ES EXECUTIVE SUMMARY

ES.1 INTRODUCTION

This Environmental Impact Report/Environmental Impact Statement (EIR/EIS) evaluates the potential short-term and long-term, direct and indirect, cumulative, and combined environmental impacts of the North City Project, the first phase of the Pure Water San Diego Program (Pure Water Program). The North City Project is initiated by the City of San Diego (City) Public Utilities Department and involves the production of 30 million gallons per day (MGD) of purified water. The North City Project will expand the existing North City Water Reclamation Plant (NCWRP) and construct an adjacent North City Pure Water Facility. Two alternative purified water pipelines are considered: one to Miramar Reservoir and one to San Vicente Reservoir. Other project components include a new pump station and forcemain to deliver additional wastewater to the NCWRP; a brine/centrate discharge pipeline; upgrades to the existing Metro Biosolids Center; a new North City Renewable Energy Facility at the NCWRP; and a new Landfill Gas (LFG) Pipeline between the Miramar Landfill gas collection system and the NCWRP.

The North City Project includes a variety of facilities located throughout the central coastal areas of San Diego County in the North City geographic area. The location of the North City Project is depicted in Figure 1-1, Regional Map, and Figure 1-2, Vicinity Map. A new pure water facility and three pump stations would be located within the corporate boundaries of the City of San Diego (City). Proposed alternative pipelines would traverse a number of local jurisdictions, including the cities of San Diego and Santee, and the community of Lakeside and other areas in unincorporated San Diego County. The proposed LFG Pipeline would traverse federal lands within Marine Corps Air Station (MCAS) Miramar.

The City of San Diego and the U.S. Bureau of Reclamation (Reclamation) are joint lead agencies in preparing this EIR/EIS in accordance with the California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.) and CEQA Guidelines (14 CCR 15000 et seq.), and the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.). Federal assistance is authorized by the Reclamation Wastewater and Groundwater Study and Facilities Act of 1992 (Title XVI of Public Law 102–575). Section 1612, San Diego Area Water Reclamation Program, directs the Secretary of the Interior, in cooperation with the City of San Diego, to participate in planning, designing, and constructing demonstration and permanent facilities to reclaim and re-use water in the San Diego metropolitan service area. This authority is delegated to Reclamation.

ES.2 BACKGROUND

On average, 85% of City's water supply is imported from the Colorado River and Northern California. This reliance on imported water causes San Diego to be vulnerable to supply shortages and price increases. With few local water supply options, the City has explored potable and non-potable reuse options of treated wastewater. On April 29, 2014, the City Council adopted a resolution (R-308906) supporting the Pure Water Program. The Pure Water Program will ultimately produce 83 MGD of locally controlled water and will be implemented in phases over a 20-year period, grouped by geographical area: North City, Central Area, and South Bay.

The North City Project will produce 30 MGD of purified water and is scheduled to be operational in 2021. The Central Area project and/or South Bay projects are scheduled to be completed by December 31, 2035, and will produce a combined total up to 53 MGD. A Final Program EIR for the Pure Water Program was certified by the City on October 25, 2016.

ES.3 PROJECT ALTERNATIVES

The North City Project EIR/EIS evaluates three alternatives including the No Project/No Action Alternative and two North City Project Alternatives: the Miramar Reservoir Alternative ~~(Locally Preferred Alternative)~~ and the San Vicente Reservoir Alternative. The Miramar Reservoir Alternative is the Locally Preferred Alternative as determined by the City; this alternative is also the Preferred Alternative for the purposes of NEPA, as determined by Reclamation. Under the No Project/No Action Alternative, the North City Project would not be implemented. The proposed North City Pure Water Facility (NCPWF) and associated improvements at other treatment, pumping, and conveyance facilities would not be constructed.

The North City Project Alternatives (Project Alternatives) would use advanced water purification technology to produce purified water from recycled water and provide a safe, reliable, and cost-effective drinking water supply for San Diego. The Project Alternatives consist of the design and construction of a new NCPWF, upgrades to an existing water reclamation facility, and design and construction of new pump stations and pipelines. The Project Alternatives would construct the NCPWF east of I-805 and north of Eastgate Mall, across from the existing NCWRP. Upgrades would occur at the existing NCWRP in order to provide sufficient tertiary influent for the

NCPWF as well as to connect the existing centrate line with the proposed brine line. Pump station and pipeline facilities would convey different types of flows to and from the treatment facilities for: (1) diverting wastewater flows to NCWRP, (2) conveying recycled water to the NCPWF, (3) conveying purified water from the NCPWF to a reservoir, and (4) transporting waste flows (brine, centrate and sludge) from treatment processes to solids handling facilities or back into the Metropolitan Sewerage System (Metro System). Upgrades would also occur at the Metro Biosolids Center to handle the additional sludge produced by the NCWRP expansion and NCPWF. A new North City Renewable Energy Facility would be constructed at the NCWRP, which would receive landfill gas from the City's Miramar Landfill gas collection system via a new LFG pipeline.

From the NCPWF, purified water would be piped to the Miramar Reservoir or San Vicente Reservoir, where it would blend with reservoir water. The water would then receive further treatment at a potable water treatment plant before being distributed as potable water.

The Miramar Reservoir Alternative would construct the NCPWF and would convey purified water to Miramar Reservoir. The Miramar Reservoir Alternative would include improvements at the Miramar Water Treatment Plant (Miramar WTP). The San Vicente Reservoir Alternative would also construct the proposed NCPWF, but would include fewer treatment processes at the facility and would pipe purified water to the San Vicente Reservoir rather than the Miramar Reservoir. The San Vicente Reservoir Alternative would also include an additional pump station, the Mission Trails Booster Station (MTBS), along the San Vicente Pure Water Pipeline (San Vicente Pipeline).

ES.4 IMPACTS DETERMINED TO BE SIGNIFICANT

Table ES-1 provides a summary of significant impacts of the North City Project. Impacts associated with land use (San Vicente Reservoir Only), air quality (Miramar Reservoir Only), biological resources, health and safety/hazards, historical resources, paleontological resources, and public utilities were identified as being potentially significant, but less than significant with mitigation. Impacts associated with air quality (San Vicente Reservoir Alternative only); aesthetics (San Vicente Reservoir Alternative Only); noise (both Project Alternatives); and transportation, circulation, and parking (both Project Alternatives) were identified as being significant and unavoidable.

Table ES-1
Summary of Significant Environmental Impacts

Issue Area	Miramar Reservoir Alternative			San Vicente Reservoir Alternative		
	Impact	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Land Use						
Would the North City Project conflict with adopted environmental plans for the area including an adopted local habitat conservation plan?	No impact.	No mitigation required.	Not applicable.	Impacts to land within MHPA would conflict with an adopted local habitat conservation plans or policies protecting biological resources.	Mitigation measures **MM-BIO-1a** and **MM-BIO-1c**, as described in Section 6.4, Biological Resources.	Below a Level of Significance
Aesthetics						
Would the North City Project result in a substantial change to natural topography or other ground surface relief features through landform alteration?	No impact.	No mitigation required.	Not applicable.	Construction activities associated with the MTBS would result in a substantial change to the natural topography of the proposed site.	No mitigation measures available.	Significant and Unavoidable.

Table ES-1
Summary of Significant Environmental Impacts

Issue Area	Miramar Reservoir Alternative			San Vicente Reservoir Alternative		
	Impact	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Air Quality and Odor						
Would the North City Project result in a violation of any air quality standard or contribute substantially to an existing or projected air quality violation? Would the proposed project exceed 100 pounds per day of respirable particulate matter (PM_{10}) or 55 pounds per day of fine particulate matter ($PM_{2.5}$)?	Daily construction emissions would result in exceedance of the NOx threshold.	Mitigation measures **MM-AQ-1** and **MM-AQ-2** as described in Section 6.3, Air Quality and Odor.	Below a Level of Significance	Daily construction emissions would result in exceedance of the NOx threshold.	Mitigation measures **MM-AQ-1** and **MM-AQ-2** as described in Section 6.3, Air Quality and Odor.	Significant and Unavoidable
Would the North City Project create objectionable odors affecting a substantial number of people?	Operation of the NCWRP and pump stations could result in potential nuisance odors.	Mitigation measure **MM-AQ-3** as described in Section 6.3, Air Quality and Odor.	Below a Level of Significance	Operation of the NCWRP and pump stations could result in potential nuisance odors.	Mitigation measure **MM-AQ-3** as described in Section 6.3, Air Quality and Odor.	Below a Level of Significance

Table ES-1
Summary of Significant Environmental Impacts

	Miramar Reservoir Alternative			**San Vicente Reservoir Alternative**		
Issue Area	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Biological Resources						
Would the North City Project result in impacts to a sensitive habitat or sensitive natural community as identified in local, regional, state or federal plans, policies, or regulations?	The Miramar Reservoir Alternative would result in 18.40 acres of impacts to sensitive vegetation, 12.54 acres of which are permanent impacts while the remaining are temporary.	Mitigation measures **MM-BIO-1a, MM-BIO-1b, MM-BIO-2**, and **MM-BIO-9~~10~~,** as described in Section 6.4, Biological Resources.	Below a Level of Significance	The San Vicente Reservoir Alternative would result in 24.57 acres of impacts to sensitive vegetation, 12.79 acres of which are permanent impacts while the remaining are temporary.	Mitigation measures **MM-BIO-1a**, **MM-BIO-1b, MM-BIO-1c, MM-BIO-2**, and **MM-BIO-9~~10~~**, as described in Section 6.4, Biological Resources.	Below a Level of Significance

Table ES-1
Summary of Significant Environmental Impacts

Issue Area	Miramar Reservoir Alternative			San Vicente Reservoir Alternative		
	Impact	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Would the North City Project result in an impact on City, State, or federally regulated wetlands through direct removal, filling, hydrological interruption or other means?	The Miramar Reservoir Alternative would impact 0.38 acre of City regulated wetlands and 0.03 acre of state and federally regulated jurisdictional resources.	Mitigation measures **MM-BIO-1b**, **MM-BIO-2**, **MM-BIO-8~~9~~**, and **MM-BIO-9~~10~~,** as described in Section 6.4, Biological Resources.	Below a Level of Significance	The San Vicente Reservoir Alternative would impact 3.02 acres of City, State, or Federally regulated wetlands.	Mitigation measures **MM-BIO-1b**, **MM-BIO-1c**, **MM-BIO-2**, **MM-BIO-7~~8~~**, **MM-BIO-8~~9~~**, and **MM-BIO-9~~10~~,** as described in Section 6.4, Biological Resources.	Below a Level of Significance

Table ES-1
Summary of Significant Environmental Impacts

Issue Area	Miramar Reservoir Alternative			San Vicente Reservoir Alternative		
	Impact	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Would implementation of the North City Project result in a reduction in the number of any unique, rare, endangered, sensitive, or fully protected species of plants or animals?	The Miramar Reservoir Alternative would result in direct and indirect impacts to sensitive plant and wildlife species.	Mitigation measures **MM-BIO-1a, MM-BIO-1b, MM-BIO-2** through **MM-BIO-6~~7~~**, and **MM-BIO-9~~10~~,** as described in Section 6.4, Biological Resources.	Below a Level of Significance	The San Vicente Reservoir Alternative would result in direct and indirect impacts to sensitive plant and wildlife species.	Mitigation measures **MM-BIO-1a, MM-BIO-1b, MM-BIO-1c, MM-BIO-2** through **MM-BIO-6**, **MM-BIO-7~~8~~,** and **MM-BIO-9~~10~~**, as described in Section 6.4, Biological Resources.	Below a Level of Significance
Would the North City Project conflict with provisions of adopted local habitat conservation plans or policies protecting biological resources?	No impact.	Not applicable.	Not applicable.	The San Vicente Reservoir Alternative would impact 18.62 acres of land within MHPA.	Mitigation measures **MM-BIO-1a** and **MM-BIO-1c**, as described in Section 6.4, Biological Resources.	Below a Level of Significance

Table ES-1
Summary of Significant Environmental Impacts

	Miramar Reservoir Alternative			San Vicente Reservoir Alternative		
Issue Area	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Would the North City Project introduce land uses within or adjacent to the MHPA that would result in adverse edge effects?	The Miramar Reservoir Alternative would be located adjacent to MHPA and could result in adverse edge effects.	Mitigation measures **MM-BIO-2** and **MM-BIO-9~~10~~(j)**, as described in Section 6.4, Biological Resources.	Below a Level of Significance	The San Vicente Reservoir Alternative would be located adjacent to MHPA and could result in adverse edge effects.	Mitigation measures **MM-BIO-2** and **MM-BIO-9~~10~~(j)**, as described in Section 6.4, Biological Resources.	Below a Level of Significance
Would the North City Project introduce invasive species into natural open space areas?	The Miramar Reservoir Alternative could introduce invasive species to natural open space areas.	Mitigation measure **MM-BIO-2**, as described in Section 6.4, Biological Resources.	Below a Level of Significance	The San Vicente Reservoir Alternative could introduce invasive species to natural open space areas.	Mitigation measure **MM-BIO-2**, as described in Section 6.4, Biological Resources.	Below a Level of Significance

Table ES-1
Summary of Significant Environmental Impacts

Issue Area	Miramar Reservoir Alternative			San Vicente Reservoir Alternative		
	Impact	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Health and Safety/Hazards						
Would the North City Project expose people or property to health hazards, including fire?	Engine-powered equipment and vehicles could increase wildfire hazards by introducing new ignition sources to areas adjacent to or within currently undeveloped areas	Mitigation measure **MM-HAZ-1**, as described in Section 6.9, Health and Safety/Hazards.	Below a Level of Significance	Engine-powered equipment and vehicles could increase wildfire hazards by introducing new ignition sources to areas adjacent to or within currently undeveloped areas.	Mitigation measure **MM-HAZ-1**, as described in Section 6.9, Health and Safety/Hazards.	Below a Level of Significance

Table ES-1
Summary of Significant Environmental Impacts

Issue Area	Miramar Reservoir Alternative			San Vicente Reservoir Alternative		
	Impact	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Would the North City Project create future risk of an explosion or the release of a hazardous substance (including, but not limited to gas, oil, pesticides, chemicals, or radiation)? Would the North City Project expose people or the environment to a significant hazard through the routine transport, use, or disposal of hazardous materials?	Potential impacts related to accidental spills during operation and maintenance activities.	Mitigation measures **MM-HAZ-2** and **MM-HAZ-3**, as described in Section 6.9, Health and Safety/ Hazards.	Below a Level of Significance	Potential impacts related to accidental spills during operation and maintenance activities.	Mitigation measures **MM-HAZ-2** and **MM-HAZ-3**, as described in Section 6.9, Health and Safety/ Hazards.	Below a Level of Significance

Table ES-1
Summary of Significant Environmental Impacts

Issue Area	Miramar Reservoir Alternative			San Vicente Reservoir Alternative		
	Impact	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Would any component of the North City Project interface or intersect with a site that is included on a hazardous material sites list compiled pursuant to Government Code Section 6596.25 and, as a result, pose a potential hazard to the public or environment?	Potential to encounter contaminated soil or groundwater, underground storage tanks (USTs), or military munitions along pipeline corridors.	Mitigation measures **MM-HAZ-4** and **MM-HAZ-5**, as described in Section 6.9, Health and Safety/ Hazards.	Below a Level of Significance	Potential to encounter contaminated soil or groundwater, USTs, and military munitions along pipeline corridors.	Mitigation measures **MM-HAZ-4** and **MM-HAZ-5**, as described in Section 6.9, Health and Safety/ Hazards.	Below a Level of Significance

Table ES-1
Summary of Significant Environmental Impacts

Issue Area	Miramar Reservoir Alternative			San Vicente Reservoir Alternative		
	Impact	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Historical Resources						
Would the North City Project result in the alteration or destruction of a prehistoric or historic archaeological site, or any adverse physical or aesthetic effects to a prehistoric or historic building, structure, object, or site?	Potential impacts to known archaeological resources inventoried within the project boundary (HR 450) and unknown archaeological resources and/or grave sites.	Mitigation measures **MM-HIS-1, MM-HIS-2, MM-HIS-3,** and **MM-HIS-4,** as described in Section 6.10, Historical Resources.	Below a Level of Significance	Potential impacts to known archaeological resources inventoried within the project boundary (P-37-013630 and P-37-036497) and unknown archaeological resources and/or grave sites.	Mitigation measures **MM-HIS-2** and **MM-HIS-3**, as described in Section 6.10, Historical Resources.	Below a Level of Significance

Table ES-1
Summary of Significant Environmental Impacts

Issue Area	**Miramar Reservoir Alternative**			**San Vicente Reservoir Alternative**		
	Impact	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Would the North City Project result in any impact to existing religious or sacred uses or result in the disturbance of any human remains within the potential impact area?	Potential impacts on known tribal cultural resources associated with religious or sacred uses or human remains may occur as a result of construction.	Mitigation measure **MM-HIS-3**, as described in Section 6.10, Historical Resources.	Below a Level of Significance	Potential impacts on known tribal cultural resources associated with religious or sacred uses or human remains may occur as a result of construction.	Mitigation measure **MM-HIS-3**, as described in Section 6.10, Historical Resources.	Below a Level of Significance

Table ES-1
Summary of Significant Environmental Impacts

Issue Area	Miramar Reservoir Alternative			San Vicente Reservoir Alternative		
	Impact	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Noise						
Would the North City Project result in or create a significant increase in the existing ambient noise level? Would construction noise associated with implementation for any component of the North City Project exceed the City's adopted noise ordinance or noise levels as established in the General Plan?	Construction noise impacts for the North City Pipeline and Morena Pipelines would be potentially significant. Impacts related to the operation of the pump stations and the North City Renewable Energy Facility would be potentially significant.	Mitigation measures **MM-NOI-1** through **MM-NOI-4**, as described in Section 6.12, Noise.	Significant and Unavoidable (Construction); Below a Level of Significance (Operation)	Construction noise and vibration impacts for the MTBS would be potentially significant. Construction noise impacts for the San Vicente Pipeline and Morena Pipelines would be potentially significant. Impacts related to the operation of the pump stations and the North City Renewable Energy Facility would be potentially significant.	Mitigation measures **MM-NOI-1** through **MM-NOI-4**, as described in Section 6.12, Noise.	Significant and Unavoidable (Construction); Below a Level of Significance (Operation)

Table ES-1
Summary of Significant Environmental Impacts

Issue Area	Miramar Reservoir Alternative			San Vicente Reservoir Alternative		
	Impact	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Paleontological Resources						
Would the North City Project result in the loss of significant paleontological resources?	Construction activities associated with specific project components have the potential to impact undisturbed, native sedimentary deposits during earthwork and could result in disturbance or destruction of paleontological resources.	Mitigation measure **MM-PALEO-1** as described in Section 6.13, Paleontologica l Resources.	Below a Level of Significance	Construction activities associated with specific project components have the potential to impact undisturbed, native sedimentary deposits during earthwork and could result in disturbance or destruction of paleontological resources.	Mitigation measure **MM-PALEO-1** as described in Section 6.13, Paleontologica l Resources.	Below a Level of Significance.

Table ES-1
Summary of Significant Environmental Impacts

Issue Area	Miramar Reservoir Alternative			San Vicente Reservoir Alternative		
	Impact	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Public Utilities						
Would the North City Project result in new systems or require substantial alterations to existing utilities including solid waste management, the construction of which would create a physical effect on the environment? These systems include communications systems, storm water drainage and solid waste disposal.	Impacts related to conflicts with existing utilities may be potentially significant.	Mitigation measure **MM-PU-1,** as described in Section 6.15, Public Utilities.	Below a Level of Significance	Impacts related to conflicts with existing utilities may be potentially significant.	Mitigation measure **MM-PU-1,** as described in Section 6.15, Public Utilities.	Below a Level of Significance

Table ES-1
Summary of Significant Environmental Impacts

Issue Area	Miramar Reservoir Alternative			San Vicente Reservoir Alternative		
	Impact	*Mitigation Measures*	*Level of Significance After Mitigation*	*Impact*	*Mitigation Measures*	*Level of Significance After Mitigation*
Transportation, Circulation, and Parking						
Would implementation of the North City Project result in an increase in projected traffic specifically associated with project-related construction that is substantial in relation to the capacity of the existing and planned circulation system?	Construction of the Morena Pipelines and North City Pipeline would exceed significance thresholds for roadways segments and intersections, and impacts would be potentially significant.	Mitigation measure **MM-TRAF-1** as described in Section 6.16, Transportation, Circulation and Parking.	Significant and Unavoidable	Construction of the Morena Pipelines and San Vicente Pipeline would exceed significance thresholds for roadway segments and intersections, and impacts would be potentially significant.	Mitigation measure **MM-TRAF-1** as described in Section 6.16, Transportation, Circulation and Parking.	Significant and Unavoidable

ES.5 EFFECTS NOT FOUND TO BE SIGNIFICANT

The remaining topics discussed in the EIR/EIS were found to be less than significant without mitigation; these topics include land use (Miramar Reservoir Only), aesthetics (Miramar Reservoir Only), environmental justice, energy, geology and soils, greenhouse gas emissions, hydrology and water quality, public services, water supply, and recreation.

ES.6 AREAS OF KNOWN CONTROVERSY

Public scoping meetings were held on August 23, 2016, at the Scripps Miramar Ranch Public Library, and on August 25, 2016, at the Public Utilities Department Metropolitan Operations Complex, to gather additional public input. Comments received during the Notice of Preparation (NOP) public scoping period and meetings were considered during the preparation of this EIR/EIS. Comment letters received during the NOP public scoping period expressed concern about biological resources, fisheries, recreation, water supply, water quality, health and safety/hazards, and public utilities. Additional comments received during Site Development Permit meetings and Environmental Committee and City Council meetings have voiced concern regarding traffic, road closures, impacts to the fishery at Miramar Reservoir, odor concerns, community impacts, and cost. These concerns have been identified as areas of known controversy and are also analyzed in Chapter 6 of this EIR/EIS. The NOP, scoping letter, and other NOP public comments are included as Appendix A of this EIR/EIS.

ES.7 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Per Section 15126.6(e)(2) of the CEQA Guidelines, an environmentally superior alternative must be identified (other than the No Project Alternative). CEQA also requires that the environmentally superior alternative be selected from the range of reasonable alternatives that could feasibly attain the basic objectives of the project.

As discussed in Chapter 6, Environmental Analysis, impacts resulting from implementation of the proposed North City Project would not occur under the No Project/No Action Alternative. Under this alternative, however, none of the project objectives would be met. CEQA Guidelines, Section 15126.6(e)(2), states that “if the environmentally superior alternative is the no project alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.” Additionally, under the No Project/No Action Alternative, beneficial impacts realized by the proposed Project, such as the creation of a local renewable energy source and the replacement of existing imported supply with a new, local, drought-proof supply, would not occur.

The Miramar Reservoir and San Vicente Reservoir Alternatives would result in less-than-significant impacts, with and without mitigation, related to biological resources; environmental justice; energy; geology and soils; greenhouse gas emissions; health and safety/hazards; historical resources; hydrology and water quality; noise; paleontological resources; public services; public utilities; transportation, circulation, and parking; water supply; and recreation. While the significance of impact would be similar, the San Vicente Reservoir Alternative would result in a greater degree of impact to biological resources, electricity and energy consumption, and a smaller net decrease in greenhouse gas emissions when compared to the Miramar Reservoir Alternative. Additionally, the San Vicente Reservoir Alternative would result in significant and unavoidable impacts associated with air quality (related to construction emissions) and aesthetics (related to construction of the MTBS); both of which would be less than significant with mitigation for the Miramar Reservoir Alternative. Therefore, the Miramar Reservoir Alternative is considered the environmentally superior alternative.

CHAPTER 1 INTRODUCTION

This Environmental Impact Report/Environmental Impact Statement (EIR/EIS) evaluates the potential short-term and long-term, direct and indirect, cumulative, and combined environmental impacts of the North City Project, the first phase of the Pure Water San Diego Program (Pure Water Program). The North City Project, which is initiated by the City of San Diego (City) Public Utilities Department, involves the production of 30 million gallons per day (MGD) of purified water. The North City Project will expand the existing North City Water Reclamation Plant (NCWRP) and construct an adjacent North City Pure Water Facility (NCPWF) and North City Pump Station. Two alternative purified water pipelines are considered: one to Miramar Reservoir and one to San Vicente Reservoir. Other project components include a new pump station and forcemain to deliver additional wastewater to the NCWRP; a brine/centrate discharge pipeline; upgrades to the existing Metro Biosolids Center; a new North City Renewable Energy Facility at the NCWRP; and a new Landfill Gas (LFG) Pipeline between the Miramar Landfill gas collection system and the NCWRP. The location of the North City Project is depicted in Figure 1-1, Regional Map, and Figure 1-2, Vicinity Map.

The City of San Diego and the U.S. Bureau of Reclamation (Reclamation) are joint lead agencies in preparing this EIR/EIS in accordance with the California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.) and CEQA Guidelines (14 CCR 15000 et seq.), and the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.). Federal assistance is authorized by the Reclamation Wastewater and Groundwater Study and Facilities Act of 1992 (Title XVI of Public Law 102–575). Section 1612, San Diego Area Water Reclamation Program, directs the Secretary of the Interior, in cooperation with the City of San Diego, to participate in planning, designing, and constructing demonstration and permanent facilities to reclaim and re-use water in the San Diego metropolitan service area. This authority is delegated to Reclamation.

This EIR/EIS is intended for use by both decision makers and the public. It provides relevant information concerning the potential environmental impacts associated with the construction and operation of the North City Project. Marine Corps Air Station (MCAS) Miramar, the Department of Veteran's Affairs National Cemetery Administration, and the U.S. Environmental Protection Agency are cooperating agencies under NEPA. Additional approvals from responsible agencies under CEQA are listed in Section 1.6.

1.1 BACKGROUND

On average, 85% of the City's water supply is imported from the Colorado River and Northern California. This reliance on imported water causes San Diego to be vulnerable to supply shortages and price increases.

With few local water supply options, the City has explored new potable and expanded non-potable reuse options of treated wastewater. In 2011, the City started operating a one MGD demonstration-scale advanced water purification facility at the NCWRP site and confirmed that the purified water complied with all federal and state drinking water standards.

During the 2010 National Pollutant Discharge Elimination System (NPDES) permit renewal process, San Diego Coastkeeper and the San Diego Chapter of the Surfrider Foundation entered into a Cooperative Agreement with the City to conduct the Recycled Water Study (City of San Diego 2012) to find ways to maximize water reuse and minimize the flow to the Point Loma Wastewater Treatment Plant (WWTP). In 2014, the City negotiated a second Cooperative Agreement with Coastkeeper, Surfrider, the Coastal Environmental Rights Foundation, and the San Diego Audubon Society (collectively referred to as the environmental stakeholders) for purposes of supporting potable reuse of wastewater and secondary equivalency. On April 29, 2014, the City Council adopted a resolution (R-308906) supporting the Pure Water Program.

On November 18, 2014, the City Council unanimously supported the application to renew the National Pollutant Discharge Elimination System permit for the Point Loma WWTP; the application included key elements of the City's Pure Water Program to implement potable reuse. The U.S. Environmental Protection Agency (EPA) and San Diego Regional Water Quality Control Board (RWQCB) released the Tentative Order No. R9-2017-0007 (Tentative Order/Permit) for public review and comment on October 28, 2016. The EPA and San Diego RWQCB revised the Tentative Order/Permit based on comments received, including revisions to the Compliance Schedule for the Pure Water San Diego Potable Reuse Tasks. The San Diego RWQCB adopted the Tentative Order/Permit on April 12, 2017, and it was issued by the EPA on August 4, 2017; the Tentative Order/Permit took effect on October 1, 2017 (San Diego RWQCB and EPA 2017). ~~The EPA and San Diego RWQCB are currently, as of February 10, 2017, seeking public comments on the proposed revisions to the Tentative Order/Permit and will consider adoption of the Revised Tentative Order/Permit on April 12, 2017 (EPA 2017).~~

The Pure Water Program will ultimately produce 83 MGD of locally controlled water and will be implemented in phases over a 20-year period, grouped by geographical area: North City, Central Area, and South Bay. The North City Project will produce 30 MGD of purified water and is scheduled to be operational in 2021. The Central Area project and/or South Bay projects are scheduled to be completed by December 31, 2035, and will produce a combined total up to 53 MGD.

