Project would reduce SCWD's dependency on imported water by integrating desalinated ocean water with the local water supply portfolio.

The Project would be subject to compliance with all Federal, State, and local requirements for energy efficiency. As shown in Table 6-4, Summary of Energy Consumption, the increase in electricity, natural gas, and automotive fuel consumption over existing conditions is minimal (less than 1 percent). For the reasons described above, the Project would not place a substantial demand on regional energy supply or require significant additional capacity, or significantly increase peak and base period electricity demand, or cause wasteful, inefficient, and unnecessary consumption of energy during Project construction, operation, and/or maintenance, or preempt future energy development or future energy conservation.



7.0 Effects Found Not to Be Significant

The South Coast Water District prepared a Notice of Preparation (NOP), which was distributed on March 11, 2016 to various responsible agencies, trustee agencies, and interested parties, and was released to the public via the District's website. An Amended NOP was distributed on November 16, 2017. During the course of preparing the NOPs and this EIR, it was determined that the Project would result in "no impact" or a "less than significant impact" for various issue areas, due to the absence of Project characteristics producing effects of this type. The effects determined not to be significant are not required to be included in the detailed Draft EIR analysis sections. In accordance with CEQA Guidelines § 15128, the following statements briefly indicate the reasons that the Project's possible significant effects concerning these issue areas were determined not to be significant, and are therefore not discussed in detail in this EIR. The NOP and Amended NOP are provided in Appendix 10.2, Notice of Preparation and Scoping Meetings.

AGRICULTURE AND FORESTRY RESOURCES

Would the Project:

7.1.1 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?

According to the Orange County Important Farmland 2014 map from the California Department of Conservation, none of the Project facilities are located on important farmlands¹. Project facilities (onshore) would primarily be located on existing urban land, within public roads, or within active areas of public parks. No impact would occur.

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

Refer to Response 7.1.1, above. No Project facilities are on lands zoned for agricultural, and no Project facilities would require cancellations of a Williamson Act contract. No impacts would occur.

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

Refer to Response 7.1.1, above. No portions of the Project site are located in areas zoned or utilized for forest lands. No impact would occur in this regard.

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

Refer to Response 7.1.3, above. No impact would occur in this regard.

7.1.5 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?

¹ <http://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2014/ora14.pdf> (accessed February 12, 2018).



Refer to Responses 7.1.1 through 7.1.4, above. There is no Farmland or forest land on or near the proposed Project facilities, as the Project is located in a highly-urbanized setting. Project implementation would not involve 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 would occur in this regard.

MINERAL RESOURCES

Would the Project:

7.2.1 *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?*

No mineral resources have been identified within the City of Dana Point.² Potential sand and gravel resources exist within San Juan Creek, primarily north of the City limits. In addition, Project development would not directly impact San Juan Creek and as such no effect would occur to potential mineral resources within San Juan Creek. No impact would occur.

7.2.2 *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?*

Refer to Threshold 7.2.1, above. The proposed Project's construction and operation would not be located on a locally-important mineral resource recovery site and no such sites are delineated on a local general plan, specific plan or other land use plan. No impact would occur in this regard.

POPULATION AND HOUSING

Would the Project:

7.3.1 *Displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere?*

No existing residential land uses are present on any of the lands proposed for construction and operation of the proposed facilities. Therefore, Project construction or operation would not displace existing people or housing, or necessitate the construction of replacement housing. No impact would occur in this regard.

² Dana Point General Plan Conservation and Open Space Element, page 24 (<http://www.danapoint.org/home/showdocument?id=205>, accessed February 12, 2018).



8.0 EIR Consultation and Preparation

This section is consistent with the requirements set forth in § 15129 of the State CEQA Guidelines.

8.1 EIR CONSULTATION

Refer to Section 2.4, Notice of Preparation/Early Consultation for a summary of public notification and stakeholder consultation. The Expanded NOP and NOP comment letters are provided in Appendix 10.2.1, Amended Notice of Preparation & Public Scoping Meeting Notice, and Appendix 10.2.2, Notice of Preparation & Public Scoping Meeting Notice.