A Final Program EIR for the Pure Water Program was certified by the City on October 25, 2016.

1.2 PURPOSE AND NEED

The purpose of the North City Project is to plan, design, construct and operate the treatment and conveyance facilities necessary to produce 30 MGD of purified water, thereby creating a new source of reliable, locally controlled water. The North City Project would expand the City's potable water production capacity to replace imported water supplies and would meet projected water demands within the City's service area as outlined in the conceptual future water supply sources in the City's 2015 Urban Water Management Plan. The North City Project will also serve existing and planned future non-potable recycled water customers.

The North City Project will provide increased protection of the ocean environment. The North City Project would reduce flows to the Point Loma WWTP, which would reduce total suspended solids discharged and recycle a valuable and limited resource that is currently discharged to the Pacific Ocean.

The City primarily relies on imported water supplies to meet the City's potable water demand. The region's reliance on imported water causes the City's water supply to be vulnerable to impacts from shortages and susceptible to price increases beyond the City's control. Potable reuse provides a proven, safe, and reliable source of water. The North City Project is needed to make San Diego more water independent and increase the reliability of water supplies.

The Point Loma WWTP currently operates with a Clean Water Act Section 301(h) modified National Pollutant Discharge Elimination System permit, which allows the City to operate without full secondary treatment. The North City Project, by reducing flows to the Point Loma WWTP, would contribute to the Point Loma WWTP's continued ability to meet modified treatment standards that would be the same as if the existing 240 MGD Point Loma WWTP were converted to secondary treatment standards by significantly reducing total suspended solids.

1.3 PROJECT OBJECTIVES

The North City Project would implement the first phase of the Pure Water Program. The Final Program EIR (City of San Diego 2016a) contains broad goals related to the Pure Water Program. Specifically, the North City Project goals and objectives include the following:

1. Produce 30 MGD of local, high-quality purified water to serve the San Diego region.
2. Reduce dependence on imported water.
3. Increase use of recycled water.
4. Reduce flows to the Point Loma Wastewater Treatment Plant and reduce total suspended solids discharged at the Point Loma ocean outfall.
5. Exceed the target online dates for the first phase of the Pure Water Program agreed to in the 2014 Cooperative Agreement[1] and meet the revised Compliance Schedule for the Pure Water San Diego Potable Reuse Tasks, Phase 1 of the Order No. R9-2017-0007[2].

1.4 CEQA REQUIREMENTS

CEQA requires the preparation of an EIR for any project that a lead agency determines may have a significant impact on the environment. According to Section 21002.1(a) of the CEQA statutes, "The purpose of an environmental impact report is to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided." CEQA also establishes mechanisms whereby the public and decision makers can be informed about the nature of the project being proposed, and the extent and types of impacts that the project and its alternatives would have on the environment if they were to be implemented. This EIR/EIS has

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[1] In 2014, the City negotiated a Cooperative Agreement with Coastkeeper, Surfrider, Coastal Environmental Rights Foundation, and the San Diego Audubon Society (collectively referred to as the environmental stakeholders) for purposes of supporting potable reuse of wastewater and secondary equivalency.

[2] Modified permit that commits to the goal of implementing a potable reuse program and obtaining legislative or administrative actions such that the Point Loma ocean outfall discharge is recognized as equivalent to secondary treatment for purposes of compliance with the Clean Water Act (secondary equivalency).

been prepared to comply with all criteria, standards, and procedures of the CEQA Guidelines (14 CCR 15000 et seq.).

This EIR/EIS has been prepared pursuant to the City's CEQA Significance Determination Thresholds (City of San Diego 2016b). This document represents the independent judgment of the City as lead agency.

1.4.1 NOTICE OF PREPARATION, NOTICE OF INTENT, AND SCOPING MEETINGS

The scope of analysis for the EIR/EIS was determined by the City and Reclamation in a scoping letter dated August 4, 2016, as well as a result of public responses to the Scoping Letter Notice of Preparation (NOP). In compliance with CEQA Guidelines Section 15082, the City's Development Services Department circulated the NOP and Scoping Letter to interested agencies, groups, and individuals. The 30-day public scoping period ended September 4, 2016. A Notice of Intent was circulated in the Federal Register on August 5, 2016, by Reclamation, requesting comments by September 6, 2016. The Notice of Intent was prepared and posted pursuant to NEPA (42 U.S.C. 4332(2)(c)), and Department of the Interior regulations for implementation of NEPA (43 CFR part 46). In addition, public scoping meetings were held on August 23, 2016, at the Scripps Miramar Ranch Public Library, and on August 25, 2016, at the Public Utilities Department Metropolitan Operations Complex, to gather additional public input. Comments received during the NOP public scoping period and meetings were considered during the preparation of this EIR/EIS. The NOP and Scoping Letter comments are included as Appendix A of this EIR/EIS. Based on the scope of analysis for this EIR/EIS, the following issues were determined to be potentially significant/adverse and are therefore addressed in Chapter 6, Environmental Analysis, of this document: land use, visual effects and neighborhood character, air quality/odor, biological resources, energy, environmental justice, geology/soils, greenhouse gas emissions, health and safety, historical resources, hydrology and water quality, noise, paleontological resources, public services, public utilities, transportation/circulation/parking, and water supply.

Additional CEQA- and NEPA-mandated environmental topics, such as agricultural and forestry resources, mineral resources, population and housing, marine fisheries, wilderness, and socioeconomic effects were not found to be significant based on the scoping results. These issues are addressed in Chapter 8, Effects Not Found to be Significant, of the EIR/EIS. Specific environmental topics were included in Chapter 8 because they did not meet the screening thresholds established in the City's Significance

Determination Thresholds (City of San Diego 2016b); therefore, impacts associated with these environmental topics were considered to be less than significant.

1.5 EIR/EIS FORMAT

An executive summary of this EIR/EIS is provided at the beginning of this document. The summary includes the conclusions of the environmental analysis and a comparative summary of the Alternatives analyzed in this EIR/EIS. Chapter 1, Introduction, introduces the North City Project in light of the required environmental review procedures and provides a description of the North City Project's purpose and need and required discretionary approvals. Chapter 2, Environmental Setting, Project Background and Regulatory Setting, describes the North City Project's location, physical environmental setting, and the City's current wastewater and water system; provides an overview of the regulatory setting for potable reuse; and provides a summary of related studies. Chapter 3, Project Description/Alternatives, provides a description of the components of the North City Project and each of the alternatives. Chapter 4, History of Project Changes, contains a discussion of how the North City Project has changed since issuance of the NOP. Chapter 5 provides the affected environment and regulatory setting. Chapter 6 consists of the environmental analysis, which examines the potentially significant/adverse environmental issues for the North City Project. Chapter 7, Cumulative Impacts, addresses cumulative impacts, and Chapter 8 discusses effects not found to be significant or adverse. Chapter 9 discusses significant environmental effects which cannot be avoided if the North City Project is implemented, significant irreversible environmental changes, and growth inducements, including the potential direct and indirect growth-inducing impacts of the North City Project. Chapter 10, Mitigation, Monitoring, and Reporting Program, provides mitigation for significant impacts incurred by the North City Project, and Chapter 11, References Cited, contains a list of sources cited throughout the EIR/EIS organized by section. The remaining EIR/EIS sections and appendices are provided as set forth in the table of contents.

1.6 DISCRETIONARY ACTIONS AND APPROVALS

The North City Project would require a variety of discretionary actions, approvals, and permits by the City, Reclamation, and various agencies. It is anticipated that this EIR/EIS will be used by these agencies in their decision-making process. Table 1-1 summarizes the future discretionary actions, approvals, and permits anticipated to be required as part of the implementation of the various components of the North City Project, and identifies agencies that would be responsible for granting the approvals and permits.

Table 1-1
Discretionary Actions and Approvals

Discretionary Action/Approval/Permit	Agency
Certification of the North City Project EIR	City of San Diego
Approval of funding for the North City Project	Bureau of Reclamation
Approval of funding under the Water Infrastructure Finance and Innovation Act Program for the North City Project	Environmental Protection Agency
Property and Easement Acquisition	City of San Diego; County of San Diego; City of Santee (San Vicente Reservoir Alternative Only)
Construction and Encroachment Permit(s)	City of San Diego; County of San Diego; City of Santee (San Vicente Reservoir Alternative Only)
Traffic Control Permit	City of San Diego (Transportation and Stormwater Department)
Groundwater Discharge Permit	City of San Diego (Public Utilities Department)
Site Development Permit	City of San Diego
Encroachment Permit	California Department of Transportation
Right of Entry Permit & Dual Right of Entry Permit	Metropolitan Transit System/North County Transit District
Easement Amendments and Acquisition	Metropolitan Transit System
Section 401 Permit – Water Quality Certification	State Water Resources Control Board/ Regional Water Quality Control Board
Section 404 Permit – Clean Water Act	U.S. Army Corps of Engineers
Section 1602 Streambed Alteration Agreement	California Department of Fish and Wildlife
Air Quality Permit to Construct/Permit to Operate	San Diego Air Pollution Control District
National Pollution Discharge Elimination Permit	San Diego Regional Water Quality Control Board
Waste Discharge Requirements	San Diego Regional Water Quality Control Board
DWQ Construction General Permit, including the stormwater pollution prevention plan	State Water Resources Control Board/Regional Water Quality Control Board
Domestic Water Supply Permit Amendment	State Water Resource Control Board, Division of Drinking Water
Obstruction Evaluation/Airport Airspace Analysis (OE/AAA), Form 7460-1	Federal Aviation Administration
Easement Amendments and Acquisition	MCAS Miramar/Department of Defense
Amendment of Property Easement	Department of Veteran's Affairs
Multi-Habitat Planning Area Boundary Line Adjustment for the SANDER Mitigation Site (approved July 12, 2017)	City of San Diego, Multiple Species Conservation Program, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service

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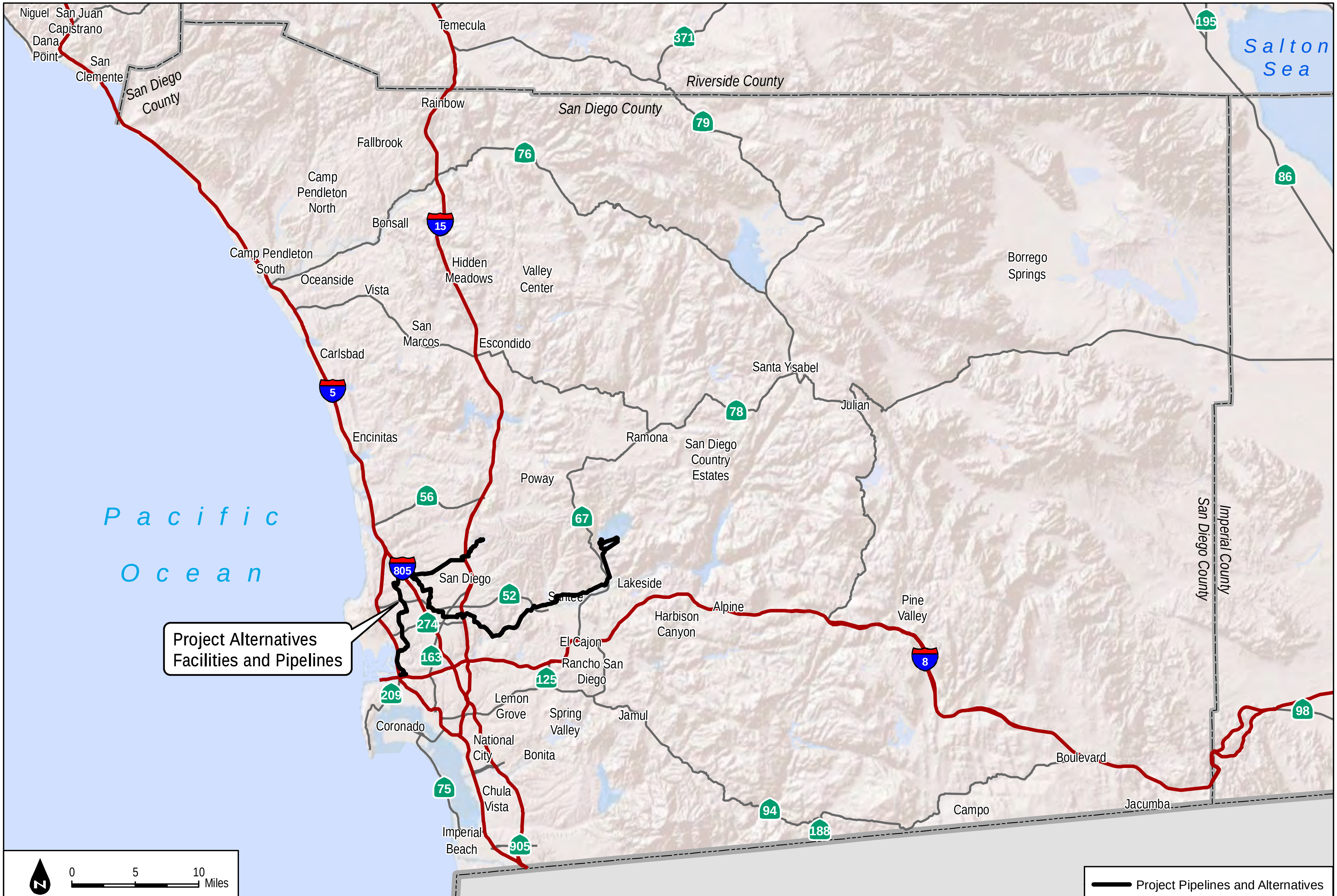

SOURCE: City San Diego 2016; ESRI 2016

DUDEK

FIGURE 1-1

Regional Map

Pure Water San Diego Program North City Project EIR/EIS

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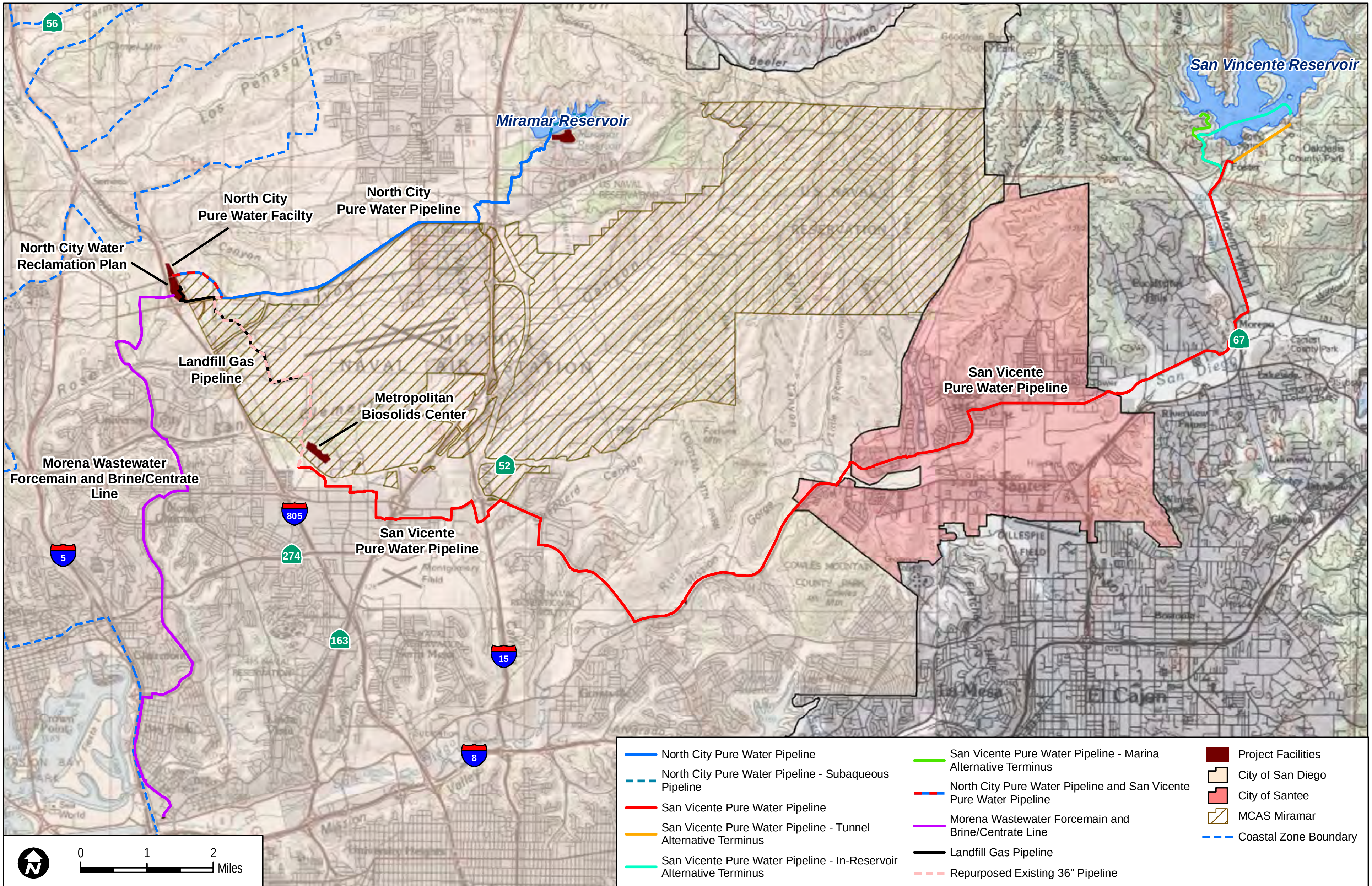

DUDEK

SOURCE: USGS 7.5-Minute Series Del Mar, Poway, San Vicente Reservoir, La Jolla, La Mesa, El Cajon Quadrangles; City of San Diego 2016; CA Coastal Commission

FIGURE 1-2

Vicinity Map

Pure Water San Diego Program North City Project EIR/EIS

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CHAPTER 2 ENVIRONMENTAL SETTING

2.1 LOCATION

The North City Project includes a variety of facilities located throughout the central coastal areas of San Diego County, California within the southwest portion of Southern California (see Figure 1-1). As shown in Figure 1-2, project facilities are proposed in the North City geographic area. A new pure water facility and three pump stations would be located within the corporate boundaries of the City of San Diego (City). Proposed pipelines would traverse a number of local jurisdictions, including the cities of San Diego and Santee, the community of Lakeside and other areas of unincorporated San Diego County, and federal lands within Marine Corps Air Station (MCAS) Miramar. Portions of the North City Project area fall within the City's Multiple Species Conservation Program and Multi-Habitat Planning Area, as further described in Section 5.1, Land Use.

2.2 PHYSICAL CHARACTERISTICS

The North City Project is generally located within the Coastal Plain geographic region of San Diego, west of the Peninsular Ranges and the Desert Basin regions. The Coastal Plain consists of a series of marine and non-marine terraces referred to as "mesas," which extend miles inland and are dissected by stream valleys. Much of the North City Project area is gently sloping or relatively flat, with steeper areas around the reservoirs.

The North City Project area lies within the South Coast Hydrologic Region, which drains in a westerly direction away from the Peninsular Ranges towards the Pacific Ocean. Project facilities are located with the San Diego and Peñasquitos Hydrologic Units. The San Diego Hydrologic Unit (907.00) is a long, triangular area covering approximately 440 square miles and is drained by the San Diego River and includes several reservoirs such as the San Vicente Reservoir. The Peñasquitos Hydrologic Unit (906.00) is a triangular area covering approximately 170 square miles (San Diego RWQCB 2016) and is drained by the Los Peñasquitos Creek.

The North City Project lies within the San Diego Air Basin, 1 of 15 air basins that geographically divide the state of California. The San Diego Air Basin is an area of high air pollution potential and experiences warm summers, mild winters, and infrequent rainfalls.

2.3 SURROUNDING LAND USES

The North City Project area is primarily developed with suburban uses including residential, commercial, industrial, and transportation uses. Transportation corridors in the vicinity include Interstate 805 (I-805), I-15, I-5, State Route 52 (SR-52), SR-163, SR-67, Miramar Road, Mission Gorge Road, Genesee Avenue, Morena Boulevard, Clairemont Mesa Boulevard, and Balboa Avenue. The new North City Pure Water Facility (NCWPF) would be located adjacent to the existing North City Water Reclamation Plant (NCWRP) site located at Eastgate Mall and I-805. The NCPWF is proposed to be located on an undeveloped site north of Eastgate Mall. The North City Pure Water Pump Station (North City Pump Station) would also be located on this currently undeveloped site. Carroll Canyon is located immediately north of the NCPWF site.

The NCWRP site is located south of Eastgate Mall and currently developed with wastewater treatment facilities, an operations building, and a power generation facility. The Demonstration Project is also located at the NCWRP and currently produces 1 million gallons per day (MGD) of purified water. I-805 borders the western edge of both the NCPWF and NCWRP properties and is a major north–south transportation corridor in the San Diego region.

The new Wastewater Forcemain and Brine/Centrate Line (Morena Pipelines) would primarily follow existing roads from the NCWRP through the University, Clairemont Mesa, and Linda Vista communities to the Morena Pump Station, which is located northeast of the intersection of I-5 and I-8 in a mostly industrial area. The Morena Pipelines alignment crosses urban canyons, including Rose, San Clemente, and Tecolote canyons, and associated open space systems. The San Diego River is just south of the Morena Pump Station.

The North City Purified Water Pipeline (North City Pipeline) would generally be located in the right-of-way of Miramar Road and other City streets in primarily commercial and industrial areas. The Dechlorination Facility would be located adjacent to the cul-de-sac at the end of Meanley Drive on City-owned property within a business park. The final portion of the North City Pipeline would run adjacent to the Scripps Ranch Library and Evan's Pond before entering Miramar Reservoir.

The Miramar Water Treatment Plant (Miramar WTP) is adjacent to Miramar Reservoir and is currently developed with water treatment facilities. Miramar Reservoir is located in the Scripps Miramar Ranch Community and was developed in order to provide a drinking water storage facility. The reservoir currently provides secondary benefits as a recreational area. Picnic and barbecue facilities, parking, and a concession area are located near the reservoir entrance off Scripps Lake Drive. A paved services road encircles Miramar Reservoir providing bicycling, walking, and rollerblading opportunities (City of San Diego 2017a).

The Metro Biosolids Center (MBC) site is currently developed with biosolids treatment and handling facilities. MBC is located adjacent to the Miramar Landfill, north of SR-52 and south of MCAS Miramar.

The San Vicente Purified Water Pipeline (San Vicente Pipeline) would also generally be located in roadway right-of-way; however, the pipeline would utilize an existing 36-inch-diameter recycled water line that crosses the Miramar National Cemetery and undeveloped lands on MCAS Miramar, and would cross other undeveloped lands including the San Diego River. One of the proposed reservoir outfall discharge structures at San Vicente Reservoir is located in undeveloped land on the south side of San Vicente Reservoir. The Mission Trails Booster Station would also be located on undeveloped land along Mission Gorge Road adjacent to residences. The Landfill Gas Pipeline would parallel the existing 36-inch-diameter recycled water line and cross Miramar National Cemetery.

The San Vicente Reservoir is the largest reservoir in the City of San Diego. The San Vicente Reservoir was closed between September 2008 and September 2016 for the San Vicente Dam Raise Project. There is a public boat launching facility on the southern end of the San Vicente Reservoir that is accessed via Moreno Avenue. A concession, bait shop, and boat rental facility operated by Rocky Mountain Recreation Company are located at the boat launch. Fishing, general boating, and water contact activities are allowed Thursdays through Sundays; fishing and general boating are allowed on Mondays; and no activities are allowed on Tuesdays or Wednesdays (Rocky Mountain Recreation Company 2017).

2.4 PROJECT HISTORY AND BACKGROUND

2.4.1 EXISTING FACILITIES, WATER DEMANDS, AND WASTEWATER FLOWS

Potable Water System Overview

The City's Public Utilities Department not only delivers water to its citizens; it also supplies treated water to the city of Del Mar and the California American Water Company, which serves the cities of Coronado and Imperial Beach. As a result, more than 1.36 million people receive approximately 65.7 billion gallons a year of water treated by the City.

After water is treated at the City's treatment plants, it is pumped to all parts of the City over 342 square miles (see Figure 2-1, City of San Diego Potable Water System). The City maintains and operates more than 3,300 miles of water lines; 49 water pump stations; 32 standpipes, elevated tanks, and concrete and steel reservoirs with a potable water storage capacity of more than 200 million gallons; more than 24,000 fire hydrants; and approximately 290,000 water meters. The pipelines range in diameter size from 2-inch service lines to 96-inch transmission pipelines. Because of San Diego's diverse topography, including sea level beach communities, mesas, hills, valleys, and canyons, the City maintains more than 120 pressure zones (City of San Diego 2017b).

On average, 85% of City's water supply is imported. The City purchases imported water from the San Diego County Water Authority (SDCWA). The City's local water supplies consist of surface water obtained from local watersheds. The City has nine local surface water reservoirs with more than 569,021 acre-feet (AF) of capacity, which are connected directly or indirectly to three water treatment plants. The largest reservoir is San Vicente Reservoir with a capacity of 242,000 AF since completion of the Emergency Storage Project (discussed in more detail in Section 2.4.3). The Miramar WTP has a rated capacity of 144 MGD and generally serves the City's geographical area north of the San Diego River (City of San Diego 2016a). The Alvarado WTP recently underwent upgrades and improvements and has a current capacity of 120 MGD. The Alvarado WTP generally serves the geographical area from National City to La Jolla Village Drive/Miramar Road. The Otay WTP has a current rated capacity of 34 MGD and serves south San Diego (City of San Diego 2017c).

The City overlies and is in the vicinity of several groundwater basins. Currently, less than 1% of the City's water supply is produced from groundwater resources that come from the San Vicente Production Well. The well has a maximum capacity of 600 gallons per minute, and raw water is treated at the Alvarado WTP. Additional groundwater supplies from the Santee-El Monte Basin and the San Diego Formation Basin are expected to augment the City's future water supply (City of San Diego 2016a).

City of San Diego Current and Projected Water Demands

The City's actual water use declined between 2005 and 2010 from 199,178 acre-feet per year (AFY) to 162,291 AFY for many reasons including economic conditions, response to the mandatory water use restrictions associated with the Level 2 Drought Alert, increased retail water costs, and conversion of potable water system customers to the recycled water system. The Drought Alert was lifted after the substantially above-average hydrologic events of the 2010/11 winter. Water use in the City had climbed back up to roughly 187,000 AFY by 2012, and to over 195,000 AF during the historically warm and dry 2014. The entire state experienced drought conditions between 2012 and 2016, and on May 5, 2015, the State Water Resources Control Board (SWRCB) adopted water use restrictions, including allocation reductions, from Calendar Year 2013 levels, for every individual water agency in the state. Due to above-average hydrologic events in the recent 2016/2017 winter, the City is now operating at a Level 1 Drought Watch, and landscape watering restrictions are no longer mandatory. However, it is assumed that some portion of the reduction in water use will continue to be realized even though the drought restrictions have been lifted, as many have replaced high water use landscaping with drought-tolerant and California native landscaping, in addition to more and more water efficient technologies being adopted. Nonetheless, the City's expected population growth in the future will continue to increase water demands (City of San Diego 2015a; City of San Diego 2017d).

The City receives, on average, 85% of its water from its wholesale supplier, SDCWA, which is responsible for providing a safe and reliable supply of water to its 24 member agencies, including the City of San Diego. SDCWA serves 95% of the County of San Diego's population over an area of 951,000 acres. Up to 80% of the region's water is imported from the Colorado River and Northern California. The Metropolitan Water District of Southern California is SDCWA's largest supplier, providing more than half of the water used in 2010 (SDCWA 2017). The remaining water supply comes from SDCWA's long-term water conservation and transfer agreement with the Imperial Irrigation District, conserved water resulting from lining of portions of the All-American and Coachella Canals in Imperial Valley, and local supply sources including groundwater, local surface water, recycled water, and conservation (SDCWA 2017). Seawater desalination also came on line in December 2015, producing from 48,000–56,000 AFY of drought-proof potable supply.

Metropolitan Wastewater and Water Reclamation System Overview

The City of San Diego operates the Metropolitan Sewerage System (Metro System) which provides regional wastewater treatment and disposal for the City and 12 Participating Agencies (the cities of Chula Vista, Coronado, Del Mar, El Cajon, Imperial Beach, La Mesa, National City, and Poway; the Lemon Grove Sanitation District, the Otay Water District, the Padre Dam Municipal Water District, and the County of San Diego (on behalf of Winter Gardens Sewer Maintenance District, and the Alpine, Lakeside and Spring Valley sanitation districts)). The system was designed to provide sufficient capacity to accommodate a regional population in excess of 2.5 million, and covers a 450-square-mile area including most of the City, stretching from Del Mar and Poway to the north, Alpine and Lakeside to the east, and south to San Ysidro. The Metro System consists of wastewater treatment plants, conveyance facilities (including major pipelines and pump stations), two ocean outfalls, water reclamation plants, and a regional biosolids processing facility. Figure 2-2, City of San Diego Metropolitan Sewerage System, provides a schematic of the Metro System showing the major facilities. As described below, the Point Loma Wastewater Treatment Plant (Point Loma WWTP) is the main treatment plant in the Metro System, and uses a chemically enhanced primary treatment process that uses chemical coagulant and flocculent to remove suspended solids. Wastewater treated through the chemically enhanced primary treatment process is disposed via an ocean outfall. The City also operates two water reclamation plants: the NCWRP and the South Bay Water Reclamation Plant (SBWRP). These plants are capable of treating wastewater to a level that is suitable for non-potable reuse, as further described below (City of San Diego 2012).

Point Loma Wastewater Treatment Plant

The Point Loma WWTP is the main treatment facility in the Metro System with a rated capacity of 240 MGD based on annual average daily flows (AADFs) and a peak wet weather capacity of 432 MGD. The Point Loma WWTP is located on the south and western coastline of the Point Loma Peninsula. It discharges treated effluent into the Pacific Ocean 4.5 miles offshore at a depth of over 300 feet via the Point Loma Ocean Outfall. Biosolids are separated and pumped 17 miles to the MBC located adjacent to the Miramar Landfill, further described below (City of San Diego 2012).

Between 2003 and 2009, wastewater flows recorded at the Point Loma WWTP ranged from 145 MGD to 185 MGD, with peak flows in 2005 resulting from a significant above-average rainfall season. High flows occur during rain due to infiltration of storm water into the sewer system. The flows then steadily decreased until 2009 as a result of increased recycled water production at the NCWRP and SBWRP, as well as from implementation of significant water conservation and water efficiency measures (City of San Diego 2012). The AADF rate at the Point Loma WWTP in 2014 was 141 MGD (City of San Diego 2015b).

North City Water Reclamation Plant

The NCWRP is one of two water reclamation plants in the Metro System that uses both the secondary and tertiary treatment processes. Secondary treatment removes the dissolved organic matter through the use of microbes that consume the organic matter. The biological process is then followed by settling tanks to remove the biological suspended solids. The tertiary treatment process involves additional filtration and disinfection, which produces water that is suitable for reuse in non-potable applications, such as irrigation and industrial uses. The NCWRP's permitted capacity is 30 MGD (based on an AADF rate); however, it was master-planned for expansion to 45 MGD. Annual average non-potable recycled water output averaged 7 MGD in 2016 (City of San Diego 2017e). Wastewater in excess of the non-potable recycled water demands is treated to secondary level and diverted to the Metro System into the Rose Canyon Trunk Sewer and ultimately flows to the Point Loma WWTP for ocean disposal (City of San Diego 2012).

South Bay Water Reclamation Plant

The SBWRP was commissioned in 2002 and has a permitted capacity of 15 MGD AADF. The facility is located in the Tijuana River Valley near the international border and serves the surrounding area. The SBWRP also treats water up to a tertiary level to produce non-potable recycled water to be distributed to surrounding communities for irrigation and industrial uses; the majority of the South Bay demand comes from the Otay Water District through a wholesale agreement between the Otay Water District and the City. Annual average non-potable recycled water output averaged 6 MGD in 2016 (City of San Diego 2017e). Wastewater in excess of the non-potable recycled water demands is treated to secondary level and discharged to the ocean via the 3.5-mile-long, 100-foot-deep South Bay Ocean Outfall. Solids removed at the SBWRP are returned to the collection system for transport to the Point Loma WWTP for treatment and then ultimately to the MBC for processing (City of San Diego 2012).

Recycled Water Conveyance System

The City also operates a non-potable recycled water conveyance and delivery system consisting of two service areas—the Northern Service Area and the Southern Service Area—supplied with recycled water from the NCWRP and SBWRP, respectively. Three wholesale purchasers of recycled water for the City are located within the service area: the City of Poway and Olivenhain Municipal Water District in the Northern Service Area, and Otay Water District in the Southern Service Area. The recycled water conveyance system and water reclamation plants are shown on Figure 2-3, City of San Diego Recycled Water Conveyance System.

Metro Biosolids Center

The MBC is a biosolids treatment facility adjacent to the Miramar Landfill. MBC receives anaerobically digested sludge from the Point Loma WWTP and primary and waste-activated sludge from the NCWRP. At MBC, NCWRP wastes are thickened, digested, and dewatered, while the digested sludge from Point Loma WWTP is only dewatered. Silos are provided to store dewatered biosolids before transferring to the truck loading facilities. Dewatered biosolids are hauled away for land application or landfill cover.

Centrate, which is the water remaining after centrifugation at MBC, is currently pumped through a 4.3-mile-long, 20-inch-diameter force main to a drop structure at the Influent Pump Station at NCWRP. From there it is discharged by gravity to the Rose Canyon Trunk Sewer, which flows to Pump Station 2 and eventually to the Point Loma WWTP for treatment and discharge through the ocean outfall.

The MBC is currently sized to treat 179 dry tons per day (City of San Diego 2012).

Wastewater Pump Stations

Most of the wastewater collection in San Diego relies on gravity for the flow of wastewater through sewers to a treatment plant. In some instances, it is necessary to pump this wastewater uphill before it can return to a gravity flow. There are 8 major pump stations in the Metro and Municipal Systems and 75 smaller municipal pump stations (City of San Diego 2017b).

The largest Pump Stations are Pump Stations No. 1 and No. 2. Pump Station No. 1, located on East Harbor Drive, collects all of south San Diego's wastewater and conveys an AADF of 75 MGD. It sends the wastewater flow north via the 8-mile-long

South Metro Interceptor Sewer to Pump Station No. 2, which is located on North Harbor Drive. The AADF into Pump Station No. 2 is approximately 180 MGD. This station pumps the wastewater to the Point Loma WWTP through two 87-inch-diameter force mains and the 114-inch-diameter West Point Loma Interceptor Sewer. The two pump stations have 24-hour staffing (City of San Diego 2017b).

Other Agency Water Reclamation Capacity

Two additional reclamation plants (each separately owned and operated by Participating Agencies)—the Padre Dam Water Recycling Facility and the Ralph W. Chapman Water Recycling Facility—also offload flows before reaching the Metro System (see Figure 2-2). The conveyance of non-potable recycled water from the reclamation plants to customers (via pumps, piping, and reservoirs) is coordinated by individual water purveyors and is not part of the Metro System (City of San Diego 2012).

The Padre Dam Municipal Water District began operating an Advanced Water Purification Demonstration Project in April 2015 at the Ray Stoyer Water Recycling Facility to evaluate treatment strategies needed to meet the requirements for potable reuse from recycled water. The Advanced Water Purification Demonstration Project is currently processing approximately 100,000 gallons of water per day for demonstration and testing purposes. In addition, the District has completed the East County Advanced Water Purification Program (ECAWPP) planning study in a collaborative partnership between the Helix Water District, County of San Diego, and City of El Cajon. As stated in the planning study, the primary objectives of the ECAWPP are (1) to utilize wastewater generated in East County to create a cost-effective new source of local, reliable, and drought-proof water supplies for potable and non-potable uses; and (2) to minimize future financial liabilities related to the Metro System. The planning study evaluated alternatives for increasing recycled water availability and use within San Diego East County and identified a preferred alternative that would produce up to 15.5 MGD of new potable water. It is envisioned that the ECAWPP would be executed in three phases. Phase 1 would include expansion of the Ray Stoyer Water Recycling Facility from 2 MGD to 6 MGD and construction of a 2.2- to 3.5-MGD capacity advanced water treatment plant by 2023. The approximately 3.5 MGD of advanced water purification effluent would either recharge the Santee Basin aquifer or augment water supply at Lake Jennings, owned and operated by the Helix Water District. Phase 2 would include expansion of the water recycling facility to 15 MGD, producing a total of 10.4 MGD of purified water for surface water augmentation at Lake Jennings by ~~2023~~2025. Phase 3 would expand the water recycling facility capacity to 21 MGD, producing a total of 15.5 MGD of purified water for surface water augmentation at Lake Jennings by 2035 (Padre Dam Municipal Water District 2016).

A draft Program EIR was released in December 2016 for the Padre Dam Municipal Water District Comprehensive Facilities Master Plan. The draft Program EIR considers 173 projects identified in the Master Plan, which would meet existing and future potable water system demands. The ECAWPP Project is a key component of the Master Plan (Padre Dam Municipal Water District 2016). The Final Program EIR for the Comprehensive Facilities Master Plan was certified in May 2017.

2.4.2 REGULATORY SETTING

A number of laws and regulations currently exist to ensure the protection of public health related to both indirect potable reuse and the treatment of drinking water. The statutory and regulatory framework surrounding recycled water and potable reuse as relevant to the North City Project is described below.

Agency Roles, Responsibilities, and Statutory Authority

U.S. Environmental Protection Agency

The principal federal agency involved in drinking water regulation is the U.S. Environmental Protection Agency (EPA). The EPA is responsible for implementing federal drinking water law, setting national drinking water requirements, and overseeing the California SWRCB enforcement of the federal law.

The Safe Drinking Water Act (SDWA) is the main federal law that ensures the quality of Americans' drinking water. Under the SDWA, the EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. The SDWA authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water. The EPA, states, and water agencies then work together to make sure that these standards are met. Originally, SDWA focused primarily on treatment as the means of providing safe drinking water at the tap. The 1996 amendments to the SDWA greatly enhanced the existing law by recognizing source water protection, operator training, funding for water system improvements, and public information as important components of safe drinking water. This approach ensures the quality of drinking water by protecting it from source to tap.

State Water Resources Control Board

The principal state regulatory agency involved in drinking water quality and potable reuse in California is the SWRCB. In 1991, the SWRCB and its nine Regional Water Quality Control Boards (RWQCBs) were brought together with five other state environmental protection agencies under the newly crafted California Environmental Protection Agency (CalEPA). CalEPA was formed by a Governor's Executive Order to create a cabinet level voice for the protection of human health and the environment and to ensure the coordinated deployment of state resources. At the time, and up until 2014, the California Department of Public Health (CDPH)—which is a department under the California Health and Human Services Agency and not part of CalEPA—was responsible for regulating and enforcing potable water quality standards. On July 1, 2014, the CDPH Drinking Water Program and the Environmental Laboratory Accreditation Program[1] moved from CDPH to the SWRCB. The roles and functions of the Drinking Water Program and the Environmental Laboratory Accreditation Program remain the same, but are now administered by the SWRCB under the Division of Drinking Water (DDW).

The SWRCB receives the majority of its statutory authority related to public health and potable water from the California Safe Drinking Water Act, as defined in the California Health and Safety Code and Titles 17 and 22, California Code of Regulations. In addition, the SWRCB DDW has the primary enforcement authority (primacy) to enforce the federal SDWA, and is responsible for the regulatory oversight of about 8,000 public water systems[2] (PWSs) throughout the state including the City of San Diego's water system. As discussed in Section 5.11, Hydrology and Water Quality, the SWRCB also administers and enforces regulations pertaining to protection of water quality and beneficial uses of water (including both surface water and groundwater) under the Porter-Cologne Water Quality Control Act, aspects of the federal Clean Water Act, and other statutes. The purpose of transferring the CDPH Drinking Water Program to the SWRCB was to promote more integrated water

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[1] The Environmental Laboratory Accreditation Program provides evaluation and accreditation of environmental testing laboratories to ensure the quality of analytical data used for regulatory purposes to meet the requirements of the state's drinking water, wastewater, shellfish, food, and hazardous waste programs.

[2] Public water systems are systems that either have 15 or more service connections or regularly serve at least 25 individuals daily at least 60 days out of the year.

quality management, from source to tap, and to take advantage of the natural synergies and common resources needed to ensure both (1) the protection of surface water quality in the environment and (2) the protection of human health through administration and enforcement of potable water standards.

Other State and Local Agencies

In addition to the SWRCB, there are several state agencies that have a role in regulating certain types of PWSs, including PWS formation, design, construction, and operation, including the rates that they can charge their customers. For example, the Department of Pesticide Regulation is responsible for ensuring that pesticides do not pollute groundwater. In addition to the SWRCB's role in ensuring that drinking water standards are protective of public health, the Office of Environmental Health Hazard Assessment is responsible for providing the SWRCB with health-based risk assessments for contaminants; these assessments are used to develop primary drinking water standards.

Local agencies also have a role in drinking water regulation both through direct oversight of certain PWSs and through activities that affect a PWS service area. In addition to other functions, Local Agency Formation Commissions oversee the expansion of service areas of public agencies that are PWS and can review to determine if an agency is providing municipal services in a satisfactory manner, including the delivery of safe drinking water.

Drinking Water Quality Standards

U.S. Environmental Protection Agency

Drinking water standards are set by the EPA to control the level of contaminants in the nation's drinking water. The SDWA requires the EPA to set these standards, which public water systems in the United States are required to meet. Enforceable standards set by the EPA come in the form of a maximum contaminant level[3] (MCL) and/or a treatment technique[4] (TT). Examples of rules requiring TTs are the Surface Water Treatment Rule (requires disinfection and filtration) and the Lead and Copper Rule (requires optimized corrosion control). The Lead and Copper Rule, for

[3] A maximum contaminant level is the maximum concentration of a contaminant allowed in water delivered to a user of any public water system.

[4] A treatment technique is the required procedure or level of technological performance set when there is no reliable method to measure a contaminant at very low levels.

example, outlines additional treatment or other requirements a PWS must follow if water samples show exceedances of the action level trigger. The process for establishing an MCL involves consideration of both health risk and technological and economic feasibility. After considering the level of a contaminant in drinking water below which there is no known or expected health risk (referred to as an "MCL Goal"), technological and economic feasibility, and public comments and other information, the EPA finalizes enforceable MCLs or TTs to provide the maximum feasible protection. The EPA has set standards for 90 chemical, microbiological, radiological, and physical contaminants in drinking water.

The EPA also sets Secondary Drinking Water Regulations, which are nonenforceable guidelines for contaminants that may cause cosmetic effects (such as skin and tooth discoloration) or aesthetic effects (such as taste or odor). Water systems are not required by the EPA to adopt these secondary standards, but states may choose to adopt and enforce them.

The EPA and others are currently conducting research and collecting information to determine which currently unregulated contaminants pose the greatest public health risk and will therefore be regulated in the future. MCLs, TTs and other drinking water standards are not fixed and absolute; they evolve as analytical testing methods become more precise, as new scientific information regarding the public health effects of pollutants is revealed, and as technological advancements are made in the field of water treatment. The EPA continually coordinates with state agencies and the scientific community to ensure adopted drinking water quality standards reflect the current state of knowledge regarding the health effects and toxicology of chemical constituents.

State Water Resources Control Board

The California SDWA prescribes enforceable primary standards for five major categories of drinking water contaminants consisting of microorganisms, disinfectants and disinfection byproducts, inorganic chemicals, organic chemicals, and radionuclides (i.e., radioactive forms of elements). Primary drinking water standards established by the SWRCB under the California SDWA are equivalent or more stringent than those set by the EPA under the aforementioned federal SDWA. The DDW has adopted new or more stringent drinking water standards for at least 16 inorganic and 33 organic contaminants, 2 groups of disinfection byproducts, 2 individual disinfection byproducts, and 2 treatment technique requirements. Domestic Water Quality and Monitoring Regulations (22 CCR 64400 et seq.) include MCLs for chemicals, monitoring requirements, compliance determination procedures, and requirements for public notification in case of failure. Monitoring requirements were also established in 2001 for nine unregulated organic and inorganic chemical contaminants, which allowed collection of information on their presence in drinking water supplies. In addition, secondary MCLs have been established for nonhealth concerns, based on aesthetic issues, such as taste, odor, or color in the water. The SWRCB and EPA have established secondary MCLs for at least 15 contaminants.

The Surface Water Treatment Rule (22 CCR 64650 et seq.) is a set of regulations intended to control the pathogenic microorganisms found in surface water sources by setting treatment requirements in lieu of MCLs. The regulations establish source sanitary survey, multi-barrier treatment, treatment design, operation, reliability, monitoring, reporting, and failure notification requirements. The regulation requires that the water source, be it surface water or groundwater under the direct influence of surface water, received permit approval from SWRCB in accordance with Sections 116525 through 116550 of the Health and Safety Code.

With regard to chemical contaminants that do not have established MCLs, the SWRCB establishes notification levels, which are health-based advisory levels. When chemicals are found at concentrations greater than their notification levels, certain reporting requirements apply. In addition, the SWRCB has established response levels at two to three times higher than each notification level, where the SWRCB recommends removal of a drinking water source from service to protect public health. The SWRCB has established notification levels and response levels for at least 30 constituents.

Evolution and Trends in Drinking Water Standards

Individual treatment technologies are designed to be effective in removing one or more types of contaminants including particulate, chemical, and biological contaminants. The application of a specific treatment technology depends on the type of contaminants present in the source water. Generally, groundwater sources contain more chemical contaminants, whereas surface water sources contain more particulate matter, and most waters require disinfection treatment in order to render the water microbiologically safe for human consumption. Technologies used for reducing or removing biological contaminants are classified disinfection or reduction treatment processes or as particulate or turbidity removal or filtration treatment processes (SWRCB 2015).

PWSs have long employed treatment techniques that have been effective at removing bacterial, viral, and protozoan pathogens; industrial chemicals; pesticides; and water-treatment byproducts. Contaminants that have emerged in the last few decades, such as perchlorate, methyl tertiary butyl ether (MTBE), *Giardia*, and *Cryptosporidium*, have been regulated and effectively controlled through treatment; while others, such as 1,2,3-trichloropropane (1,2,3-TCP), and N-Nitrosodimethylamine (NDMA), are in the process of becoming regulated by DDW. Notification levels for both 1,2,3-TCP and NDMA have been established, and the SWRCB is proposing an MCL for 1,2,3-TCP. Standards for some regulated chemicals, such as hexavalent chromium, arsenic, and disinfection byproducts, have been newly established or have become more stringent in the last decade.

Recent trends in recycled water use applications have focused on contaminants of emerging concern (CECs). Such contaminants include pharmaceuticals, endocrine-disrupting compounds such as hormones, and other environmentally persistent chemicals that enter the wastewater system through human use. These constituents are not currently regulated in the potable water supply or in wastewater. Studies indicate that conventional secondary wastewater treatment only partially removes CECs; however, three of the advanced treatment processes, specifically ozonation, reverse osmosis (RO), and advanced oxidation, have each been demonstrated to reduce such chemicals to nondetectable or very low levels. The SWRCB convened an expert advisory group and expert panel to identify knowledge gaps, recommend criteria, and determine other actions needed to successfully establish uniform statewide health-protective criteria for advance wastewater treatment systems and surface water augmentation (see the discussion under Potable Reuse Draft Regulations below).

Public Water System Permitting

PWS permits are issued to each producer or purveyor of drinking water serving a specified minimum number of connections as required by the California Health and Safety Code. The permit covers each source of water used by the system. These permits and their accompanying engineering reports identify the source site, construction, and contaminant threats, and establish the treatment, operational, and monitoring requirements for each source. Almost all permits include special provisions established specifically for the individual water system, setting forth operating requirements that, if not met, could result in a formal enforcement action. Permits do not have expiration dates, but whenever a water system adds a new water source, adds or changes treatment, has a change in ownership, or makes changes that are not in compliance with DDW drinking water regulations, then an amendment to the water permit is required.

In the case of potable reuse, the use of recycled water as a source must be identified in the PWS permit. There are several regulations, draft regulations, and policies that SWRCB uses in its current operations that must be considered in the development of any project involving potable reuse.

A Consumer Confidence Report is required annually for each PWS (22 CCR 64481). Each report must contain information on the source of the water delivered, including:

- The type of water delivered by the water system (e.g., surface water, groundwater, and the commonly used name [if any] and location of the body of water).
- If a source water assessment has been completed, notification that the assessment is available, how to obtain it, the date it was completed or last updated, and a brief summary of the system's vulnerability to potential sources of contamination.

The report is intended to clearly communicate to the public the source of their water, threats to the source, and any water quality problems. The City of San Diego (City) Public Utilities Department publicizes its annual drinking water quality reports (consumer confidence report) online at https://www.sandiego.gov/water/quality/reports. The City provides potable water that meets or exceeds all state and federal potable water quality standards.

Non-potable Recycled Water Regulations

Non-potable recycled water (also referred to as “reclaimed water” in the United States or “Title 22 water” in California) is a broad term that encompasses several beneficial uses of treated wastewater. Chapter 3 of CCR Title 22, Division 4, outlines criteria for non-potable water recycling. This document is commonly abbreviated as Title 22 in the industry, and contains regulations that govern the sources, production, intended use, and quality of recycled water. Limited applications are allowed at secondary treatment levels. Most agencies in California operate water reclamation plants meeting disinfected tertiary standards (which add filtration and disinfection process after secondary treatment). Disinfected tertiary treatment plants allow serving much broader uses.

The City's plants, along with Padre Dam Municipal Water District's and the Otay Water District's plants, include disinfected tertiary treatment, which allows them to serve the broadest application of non-potable recycled water uses in San Diego County. Allowed uses of tertiary treated recycled water include applied irrigation (including agricultural and landscaping), fire protection, toilet/urinal flushing, and construction uses (e.g., dust control, soil compaction, concrete mixing).

On February 3, 2009, the SWRCB adopted Resolution 2009-0011, Adoption of a Policy for Water Quality Control for Recycled Water (Recycled Water Policy). The Recycled Water Policy promotes the use of recycled water to achieve sustainable local water supplies, but also requires consistency with the SWRCB Policy 68-16, known as the Anti-degradation Policy. The Anti-degradation Policy requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Anti-degradation Policy allows limited degradation of water quality so long as such degradation does not result in water quality impaired to levels above water quality objectives as defined in Regional Basin Plans. Additionally, the Drought State of Emergency proclaimed in 2014 led the California Legislature to declare that a substantial portion of future water requirements may be met by beneficial use of recycled water.

The State Recycled Water Policy [Section 9.d] states, "Landscape irrigation with recycled water in accordance with this Policy is to the benefit of the people of the State of California. Nonetheless, the State Water Board finds that the use of water for irrigation may, regardless of its source, collectively affect groundwater quality over time" (SWRCB 2013). To assess whether a recycled water use project meets the Anti-degradation Policy requirements, the State Recycled Water Policy stated that a:

> project that meets the criteria for a streamlined irrigation permit and is within a basin where a salt/nutrient management plan satisfying the provisions of paragraph 6(b) is being prepared may be approved by the Regional Water Board by demonstrating through a salt/nutrient mass balance or similar analysis that the project uses less than 10 percent of the available assimilative capacity as estimated by the project proponent in a basin/sub-basin.

Potable Reuse Draft Regulations

California Senate Bill 918, signed into law on September 30, 2010, provided funding and deadlines to complete regulations for indirect potable reuse projects and to evaluate direct potable reuse. The law required the CDPH Drinking Water Program (now the SWRCB DDW) to adopt uniform water recycling criteria for potable water reuse for groundwater recharge by December 31, 2013. These draft regulations were completed and adopted on June 18, 2014, as 22 CCR Division 4, Chapter 3, Articles 5.1 and 5.2, "Indirect Potable Reuse: Groundwater Replenishment – Surface Application / Subsurface Application."

The law also required the department to develop and adopt uniform water recycling criteria for surface water augmentation by December 31, 2016. The proposed surface water augmentation regulations went through two separate external review processes: (1) an external scientific peer review of the basis of the scientific portions of the regulation (per Health and Safety Code section 57004), and (2) an evaluation by an expert panel as to whether the proposed uniform water recycling criteria for surface water augmentation adequately protects public health. These external review process were completed by the end of 2016, finding that the proposed uniform water recycling criteria for surface water augmentation adequately protects public health. The regulations include the following: (1) specific water quality criteria that must be met for approval of a "Surface Water Source Augmentation Project"; (2) describe the minimum required advance treatment processes, lab analyses, source control, and chemical/contaminant monitoring protocols; and (3) requires the water agency (or agencies) proposing such a project to submit a joint plan to the SWRCB and RWQCB outlining corrective actions to be taken in the event that a delivery of recycled municipal wastewater from the Surface Water Source Augmentation Project to an augmented reservoir fails to meet required water quality criteria, and procedures to be used in notifying the SWRCB and RWQCB of any operational changes that might adversely affect the quality of the recycled municipal wastewater to be delivered to an augmented reservoir. In addition, the plan must demonstrate the agency's financial, managerial, and technical capability to comply with the regulations; and demonstrate that all proposed treatment process will be operated, as designed, to achieve their intended function.

On July 21, 2017, the SWRCB announced the proposed regulatory action to amend California Code of Regulations, Title 22, Division 4, Chapters 3 and 17, for the purpose of establishing regulations governing surface water augmentation. The public comment period closed~~s~~ September 12, 2017, after which the SWRCB will consider the comments received, revise the regulations if appropriate, set an effective date, and submit them to the Office of Administrative Law for eventual adoption.

Potable reuse is currently regulated by the SWRCB and the RWQCBs through the issuance of National Pollutant Discharge Elimination System (NPDES) permits and Waste Discharge Requirements. These are described in greater detail in Section 5.11, Hydrology and Water Quality. The proposed surface water augmentation regulations would not preclude the RWQCB, via their authority and responsibility, from imposing more stringent requirements when issuing a waste discharge and/or water recycling permit to water recycling agencies that may choose to engage in surface water augmentation, including having to meet NPDES requirements established by the EPA. With respect to augmentation of water supply reservoirs using water that has undergone advanced purification, it is stated in the California Health and Safety Code (Section 116551) that SWRCB DDW shall not issue a permit to a public water system or amend a valid existing permit for the use of a reservoir as a source of supply that is directly augmented with recycled water unless SWRCB DDW performs an engineering evaluation of the proposed treatment technology and finds that the proposed technology will ensure that the recycled water meets all applicable primary and secondary drinking water standards and poses no significant threat to public health.

National Pollution Discharge Elimination System Permit

The Point Loma WWTP operates with a modified NPDES Permit that includes a variance from the federal Clean Water Act (CWA) secondary requirements for the discharge of total suspended solids and biochemical oxygen demand. The permit contains modified standards for only these two substances; all other constituents in the discharge meet the same standards as in a secondary permit. This variance has ensured protection of ocean water quality from discharges at the Point Loma WWTP ocean outfall while avoiding unnecessary and expensive upgrades at the Point Loma WWTP to secondary treatment capacity. The City currently operates the SBWRP at a secondary treatment level, which can be discharged to the ocean through the South Bay Ocean Outfall with no permit modification.

Section 301(h) of the CWA allows the EPA to grant variances to ocean dischargers who demonstrate that the modified standards are not harmful to the ocean. Additionally, in the 1990s, the City worked with the local congressional delegation to pass special legislation modifying the CWA to provide the City with its own unique ability to apply for a modified permit for the Point Loma WWTP. This legislation, known as the Ocean Pollution Reduction Act, was signed into law on October 31, 1994, and as a result, the City received its first modified permit in 1995. The permit must be renewed every 5 years.