As identified in Appendix 10, SCWD provided multiple opportunities for public input, both as part of the CEQA process and as part of project scoping. In addition to required public notifications under CEQA, SCWD has implemented an extensive, comprehensive and ongoing outreach to the general public and Project stakeholders, as summarized below:

- **CEQA Public Scoping** – SCWD has exceeded the CEQA minimum requirement of one public scoping meeting as noted above, with one formal public scoping meeting for the NOP and Amended NOP, as well as separate agency and environmental group scoping meetings for the NOP and an additional separate agency scoping meeting for the Amended NOP.
- **Regulatory Agency Consultation** – SCWD has been consulting with various regulatory agencies on its ocean desalination program since early 2000 when the test slant well was permitted and constructed; refer to Section 3.3. Following the release of the NOP, SCWD has consulted (mainly through briefings and conference calls) with regulatory permitting agencies regarding the proposed Project. In addition to formal scoping through the NOP, Amended NOP and OPC Interagency briefing, SCWD has reached out to individual regulatory agencies as part of the EIR process and to initiate regulatory permitting pre-application dialogue. A partial summary of regulatory agency consultation includes the following:
 - o **Ocean Protection Council (OPC) Interagency Desalination Briefing** in May 2016. SCWD provided a Project briefing at an OPC-facilitated briefing to state and federal agencies, held at the OPC offices in Sacramento, CA. A copy of the OPC briefing and agency sign-in sheet is included in Appendix 10.2.3, OPC Briefing. This interagency briefing was well-attended, and provided valuable input to the EIR and Project design development. Following the initial OPC briefing, SCWD released an Amended NOP, and invited OPC to convene a second interagency briefing, which was determined to be unnecessary, as the fundamental Project features and environmental benefits had not changed.
 - o **Agencies Participating in Consultation** through the NOP, Amended NOP and/or the OPC Interagency briefing included:
 - U.S. Army Corps of Engineers
 - U.S. Fish and Wildlife Service
 - NOAA National Marine Fisheries Service
 - State Water Resources Control Board
 - San Diego Regional Water Quality Control Board



- SWRCB Drinking Water Program
 - California Coastal Commission
 - California State Lands Commission
 - California State Parks
 - California Public Utilities Commission
 - California Department of Fish and Wildlife
 - City of Dana Point
 - County of Orange
 - Orange County Transportation Authority
 - South Orange County Wastewater Authority
 - Santa Margarita Water District
 - San Juan Basin Authority
 - Metrolink
 - Caltrans
 - South Coast Air Quality Management District
- **Stakeholder Consultation** – in addition to regulatory agency consultation, SCWD has been in ongoing communication with MWDOC, [MWDOC member agencies](#), MWD, and other local interest groups. This has included opportunities for public participation at numerous SCWD Board of Directors meetings where the Project was addressed, in addition to SCWD forming a local resident stakeholder-driven Water Reliability Working Group to evaluate water supply alternatives (discussed in [Sections 3.0 and 5.0](#) of this EIR).
- **Public Notification** –SCWD provided extensive public notifications for the NOP and Amended NOP as shown in [Appendix 10.2, Notice of Preparation and Scoping Meetings](#).
- **SRF Loan “CEQA Plus” Consultation** - This EIR and the associated agency consultation process have been prepared to satisfy the “CEQA Plus” requirements for the State Revolving Fund (SRF) program for low interest loans to public agencies. To receive State Revolving Funds, a project applicant must demonstrate compliance with several federal “cross-cutting” regulations,¹ including the Endangered Species Act (ESA), National Historic Preservation Act (NHPA), and the General Conformity Rule for the Clean Air Act (CAA). The consultation process summarized above has included consultation with federal agencies having jurisdiction with respect to the ESA (U.S. Fish and Wildlife Service and NOAA National Marine Fisheries Service), the NHPA (State Historic Preservation Officer), and the CAA (California Air Resources Board and the South Coast Air Quality Management District). As part of the Project’s federal permitting process with the U.S. Army Corps of Engineers (Corps), the Corps will require compliance with these federal regulations prior to issuance of applicable federal permits or approvals.

¹ Numerous federal laws and Executive Orders may apply to projects funded under the CWSRF which are referred to as the Federal cross-cutting authorities. The State Water Board uses the applicant’s CEQA document in conjunction with the federal cross-cutting documentation (e.g., air quality analysis report, biological assessment, Section 106 cultural resources report, wetland delineation, etc.) to ensure compliance with the federal cross-cutters.



8.2 EIR PREPARATION

The following persons contributed to the preparation of this EIR. This section is consistent with the requirements set forth in § 15129 of the State CEQA Guidelines.

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