In 2010, the EPA granted the City of San Diego its third 301(h) modified NPDES Permit. The 301(h) modification allows the City to continue operating the Point Loma WWTP as a chemically enhanced (advanced) primary treatment facility instead of upgrading the Point Loma WWTP to secondary treatment. During the 2010 NPDES permit renewal process, San Diego Coastkeeper and the San Diego Chapter of the Surfrider Foundation (Surfrider) entered into a Cooperative Agreement with the City to conduct the Recycled Water Study (City of San Diego 2012), described above, to find ways to maximize water reuse and minimize the flow to Point Loma WWTP. In accordance with the agreement, both organizations provided support to the EPA's decision to grant the modified permit. In 2014, the City negotiated a second Cooperative Agreement with San Diego Coastkeeper, Surfrider, Coastal Environmental Rights Foundation, and the San Diego Audubon Society (collectively referred to as the Environmental Stakeholders) for purposes of supporting potable reuse of wastewater and secondary equivalency.

The City has the legal authority under the Ocean Pollution Reduction Act to continue applying for a modified permit each renewal term. Results from the City's extensive Point Loma WWTP and ocean monitoring program have shown that discharges from the Point Loma WWTP continue to meet all requirements of the modified permit; however, <u>NPDES discharge permits must be renewed every fice years and the modified permit must be re-justified in conjunction with each renewal</u>~~because a modified permit is not a standard process, there is always uncertainty that the EPA would continue to approve this in the future~~. As part of its report of waste discharge, the City submitted a modified permit application for the 2015 permit renewal that committed to the goal of implementing a potable reuse program (Pure Water Program) and obtaining legislative or administrative actions such that the Point Loma Ocean Outfall discharge is recognized as equivalent to secondary treatment for purposes of compliance with the CWA (secondary equivalency). Implementation of the Program would off-load the Point Loma WWTP by removing flows and constituents upstream. This diversion would reduce the amount of water, total suspended solids, and biochemical oxygen demand discharged to the ocean.

On September 17, 2015, the City received a letter in support of the Program from the EPA recognizing that upgrades at the Point Loma WWTP to achieve secondary treatment may not be needed to protect ocean water quality as a result of Program improvements to effluent quality. The EPA and San Diego RWQCB released the Tentative Order No. R9-2017-0007 (Tentative Order/Permit) for public review and comment on October 28, 2016. The EPA and San Diego RWQCB revised the Tentative

Order/Permit based on comments received, including revisions to the Compliance Schedule for the Pure Water San Diego Potable Reuse Tasks. The San Diego RWQCB adopted the Order on April 12, 2017, and the EPA issued a Permit on August 4, 2017. The Order/Permit ~~will become~~became effective on October 1, 2017, for a 5-year term through September 30, 2022 (San Diego RWQCB and EPA 2017).

2.4.3 PREVIOUS STUDIES AND PROJECTS

The North City Project is the first in the state to propose reservoir augmentation with advanced purified recycled water. Other water purveyors have been implementing potable reuse projects through groundwater replenishment, primarily in Southern California, in an effort to reduce reliance on imported supplies and exert more local control on management of water resources. For example, the Orange County Water Agency has been replenishing their underground aquifers using advanced water purification technologies for over a decade.

The North City Project proposes reservoir augmentation, as the San Diego region lacks large groundwater basins suitable for large-scale groundwater replenishment projects. Like groundwater replenishment, reservoir augmentation employs the concept of an environmental buffer, whereby treated wastewater that has undergone wastewater treatment followed by advanced purification processes is discharged at a location that is removed from raw water intake facilities—both spatially and temporally—to allow for ample dilution and time to respond to any issues detected upstream in treatment barriers. Where environmental buffers provide less than the minimum dilution and retention times, additional treatment steps such as ozone system and biologically active carbon filters would be added to the advanced purification process. The City has been studying this concept for years and has commissioned economic, regulatory, technical, and social studies necessary to demonstrate the concept is protective of public health and is feasible. These studies are available on the City's website at http://www.sandiego.gov/water/purewater/index.shtml. They are also summarized in the discussion below.

Issues common to both groundwater replenishment and reservoir augmentation include ensuring adequate treatment for CECs and other unregulated contaminants. Issues unique to reservoir augmentation include potential changes to the water quality of the subject reservoirs, such as changes to reservoir chemistry and temperature (e.g., nutrient levels).

City of San Diego Water Reuse Study

The City of San Diego Water Reuse Study (2006) evaluated opportunities available to the City to increase beneficial use of recycled water, including both non-potable reuse and potable reuse, which is the augmentation of a potable drinking water supply (surface or ground water) with recycled water followed by an "environmental buffer" that precedes the typical treatment of drinking water prior to entering a potable water distribution system. Two groups were formed to provide input and oversee the process: an Assembly on Water Reuse comprising a cross-section of San Diego stakeholders and an Independent Advisory Panel of experts in relevant fields. The Metropolitan Joint Powers Authority and the SDCWA also participate in the stakeholder meetings. The study included an evaluation of six strategies integrating non-potable reuse and potable reuse opportunities for the North, Central, and South potable water service areas. A potable reuse project using the City's San Vicente Reservoir through a concept known as "reservoir augmentation" was identified as the preferred reuse strategy. This concept formed the basis of the North City component as analyzed in the Pure Water Program EIR (City of San Diego 2016b).

Water Purification Demonstration Project

In December 2007, the City Council voted to accept the Water Reuse Study and to proceed with the Water Purification Demonstration Project (Demonstration Project). The objective of the Demonstration Project was to determine the feasibility of turning recycled water produced at the NCWRP into drinkable water through the use of advanced water purification technology.

In the last decade, there have been significant advances in treatment technology (e.g., improvements in membrane performance, the use of advanced oxidation processes for the reduction of organic compounds, and the increasing use of ultraviolet radiation for disinfection) and analytical monitoring methodology (e.g., development of test methods for trace organic constituents—particularly endocrine disrupting compounds, pharmaceuticals, and ingredients in personal care products—and the ability to measure them at nanogram per liter or lower levels) (SWRCB 2015). Municipal wastewater contains a myriad of microbial pathogens (e.g., bacteria, parasites, and viruses) and chemical contaminants (e.g., heavy metals, pharmaceutically active compounds, endocrine-disrupting compounds, and ingredients in personal care products) that must be reduced to extremely low or immeasurable levels in recycled water used for potable reuse. According to the

Draft Safe Drinking Water Plan for California (SWRCB 2015), and as demonstrated by the City, advanced wastewater treatment processes are now available which are suitable to reliably accomplish this task.

The main components of the Demonstration Project included:

- Operated, tested and monitored a demonstration-scale advanced water purification facility (AWPF) that produced one million gallons of purified water per day;
- Convened an Independent Advisory Panel to provide expert peer review and feedback;
- Conducted a study of San Vicente Reservoir;
- Proposed a regulatory framework for a full-scale reservoir augmentation project;
- Performed an energy and cost analysis;
- Performed a pipeline alignment study;
- Conducted an education and outreach program.

The Demonstration Project included the design, installation, and operation of a 1 MGD demonstration-scale AWPF at the NCWRP, which began operation in June 2011. The AWPF treatment process begins with microfiltration (MF) or ultrafiltration (UF), followed by RO, and ends with ultraviolet disinfection and advanced oxidation processing (UV/AOP). Testing at the AWPF was conducted from June 2011 until August 2012 and included measurements for 342 constituents and parameters (231 regulated constituents and 111 non-regulated constituents).

Key monitoring activities from the demonstration-scale AWPF included:

- Daily testing to identify potential breaches in the membrane filtration units.
- Continuous measurement of total organic carbon (TOC) and conductivity to demonstrate that the RO system was performing as expected.
- Continuous UV reactor power level monitoring to confirm UV lamp operations.
- Daily monitoring of hydrogen peroxide dose and continuous flow confirmation to demonstrate that the target hydrogen peroxide dose was achieved.

This daily and continuous testing was conducted throughout the 12-month testing period. This extensive monitoring showed that the demonstration-scale AWPF equipment met the intended treatment performance on a continuous basis and was reliable throughout the operational period (City of San Diego 2013).

As shown in Table 2-1, comprehensive water quality testing at the demonstration-scale AWPF included almost 30,000 tests (including 9,000 tests during initial testing completed in 2012) of the purified water at various points in the treatment process and for 342 different constituents. The water quality of the purified water was compared to regulatory limits, verifying that purified water met all applicable water quality standards. Furthermore, the water quality testing shows that the purified water produced at the demonstration-scale AWPF approaches distilled water quality. For example, the total dissolved solids (a measure of salt content) in the purified water is about 15 milligrams per liter (mg/L), compared to total dissolved solids in San Diego's source and drinking water of about 500 mg/L. As a second example, the TOC (a measure of carbon that is bound in organic molecules) in the purified water is about 0.1 mg/L compared to TOC of 3.0 mg/L in San Diego's source water and 2.5 mg/L in San Diego's drinking water (City of San Diego 2013).

Regarding CECs and unregulated constituents that as of yet do not have primary drinking water MCLs, only 6 out of 111 unregulated constituents were detected in the purified water during in at least one sampling event. All six were 10 million times to 18 times lower than the associated Drinking Water Equivalent Level or the EPA-identified Health Reference Level. Although these standards are guidelines and not regulatory limits, they both represent an acceptable concentration in drinking water based on a human health risk assessment that considered an average person consumes 2 liters of water per day for 70 years. As discussed below, the water produced by the full-scale facility would be diluted to at least 100:1 in the reservoir, or will be diluted at least 10:1 in the reservoir with an additional, independent treatment barrier at the AWPF.

Table 2-1
AWPF Demonstration Project Monitoring Results

Regulations or Guidelines	Number of Constituents and Parameters	Purified Water Results	Comment
California Department of Public Health Goals			
Primary Drinking Water MCLs	90	Meets All Regulations	Primary drinking water MCLs are enforceable, human health-based water quality limits.

Table 2-1
AWPF Demonstration Project Monitoring Results

Regulations or Guidelines	Number of Constituents and Parameters	Purified Water Results	Comment
Secondary Drinking Water MCLs	18	Meets All Regulations	Secondary drinking water MCLs are unenforceable water quality goals related to aesthetic water characteristics such as taste and odor. Purified water met all federal and state secondary MCLs with the exception of pH and corrosivity. The potential full-scale AWPF would include post treatment to meet these requirements.
Microbial	4	Not Detected	Total coliform, fecal coliform, and viruses (somatic and male specific bacteriophage)
Notification Levels	30	Meets All Regulations	Notification levels are drinking water quality advisory limits.
Groundwater Replenishment Criteria	142	Meets All Regulations	Groundwater Replenishment Criteria are water quality limits specifically developed for indirect potable reuse via groundwater replenishment.
Anticipated San Diego Water Board Goals for Reservoir Augmentation			
Reservoir Limits	143	Meets All Regulations	Reservoir limits are EPA Numeric Criteria for Priority Pollutants and San Diego Basin Numeric Objectives.
Total	231	Because some contaminants and parameters are in multiple regulations/guidelines, the total of unique parameters is less than the sum.	

Source: City of San Diego 2013, page 34.

The Water Purification Demonstration Project has shown that the advanced water purification process would produce water in compliance with existing drinking water quality standards and guidelines.

Attachment B, Quarterly Testing Report No. 4, of the AWPF Study Report (City of San Diego 2013) provides a comprehensive list of all potential drinking water contaminants and the monitoring results of the level of contaminants present in purified water after advanced treatment. Common drinking water contaminant levels are summarized below in a comparison chart for the tertiary effluent from the NCWRP, demonstration facility AWPF product water, imported raw aqueduct water, Miramar WTP product water, Alvarado WTP product water, and Otay WTP product water. As shown below, the product water from the AWPF has substantially lower levels of contaminants than the imported raw aqueduct water in all instances except for nitrate. In instances where the product water for the WTPs had detectable levels of contaminants, the product water for the AWPF had lower levels in almost all instances.

Table 2-2
Comparison Summary of Contaminants with Federal and State Drinking Water Standards

	Primary MCL or (Secondary MCL)	NCWRP Tertiary Effluent	Pure Water Facility	Imported Raw Aqueduct Water	Miramar WTP (2015 CCR Average)	Alvarado WTP (2015 CCR Average)	Otay WTP (2015 CCR Average)
Radioactivity (pCi/L)							
Alpha Radiation	15	0.016	0.16	1.02	ND	4.4	6.4
Beta Radiation	50	3.4	0.62	5	ND	ND	ND
Combined Radium	5	0.27	0.22	0.57	<DLR	<DLR	<DLR
Uranium	20	0.31	<0.019	2.2	2.4	2.8	1.8
Volatile Organics (ppb)							
Tetrachloroethylene	5	<0.18	<0.18	<0.18	<DLR	<DLR	<DLR
Trichloroethylene	5	<0.18	<0.18	<0.18	<DLR	<DLR	<DLR
Inorganics (ppm)							
Aluminum	1000	6.1	<5	16	<DLR	<DLR	<DLR
Arsenic (ppb)	10	0.77	<0.4	2.2	<DLR	<DLR	<DLR
Fluoride, naturally occurring	2	0.71	<0.02	0.25	0.3	0.3	0.3
Nitrate	45	66	4.3	<1	<DLR	<DLR	<DLR
Nitrite as N	1000	<100	<10	<10	<DLR	<DLR	<DLR
Selenium (ppb)	50	1.1	<0.28	0.87	<DLR	<DLR	<DLR
Secondary Standards (ppm)							
Chloride	250	270	<5	71	99.2	103	112
Color (units)	15	15	<3	<3	ND	ND	ND
Iron (ppb)	300	69	<1.1	18	<DLR	<DLR	<DLR
Manganese (ppb)	50	72	<0.2	2.8	<DLR	<DLR	<DLR
Odor (TON)	3	10	<1	<1	ND	ND	1
Specific Conductance (μmhos/cm)	900	1500	26	670	985	993	1010

Table 2-2
Comparison Summary of Contaminants with Federal and State Drinking Water Standards

	Primary MCL or (Secondary MCL)	NCWRP Tertiary Effluent	Pure Water Facility	Imported Raw Aqueduct Water	Miramar WTP (2015 CCR Average)	Alvarado WTP (2015 CCR Average)	Otay WTP (2015 CCR Average)
Sulfate	250	180	<0.5	130	232	232	219
Total Dissolved Solids	500	650	11	290	618	620	621
Turbidity (NTU)	5	<0.024	<0.024	<0.024	0.09	0.17	0.13
Other Analyses (ppm)							
pH (Units)	NR	6.91	5.89	7.62	8.1	8.07	8.23

Notes: ppb = parts-per-billion; ppm = parts-per-million; pCi/L = picoCuries per liter; ntu = nephelometric turbidity units; µmho/cm = micromhos per centimeter; NR = not required to be analyzed; ND = not detected; <DLR = average is less than the detection limit for reporting purposes; MCL = maximum contaminant level.
Sources: Table 26 and Table 27, Appendix B, Quarterly Testing Report No. 4, AWPF Study Report (City of San Diego 2013).

Table 2-3 provides a summary of the findings for each of the Pure Water Program's key components.

Table 2-3
Summary of Demonstration Project Findings

Project Component	Key Findings
Convene an Independent Advisory Panel	The Independent Advisory Panel found that purified water would meet or exceed all drinking water requirements and provide multiple barriers for public health protection; reservoir modeling verified that the reservoir will provide at least a 100-fold dilution of purified water, SWRCB and the San Diego RWQCB have indicated support for the project, and City staff has implemented an effective public outreach program. The Independent Advisory Panel found the demonstration-scale AWPF produced water of a higher quality than any source available to the City of San Diego and unanimously concluded that a reservoir augmentation project at San Vicente Reservoir would be a landmark project in the acceptance and furtherance of indirect potable reuse and would improve the reliability of the City of San Diego's water supply portfolio.
Design, install, and operate a demonstration-scale advanced water purification facility at the NCWRP	Water quality of the purified water was compared to regulatory limits, verifying that purified water met all applicable water quality standards. This comprehensive water quality testing showed that the purified water produced at the demonstration-scale AWPF is pure, approaching distilled water purity. Continuous and daily monitoring of each water purification process can assure the integrity of each treatment step and that only high quality water is produced.
Perform a study of San Vicente Reservoir to establish residence time and water quality parameters and conditions of purified water in the reservoir	The addition of purified water into San Vicente Reservoir would not affect natural hydrologic characteristics of the reservoir, seasonal stratification, or mixing. Blending and retention of purified water in the reservoir would constitute a substantial environmental barrier, sufficient to meet regulatory requirements. For all anticipated reservoir operating scenarios and purified water release locations, the reservoir would dilute the purified water by at least a factor of 100 to 1, or by a factor of 10 to 1 with an additional, independent treatment barrier at the AWPF. The addition of purified water would not substantially affect water quality in San Vicente Reservoir. The dam raise will improve overall water quality and the addition of purified water will not change these improvements.

Table 2-3
Summary of Demonstration Project Findings

Project Component	Key Findings
Perform an energy and economic analysis	The estimated capital and annual operational and maintenance costs for a full-scale reservoir augmentation project at San Vicente Reservoir are $369 million and $15.5 million per year, respectively. This capital and annual costs for a full-scale project yielded an estimated unit cost of $2,000/AF. This unit cost is comparable to the $2,100/AF unit cost estimated in the Long-Range Water Resources Plan for a full-scale (15 MGD average production) reservoir augmentation project at San Vicente Reservoir. Accounting for wastewater system avoided costs, the estimated net unit cost of a reservoir augmentation project at San Vicente Reservoir is $1,000/AF, which is comparable to the current imported water cost. A full-scale reservoir augmentation project at San Vicente Reservoir was estimated to require 2,500 kilowatt hours per AF (kWh/AF) of energy and would produce approximately 1.0 metric tons of greenhouse gases/AF. A full-scale project would consume energy and produce greenhouse gas emissions that are equivalent to imported water and less than ocean desalination.
Define the state's regulatory requirements for a full-scale reservoir augmentation project at San Vicente Reservoir.	The CDPH issued a concept approval of the City's San Vicente Reservoir Augmentation Project. The San Diego RWQCB, with concurrence from the EPA issued concept approval as well.
Perform a pipeline alignment study.	The estimated capital and annual operational and maintenance costs for the conveyance system are $225 million and $3.4 million, respectively. Updated analysis of the pipeline alignment confirmed that a southerly alignment appears to be the most feasible.
Conduct a public outreach and education program.	Recent research showed that when provided with information about the water purification process, respondents favor use of purified water to supplement local water supply via reservoir augmentation at San Vicente Reservoir. Feedback from individuals that toured the Advanced Water Purification Facility showed that providing an opportunity to tour the facility increases understanding about water purification.

Source: City of San Diego 2013, pgs. 121–124.

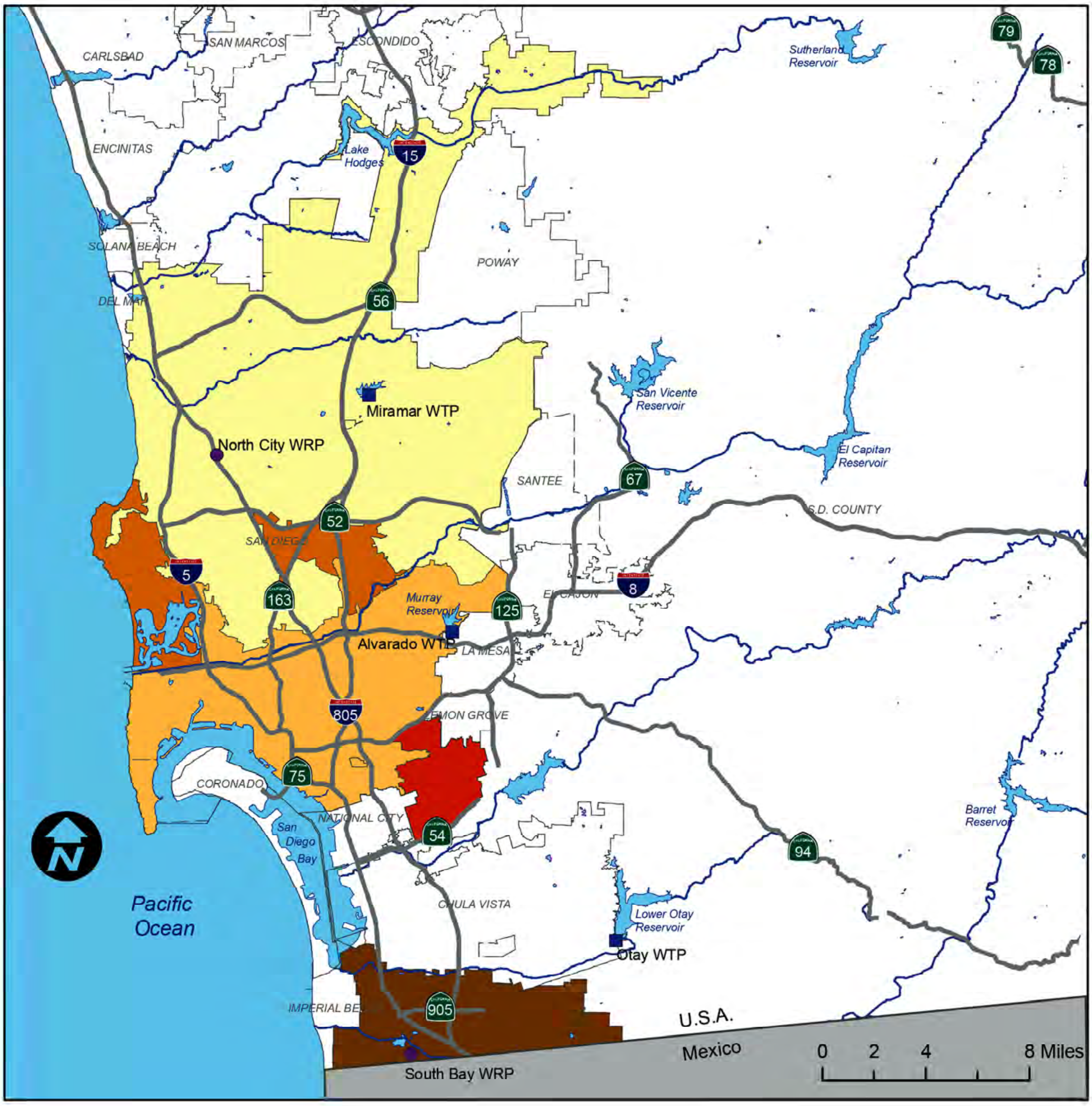
On October 12, 2011, the San Diego RWQCB adopted Resolution No. R9-2011-0069, which documented the San Diego RWQCB's support for a reservoir augmentation project, as well as its intent to consider permitting through the NPDES and Waste Discharge Requirements process. Regulatory acceptance of the City's Demonstration Project was validated through a Concept Approval letter from SWRCB and a Resolution of Support and Letter of Concurrence from the San Diego RWQCB in February 2013.

A report on the Demonstration Project was completed in March 2013 and was unanimously accepted during the April 23, 2013, City Council hearing (R-308121). At the hearing, the City Council directed staff to define in greater detail the City's potable reuse options and to determine a preferred implementation plan and schedule that considers potable reuse options for maximizing the local water supply and reducing flows to the Point Loma WWTP. This potable reuse program forms the basis of the Pure Water San Diego Program. On April 29, 2014, the City Council adopted a resolution (R-308906) supporting the implementation of Pure Water San Diego. On November 18, 2014, the City Council unanimously supported the application to renew the NPDES permit for Point Loma WWTP; the application included key elements of the City's Pure Water Program to implement potable reuse.

Recycled Water Study

In August 2009, the City, along with key stakeholders, initiated the Recycled Water Study (City of San Diego 2012) as part of a Cooperative Agreement between the City and two environmental groups: San Diego Coastkeeper and the San Diego Chapter of the Surfrider Foundation. The study developed integrated water reuse alternatives which support both non-potable and potable reuse to augment the region's water supply and reduce reliance on imported water. The Recycled Water Study identified potential locations for future AWPFs and water and wastewater facilities. Two of these locations, North City and South Bay, are existing water reclamation plants. The Recycled Water Study proposed to construct the AWPFs on vacant land adjacent to these existing reclamation plants and proposed to purify the recycled water they produce to near distilled-water quality. The study proposed a third AWPF as a combination of a water reclamation plant to be located west of the airport near Harbor Drive (due to its proximity to Pump Station No. 2 and the confluence of the vast majority of the wastewater generated within the Metro System) and an AWPF proposed to be located at a site in Mission Valley, which would process recycled water from the reclamation plant. The Recycled Water Study identified two City-owned and operated reservoirs (Otay Reservoir and the San Vicente Reservoir) as potential locations for reservoir augmentation (City of San Diego 2012).

The City Council accepted the Recycled Water Study on July 17, 2012 (R-307584). Follow-up studies and technical memoranda have been completed to refine the information presented in the very high level evaluation of the alternatives presented in the Recycled Water Study.



Legend

- Water Reclamation Plants (WRP)
- Water Treatment Plants (WTP)
- Major Freeways
- Rivers
- Municipal Boundaries
- Miramar Service Area
- Alvarado/Miramar Service Area
- Alvarado Service Areas
- Alvarado/Otay Service Area
- Otay Service Area
- Lakes/Reservoirs

Morena Lake, not shown in the figure, is located to the East and upstream of Barret Reservoir

SOURCE: City of San Diego 2015 Urban Water Management Plan

FIGURE 2-1

City of San Diego Potable Water System

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SOURCE: City of San Diego, 2018

DUDEK

FIGURE 2-2

City of San Diego Metropolitan Sewerage System

Pure Water San Diego Program North City Project EIR/EIS

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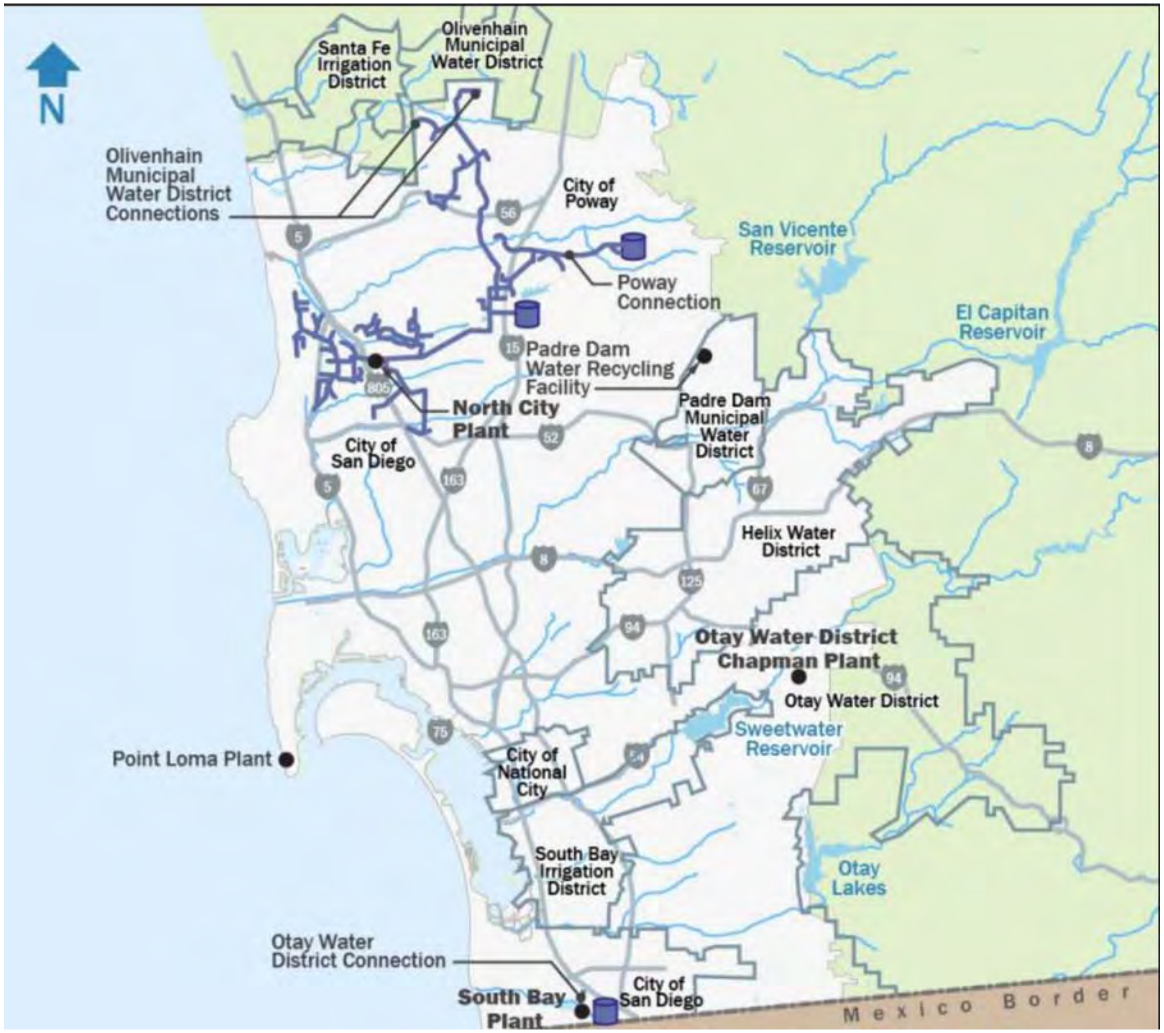

SOURCE: San Diego Recycled Water Study, 2012.

DUDEK

FIGURE 2-3
City of San Diego Recycled Water Conveyance System

Pure Water San Diego Program North City Project EIR/EIS

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CHAPTER 3 PROJECT DESCRIPTION/ALTERNATIVES

The National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) require that environmental documents identify and analyze a reasonable range of feasible alternatives that could be implemented to meet the North City Project purpose and need and objectives. In addition, CEQA and NEPA focus on alternatives that would avoid or substantially lessen any of the significant/adverse effects of the North City Project. This Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) evaluates the No Action/No Project Alternative and two Project Alternatives.

3.1 LOCATION OF THE PROJECT ALTERNATIVES

The North City Project Alternatives include a variety of facilities located throughout the central coastal areas of San Diego County in the North City geographic area. Figures 3-1 and 3-2 show the location of proposed facilities and pipelines for the alternatives. A new pure water facility, expanded water reclamation facility, and three pump stations would be located within the corporate boundaries of the City of San Diego (City). Proposed pipelines would traverse a number of local jurisdictions, including the cities of San Diego and Santee, and the community of Lakeside and other areas of unincorporated San Diego County. The proposed North City Pure Water Pipeline (North City Pipeline) and Landfill Gas (LFG) Pipeline would traverse federal lands within Marine Corps Air Station (MCAS) Miramar.

3.2 NO PROJECT/NO ACTION ALTERNATIVE

CEQA Guidelines, Section 15126.6(e) and NEPA regulations (40 CFR 1502.14(d)), require that a No Project (CEQA) and No Action (NEPA) alternative be analyzed in an EIR and an EIS, respectively, to allow decision makers to compare the impacts of not approving the action with those of approving the action. In the remainder of this document, references to the No Project Alternative are synonymous with the No Action Alternative.

Under CEQA Guidelines Section 15126.6(e), the No Project Alternative assumes existing conditions at the time that the Notice of Preparation is filed or at the time the environmental analysis commenced. This document reflects existing conditions through 2016. In addition, to satisfy NEPA requirements, this EIR/EIS also considers foreseeable actions that are likely to occur without implementation of the Pure Water Program.

Under the No Project/No Action Alternative, the North City Project would not be implemented. The proposed North City Pure Water Facility (NCPWF) and associated improvements at other treatment, pumping, and conveyance facilities would not be constructed. Therefore, 30 million gallons per day (MGD) of purified water would not be produced. Instead, potable water demand would continue to be met through imported water supplies. In addition, current levels of wastewater flows would continue to the Point Loma Wastewater Treatment Plant (Point Loma WWTP). It is anticipated that the Point Loma WWTP would continue operating under a modified permit.

3.3 NORTH CITY PROJECT ALTERNATIVES

The North City Project would use advanced water purification technology to produce purified water from recycled water and provide a safe, reliable, and cost-effective drinking water supply for San Diego. The North City Project consists of the design and construction of a new NCPWF, upgrades to an existing water reclamation facility, and design and construction of new pump stations and pipelines. The North City Project would construct the NCPWF east of Interstate 805 (I-805) and north of Eastgate Mall, across from the existing North City Water Reclamation Plant (NCWRP). Upgrades would occur at the existing NCWRP in order to provide sufficient tertiary influent for the NCPWF as well as to connect the existing centrate line with the proposed brine line. Pump station and pipeline facilities would convey different types of flows to and from the treatment facilities for: (1) diverting wastewater flows to NCWRP, (2) conveying recycled water to the NCPWF, (3) conveying purified water from the NCPWF to a reservoir, and (4) transporting waste flows (brine, centrate, and sludge) from treatment processes to solids handling facilities or back into the Metropolitan Sewerage System (Metro System). Upgrades would also occur at the Metro Biosolids Center (MBC) to handle the additional sludge produced by the NCWRP expansion and NCPWF. A new North City Renewable Energy Facility would be constructed at the NCWRP, which would receive landfill gas from the City's Miramar Landfill gas collection system via a new Landfill Gas (LFG) Pipeline.

Tertiary treated water would be treated at the NCPWF; from there, purified water would be piped to the Miramar Reservoir or San Vicente Reservoir, where it would blend with impounded water and imported supplies. The water would then receive further treatment at a potable water treatment plant before being distributed as potable water (see Figure 3-3, Pure Water System Overview).

The North City Project would create up to 30 MGD of locally controlled water and reduce flows to the Point Loma WWTP, which in turn would reduce total suspended solids (TSS) discharged to the ocean. The North City Project would construct facilities that have the ability to produce an annual average daily flow (AADF) of 30 MGD in 2021.

Two North City Project Alternatives (Project Alternatives) are proposed. The Miramar Reservoir Alternative is the ~~(~~Locally Preferred Alternative as determined by the City of San Diego. This alternative is also the Preferred Alternative for purposes of NEPA, by the U.S. Bureau of Reclamation.~~)~~ This alternative would construct the NCPWF and would convey purified water to Miramar Reservoir. The Miramar Reservoir Alternative would include improvements at the Miramar Water Treatment Plant (Miramar WTP) (see Figure 3-1, Miramar Reservoir Alternative, for a map of facilities proposed by the Miramar Reservoir Alternative). The San Vicente Reservoir Alternative would also construct the proposed NCPWF, but would include fewer treatment processes at the facility and would pipe purified water to the San Vicente Reservoir rather than the Miramar Reservoir. The San Vicente Reservoir Alternative would also include an additional pump station, the Mission Trails Booster Station (MTBS), along the San Vicente Pure Water Pipeline (San Vicente Pipeline) (see Figure 3-2, San Vicente Reservoir Alternative, for a map of facilities proposed by the San Vicente Reservoir Alternative). Table 3-1 shows a comprehensive list of all components associated with the North City Project and which components are associated with each Project Alternative. The two Project Alternatives are discussed in more detail below.

Table 3-1
North City Project Components

Project Component
Components Common to Project Alternatives
Morena Pump Station
Morena Wastewater Forcemain and Brine/Centrate Line (Morena Pipelines)
North City Water Reclamation Plant (NCWRP) Expansion
North City Pure Water Facility (NCPWF) Influent Pump Station
North City Pure Water Pump Station (North City Pump Station)
North City Renewable Energy Facility
Landfill Gas Pipeline
Metro Biosolids Center (MBC) Improvements
Miramar Reservoir Alternative
North City Pure Water Facility – Miramar Reservoir (NCPWF-MR)
North City Pure Water Pipeline (North City Pipeline)

Table 3-1
North City Project Components

Project Component
Pure Water Dechlorination Facility (Dechlorination Facility)
Miramar Water Treatment Plant (WTP) Improvements
San Vicente Reservoir Alternative
North City Pure Water Facility – San Vicente Reservoir (NCPWF-SVR)
San Vicente Reservoir Pure Water Pipeline (San Vicente Pipeline)
Mission Trails Booster Station (MTBS)

3.3.1 MIRAMAR RESERVOIR ALTERNATIVE

The Miramar Reservoir Alternative includes the following: (1) a new pump station at Morena Boulevard, a wastewater forcemain, and brine/centrate pipeline (Morena Pump Station and Pipelines); (2) expansion of the existing NCWRP; (3) construction of a new influent pump station at NCWRP and conveyance pipeline between NCWRP and the NCPWF; (4) construction of the new NCPWF; (5) construction of a new North City Pump Station; (6) construction of a new North City Pure Water Pipeline (North City Pipeline); (7) construction of a new renewable energy facility at the NCWRP; (8) a new LFG Pipeline between the Miramar Landfill gas collection system and the NCWRP; (9) upgrades at the MBC; and (10) improvements at the Miramar WTP (see Figure 3-1).

Morena Pump Station and Pipelines

In order to utilize the proposed expanded capacity of the NCWRP, approximately 32 MGD AADF of additional wastewater flows that would normally be conveyed to the Point Loma WWTP would need to be diverted to the NCWRP. The Morena Pump Station and Wastewater Forcemain are proposed to deliver maximum flow of 37.7 MGD of raw wastewater to the NCWRP, expanding the NCWRP's production capacity from 30 MGD to 52 MGD in dry weather conditions. Wastewater will be conveyed to the Morena Pump Station by connections with four existing sanitary sewer trunk sewers: the 78-inch North Mission Valley Interceptor, the 72-inch Morena Boulevard Interceptor No. 14, the 33-inch Morena Boulevard Trunk Sewer No. 11, and the 60-inch East Mission Bay Trunk Sewer No. 4.

<u>The North City Project would also increase production of Title 22 recycled water at the NCWRP. The increased production would be utilized to meet the demand of the</u>

NCPWF in order to produce an annual average daily flow of 30 MGD of purified water and to provide non-potable water to existing and planned future recycled water customers.

The proposed Morena Pump Station is to be located on a parcel currently owned by the San Diego Humane Society and the Society for the Prevention of Cruelty to Animals. The site is approximately 1 acre and is near the intersection of Sherman Street and Custer Street (see Figure 3-4, Morena Pump Station Site). The proposed Morena Pump Station would consist of: (1) a junction structure and intake screening facility – flow separator and screening structures, (2) a pump station building, (3) odor control and chemical storage, (4) an energy dissipater for the 30-inch brine/centrate line, (5) a transformer, (6) an electrical and motor control center building, and (7) a diversion structure (see Figure 3-5, Morena Pump Station Conceptual Site Layout).

Yard piping is anticipated to consist of both wet and dry underground piping as well as duct banks. The pump station will be an approximately 92-foot-long by 66-foot-wide, reinforced, cast-in-place concrete structure. The finished floor of the pump room and wet well will be approximately 52 feet below grade. Due to the location of the pump station, an additional depth of 6 to 10 feet may be required for sub-grade stabilization below the groundwater level. The top slab of the pump station will extend above finish grade approximately 1 foot, 6 inches at the ridge and taper down to 1 foot, 3 inches at the edges. It is anticipated that the cast-in-place walls will be approximately 4 feet thick and include external buttresses for lateral soil support.

Influent flows are conveyed in reinforced concrete pipe (RCP) with protective linings via a 72-inch-diameter west diversion and a 78-inch-diameter east diversion sewer pipeline. The pipelines will merge in a junction structure near the southwest parcel corner. From here the combined influent is conveyed via an 84-inch-diameter RCP conduit to the flow separator structure before discharging into the intake screening building via three 42-inch-diameter RCP conduits. Downstream of the intake screening building, the influent is sent to the pump station building through another 72-inch-diameter RCP.

Off-site infrastructure of the pump station facility, excluding the Morena Wastewater Forcemain and Brine/Centrate Line (Morena Pipelines), consists of a storm drainage line, pump station inflow piping, overflow piping, and associated subgrade diversion structures. Diversion structure No. 1 will be approximately 14 feet long by 12 feet wide; diversion structure No. 2 will be approximately 18 feet long by 10 feet wide. Flow control gates will be installed at each diversion structure for flow management into the pump station.

The Morena Pump Station would convey new wastewater approximately 11 miles through a new 48-inch-diameter wastewater forcemain to the existing NCWRP. The wastewater forcemain will connect to the existing 60-inch-diameter reinforced steel line prior to entering the existing headworks building at NCWRP.

Approximately 6 MGD AADF of brine (produced as a by-product of the advanced water purification treatment process) and 6 MGD AADF of centrate (product remaining after centrifugation at MBC) will be conveyed via a new 30-inch-diameter gravity flow line from the new NCPWF back to Morena Pump Station, and then to a sanitary sewer located in Friars Road where it will ultimately flow to the Point Loma WWTP. The brine/centrate line will combine with the 60-inch diameter overflow sewer and would discharge downstream of the diversion structures back to the Mission Valley Interceptor with sufficient distance as to not recirculate brine flows into the screening facility of the pump station.

The Morena Pipelines will follow the alignment as depicted in Figures 3-6A through 3-6C, Morena Wastewater Forcemain and Brine/Centrate Line Alignment. The alignment would begin in an open cut section near the north corner of the Morena Pump Station site, entering the public street right-of-way (ROW) on Custer Street. The alignment would generally head north along Sherman Street, Morena Boulevard, and West Morena Boulevard. The alignment would cross Tecolote Creek just to the east of Tecolote Road bridge, then continue generally heading north and east along ~~Ingulf~~ Jellette Street, Denver Street, Clairemont Drive, Clairemont Mesa Boulevard, and Genesee Avenue. It would cross near the bridge at San Clemente Canyon near the State Route 52 (SR-52) on-ramp. Following the bridge, the alignment would continue along Genesee Avenue, crossing SR-52 and the Metropolitan Transit System (MTS) railroad tracks. After the railroad tracks, the alignment will continue north along Genesee Avenue to the intersection of Nobel Drive and Genesee Avenue. After the intersection, the alignment will head east on Nobel Drive and then continue heading north on Towne Centre Drive. The alignment would turn east on Executive Drive and cross I-805. The alignment would end at NCWRP. Three trenchless installations are proposed along the Morena Pipelines alignment and include the following: (1) San Clemente Canyon at the SR-52 eastbound off-ramp/on-ramp; (2) railroad tracks owned by the MTS at Rose Canyon north of University City High School and (3) the I-805 at the terminus of Executive Drive to the NCWRP. An additional trenchless installation would occur where the overflow pipeline crosses MTS right-of-way near the Morena Pump Station.

The entire alignment of the wastewater forcemain would be constructed of welded steel pipe that has an inner mortar coating that is tape wrapped with a mortar shield coating on the outside. The pipe would be cathodically protected by an induced current to prevent corrosion. The pipe would be tested to a pressure that is 1.5 times higher than the proposed operational pressure to ensure structural integrity.

North City Water Reclamation Plant Expansion

The NCWRP is an existing facility located south of Eastgate Mall and east of I-805, and is currently developed with wastewater treatment facilities, an operations building, a power generation facility, and the Demonstration Project (see Figure 3-7, North City Water Reclamation Plant Expansion Site). The NCWRP would be expanded from a capacity of 30 MGD to 52 MGD (AADF) and 90 MGD on a peak daily flow and additional wastewater flows would be delivered from the Morena Pump Station and Wastewater Forcemain (CH2M 2017). This recommended expansion intends to provide sufficient capacity to meet the NCPWF flow and water quality needs, and to improve energy efficiency. Up to 12 MGD of disinfected tertiary effluent produced by the NCWRP will be delivered to satisfy non-potable reuse demand. An additional 42 MGD of tertiary effluent flow will be pumped to the NCPWF to produce an AADF of 30 MGD of purified water.

To ensure the 30 MGD AADF of purified water can be produced at the NCPWF, the NCWRP will undergo an expansion of the primary, secondary, and tertiary treatment processes, as well as the corresponding support systems. The recommended improvements are presented in Figure 3-8, North City Water Reclamation Plant Expansion Improvements, and the proposed location for improvements are shown on Figure 3-9, North City Water Reclamation Plant Expansion Conceptual Site Plan. An alternative design concept to the site layout shown is being evaluated to repurpose the existing secondary clarifiers to minimize demolition and the size of new aeration basins.

To increase capacity at the NCWRP, a number of new process units and tankage would be required. Process units requiring expansion include influent screening, primary sedimentation, flow equalization, aeration basins, secondary clarification, and tertiary filtration. The expanded NCWRP facilities are expected to include an additional bar screen, grit pumps, primary sedimentation with chemically enhanced primary treatment, a primary equalization basin, aeration basins using biological nutrient removal, secondary clarifiers, tertiary filters, and additional ancillary and support systems.

The existing main access road, Road "B" (near Eastgate Mall), will need to be realigned to allow the addition of the new secondary clarifiers and to be aligned with the plant entrance for the NCPWF across Eastgate Mall. At the perimeter of the new secondary clarifiers a new maintenance road will be constructed. The maintenance road will be 20 feet wide at the south leg, and then narrow down to 15 feet wide on the east leg.

Centrate, which is the water leaving a centrifuge after most of the solids have been removed at MBC, is currently pumped through a 4.3-mile-long, 20-inch-diameter forcemain to a drop structure at the Influent Pump Station at NCWRP. An increased volume of centrate would be produced at MBC as a result of the increased influent received at MBC. In addition, construction of the Morena Pump Station would divert additional wastewater flows to the NCWRP, including increased centrate flows, which would result in a higher than desirable concentration of nitrogen in the tertiary effluent produced at NCWRP, and therefore in the influent received at the NCPWF. The centrate forcemain would be connected to the proposed brine line that discharges from the NCPWF to convey flows downstream of the Morena Pump Station. A brine-centrate valve vault will be constructed on the NCWRP site adjacent to the tunnel that conveys the brine and wastewater forcemains on the western edge of the NCWRP next to the existing aeration basins. The brine-centrate valve vault would be approximately 22 by 14 feet, within which the centrate pipeline would connect into the brine pipeline. The vault would allow for personnel access to check valves and perform routine maintenance.

<u>Non-potable recycled water usage is highly affected by the seasons since a majority of the water serves landscaping. Demands peak in the summertime, with a general rule of thumb being that peak summer day demands will be twice the average annual demands. The seasonal fluctuation is an important constraint for non-potable recycled water systems since serving peaks require sizing treatment plants and storage facilities large enough to handle the highest demand condition. This generally means that the treatment plant capacity must be two times larger than the average demands, resulting in potentially underutilized capacity at the treatment plants. Optimization through peak management is a major focus for all infrastructure systems (City of San Diego 2012).</u>

North City Pure Water Facility Influent Pump Station and Conveyance

The NCPWF Influent Pump Station will be constructed at the NCWRP and will convey tertiary effluent from the NCWRP to the NCPWF as shown on Figure 3-10, North City Pure Water Facility Influent Pump Station and Conveyance Location. The NCPWF Influent Pump Station will have a maximum capacity of 42.5 MGD to enable the NCPWF to produce a maximum of 34 MGD of purified water after accounting for recycle and other streams. The NCPWF Influent Pump Station would be located on the west side of the NCWRP adjacent to the tertiary filters to divert tertiary effluent from upstream of the chlorination facilities and pump it to the NCPWF. The NCPWF Influent Pump Station would consist of a single enclosed 6,700-square-foot building approximately 32 feet high and would contain two separate rooms: a pump room and electrical room.

Piping, equipment, and appurtenances are currently located within the site. These components will be removed prior to construction of the NCPWF Influent Pump Station. The site is partly covered with grass and is relatively flat.

The proposed tertiary effluent pipeline alignment crosses Road C in a northwest direction and then continues to the north along the western boundary of the NCWRP site until it passes under Eastgate Mall to the future NCPWF site. Existing grades vary from about 342 feet above mean sea level (AMSL) at the pump station to about elevation 368 feet AMSL at the NCPWF site to the north. A concrete retaining wall up to 20 feet in height is located on the north side of the landscaped area west of Building 51. Other improvements include a concrete modular (reinforced earth) wall located adjacent to the proposed pipeline alignment along the western boundary of the NCWRP, as well as landscaped and hardscaped areas.

North City Pure Water Facility – Miramar Reservoir Alternative

The new NCPWF under the Miramar Alternative (NCPWF-MR) would be located on the vacant 10-acre City-owned lot across Eastgate Mall to the north of the NCWRP (see Figure 3-11, North City Pure Water Facility Site). The NCPWF-MR would produce 34 MGD AADF of purified water. A portion of the purified water would be returned to the NCWRP to reduce the TSS concentration of the disinfected tertiary treated effluent to 1,000 milligrams per liter (mg/L), a level suitable for irrigation. Approximately 30 MGD AADF of purified water will be pumped to Miramar Reservoir.

The treatment process is described in more detail in Section 3.6. The treatment train includes an ozone system, biological activated carbon filtration (BAC), membrane filtration (MF), reverse osmosis (RO), and ultraviolet/advanced oxidation process (UV/AOP), before it is stabilized and chlorinated prior to pumping out to Miramar Reservoir. In addition to process areas for each stage of treatment at the NCPWF-MR, the facility would include chemical feed systems and post-treatment chemical storage.

Figure 3-12, North City Pure Water Facility – Miramar Reservoir Conceptual Site Layout, provides a conceptual site layout for the NCPWF-MR. The access to the site will be from Eastgate Mall, and the entrance will be coordinated with the entrance to the NCWRP. A traffic signal is proposed at the NCWRP driveway to provide a protected crossing for pedestrians and will be designed in accordance with the City of San Diego standards, including appropriate signing and striping. An approximately 15,000-square-foot operations and maintenance (O&M) building with three above-grade stories will be built as part of the NCPWF-MR, including a water quality testing laboratory.

All the pipes between the NCPWF-MR and the NCWRP will be direct buried. Major piping and duct banks within the NCPWF-MR will also be direct buried. Smaller pipes (chemical, utility lines etc.) will be installed in shallow utility trenches for better access.

North City Pure Water Conveyance System

The North City Pure Water Conveyance System will transmit product water from the NCPWF-MR to Miramar Reservoir where it will be blended with the imported raw water in the Miramar Reservoir and receive additional treatment at the Miramar WTP. The North City Pure Water Conveyance System consists of the North City Pure Water Pump Station (North City Pump Station), North City Pipeline, and the Pure Water Dechlorination Facility (Dechlorination Facility).

The North City Pump Station would be located on the southeast corner of the NCPWF site as shown on Figure 3-12. The North City Pump Station will have three duty pumps and one standby pump, all of which are 1,000 horsepower (HP) motor pumps and vertical-turbine. Each pump will be design to deliver a flow rate of 7,593 gallons per minute. The North City Pump Station layout is shown on Figure 3-13, North City Pump Station Conceptual Site Layout. The North City Pump Station will serve as the NCPWF-MR's only effluent pump station and will convey purified water from the NCPWF Product Water Storage Tank via the approximately 8-mile (46,000-linear-foot) North City Pipeline to the Miramar Reservoir.

The North City Pipeline will be designed for an average daily flow of 30 MGD with a minimum daily flow of 23 MGD and a maximum daily flow of 33 MGD. A 48-inch-diameter welded steel pipe is the recommended width and material for the North City Pipeline as the most suitable for the design conditions.

The North City Pipeline alignment is shown on Figures 3-14A and 3-14B, North City Pure Water Pipeline Alignment. Detailed cross sections of the North City Pipeline are included on Sheets C1 through C51 in the Design Report for the North City Pure Water Pipeline (HDR ~~2017~~2018). The North City Pipeline is proposed to travel through the University, Mira Mesa, and Scripps Miramar Ranch communities of the City of San Diego (City of San Diego 2017a). The North City Pipeline would also cross federal lands in MCAS Miramar along segments of Miramar Road and would cross an unincorporated area of the County of San Diego immediately after the I-15 crossing.

The North City Pipeline alignment would begin in an open trench in Eastgate Mall and would head southeast, with a short trenchless section just before Eastgate Court. At Miramar Road, the North City Pipeline would continue east for approximately 4.5 miles, with a bridge over the MTS Railway crossing and a short trenchless section under the BNSF Railway crossing. The North City Pipeline would turn north on Kearny Villa Road and then turn east on Candida Street. The North City Pipeline would head north on Via Pasar via a trenchless segment, and then continue east on Via Excelencia in an open cut section. A trenchless segment would cross I-15 then would return to an open cut section across private property then turn north on Businesspark Avenue. The North City Pipeline would continue north on Carroll Canyon Road then head east on Hoyt Park Drive and Meanley Drive, continuing east/northeast before crossing Evans Pond in a trenchless segment.

The final segment of the North City Pipeline will consist of a subaqueous pipeline within Miramar Reservoir. The segment of pipeline will begin at the Miramar WTP site and continue to the far east side of Miramar Reservoir. The pipeline would be a submerged, 4,800-foot-long HDPE pipe ranging in diameter from 8 inches to 54 inches with 94 outlets and 188 subaqueous diffusers along the bottom of Miramar Reservoir.

The Dechlorination Facility will be located at the end of Meanley Drive off the cul-de-sac on the City's property for the Miramar Recycled Water Storage Tank as shown on Figure 3-15, Pure Water Dechlorination Facility Site. The facility will include an approximately 768-square-foot above-grade building to house chemical storage tanks, dosing pumps, analyzers, and associated piping valves and appurtenances as shown on Figure 3-16, Pure Water Dechlorination Facility

Conceptual Site Layout. The NCPWF purified water will be chlorinated to maintain chlorine residual and prevent regrowth within the North City Pipeline. Prior to blending the purified water with the raw water at Miramar Reservoir, the remaining free chlorine residual will be removed from the purified water to protect the aquatic life in the lake. The Dechlorination Facility would reduce the residual chlorine concentration to below the required limit of 0.019 mg/L. The use of 38% concentration liquid sodium bisulfite solution is proposed as the preferred method of removing total and free chlorine residue from the purified water.

North City Renewable Energy Facility

A new North City Renewable Energy Facility would be constructed in order to provide power to the expanded NCWRP as well as the new NCPWF and North City Pump Station. The new facility includes approximately 15.4 megawatts (MW) of new generation capacity. The 5 MW of existing power generation capacity already at NCWRP would remain.

Six new internal combustion engines (ICE) and generator units would be installed. Each of these consists of a 3.8 MW Caterpillar Model CG260-16 IC or equivalent ICE and generator units. The generator units would use landfill gas as fuel, supplemented with natural gas as needed. One additional 3.8 MW Caterpillar Model CG260-16 IC or equivalent ICE will serve as backup to the engines.

The engines will be placed inside a building located immediately south of the new circular secondary clarifiers and north of the existing power generation facility at NCWRP (see Figure 3-7, NCWRP Expansion Site). The building will include sound suppression features to reduce the noise levels outside the building. The estimated stack height of the engines' exhaust stacks is 55 feet measured from the finished ground elevation immediately adjacent to the power generation building (at approximate elevation 354 feet AMSL) which is approximately 30 feet above the top of the building.

A skid-mounted equipment package consisting of a natural gas compressor system, air receivers, and oil storage will be located on the site adjacent to the power generation building. Two additional buildings will be included on the site for controls equipment and storage. The facility will also include a gas cleaning and cooling equipment skid and an electrical switchyard. An area chemical storage, containment, and feed facility will be provided for emissions control.

The facility layout includes relocation of the City's existing 1.6 MW engine to a new location on the site near the existing power generation equipment at NCWRP in order to accommodate the layout of the new North City Renewable Energy Facility. Figure 3-17, North City Renewable Energy Facility Conceptual Site Layout, illustrates a preliminary layout for the new North City Renewable Energy Facility at the NCWRP.

The North City Renewable Energy Facility covers an area of approximately 1 acre and is fully contained within the existing NCWRP property. Approximately half of that area is existing impervious paved surface and the entire area will be impervious once the facility is constructed. The site topography for the new North City Renewable Energy Facility at NCWRP will necessitate a perimeter retaining wall approximately 300 feet in length with a maximum height of 22 feet. The retaining wall will be either a mechanically stabilized earth wall or reinforced concrete. The North City Renewable Energy Facility will include utility relocations, new utilities, equipment, earthwork, retaining wall, paving, and other site-preparation activities.

Landfill Gas Pipeline

The new North City Renewable Energy Facility will receive landfill gas from the City's Miramar Landfill gas collection system via a new 12-inch diameter LFG Pipeline. The approximately 15,885 linear feet alignment runs from the existing Miramar Landfill north along the western end of the MCAS Miramar property to the NCWRP site as shown on Figure 3-18, Landfill Gas Pipeline Alignment. The new LFG Pipeline will parallel an existing 10-inch-diameter gas pipeline that conveys landfill gas from the landfill to fuel the existing power generation units at NCWRP. Approximately 4,050 linear feet of the new LFG Pipeline will be constructed within the limits of the City's existing 40-foot utility easement where it crosses the Veteran's Administration (VA) at the Miramar National Cemetery. Within the VA, the majority would be constructed using open trench techniques. A short section of the LFG Pipeline would be constructed using trenchless techniques where the alignment passes developed portions of the cemetery in order to avoid sensitive vegetation (wetlands) and to minimize disturbance to cemetery visitors. An expanded additional 10-foot easement is planned along the remainder of the alignment outside of the VA to facilitate construction and future maintenance activities.

A new 5,000-square-foot gas compressor station will be sited immediately adjacent to an existing gas compressor station at the Miramar Landfill in order to pressurize and convey the landfill gas from the landfill to NCWRP.

Metro Biosolids Center Improvements

The MBC site is currently developed with biosolids treatment facilities. MBC is located adjacent to the Miramar Landfill, north of State Route 52 and south of MCAS Miramar (see Figure 3-19, Metro Biosolids Center Site).

Diverting additional wastewater flows to the NCWRP ultimately changes the relative contribution of biosolids received at the MBC from the NCWRP and the Point Loma WWTP. Projected flows of raw solids from the NCWRP will increase, while projected flows of digested solids from Point Loma WWTP will remain roughly constant such that MBC will be required to provide on-site anaerobic digestion for a greater percentage of the system's biosolids output. In addition to changes in quantity, changes in treatment processes at the NCWRP and Point Loma WWTP may change the quality, and hence treatability, of the two biosolids streams. Raw solids flows are expected to increase by a factor of 7 from a current maximum operating flow of 0.89 MGD to a projected flow of 6.55 MGD at maximum conditions; solids in pounds per day (lb/d) are expected to increase by a factor of 5:1 from 56,000 lb/d (current) to 294,000 lb/d (maximum conditions).

Improvements at MBC would include expanding the existing closed-loop grit removal system and building; replacement of the existing thickening centrifuges (a total of six new centrifuges will be installed); upgrades to digesters, including replacing the existing digester gas laterals with larger lines and larger gas handling appurtenances, installing one additional flare, and replacing existing biogas booster blowers with three new blowers and increasing the size of the biogas feed line from the blowers to the cogeneration facility; installing new thickened sludge supply line; upgrading the sludge feed pumps and polymer feed pumps; installing three new centrate pumps and variable frequency drives; adding a fourth off-the-shelf replacement peristaltic pump; and expansion of existing piping systems. Improvements at MBC are shown on Figure 3-20, Metro Biosolids Center Improvements Conceptual Site Layout.

The current centrate pump station at MBC would require pumps to be upgraded to be capable of higher flows and pressure. In addition, the centrate forcemain would need regular maintenance to clean the pipe and restore capacity to its full potential. As part of the pipe cleaning, existing plug valves would need to be replaced with full port valves. Launching and receiving pits may need to be constructed.

Miramar Water Treatment Plant Improvements

Under the Miramar Reservoir Alternative, purified water discharged into the Miramar Reservoir will be pumped via the existing Miramar Reservoir Pump Station to the Miramar WTP for treatment and eventual distribution (see Figure 3-21, Miramar Water Treatment Plant and Miramar Reservoir Pump Station Site, for the location of the Miramar WTP and Miramar Reservoir Pump Station). Currently, the majority of the water treated at the Miramar WTP is fed directly to the plant, and the Miramar Reservoir is primarily used for balancing flows and emergency storage. Under the Miramar Reservoir Alternative, the Miramar Reservoir will receive approximately 30 MGD AADF of purified water on a more or less continuous basis, meaning that the Miramar Reservoir Pump Station must operate at roughly 30 MGD AADF to maintain the inflow/outflow balance in the reservoir. This increased use calls for rehabilitation of the Miramar Reservoir Pump Station, which includes upgrading the existing pumps with Variable Frequency Drives along with various mechanical upgrades to the valves and piping. Machinery and pumps would be housed within concrete structures with acoustically absorptive treatments, where necessary. Additional noise reduction measures may also be applied, such as sound enclosures, separate rooms for high noise equipment, etc.

In addition to increased pumping, the Miramar Reservoir Alternative will result in changes to the treatment and corrosion control processes during operation of the Miramar WTP. Operational adjustments, such as changes to chemical dosing, may also be required. The Miramar WTP would be completely powered by an on-site 1 megawatt solar photovoltaic system.

3.3.2 SAN VICENTE RESERVOIR ALTERNATIVE

Project components described above under the Miramar Reservoir Alternative that are also common to the San Vicente Reservoir Alternative include (1) the Morena Pump Station and Pipelines, (2) expansion of the existing NCWRP, (3) construction of a new influent pump station at NCWRP and conveyance pipeline between NCWRP and the NCPWF, (4) a new power generation facility at the NCWRP, (5) a new LFG Pipeline between the Miramar Landfill gas collection system and the NCWRP; and (6) upgrades at the MBC. The San Vicente Reservoir Alternative would yield 31.4 MGD AADF of purified water and 12 MGD AADF of recycled water for non-potable use.

Both alternatives would include the construction of a new full-scale advanced water purification facility adjacent to the NCWRP and a pipeline to convey purified water from the NCPWF to a reservoir. However, because of the different sizes of the Miramar Reservoir and San Vicente Reservoir, the design of the NCPWF for each will be different (i.e., no ozone system or BAC filtration treatment processes would be required at the NCPWF-SVR). Similarly, the pipeline alignment would be different depending on which reservoir purified water would be delivered to. Additionally, no improvements at the Miramar WTP would be required under this alternative. Therefore, details regarding these components which are applicable to the San Vicente Reservoir Alternative are discussed separately below.

North City Pure Water Facility – San Vicente Reservoir

The new NCPWF under the San Vicente Alternative (NCPWF-SVR) would be located on the vacant 10-acre City-owned lot across Eastgate Mall to the north of the NCWRP (see Figure 3-11). The NCPWF-SVR would produce 31.4 MGD AADF of purified water. A portion of the purified water would be returned to the NCWRP to reduce the TDS concentration of the disinfected tertiary treated effluent to 1,000 mg/L, a level suitable for irrigation. Another portion, about 1.4 MGD on average, would be sent to non-potable reuse customers connected to a repurposed segment of the San Vicente Pipeline. Approximately 30 MGD of purified water will be delivered to the San Vicente Reservoir.

The treatment process is described in more detail in Section 3.6. The treatment train includes MF, RO, and UV/AOP, before it is stabilized and chlorinated prior to pumping out to San Vicente Reservoir.

Figure 3-22, North City Pure Water Facility – San Vicente Reservoir Conceptual Site Layout, provides a conceptual site layout for the NCPWF-SVR. The access to the site will be from Eastgate Mall, and the entrance will be coordinated with the entrance to the NCWRP to be at the same traffic signal along Eastgate Mall. An approximately 17,000-square-foot O&M building with three above-grade stories will be built as part of this project. The third level of the O&M building will be dedicated for a water quality testing laboratory. Access between NCWRP and NCPWF-SVR will be via a traffic signal and pedestrian crosswalk on Eastgate Mall.

All the pipes between the NCPWF-SVR and the NCWRP will be direct buried. Major piping and duct banks within the NCPWF-SVR will also be direct buried. Smaller pipes (chemical, utility lines etc.) will be installed in shallow utility trenches for better access.

San Vicente Pipeline and Pump Stations

Two pump stations would be required to convey purified water via the approximately 29-mile (154,775-linear-foot) San Vicente Pipeline to the San Vicente Reservoir. The North City Pump Station would be located on the southeast corner of the NCPWF site and would be the same as discussed above under the Miramar Reservoir Alternative (see also Figure 3-11). The MTBS would be located along Mission Gorge Road spread across two privately owned parcels (see Figure 3-23, Mission Trails Booster Station Site). Both the North City Pump Station and MTBS will have three duty pumps and one standby pump, all of which are 1,000 HP vertical-turbine motor pumps (see Figure 3-24, Mission Trails Booster Station Conceptual Site Layout).

The San Vicente Pipeline will be designed for an average daily flow of 30 MGD with a minimum daily flow of 27 MGD and a maximum daily flow of 35 MGD. The San Vicente Pipeline includes a segment (approximately 21,300 linear feet) of existing recycled water pipe that will be repurposed for purified water conveyance (San Vicente Pipeline - Repurposed 36-inch Recycled Water Line). That segment currently serves non-potable reuse customers. Under the San Vicente Reservoir Alternative, the San Vicente Pipeline will continue to supply those non-potable reuse customers with purified water. Approximately 1.4 MGD AADF will be provided as non-potable reuse to existing customers.

The remaining 133,475 linear feet of the San Vicente Pipeline would be newly constructed using a combination of open cut trench and trenchless construction methods to deliver 30 MGD AADF to the San Vicente Reservoir. A 48-inch-diameter and 60-inch-diameter welded steel pipe is the recommended width and material for the San Vicente Pipeline as the most suitable for the design conditions.

The general alignment of the San Vicente Pipeline is shown on Figures 3-25A through 3-25D, San Vicente Pure Water Pipeline Alignment. Detailed cross sections of the San Vicente Pipeline are included on Sheets 7 through 89 in Appendix K of the 10% Engineering Design Report: North City Plant to San Vicente Reservoir (Brown and Caldwell 2015). The pipeline is proposed to travel through the University, Kearny Mesa, Navajo, Tierrasanta, and East Elliot communities of the City of San Diego; the City of Santee; and the unincorporated community of Lakeside in the County of San Diego.

The first approximately 5,500 linear feet of the San Vicente Pipeline would follow the same alignment as the North City Pipeline along Eastgate Mall. At Miramar

Road, purified water would be conveyed via the San Vicente Pipeline – Repurposed 36-inch Recycled Water Line. This repurposed 36-inch-diameter pipeline traverses federal lands, including the Miramar National Cemetery and MCAS Miramar. The new 48-inch-diameter San Vicente Pipeline would begin again in an open cut segment on Copley Drive and would continue southeast until heading due east on Copley Park Place, then south on Convoy Street, then east again on Convoy Court. The San Vicente Pipeline would continue east on Mercury Court, passing through various business park and industrial uses before heading south on Industrial Park Driveway.

A trenchless segment would cross Clairemont Mesa Boulevard, and the San Vicente Pipeline would continue south on Ronson Court before heading east on Ronson Road. A trenchless segment would cross SR-163 and then the San Vicente Pipeline would continue again in an open cut segment east along Lightwave Avenue. The alignment would continue north on Ruffin Road, east on Clairemont Mesa Boulevard and then south on Murphy Canyon Road. At Elanus Canyon, the alignment would head east across a parking lot before crossing I-15 in a trenchless segment and traversing the canyon until rejoining Clairemont Mesa Boulevard. At Santo Road the alignment would head south then east along Tierrasanta Boulevard. A trenchless segment would continue south across the San Diego River and then the alignment would turn east on Mission Gorge Road, traversing the Mission Trails Regional Park. A trenchless segment would cross the SR-52 at West Hills Parkway before continuing east on Carlton Oaks Drive. The alignment would leave the roadway ROW for a short segment and then cross Sycamore Canyon via a trenchless crossing before continuing east again within Carlton Oaks Drive.

The San Vicente Pipeline would continue north on Halberns Boulevard, then east on Mast Boulevard with another trenchless segment between two disconnected portions of Mast Boulevard. The alignment would continue east on Riverside Drive and Lakeside Avenue before connecting with Willow Road. From Willow Road the San Vicente Pipeline would turn north on Moreno Avenue, continuing north to the shore of the San Vicente Reservoir.

San Vicente Reservoir Inlet Terminus Alternatives

The San Vicente Reservoir Alternative proposes three alternative pipeline terminus options as shown on Figure 3-26, San Vicente Reservoir Inlet Terminus Alternatives: (1) San Vicente Pipeline - Tunnel Alternative Terminus (TAT), (2) San Vicente Pipeline

- In-Reservoir Alternative Terminus (IRAT), and (3) San Vicente Pipeline - Marina Alternative Terminus (MAT).

For the San Vicente Pipeline - TAT, an approximately 5,400-linear-foot tunnel would be located at the end of the San Vicente Pipeline. The San Vicente Pipeline - TAT would discharge 32 feet above the spillway elevation of the San Vicente Dam (elevation 766 feet) into a reinforced concrete discharge structure and flow down a natural drainage way into the San Vicente Reservoir. Prior to the structure itself, a dechlorination injection point is envisioned to be incorporated to eliminate any residual chlorine in the purified water prior to discharge. Monitoring and injection equipment could be located on an existing City property nearby or at the structure itself, provided regular maintenance can be accommodated.

The San Vicente Pipeline - IRAT would continue via open trench from Moreno Avenue approximately 6,900 linear feet up the existing Marina access road to the San Vicente Reservoir's western side near the newly constructed Marina. An approximately 10,000-linear-foot subaqueous HDPE pipeline would then convey water across the San Vicente Reservoir, exiting up the far bank where it would connect to the same discharge structure as proposed for the San Vicente Pipeline - TAT. As proposed for San Vicente Pipeline – TAT, a dechlorination injection point is envisioned to be incorporated to eliminate any residual chlorine in the purified water prior to discharge. The subaqueous pipeline would be weighted to ensure it remains on the San Vicente Reservoir bottom in its final position.

The San Vicente Pipeline - MAT would follow the same alignment as the San Vicente Pipeline - IRAT from the intersection of Vigilante Road and Moreno Avenue along the Marina access road. At the road's high point, near the saddle dam, the pipeline would continue in the access road to the Marina parking area rather than transition to a subaqueous pipeline. The pipeline would continue in the access road that runs along the shoreline and would discharge at the western shore of the San Vicente Reservoir. As proposed for San Vicente Pipeline – TAT, a dechlorination injection point is envisioned to be incorporated to eliminate any residual chlorine in the purified water prior to discharge. The San Vicente Pipeline – MAT would be approximately 8,625 linear feet.

3.4 CONSTRUCTION SUMMARY OF ALTERNATIVES

3.4.1 CONSTRUCTION SCHEDULE

The North City Project Alternatives would be constructed in approximately 36 months, beginning in October 2018 and completing in December 2021. All North City Project components would be online by the end of 2021.

Table 3-2
North City Project Construction Schedule

Project Component	Construction Start Date	Construction End Date
Components Common to Project Alternatives		
Morena Pump Station and Pipelines	4/2019	10/2021
NCWRP Expansion	10/2018	12/2021
NCPWF Influent Pump Station	1/2019	10/2021
North City Pump Station	5/2019	11/2021
Renewable Energy Facility	3/2020	12/2021
Landfill Gas Pipeline	3/2020	10/2021
MBC Improvements	4/2019	10/2021
Miramar Reservoir Alternative		
NCPWF-MR	10/2018	11/2021
North City Pipeline + Dechlorination Facility	11/2018	10/2021
Miramar WTP Improvements	7/2020	9/2021
San Vicente Reservoir Alternative		
NCPWF-SVR	10/2018	11/2021
San Vicente Pipeline + MTBS	12/2018	5/2021
MTBS	5/2019	9/2021

3.4.2 CONSTRUCTION HOURS

Construction will generally occur for 8 to 10 hours during the work day. However, night or holiday work may occur to accommodate time-sensitive work, such as construction of pipelines in roadway ROW, or at the NCWRP and NCPWF. Nighttime work hours may be modified/reduced or work may be performed during weekends on roadways near residential areas. Night or holiday work would typically occur for a maximum of one week in any given location, and most frequently between 2 to 3 days (refer to Section 6.16, Transportation and Traffic, for details regarding duration and progression of pipeline construction within roadways).

3.4.3 CONSTRUCTION METHODS

Treatment Facilities

Construction of treatment facilities includes the new construction of the NCPWF, as well as improvements and/or expansion of existing facilities, including the NCWRP, Miramar WTP, and MBC. Under the Miramar Reservoir Alternative, the Dechlorination Facility would also be constructed.

The construction phasing for treatment facilities generally begins with initial procurement of equipment and materials concurrent with physical mobilization on the facility site. Following the start of the procurement phase, general site civil engineering work would begin, focused on rough grading, installation of yard piping, and preparation for structural work. As the general civil work progresses, structural work would commence and include the installation of foundation slabs and concrete or steel structures. Once foundation slabs are complete, equipment deliveries would begin and mechanical installation would commence. As equipment is installed, the electrical work would continue, tying each facility area to the on-site electrical system. After all mechanical and electrical work is complete, the facility would be tested and commissioned.

Pumping Facilities

Pump stations would include the Morena Pump Station, Influent Pump Station, and the North City Pump Station. The Influent Pump Station and North City Pump Station would be constructed within the footprint of a treatment facility. Under the San Vicente Reservoir Alternative, the MTBS would also be constructed and would be located on an undeveloped parcel along the proposed San Vicente Pipeline alignment.

The pumps and ancillary facilities (instrumentation, control, and power supply systems) would be placed within a masonry enclosure to minimize interior noise.

Conveyance Facilities

All pipeline facilities will be located within public ROW and/or publicly owned properties where available corridors exist. Easements will be required at locations where the pipeline crosses controlled access such as MTS and Caltrans facilities. In addition, at various locations the proposed pipelines will cross through private properties. Currently, utility easements are known within the private properties.

Adjustments to the existing easements will be required to provide the appropriate utility easements for the new pipelines.

Open Cut Construction

The majority of the pipeline alignments are anticipated to be constructed using cut-and-cover, or open-cut, construction techniques. Minimum cover will be based on the pipe diameter and purpose of the pipeline. Pipelines will typically follow agency guidelines with 5 to 8 feet of cover, and where feasible, would be constructed below the typical depth of other wet and dry utilities to avoid conflict and potential exposure during future improvements. It is anticipated that excavation will be achievable with typical heavy excavation equipment. Vertical trench walls are anticipated for construction to minimize impacts to surface improvements, traffic flow, and adjacent utilities. Vertical trench walls can be provided by speed shoring, trench boxes, trench shields, driven sheet piles, soldier piles, soil nails, or other forms of shoring depending on local subsurface conditions and depth. Temporary construction easements and staging areas for construction will be determined based on pipeline diameter, recommended trench width, and depth of cover. Work areas for open-cut construction, including required lay-down area for supplies and equipment, would range from 30 to 60 feet wide, depending on depth of the trench and would typically occupy half the roadway width.

Trenchless Construction

Portions of the pipeline alignments will also be constructed using trenchless construction methods such as auger boring/auger jack and bore, drill and blast, microtunneling, or horizontal directional drilling. These methods are typically used in sensitive environmental areas, heavily congested areas or to cross-controlled access freeway and railroad crossings where open cut is not allowed.

The selection and suitability of specific trenchless methods is largely dependent upon the anticipated ground conditions along the alignment; geotechnical reports or geotechnical baseline reports will be prepared where trenchless methods are proposed. Several other design elements should also be considered in assessing appropriate trenchless methods, including pipeline material and diameter, drive length, alignment and grade tolerances, available staging areas, control of groundwater, ground loss, and the potential for heave or settlement and permit requirements for casings in a two-pass installation.

Trenchless methods can be either a “one-pass” or “single-pass” system with the product pipe installed directly in place or “two-pass” with the product pipe installed within a casing pipe that has been installed by a trenchless method. Casings required are anticipated to be a minimum of 12 inches larger than the product pipe (60-inch-diameter casings for 48-inch nominal diameter pipelines) with a minimum 3/4-inch wall thickness per California Department of Transportation requirements.

Auger Boring/Auger Jack and Bore

Auger boring is recommended for short two-pass installations where a casing is required. It is best suited to displaceable, cohesive, and dry soft soils. As the method is typically an open-face operation, it is not generally suitable where groundwater or running soils are present because of raveling or ground loss. For ground containing boulders or hard base rock, contractor access to the cutter face may be required to remove obstacles that cannot be bored through.

The method employs a rotating cutting head attached to the leading end of a series of connected continuous-flight augers (auger chain) to construct a bore hole. A rotating cutter head is attached to the lead auger and can be placed within the casing, set flush with the leading edge or be larger in diameter than the casing pipe and excavate the soil in front of the casing. The auger boring machine uses large hydraulic pistons to advance the casing as the augers are rotated. Spoils are transported back to the drive shaft by the rotation of helical-wound auger flights by muck bucket, excavator, or conveyor.

Multiple steering methods are available depending on the drive length and required tolerances. For short drives, unguided machines or water levels for vertical control are commonly used. For longer drives, precise tolerances can be obtained with pilot drilling or front-steer optical guidance systems such as “on-target” proprietary auger boring steering heads.

Two work pits are required for construction: (1) a launching pit, which is the primary work area from which the auger boring machine is launched and the pipe is jacked in behind the machine; and (2) a receiving pit, where the auger boring machine is removed at the completion of the drive. The size of the pits is a function of the auger boring machine selected for the operation, the type and configuration of the jacking frame, and the size and length of pipe being installed. A launching pit approximately 12 to 15 feet wide and 35 to 40 feet long is anticipated based on common industry guidelines.

Microtunneling

Microtunneling is a one- or two-pass method defined as "a remotely controlled, guided, pipe-jacking operation that provides continuous support to the excavation face by applying mechanical or fluid pressure to balance groundwater and earth pressures." Face support and accurate guidance are key features distinguishing this method from auger boring. Microtunneling can be used in a wide variety of ground conditions including granular soils, cohesive soils, and bedrock, either above or below the groundwater table. However, without careful selection of the machine and investigation of the subsurface conditions, large quantities of cobbles or large rocks can block the cutter head and require that a separate rescue pit be constructed to remove the obstacles.

A microtunnel boring machine typically consists of a bi-directional rotating cutter head equipped with cutter teeth, picks, or spades for excavation of soil and a conical-shaped crushing chamber to pulverize cobbles and boulders. During excavation, slurry is pumped to the head and mixed with the soil cuttings. The slurry is then returned to a separation plant in the staging area at the launching pit to remove soil particles. Slurry pressure balanced microtunneling systems enable installations below the water table or in very wet soil without the need for dewatering.

Most microtunneling operations include the following components:

- Hydraulic jacking system to advance the microtunnel boring machine and pipe string
- Closed-loop slurry system to transport the excavated spoils
- Slurry cleaning system to remove the spoil from the slurry water
- Lubrication system to lubricate the exterior of the pipe string during installation
- Guidance system to provide line and grade control
- Electrical supply and distribution system to power equipment
- Crane to hoist pipe sections into the launching pit
- Various trucks and loaders to transport spoil off site

Microtunneling requires launching and receiving shafts, or pits, at the opposite ends of each drive. The launching pit and staging/work area requirements are heavily dependent on the contractor's choice of methods, equipment, and layout. Typical launching pit and work area sizes for the Miramar Pipeline are approximately 16 feet by 33 feet to 50 feet by 100 feet with an additional working area of 20 to 40 feet wide and 75 to 150 feet long.

Horizontal Directional Drilling

Horizontal directional drilling is a multi-pass method that uses steered drilling technologies to install product pipelines in a curved vertical alignment. This method is suitable for a variety of soil conditions; 2,000-foot drive lengths are common and lengths of up to 6,000 linear feet have been achieved in pipe diameters up to 54 inches to date.

The first pass in horizontal directional drilling drills a pilot hole approximately 2 to 5 inches in diameter along the proposed alignment. Drilling heads come in multiple designs, and selection depends on the subsurface conditions at the proposed depth. Heads have multiple ports to allow injection of drilling fluid and removal of material. Cutting tools allow for steering and excavation of the soil, and mud-motors may be used in rocky soils. The pilot hole is drilled with a surface launched rig with an inclined carriage, typically adjusted at an angle of 8 to 18 degrees with the ground for entrance and 8 to 12 degrees for exit angle.

Once the initial bore hole is complete, a series of passes are made to enlarge or ream the drill hole to the desired diameter. In the final pass, the product pipe is attached to the reamer and pulled back. The product pipe is attached to the reamer with a swivel assembly to ensure that the rotation (torque) applied to the reamer is not transmitted to the pipe. Prior to the pull-back operation, the pipeline is usually assembled to its full length and tested. For steel pipe, welding, weld testing, and field-applied lining and coating is completed. Joints are commonly welded or fused to carry tension during pull-back.

Drilling fluid is pumped through the drill head during the pilot bore, reaming, and pull-back operation. This fluid is a mixture of water and additives (bentonite, polymers, surfactants, etc.) and aids in the removal of drill cuttings, reduces friction against the soil, and stabilizes the bore hole during installation. Drilling fluid should be selected or designed for the site's specific soil and groundwater conditions to prevent inadvertent fluid returns (hydraulic fracture). The best defense against losing fluid to the surface is monitoring drilling fluid pressures and careful drilling fluid design. Mitigation measures also include use of release holes and conductor casings in poor granular soils.

Supporting equipment such as a drilling mud recycling system, shale shaker, mud cleaner, centrifugal pump, mud tanks, etc., is needed to assist horizontal directional drilling and complete the work.

Subaqueous Construction

The “float-and-sink” method is recommended to install the subaqueous discharge pipeline at the bottom of Miramar Reservoir. The HDPE pipe segments will be butt-fused at the Miramar Reservoir parking lot and on a barge. Once fused, the pipe will be towed into position along the Miramar Reservoir surface. As the pipe is floated, pre-cast concrete ballast blocks will be connected to the positively buoyant pipeline at regular intervals. Precast concrete ballast blocks such as single piece blocks held in place by stainless-steel strapping and bolts or two-piece concrete blocks will depend on the evaluation of installation condition, depth, and service conditions such as anticipated wave action, current movements, and bottom topography. Trenching and backfilling other than at the shoreline and reservoir entry are not anticipated for construction. Once the pipe is towed into position at the surface, water is allowed to fill the pipe in a controlled fashion, causing it to sink to the reservoir bottom. During the operation, the position of the pipe is monitored to place the pipe in the correct alignment.

Landfill Gas Pipeline

The approximately 15,882-linear-foot LFG Pipeline would be constructed using a combination of open cut and trenchless methods. Approximately 13,577 linear feet will be constructed using open trench methods. Limits of work for open cut construction would range from 40 to 60 feet with a 4-foot-wide open trench. Approximately 2,305 linear feet would be constructed using trenchless methods; launching and receiving pits for each trenchless section would measure approximately 8 feet by 15 feet. Access to the LFG Pipeline would be via existing access roads, and all staging and equipment would be located in previously disturbed areas.

San Vicente Reservoir Inlet Terminus Alternatives

For the San Vicente Pipeline - TAT, the tunnel and tunnel boring machine portal sites would be located at the end of the San Vicente Pipeline alignment near the City’s maintenance yard. The tunnel is approximately 5,400 linear feet in a straight horizontal alignment at an approximate 5.4% (3-degree) grade. Excavation is anticipated to be completed by a single tunnel boring machine with an entry portal at the lower downstream end and exit portal in the canyon area above at the designed discharge point near elevation 798. A 60-inch-diamater steel pipe would be installed within the tunnel, and the space between the tunnel and pipe would be backfilled with grout and the pipeline interior coated with cement mortar. Intermediate access along the alignment is not anticipated based on the existing terrain along the tunnel alignment.

The San Vicente Reservoir - IRAT would be constructed using the open cut methods described above until reaching the reservoir's shoreline. An approximately 10,000-linear-foot subaqueous pipeline constructed of HDPE would then convey water across the San Vicente Reservoir, exiting up the far bank where it would connect to the same discharge structure as proposed for the San Vicente Pipeline - TAT. The subaqueous pipeline would be weighted to ensure it remains on the San Vicente Reservoir bottom in its final position.

The San Vicente Pipeline - MAT would be constructed using the same open cut methods described above until reaching the western shore of the San Vicente Reservoir, where it would discharge into the reservoir.

3.4.4 CONSTRUCTION EQUIPMENT

For facility construction, grading and excavation equipment, heavy-duty trucks, cranes, generators, bulldozers, compactors, welders, rollers, saws, and pumps are anticipated. Pile driving is not anticipated.

For pump station construction, it is anticipated that the equipment will consist of a bulldozer, an excavator, a grader, a crane, a concrete pump, dewatering pumps, two dump trucks, two pick-up trucks, a generator, and a welding machine.

Construction equipment for pipelines would typically include pickup and utility trucks, excavators, loaders, compactors/rollers, welding machines, asphalt/concrete saw, and pipe fusion machines. Specialized equipment would be required for trenchless construction portions as described above under Section 3.4.3.

Construction Personnel

It is assumed that multiple crews of approximately eight members each would be working simultaneously on each pipeline alignment. Specialty crews would work solely on the trenchless segments using specialized equipment. In addition, separate crews would construct the treatment facilities and pump stations; it is anticipated that a single crew would be responsible for construction of each facility.

3.4.5 STAGING AND ACCESS

Staging areas for facilities and pump stations would be located within the facility footprints.

Pipeline staging areas will be located within developed parking lots or other developed and disturbed areas to minimize traffic and road disruptions and would move frequently as construction progresses along the alignment. No new access roads would be needed. Staging areas for open cut construction would generally range from 30 feet to 60 feet wide. Staging areas for trenchless construction would range from 20 feet by 50 feet up to 100 feet by 150 feet.

A jacking pit would be constructed at the beginning of each trenchless pipeline segment and a receiving pit would be constructed at the end of each segment.

3.4.6 TRAFFIC CONTROL PLAN

The City would prepare traffic control plans for pipeline construction to specifically address construction traffic within the City's public rights-of-way. The traffic control plans would include provisions for construction times, control plans for allowance of bicyclists, pedestrians, and bus access throughout construction. The traffic control plans would also include provisions to ensure emergency vehicle passage at all times, and include signage and flaggers when necessary to allow the heavy equipment to utilize surrounding streets. The traffic control plans would include provisions for coordinating with local school hours and emergency service providers regarding construction times.

3.5 OPERATION SUMMARY OF ALTERNATIVES

3.5.1 STAFFING, PARKING, AND SECURITY

Staffing

A maximum of 60 new full-time employees would be required for operation of the entire North City Project, including 15 new full-time employees at the NCWRP and 45 at the NCPWF.

The NCPWF would include an O&M building on site. Approximately 45 new workers are anticipated to be required for operation, including a staff of approximately 12 researchers. These staff would be provided by the City. The facilities would be staffed in shifts 24 hours per day. A fully automated control system would allow for remote monitoring. Pumping facilities would operate 24 hours per day. No permanent staff would be required, and monitoring would occur remotely. City staff would routinely visit the pump station for maintenance and monitoring activities.

Parking

The Morena Pump Station is considered an unmanned facility. To anticipate O&M needs, five parking stalls will be located within the site. Relocation and addition of parking at the NCWRP is also anticipated. There is existing parking at MBC and Miramar WTP, and no new parking spaces would be provided. No new parking would be provided at the MTBS or along any of the pipeline alignments.

Approximately 82 parking spaces would be provided for staff and visitors at the NCPWF-MR, and approximately 92 parking spaces would be provided at the NCPWF-SVR, in addition to the existing parking at the NCWRP. Pedestrian access between NCWRP and NCPWF will be via a potentially signalized intersection and pedestrian crosswalk at the intersection of Eastgate Mall and Eastgate Drive. The proposed main entrance is located west of the North City Pump Station and east of the O&M building. The emergency access is located in the southwest corner of the property or west of the O&M building. Parking at the NCPWF would include space for the North City Pump Station, which is located on the same site.

Security

Pump stations not collocated with the NCWRP or NCPWF, as well as the dechlorination facility, would be fully fenced and would include exterior lighting for security purposes. Security lighting will be activated through motion detection and will remain active for a minimum duration of 4 hours during the nighttime hours. Security lighting will have a manual override activated by O&M personnel in the event site activities exceed the 4-hour lighting pre-programmed limit.

Site security at the NCWRP would remain similar to existing conditions, including on-site security guards, cameras, and a secure entrance. Security lighting would be provided around new equipment/structures, as necessary. For the NCPWF, security lighting on the exterior of structures, paths, and the entrance would be provided as necessary. The main entrance would include a secure access via a guard shack at the entrance and the perimeter of the facility would be fully fenced.

3.5.2 MAINTENANCE

Morena Pump Station and Pipelines

The Morena Pump Station will operate 24 hours per day, 7 days a week. The pump station will not have any full-time personnel for general operation purposes. O&M personnel will be on site at regular intervals for the removal of collected screenings and delivery of materials. Pump stations are designed with one redundant pump so that peak flows can be achieved even with one pump out of service for maintenance or repair. In the unlikely case of pipe failure, the NCPWF would be shut down until the pipe is repaired. In the event the NCPWF is shut down for any purpose, the Morena Pump Station will also be shut down and go into a by-pass mode directing flows to the Point Loma WWTP.

Regular maintenance of conveyance facilities would be required to ensure that adequate flow is maintained. Permanent access along pipeline alignments would allow for inspection and maintenance. Operation and maintenance of the conveyance facilities would consist of routine patrolling, emergency repair, exercising valves, repair and maintenance, inspections, and periodic pipeline dewatering to allow for interior inspections or repairs. Flows would also be maintained via cleansing and flushing activities with a variety of tools. Video inspections would be performed on selected sections of pipelines when necessary. O&M activities also include no-dig rehabilitations such as epoxy coatings, polyurethane coatings, slip liners, and cured-in-place resin compound liners. Maintenance for elements of the proposed conveyance facilities would include activities similar to those performed throughout the existing water and wastewater system, such as exercising valves.

North City Water Reclamation Plant and Influent Pump Station

The NCWRP and Influent Pump Station will operate 24 hours a day 7 days a week.

Operation and maintenance of the facility would consist of routine patrolling, emergency repair, exercising valves, repair, maintenance, and inspection. O&M will be conducted similar to operation of the existing NCWRP, with additional staff provided to support the increased flow and expanded treatment processes.

A schedule will be developed for routine maintenance, but the treatment processes have built-in monitoring and controls as well as standby equipment. Maintenance would be performed on a routine schedule, and repairs would be conducted as needed. Large equipment such as a crane may be used to replace pumps or other appurtenances.

The pumping facility would operate 24 hours per day. Monitoring would occur through the control system and routine site patrolling for the pump station collocated with the treatment facility.

North City Pure Water Facility and North City Pump Station

The NCPWF and North City Pump Station will operate 24 hours a day 7 days a week, and the NCPWF will be staffed full-time, two shifts per day.

O&M of the facility would consist of routine patrolling, emergency repair, exercising valves, repair, maintenance, and inspection. O&M procedures and protocols is based on the Demonstration Project for each process. A schedule will be developed for routine maintenance, but the treatment processes (MF, RO, etc.) have built in failsafe technology and equipment standby. Maintenance or repairs would only be required if, for example, there are substantial fluxes in the MF system. A crane will be used to remove and replace pumps. Other appurtenances within the North City Pump Station will be removed and replaced using the facility's proposed bridge crane.

North City Pure Water Conveyance System

Pumping facilities would operate 24 hours per day. No permanent staff would be required, and monitoring would occur remotely. City staff would routinely visit pump stations that are not collocated with a treatment facility for maintenance and additional monitoring activities.

Regular maintenance would be required to assure that adequate flow is maintained. Permanent easements along pipeline alignments would allow access for inspection and maintenance. O&M of the conveyance facilities would consist of routine patrolling, emergency repair, exercising valves, repair and maintenance, inspections, and periodic pipeline dewatering to allow for interior inspections or repairs. Flows would also be maintained via cleansing and flushing activities with a variety of tools. Video inspections would be performed on selected sections of pipelines when necessary. O&M activities also include no-dig rehabilitations such as epoxy coatings, polyurethane coatings, slip liners, and cured-in-place resin compound liners. Maintenance for elements of the proposed conveyance facilities would include activities similar to those performed throughout the existing water and wastewater system, with the exception that City divers will maintain the subaqueous pipeline.

San Vicente Pure Water Pipeline and Pump Stations

Pumping facilities would operate 24 hours per day. No permanent staff would be required, and monitoring would occur remotely. City staff would routinely visit the MTBS for maintenance and additional monitoring activities.

Regular maintenance would be required to assure that adequate flow is maintained. Permanent easements along pipeline alignments would allow access for inspection and maintenance. Operation and maintenance of the conveyance facilities would consist of routine patrolling, emergency repair, exercising valves, repair and maintenance, inspections, and periodic pipeline dewatering to allow for interior inspections or repairs. Flows would also be maintained via cleansing and flushing activities with a variety of tools. Video inspections would be performed on selected sections of pipelines when necessary. O&M activities also include no-dig rehabilitations such as epoxy coatings, polyurethane coatings, slip liners, and cured-in-place resin compound liners. Maintenance for elements of the proposed conveyance facilities would include activities similar to those performed throughout the existing water and wastewater system.

3.5.3 ENERGY REQUIREMENTS

Table 3-3 summarizes the energy requirements by component for each Project Alternative.

Table 3-3
Estimated Electricity Consumption for North City Project

Project Component	Estimated Energy Use (kWh/year)
Miramar Reservoir Alternative	
Morena Pump Station	25,458,000
NCWRP Expansion	32,498,000
NCPWF Influent Pump Station	3,942,000
NCPWF	42,209,000
North City Pump Station	19,230,000
North City Renewable Energy Facility (building usage)	2,628,000
MBC Upgrades	15,884,000
Dechlorination Facility	44,000
Miramar WTP Improvements	586,000
Reduction in Collection System and Wastewater Treatment	(15,598,000)
Total Miramar Reservoir Alternative	**126,881,000**

Table 3-3
Estimated Electricity Consumption for North City Project

Project Component	Estimated Energy Use (kWh/year)
San Vicente Reservoir Alternative	
Morena Pump Station	25,458,000
NCWRP Expansion	32,498,000
NCPWF Influent Pump Station	13,065,000
NCPWF	30,598,000
North City Pump Station and MTBS	40,371,000
North City Renewable Energy Facility (building usage)	2,628,000
MBC Upgrades	15,884,000
Reduction in Collection System and Wastewater Treatment	(15,598,000)
Total San Vicente Reservoir Alternative	**144,904,000**

Note: kWh/year = kilowatt hours per year

A new North City Renewable Energy Facility is proposed to be located at the NCWRP. Landfill gas from the City's Miramar Landfill gas collection system will be supplied to the facility via a new 12-inch diameter LFG Pipeline. The new facility will produce a total of 15.4 MW of new generation capacity and will incorporate 5 MW of existing power generation capacity already at NCWRP. The power supplied by the North City Renewable Energy Facility will be used for additional energy needs at the expanded NCWRP as well as for the NCPWF, the NCPWF Influent Pump Station, and the North City Pump Station. Backup power would be provided by SDG&E only to maintain minimal critical operations if the main power supply failed.

Power for the Morena Pump Station and MTBS would be supplied by SDG&E. Backup generators are not anticipated to be required.

3.6 TREATMENT PROCESS AND MAINTENANCE SUMMARY

The North City Project will be planned and coordinated with existing operations, in full compliance with applicable federal, state, and local regulations.

Operations at existing treatment facilities that will be improved or expanded will be integrated into existing operations processes and would continue to follow current protocol.

3.6.1 MORENA PUMP STATION

Wastewater will be conveyed to the Morena Pump Station from four existing sanitary sewer trunk sewers. These sewers collect flows from the City's eastern service area and the areas along the I-5 corridor and all areas south of the City's existing Pump Station 64 located in the Sorrento Valley area. Wastewater conveyed to the Morena Pump Station will be screened by continuous mechanical screens to remove trash, debris, and large solids prior to pumping it to the NCWRP. The pump station will consist of five sets of two stage pumps operating in parallel. Each set would consist of two sewage non-clog pumps operating in series to manage the high head needed to deliver wastewater flows to the NCWRP.

Odor Control

The Morena Pump Station will also include new facilities to manage and address odor control issues from the pump station and the new wastewater force main. Foul air from the pump station wet well and screening facility will be delivered to two large granular activated carbon (GAC) odor control scrubbers. Foul air would be treated by these scrubbers and released to the atmosphere after it has reached acceptable air treatment levels. For the wastewater force main odor control, ferric chloride and/or high purity oxygen would be injected into the force main to control the foul air that may be released to the atmosphere along the high points of the force main alignment from the Morena Pump Station to the NCWRP. The proposed odor control methods and strategies are similar to what the City currently uses at the existing large sewage pump stations. The odor control system that removes and treats foul air at the Morena Pump Station utilizes negative pressure to change out the air in the screening and pump station buildings 20 times every hour. This process ensures that the air surrounding the wet well at the pump station and the air in the screening building is suitable for people to safely enter these facilities to perform any required maintenance activities.

3.6.2 NORTH CITY PURE WATER FACILITY

Operations for the NCPWF are discussed below.

Treatment

The NCPWF Influent Pump Station would convey tertiary effluent from the NCWRP to the NCPWF, where additional treatment processes would be required to produce the purified water.

The major process components of the NCPWF include MF and/or UF, RO, and UV/AOP (see Figure 3-27, Pure Water System Overview San Vicente Reservoir Alternative). In addition, the NCPWF-MR would provide additional stages of treatment, including an ozone system and BAC process (see Figure 3-28, Pure Water System Overview Miramar Reservoir Alternative) to ensure product water meets certain levels of log removal for *Cryptosporidium*, *Giardia*, and viruses as required by the State Water Resources Control Board Division of Drinking Water. Each of these processes is described below (MWH Americas et al. 2016):

Ozone System (Miramar Reservoir Alternative Only)

The ozone system will provide disinfection to achieve the log-removal credits for that unit process and chemical oxidation to reduce constituent of emerging concern (CEC) concentrations and facilitate biological treatment by BAC filters. The controlling factor for the design of the ozone system is achieving 1-log inactivation of *Cryptosporidium*, which requires a CT (residual concentration x contact time) of 3.8 milligrams per minute per liter (mg-min/L) at a temperature of 20.5 degrees Celsius (°C). Components of the ozone system include the LOX system, ozone generators, ozone dissolution and contactor, ozone off-gas destruction, and instrumentation and controls. Combined with BAC, ozonation will also improve membrane filtration performance beyond what could be achieved without this pretreatment. A total of two ozone contactors, three ozone generators, two LOX tanks, three vaporizers, and required auxiliary systems will be provided. There are three distinct ozone facilities on site:

- **LOX facility:** The LOX facility contains two vertical LOX storage tanks, three vaporizers, a pressure regulating station, a truck fill-station with a concrete apron for truck deliveries, and associated pipes and valves. All the equipment is mounted on a concrete slab north of the eastern parking lot and south of the chemical storage facility.
- **Ozone generation system:** The ozone generation system includes three ozone generators, three power supply units (PSUs), a particulate filter skid, a fine-pressure regulating station, a nitrogen boosting system, a cooling water system, and associated valves and piping.
- **Ozone injectors and contactors:** This system contains six ozone sidestream injection skids, six sidestream injection pumps, two ozone contactors, three ozone destruct units, three cooling water pumps (open loop), an ozone

residual sampling system with residual analyzers, and associated valves and piping (MWH Americas et al. 2016).

Biologically Active Carbon Filters (Miramar Reservoir Alternative Only)

The ozone process will be followed by biological filtration using GAC, also known as BAC filtration, to provide additional treatment before the MF system. Biological filtration is a fixed-film biological process that uses filter media as the surface for biological growth. With BAC, the GAC filter media is important mainly because its micro- and meso-porosity make it conducive to biofilm growth. This GAC is not regenerated, leading to the slow exhaustion of its adsorption capacity and making BAC a *biological* and *filtration* process rather than an *adsorption* process. During the filtration cycle, BAC removes both dissolved organics and suspended solids from the water by a combination of biological uptake and depth filtration. As the filtration cycle continues, biomass growth and suspended solids entrainment create additional head loss in the filter bed. The backwash cycle is then used to flush out the entrained solids and slough off some biomass from the media, thereby controlling the rate of biomass growth.

BAC filtration downstream of ozonation of tertiary effluent is provided for the removal of total organic carbon, N-Nitrosodimethylamine, and CECs. Ozonation increases the bioavailability of organic molecules by breaking them down, allowing BAC filtration to readily remove these organic molecules (MWH Americas et al. 2016).

Membrane Filtration

The MF treatment system will remove particulate matter from the RO feed water that would otherwise foul the RO membranes. The MF process is expected to achieve 4-log removal of *Cryptosporidium* and 4-log removal of *Giardia*; it is not being relied upon for virus removal.

The MF design will use hollow-fiber pressurized microfiltration or ultrafiltration membrane systems. The design uses membrane systems from Toray (packaged by H2O Innovation) and Pall because those systems have been prequalified for pre-selection testing. Both the Toray and Pall MF systems have been approved by the state, as California DDW certification was a requirement in the prequalification documents. Differences between suppliers include the size, type, and number of membrane modules and skids; ancillary equipment and chemicals used; and other system components. Final selection of the MF system will be determined with pre-selection testing and a present-worth-based selection process and assigned bids.

The MF process includes pretreatment with automatic strainers upstream of the membrane modules. The feed water to the MF system is pumped from the MF feed tank. During filtration mode, water will pass through the automatic strainers and the membrane modules and will discharge into the RO feed tank. The MF system also has backwash, cleaning, and direct integrity testing (DIT) cycles that individual racks will go through during operation. Ancillary systems to support the MF system operation include backwash pumps, air scour blowers, enhanced flux maintenance (EFM)/clean-in-place (CIP) and neutralization tanks and pumps, and a compressed-air system. The system will be controlled by a master programmable logic controller (PLC) provided by the MF supplier (MWH Americas et al. 2016).

Reverse Osmosis System

The RO process removes a significant portion of the dissolved solids, organics, and pathogens that remain after the MF system. For potable reuse applications, RO is critical for salinity control—it allows finished water to be within the desired range for TDS even with high-TDS source feed water, and prevents the accumulation of salts that would occur at a system-wide level without a flux of dissolved solids out of the system. The brine from the RO system is discharged to a location downstream of the Morena Pump Station intake diversion structures to prevent recirculation. RO is also vital for the removal of total organic carbon.

Overall operation of the RO system includes the following steps:

1. The plant operators confirm the feed water quality and the available flow for NCPWF to treat. They coordinate with the staff at NCWRP before making changes to the NCPWF flow rate.
2. Based on the above, the operators select a number of Production RO skids and Recovery RO skids on line for the amount of product water that is to be produced.
3. The plant control system calculates the required total RO feed flow based on the selected skid configuration and brings the RO transfer pumps on line. The cartridge filters are also brought on line.
4. Strong acid and antiscalant are dosed downstream of the RO transfer pumps. The RO feed pH is kept between 6.2 and 6.7, and the operators select the proper antiscalant dose based on the particular antiscalant product and the selected target feed pH.

5. Each Production RO skid runs on a constant feed flow and recovery set point. Each skid will monitor its own feed, permeate, and concentrate flow rates and calculate its own recovery on-board. Each skid adjusts its own Production RO feed pump and concentrate valve to achieve the set points.
6. Each Recovery RO skid runs on a constant feed flow and recovery set point. Each skid will monitor its own feed, permeate, and concentrate flow rates and calculate its own recovery on-board. Each skid adjusts its own Recovery RO feed pump/ERD and exhaust/bypass valves to achieve the set points.
7. Permeate from the Production RO skids and the Recovery RO skids flows into a combined permeate header. Concentrate from the Recovery RO skids flows from the Recovery RO concentrate header to the brine/centrate line.

Advanced Oxidation (Ultraviolet plus Oxidant)

The UV/AOP system will be used to generate hydroxyl radicals to facilitate oxidation of organic compounds. This process will also be used to achieve an additional 6-log inactivation/removal of viruses *Giardia* and *Cryptosporidium* from the product water stream.

The UV/AOP system will be fed from permeate flows from the Production RO trains and Recovery RO trains. In the 30% design, the effluent from the UV/AOP system was shown flowing to the RO break tanks below the UV facility (MWH Americas et al. 2016). Following design progression, the effluent from the UV/AOP system will flow to the product water tank located to the north of the process building. HOCl will be used as the oxidant to generate the hydroxyl radicals. The selection of HOCl as an oxidant is based largely on industry research and UV manufacturer bench-scale analysis. The system layout would include a header pipe (located in the process building basement) will convey the combined ROP flows to the UV process area. Sufficient pipe length will be provided in the header pipe upstream of the individual UV reactors to ensure a stable flow. Turbulent flow into the UV reactors will impact the ability of the UV light to pass through the water column. The pipe length upstream of the UV reactors also provides the necessary upstream/ downstream distances for the combined ROP flow meter. Chemical dosing for NaOCl and H2SO4 will be injected in the header pipe. Influent flow to the individual reactor trains is provided from lateral piping off of the ROP header. Individual flow meters are located along the straight run of the influent piping for each individual UV reactor in the process building basement. The lateral pipe lengths are sized to account for the necessary upstream/downstream distances for the flow meters.

The influent piping for the individual reactor trains then passes up through the process building floor to the ground floor level before connecting to the influent side of the UV reactor.

Flow passes through the individual UV reactors where hydroxyl radicals produced by the photolysis of HOCl facilitate oxidation of organic compounds. Motorized inlet and discharge valves are included with each reactor for isolation and control of each individual process train. UV reactor effluent piping is routed from the individual reactors up to a combined effluent header above the UV process area. The vertical run of piping serves to ensure that the UV reactors are always flooded when in operation. The UV effluent header piping then passes through the north wall of the process building and is routed to the product water tank.

Product Water Conditioning

After RO treatment, the low total dissolved solids (TDS) and low pH water must be stabilized to reduce its corrosive nature as it is conveyed from NCPWF to Miramar Reservoir. Carbon dioxide (CO_2) addition lowers the pH and encourages carbonate alkalinity production from lime addition. Lime addition increases alkalinity, pH, and hardness. NaOCl break-points any remaining chloramine and maintains a HOCl residual in the distribution system to Miramar Reservoir. A product water tank with the following configuration will be used for storing RO flush water and for product water stabilization:

- RO flush tank
- CO_2 injection box
- Two lime injection boxes
- Pump wetwell
- Overflow box
- Hypochlorite in-line injection

Distributed Control System

The NCPWF will be monitored and primarily controlled through an extension of the City's COMNET Distributed Control System (DCS). The components of the control system will match those of the Emerson Process Management Ovation DCS deployed throughout all of the City's conveyance and treatment facilities.

The DCS at the NCPWF will be physically connected to the existing COMNET DCS at the NCWRP through redundant single-mode fiber optic cables that are routed underground from the NCWRP secondary clarifiers control building root and backup root network switches using different routes to new primary and partner fan-out network switches located in the NCPWF server room. A single (non-redundant) process historian located at the O&M building network would augment the existing NCWRP historian.

The NCPWF O&M building control room will be the location for one set of fan-out switches, with another set located in the process building electrical room, and a final set located at the North City Pump Station. Although NCPWF is physically connected to NCWRP and will be part of the NCWRP domain, the two facilities will operate independently with separate operations staff for the two facilities. The one exception is that the NCPWF operators will have control and monitoring capability over the NCPWF Influent Pump Station located within NCWRP that feed the NCPWF.

Within NCPWF, the O&M building control room, process building electrical room, and North City Pump Station will each have DCS workstations with login interface that will be used by local operators to control the unit process in that specific area of the facility, but will also have the ability to control all processes within the facility based on the login credentials of the individual accessing the system. Each of the workstations will be connected directly through fiber-optic cable to the primary and partner fan-out switches for redundancy and reliability purposes.

Chemical Storage

For the NCPWF, hazardous materials are to be stored in chemical tanks housed in a chemical storage containment area. The chemical storage area is designed to comply with the International Fire Code (incompatible chemical storage vessels are isolated by at least a 20-foot distance). Each chemical area is isolated from the others, and for each one secondary containment is provided to contain at least 110% of the volume of the largest chemical tank plus a 24-hour, 25-year storm event. This volume is provided as part of the chemical storage structure; grating will allow O&M staff to walk above the liquid surface in case of a tank failure.

All of the chemical unloading areas are located on the same side of the building. A distinct splash area for incompatible chemicals should be provided with sumps, and constructed of concrete. Drip sumps (properly coated) and drains will be placed below the truck connection points. The drains will discharge directly into the chemical storage containment area. Hose bibs should also be provided near unloading and chemical storage areas for washdown.

The chemical pumps will be located beneath a canopy for weather protection. All hazardous chemicals will be conveyed via double contained piping. The following chemicals will be stored in tanks located in a secondary containment structure: Sodium hypochlorite, aqueous ammonia, antiscalant, sulfuric acid, citric acid, sodium hydroxide, sodium bisulfite, lime, carbon dioxide, liquid oxygen, ozone, and proprietary membrane cleaning chemicals.

Power Outages

The NCPWF is not an essential facility. In the rare event of simultaneous failure of the power generation facility at NCWRP and utility power, the majority of NCPWF will be shut down and flow to NCWRP will be reduced to meet Title 22 flows. Remaining raw sewage will be diverted to the Point Loma WWTP.

RO MCC-2 will have emergency power via a standby generator for the ability to continue flushing the process lines to prevent buildup within the pipe. The generator is sized for operating two RO flush pumps and 45 kilovolt-amperes of miscellaneous loads.

Each DCS, PLC, and remote IO cabinet as well as 120-volt alternating current powered instruments will be supplied power from a localized uninterruptible power supply system with a recommended backup time of 4 hours.

Failsafe Features

Measures for Pathogen Control and Off-Specification Water Monitoring

The NCPWF has been designed to consistently achieve pathogen log reduction values in excess of the minimum log reduction that would be required. With this design strategy, the NCPWF will have a buffer so that even if an individual process or monitor fails, the facility will not generate off-spec water.

Use of SCADA in the Critical Control Point Management Process

Using monitoring data for flow and for surrogates at all the critical control points (CCPs), supervisory control and data acquisition (SCADA) will be used to continuously calculate and display the performance of the plan in meeting its performance goals. Each surrogate for each CCP will be separately displayed and, using colors and flashing lights, SCADA will provide operational staff with a clear picture of the status of NCPWF as a whole as well as each CCP. Operators will know where they stand at all times.

Facilities for Diversion of Off-Specification Water

The proposed advanced water purification facility treatment train contains multiple and redundant treatment processes, redundant water quality monitoring equipment, and conservative design specifications that will ensure treatment reliability and compliance with applicable water quality standards. In the unlikely event that major treatment and monitoring processes simultaneously fail, however, it is possible that water not meeting the specified log removals, or “off-spec” water, could be produced.

As a first level of public health protection against such off-spec water, the supply of Miramar Reservoir water to the Miramar WTP would be cut off, and water treatment plant operations would rely on imported aqueduct water until the off-spec problem was corrected and it was demonstrated to regulators that reservoir water could again be directed to the filtration plant. If the cause of the off-spec water cannot be immediately rectified, conveyance of advanced water purification facility water to the reservoir would be suspended, and advanced water purification facility water would be directed to the sewer for treatment at the Point Loma WWPT and ocean discharge.

In the event the off-spec issue is sufficient to warrant no discharge of the pipeline water to the reservoir, the off-spec water would be diverted from the pipeline for disposal or reuse. The flowing proposed strategies for off-spec water disposal were developed based on the following goals:

- Provide barriers to protect public health.
- Minimize required facilities to reduce project costs.
- Minimize the conveyance system out of service time to bring the NCPWF back on-line as quickly as possible.
- Develop preferred disposal options based on listed criteria such as available time, reducing water loss, etc.

Three options have been developed to provide operational flexibility for O&M staff to dispose of off-spec water in the very unlikely event that off-spec water leaves the NCPWF, enters the North City Pipeline, and the off-spec issue is sufficiently significant to warrant disposal of the off-spec water in the pipeline. The three options utilize the closure of an isolation valve downstream of the Dechlorination Facility to prevent off-spec water from entering Miramar Reservoir.

Option A – Disposal of Off-Spec Water to NCPWF Waste Discharge Pipeline

Option A has been designed to drain back the North City Pipeline thru the North City Pump Station discharge header controlled by a pressure control valve plumbed to a 24-inch pipeline connected to the 48-inch NCPWF Waste Discharge Pipeline, which has the capacity to drain 42 MGD. The North City Pipeline will drain back utilizing the elevation head in the pipeline. Localized low points will be manually pumped out of the North City Pipeline and into adjacent sanitary sewers. This option will require the temporary shut down and closure of the North City Pump Station. Option A is best suited in a situation where disposing of off-spec water and the commencement of the production of on-spec water from the NCPWF will take more than a few hours and longer than the drain time of the North City Pipeline, which can be up to 9 hours and 37 hours to manually drain low points along the North City Pipeline.

Option B – Disposal of Off-Spec Water to Existing Carrol Canyon Trunk Sewer at Via Pasar

Option B has been designed to push the volume of off-spec water out of the North City Pipeline into the existing Carrol Canyon Trunk Sewer via an above-grade discharge pipe into an existing sewer manhole. This option will require the North City Pump Station to pump at lower flow rates and monitor the capacity of the Carrol Canyon Trunk Sewer at Manhole 223, located 1,850 feet west of the intersection of Camino Ruiz and Carroll Canyon Road. In addition to the closure of the isolation valve downstream of the Dechlorination Facility, an additional closure of the isolation valve located at Via Pasar will be required to isolate the eastern portion of the subaqueous pipe from the North City Pipeline. Option B is not recommended during wet weather conditions. The travel time within the North City Pipeline from the North City Pump Station to the Via Pasar above-grade discharge pipe is 2 hours when the North City Pump Station is operating at maximum design flow (32.8 MGD). This option is suited for scenarios where the production of on-spec water is within a few hours, and operators are looking to dispose of the segment west of Via Pasar of off-spec water during dry weather conditions.

Option C – Disposal of Off-Spec Water to Existing Meanley Drive Storm Drain System

Option C has been designed to push the volume of off-spec water out of the North City Pipeline, into an existing 18-inch storm drain located in Meanley Drive. Information gathered from the existing storm drain system as-builts and a hydraulic analysis indicated adequate capacity to accommodate the full flow of the North City Pump Station. However, this option will require North City Pump Station to pump at lower flow rates and monitoring of the capacity of the existing storm drain system on Meanley Drive, Hoyt Park, and Scripps Ranch Court, as well as the need to monitor that no erosion occurs at the outlet of the existing storm drain at the west end of Scripps Ranch Court. Operators will also coordinate with the City's Transportation and Storm Water Department, particularly during a rain event. This option involves the following requirements:

- A National Pollutant Discharge Elimination System permit;
- Water quality compliance monitoring; and
- Compliance with applicable surface water quality standards

Furthermore, the following may also be required:

- Energy dissipation/erosion controls or flow throttling facilities; and
- U.S. Army Corps of Engineers Streambed Alteration Permit.

The travel time within the North City Pipeline from the North City Pump Station to the Dechlorination Facility is 2 hours and 30 minutes when the North City Pump Station is operating at maximum design flow (32.8 MGD).

3.7 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD FOR ANALYSIS

3.7.1 PREVIOUS WATER SUPPLY ALTERNATIVES PLANNING

The City has a long history of evaluating water supply alternatives. Over the past decade, potable reuse options have been extensively studied and weighed along with other water supply options. As part of a balanced approach to water supply portfolio diversification, no single water supply option is considered to be "preferred." Rather, the study of water supply alternatives has included broad-based considerations of feasibility, environmental considerations, and costs. For reuse options, specific focus has been given to the various options involved in implementing new and enhancing existing reuse practices. The following provides a summary of the City's recent water supply planning efforts, which form a basis from which alternatives to the North City Project were considered for purposes of this EIR/EIS. Specifically, the City's extensive planning and broad stakeholder-driven processes in developing options that ultimately led to definition of the Pure Water Program provide the basis for alternatives that were considered and rejected through the planning process—all of which has undergone extensive public participation.

Long-Range Water Resources Plan

The Long-Range Water Resources Plan (LRWRP) was developed in 2012, and is a high-level strategy document intended to provide information to decision makers regarding the tradeoffs of future water resource investments, with a long-range viewpoint through the year 2035 planning horizon (City of San Diego 2013). The 2012 LRWRP evaluates water supply and conservation options with consideration of multiple planning objectives. The plan was developed using an open, participatory planning process, with input from a dedicated Stakeholder Committee. The outcome of the 2012 LRWRP is a flexible and adaptive implementation strategy that accounts for future risk and uncertainty.

The City developed its first LRWRP in 2002, which provided direction for the City to pursue additional conservation, recycled water, and groundwater, with consideration of implementing potential water transfers, marine transport, and ocean desalination options if warranted. The City decided to update the plan in 2012 in light of the following changed conditions since adoption of the 2002 LRWRP:

- Metropolitan Water District of Southern California/San Diego County Water Authority imported water reliability issues surrounding the Sacramento–San Joaquin Delta and Colorado River, especially in the areas of the Endangered Species Act
- Climate change and its potential impacts on water demands and supplies
- New approaches and public support for potable reuse, using advanced purification of recycled water
- Viability of water transfers, marine transport, and ocean desalination

As such, the 2012 LRWRP reassessed planning objectives and stakeholder values, evaluated emerging issues, and used the most recent information available at that time to determine a long-term water resources strategy for the City. The 2012 LRWRP used projected water demands, imported water availability, and costs; it also evaluated new supply opportunities that were not considered in the 2002 LRWRP.

The 2012 LRWRP identified three options for potable reuse for a total projected yield of up to 93,000 acre-feet per year (AFY; 83 MGD) (City of San Diego 2013). A total of 20 additional options were identified as alternatives to imported water in the categories of conservation; groundwater development; non-potable recycled water; and rainwater harvesting, graywater, and ocean desalination. Because the goal of achieving a balanced portfolio of water supply involves weighing numerous factors among various alternatives, the LRWRP process included an evaluation and ranking of portfolios to show the relative trade-offs among performance measures. The LRWRP Objectives were defined as follows (City of San Diego 2013):

- Provide Reliability and Robustness
- Manage Cost and Provide Affordability
- Maximize Efficiency of Water Use
- Provide for Scalability of Implementation
- Maintain Current and Future Assets
- Provide for Local Control/Independence
- Maximize Project Readiness
- Protect Quality of Life
- Protect Habitats and Wildlife
- Reduce Energy Footprint
- Protect Quality of Receiving Waters

As a result of the alternative water supply evaluation process, the LRWRP recommended implementation of strategies that included the following (City of San Diego 2013):

- Additional Active Conservation – 20,900 AFY (18.7 MGD)
- Rainwater Harvesting – 420 AFY (0.38 MGD)
- Groundwater Supply – up to 4,000 AFY (3.6 MGD)
- Potable Reuse (for all three phases) – 93,000 AFY (83 MGD)

The North City Project implements a portion of the Pure Water Program, which was developed from recommendations from the 2012 LRWRP to include potable reuse as one of multiple recommended strategies to complement the City's ongoing pursuit of planned water supply options.

Water Reuse Study

On January 13, 2004, the San Diego City Council directed the City Manager to conduct a study to evaluate options for increasing the beneficial use of the City's recycled water. As part of the planning process, the study team developed an objective and a mission statement for the project, which set forth parameters for an impartial, balanced, comprehensive, and science-based study of all recycled water opportunities to increase local water supply and reliability, and optimize local water assets. As such, the study represented the first step in the City's comprehensive consideration of alternatives to optimize recycled water.

The process used to develop the study started with the City assembling a diverse, participatory group that included stakeholders and noted specialists in the fields of science, technology, health and safety, and economics. Two key groups convened shortly after the project began: a stakeholder workshop, called the City of San Diego Assembly on Water Reuse (Assembly), and an Independent Advisory Panel (IAP). The City selected its 67 Assembly participants through a City-wide search for key stakeholders such as community leaders, policy makers, water consumers, business leaders, and professionals in various fields of expertise. The IAP was established to provide independent oversight and guidance to the study team. IAP panel members were contracted through the National Water Research Institute, which was selected to ensure an unbiased and thorough examination of all possible water reuse opportunities. These two groups worked with City staff and consultants to develop and review and finalize the Water Reuse Study.

The following is an excerpt from the IAP's findings at the conclusion of the process:

> It is the unanimous conclusion of the Panel [IAP] that appropriate alternative water reuse strategies for the City of San Diego have been identified, and that these alternatives have been presented clearly so that the citizens of the City of San Diego can make informed choices with respect to water reuse.

The analysis consolidated a combination of reuse opportunities, which are referred to as "strategies." The strategies represent a set of diverse reuse options for both the North City and South Bay systems. Decision charts, which can be used as roadmaps for each strategy's implementation, were included to summarize facilities and reuse volumes and were developed to help answer the primary study questions of (1) which water recycling opportunities to pursue, and, (2) depending on the opportunity, how much water to recycle. Supporting text included the benefits of each strategy, the value of recycled water, detailed costs for each strategy, and information on other water supply options.

The study resulted in an evaluation of six strategies integrating non-potable reuse and potable reuse opportunities for the North, Central, and South potable water service areas. A potable reuse project using the City's San Vicente Reservoir through a concept known as "reservoir augmentation" was identified as the preferred reuse strategy. This concept formed the basis of the North City component as analyzed in the Pure Water Program EIR (City of San Diego 2016a).

Recycled Water Study

The Recycled Water Study (City of San Diego 2012) followed the 2006 Water Reuse Study, with the objective of finding ways to maximize system-wide reuse and developing integrated reuse alternatives that the public and policy makers could review and select from to guide the future of the reuse program located within the Metro System Service Area. The alternatives were evaluated to meet City, participating agency, and project stakeholder reuse goals through a 2035 planning horizon, and were part of a comprehensive regional program to evaluate and develop water reuse in San Diego.

The Recycled Water Study was initiated with a broader basis than the 2006 Water Reuse Study: to consider the water reuse goal to be limited only by the amount of wastewater available in the Metro System Service Area. This was a more comprehensive goal, providing the potential to reuse 10 times more water than previous targets, with approximately 200 MGD projected to be available in the Metro System Service Area on an average dry weather year in 2035.

The study included a number of technical evaluations and coordination steps to identify and evaluate reuse alternatives within the City as well as areas served by the participating agencies. Throughout the study, regular stakeholder status update meetings were held to present progress and to receive input and feedback on the activities. Eight technical memoranda were developed to document information. Alternatives were developed through a participatory process, with stakeholder status update meetings and five work sessions that were used to frame, develop, refine, and communicate the alternatives included in this study.

"Area Concepts" were developed to provide detailed, comparable alternatives for discussion at a "Coarse Screening Session" and stakeholder status update meetings, and were then refined and compiled into Integrated Reuse Alternatives. The Area Concepts were strategically selected, based on the locations of available wastewater, existing facilities, and delivery points (non-potable recycled water customers, surface water reservoirs, or groundwater basins). Eleven reservoirs were originally evaluated based on their size, proximity to infrastructure (which relates to cost), ability to integrate with existing water treatment plants, anticipated characteristics related to regulatory compliance, and institutional complexity. The San Vicente Reservoir, Otay Lakes, and Lake Hodges were advanced as candidate indirect potable reuse opportunities. Lake Murray and Miramar Reservoir were considered too small to meet anticipated regulatory requirements at the time; however, potential project sizes were calculated for these two reservoirs as well since they are located at the two largest water treatment plants in the Metro System Service Area.

Regional groundwater basins were also considered for additional opportunities for indirect potable reuse. However, evaluations confirmed that groundwater recharge opportunities in San Diego County are more limited than reservoir augmentation due to the size, yields, and characteristics of the local groundwater basins. Groundwater basins were eliminated from consideration based on a variety of reasons, including infrastructure needs leading to higher costs, small size, water quality issues, liquefaction potential, and institutional complexity.

Opportunities were sized and then pieced together by laying out treatment and conveyance facilities. Cost information was also developed, with pumping costs being a particularly important component because of the variability of pumping costs for potable reuse using reservoir augmentation, non-potable water, and wastewater. The availability of this information allowed stakeholders to compare the benefits of different approaches within each area. For example, alternatives that required extensive wastewater pumping (which requires pumping approximately 30% more flow than advanced treated water), were identified as having added costs and risks compared to other alternatives. This point led to development of the Harbor Drive Plant concept later in the study. Area Concepts were refined into Integrated Reuse Alternatives in the "Fine Screening Session." Fine Screening Session participants considered a series of projects to meet the 100 MGD water reuse target.

Five Integrated Reuse Alternatives were developed based on the extensive, interactive Stakeholder process. Each alternative includes 83 MGD of new potable reuse and 3 MGD of new non-potable recycled (in addition to 4 MGD of already planned non-potable reuse).

City of San Diego Urban Water Management Plan

The City's 2015 Urban Water Management Plan meets the State of California's requirements under the California Water Code and complies with the California Urban Water Management Planning Act, as well as serves as an overarching water resources planning document for the City (City of San Diego 2016b). The 2015 UWMP details the City's water system, water demands, sources of water supplies, water conservation efforts, climate change impacts, energy intensity, water shortage contingency planning, and projected water supply reliability during normal, dry, and multi-year drought conditions.

The 2015 UWMP identifies current and planned future water supplies, and identifies potential, conceptual future water supplies that the City may implement. Based on the results of the 2012 LRWRP and 2012 Recycled Water Study, the 2015 UWMP identifies both verifiable water supply sources (surface water, groundwater, and recycled water (non-potable), as well as conceptual water supply sources (the City's Pure Water Program, future groundwater projects, and rainwater harvesting and greywater).

Summary of Water Supply Alternatives Consideration

As summarized in this section, the City's evaluation of water supply alternatives over the past decade or more has focused on reducing dependence on imported water supplies, and has ranged from broad-based options for generating new supplies, to more focused studies on implementing specific supply options, such as reuse. Various options and concepts that were included among those studies and evaluation processes are alternatives that were considered and rejected. Included among those are alternatives relating to increasing non-potable recycled water use and updating Point Loma WWTP to full secondary treatment, both of which were considered and rejected in the Water Reuse Study and the Recycled Water Study.

The Recycled Water Study built on past efforts in defining supply options, by providing detail on facility needs to achieve the reuse supply targets. The North City Project comprises the facilities necessary to move a portion of the Pure Water

Program identified reuse options into an implementation stage, and represents the outcome of the City's deliberative efforts to diversify the City's water supply portfolio.

3.7.2 CURRENT ALTERNATIVES SCREENING

The screening process used in the EIR/EIS to evaluate a reasonable range of alternatives was based on the North City Project's purpose and need/objectives (Chapter 1). A number of alternatives were considered, but not carried forward for detailed analysis in the EIR/EIS. A wetlands avoidance alternative was considered but no technically feasible alternatives that met the purpose of the North City Project could be determined. An electrical transmission line alternative was considered, which would have generated power at MBC and transferred it to the North City Project via an electrical transmission line to the NCWRP. Additionally, the Project team considered numerous alternative alignments and routes for each of the purified water pipelines and the Morena Pipelines.

Wetlands Avoidance Alternative

Impacts to wetlands have been avoided to the extent practicable within the Project Alternatives; with only 0.38 acre of permanent impacts out of the total 207 acres of impacts attributable to wetlands under the Miramar Reservoir Alternative. All permanent impacts to wetlands under the Miramar Reservoir Alternative would occur at the NCPWF site.

There is a substantial increase in efficiency to locating the NCPWF adjacent to the NCWRP. By locating the NCPWF adjacent to the NCWRP, less energy is required to pump recycled water from the NCWRP to the NCPWF, which thereby results in less greenhouse gas emissions. By locating the facilities adjacent to each other, staff and other O&M requirements can be shared. Other parcels adjacent to the NCWRP or along the North City Pipeline alignment were screened for suitability, including the Pueblo Central, Pueblo South, and MCAS Property immediately east of the NCWRP; however, all are either currently developed, are under the jurisdiction of MCAS Miramar, or contain more sensitive resources than the proposed NCPWF site (see Figure 3-29, Alternative North City Pure Water Facility Sites). There are no other feasible alternative NCPWF sites.

A Wetlands Avoidance Alternative has been thoroughly vetted by the Project team; however, due to the inherent nature of the Project, impacts to wetlands would be unavoidable. Therefore, this alternative is not carried forward for detailed analysis in this EIR/EIS.

Electrical Transmission Line Alternative

An electrical transmission line alternative was originally considered by the Project team. This alternative would have located a power generation facility at MBC and supplied power to the North City Project via an electrical transmission line. The electrical transmission line would have been approximately 4 miles, as compared to the LFG Pipeline which is approximately 3 miles, and therefore, would have resulted in more ground disturbance. The electrical transmission line also would have required a new easement through the VA Cemetery that would have resulted in greater impacts and loss of cemetery plots within the VA Cemetery, whereas the LFG Pipeline can be constructed within an existing easement through the VA Cemetery property. Additionally, the electrical transmission line would have resulted in overhead power lines being located on some portions of MCAS Miramar, thereby resulting in a potential hazard to military aircraft. An additional gas transmission line from the Miramar landfill to MBC would have been required. Therefore, due to the higher capital, O&M, and life-cycle costs and greater environmental effects, the electrical transmission line was not carried forward for detailed analysis in the EIR/EIS.

Pipeline Alignment Alternatives

During preliminary design of the Morena Pipelines, North City Pipeline, and San Vicente Pipeline, design teams studied a number of alignments for feasibility, cost effectiveness, resource avoidance, and risk. A number of factors were evaluated in determining the current alignment of pipelines. Factors considered include cost, schedule for construction, community disruption, traffic impacts, energy demand, impacts to environmentally sensitive lands, property and easement acquisition, utility conflicts, overall length of pipeline corridors, geologic conditions, constructability, and O&M considerations.

Morena Wastewater Forcemain and Brine/Centrate Line

The initial alignment for the Morena Pipelines was based on the Plant Siting and Pipe Alignment Study, dated February 2, 2015, prepared by Brown and Caldwell. Initial alignments included a Proposed Corridor and Alternate Corridor. The Proposed Corridor ran east along Balboa Avenue from a conceptual pump station location at Balboa Avenue and Morena Boulevard, then north along Genesee Avenue, east along Governor Drive, and north along the SDG&E utility corridor, crossing Miramar Road to the NCWRP and NCWPF (see Initial Alignments shown on Figure 3-30, Morena Wastewater Forcemain and Brine/Centrate Line Alternative Alignments).

During preparation of the 10% Design Report for the Morena Pipelines, the Proposed Corridor (Alternative Alignment No. 1) was refined and two alternative pipeline alignments were evaluated (see 10% Design Phase Alignments shown on Figure 3-30), including Alternative Alignment No. 2, which is approximately 9 miles and was designed to decrease community impacts; and Alternative Alignment No. 3, which is approximately 10.4 miles and was designed to decrease environmental impacts and be more hydraulically favorable (Appendix B of the 10% Design Report, MWH Americas and Brown and Caldwell 2016). Alternative Alignment No. 3 was identified as the preferred alignment for the Morena Pipelines and was elevated to the 10% Design Phase. During the 10% and subsequent 30% Design Phases, additional tweaks were made to the alignment, including bypassing the Morena Boulevard/Clairemont Drive intersection by following Ingulf and Denver Streets; removing the section along La Jolla Village Drive and instead following Nobel Drive to Towne Center Drive to Executive Drive; and moving the trenchless crossing of Rose Canyon out of the roadway ROW and placing the receiving pit just east of Genesee Avenue.

North City Pure Water Pipeline

Similar to the Morena Pipelines, three alternative alignments, along with various alignment deviations, were also evaluated for the North City Pipeline prior to advancing a preferred alignment to the 10% Design Phase (MWH Americas Inc. and Brown and Caldwell 2015). A study area bounded by I-805 to the west, Mira Mesa Boulevard and Scripps Ranch Boulevard to the north, MCAS Miramar and the Navy Operations Center to the south, and the existing water authority easements and Miramar Lake's eastern banks to the east was originally considered. Miramar Road was identified as the preferred route between the North City Pump Station and Black Mountain Road. Three alternative alignments were evaluated (Alternative A "North," Alternative B "Central," and Alternative C "South"; see Figure 3-31A, North City Pure Water Pipeline Alternative Alignments) between Black Mountain Road and Miramar Reservoir in addition to four initial study options and various alignment deviations. Table 3-4 discusses the impacts associated with each option and deviation.

Table 3-4
Initial Alignment Alternatives and Deviations

Map ID	Description	Impact
Initial Study Options		
1	Mira Mesa Boulevard	Reviewed as an alternative to Miramar Road. Route was eliminated due to heavy daily traffic counts, schedule restrictions working in residential areas, and avoidance of hard improvements and vegetation in the median.
2	Rock Quarry Sewer Easement	Reviewed as an alternative to Miramar Road. Route was eliminated due to environmentally sensitive areas bordering the quarry, planned development, waterways, and insufficient easement space.
3	Clean Water Act (CWA) Easement	Reviewed as an alternative between Pomerado Road and the Miramar WTP. Eliminated due to easement language restrictions – CWA facilities only.
4	Miramar Ranch School Easement on South & East boundary	Reviewed as an alternative to bypass Red Cedar Drive and CWA pipelines. Eliminated due to schedule restrictions, need to protect school facilities, and crossing on the CWA easement that crosses the property.
Alternative A (North)		
A1	Activity Road	Option to avoid MCAS Main Gate. Adds 200 feet to alignment overall length.
A2	Westview Parkway	Option to avoid Mira Mesa/Black Mount Road intersection.
Alternative B (Central)		
B1	Activity Road	Option to avoid MCAS Main Gate. Adds 200 feet to alignment overall length.
B2	Black Mountain Road & Kearny Mesa Road to Via Excelencia	Revision to remove 390 degrees or greater horizontal bends. Reduced overall Alternative Alignment B by 200 feet (included in Alternative B).
B3	Scripps Ranch Blvd & Carrol Canyon Road to Miramar WTP	Revision to avoid heavy utility congestion in Scripps Ranch Boulevard and Scripps Lake Drive. Reduced overall Alternative Alignment B by 900 feet (included in Alternative B).
B4	Miramar WTP East discharge at east end of Miramar Reservoir	Revision to reduce pumping head and overall length by 9,500 feet (included in Alternative B).

Table 3-4
Initial Alignment Alternatives and Deviations

Map ID	Description	Impact
Alternative C (South)		
C1	Scripps Ranch Boulevard & Aviary Drive to Red Cedar Drive & Ranch View Drive	Option to bypass Aviary Drive and Red Cedar Drive. Increases overall alignment by 100 feet.

Source: MWH Americas Inc. and Brown and Caldwell 2015

Alternative B was advanced to the 10% Design Phase (Appendix K of the 10% Design Report, Brown and Caldwell 2015).

Since the Alternatives Analysis in the 10% Design Phase, the North City Pipeline alignment has been further refined as part of the 30% and 60% design efforts. Rather than following Black Mountain Road to Kearny Villa Road to Carrol Center Road to Via Pasar and the crossing I-15 at the terminus of Via Excelencia across private property, the alignment now continues on Miramar Road to Kearny Villa Road, then follows Candida Street to Via Pasar to Via Excelencia. The I-15 crossing is still the same.

As described in the NC04B Pure Water Pipeline Alignment Alternatives (City of San Diego 2017b), Alternative B "Central" was chosen for having the most advantages, including the least impacts to residential areas; however, this alignment also had the principal disadvantage of requiring the most private commercial land easement acquisitions. As such, a number of alternative alignments have been considered for the portion of the North City Pipeline between Scripps Ranch Boulevard and Miramar Reservoir (see Figure 3-31B, North City Pure Water Pipeline Alternative Alignments).

~~A key consideration of~~ T~~t~~he alignment analysis determined~~is~~ the proposed location of the Dechlorination Facility, which is proposed on City property at the reclaimed water tank site located at the southeast end of Meanley Drive because it provides adequate contact time to properly remove chlorine from the pipeline prior to discharging into the reservoir. "Alignment A – Meanley Drive Alignment" follows Meanley Drive from Scripps Ranch Boulevard to the Dechlorination Facility and then continues via one of three routes to the reservoir: (1) Alignment A1 – APN 319-170-23, (2) Alignment A2 – APN 319-170-22, and (3) Alignment A3 – Scripps Ranch Branch Library Pathway. "Alignment B – Hoyt Park Drive Reroute" reroutes the North City Pipeline along Hoyt

Park Drive, which eliminates the need to tunnel under the crossing of the San Diego County Water Authority's 96-inch Aqueduct at Meanley Drive.

"Alignment C – Scripps Lake Drive Alternative" reconsidered routing the North City Pipeline from the Dechlorination Facility back to Scripps Ranch Boulevard, then east on Scripps Lake Drive to the Miramar WTP site before entering the Miramar Reservoir; however, utility congestion in Scripps Lake Drive (including a fiber optic line, SDG&E electrical, SDG&E electrical vault, City water pressure reducing station, and a San Diego County Water Authority facility not previously discovered in earlier research) limited available space for the North City Pipeline, which needs to meet specific separation requirements.

"Alignment D – Modified APN 319-170-23 Alternative" deviates from Alignment A1 originally analyzed across this property and follows the western boundary of the property within the existing paved parking lot. However, in addition to other constraints, this alignment raises the highpoint of the pipeline and results in increased motor requirements at the North City Pump Station, thereby increasing annual energy requirements. "Alignment E – Modified Alignment through KBS Ingress/Egress & Landscaped Area" follows a similar alignment to Alignment D, but just slightly to the west in the landscaped areas instead of the paved parking lot. This alignment reduces the need for higher motor requirements, but requires temporary construction easements within the Scripps Ranch Technology Park property, and maintenance access would be required through the easement.

"Alignment F – Modified Alignment within 20-foot-wide setback of Scripps Ranch Technology Park Parcel" deviates just slightly from Alignment A2 and maintains the North City Pipeline alignment within the 20-foot-wide setback and outside of the proposed future parking lot's estimated structural line of influence.

San Vicente Pure Water Pipeline

The San Vicente Pipeline alignment was originally vetted in the Recycled Water Study (City of San Diego 2012), which considered a number of alignments between both the NCPWF and a proposed Harbor Drive Plant and the San Vicente Reservoir (see Figure 3-32A, San Vicente Pure Water Pipeline Alternative Alignments). The alignment was significantly revised and refined in the 10% Design Phase, which considered nine different alignment revisions to the base alignment (see Figure 3-32B, San Vicente Pure Water Pipeline Alternative Alignments; Brown and Caldwell 2015). Specific reasons for realignment from the base alignment included: (1)

accommodating the High Pressure Scenario and abandoning a proposal to construct a new pipe parallel to the existing 36-inch Recycled Water Line, (2) avoidance of environmentally sensitive areas such as vernal pools along SR-52, (3) avoidance of congested utility corridor, (4) avoidance of contaminated soil, (5) potential impacts to traffic and commercial establishments, (6) anticipated difficulty in acquiring easements within federal property, (7) environmental considerations, (8) elimination of Deerfield Pump Station site from consideration for MTBS site due to impacts to park land, and (9) alignment issues for SR-67 crossing.

The process of selecting each pipeline alignment was made with careful consideration of environmental resources and with the intention to minimize potential impacts. As such, all feasible alignments were evaluated, and it has been determined that the proposed alignments would result in the least environmental impacts.

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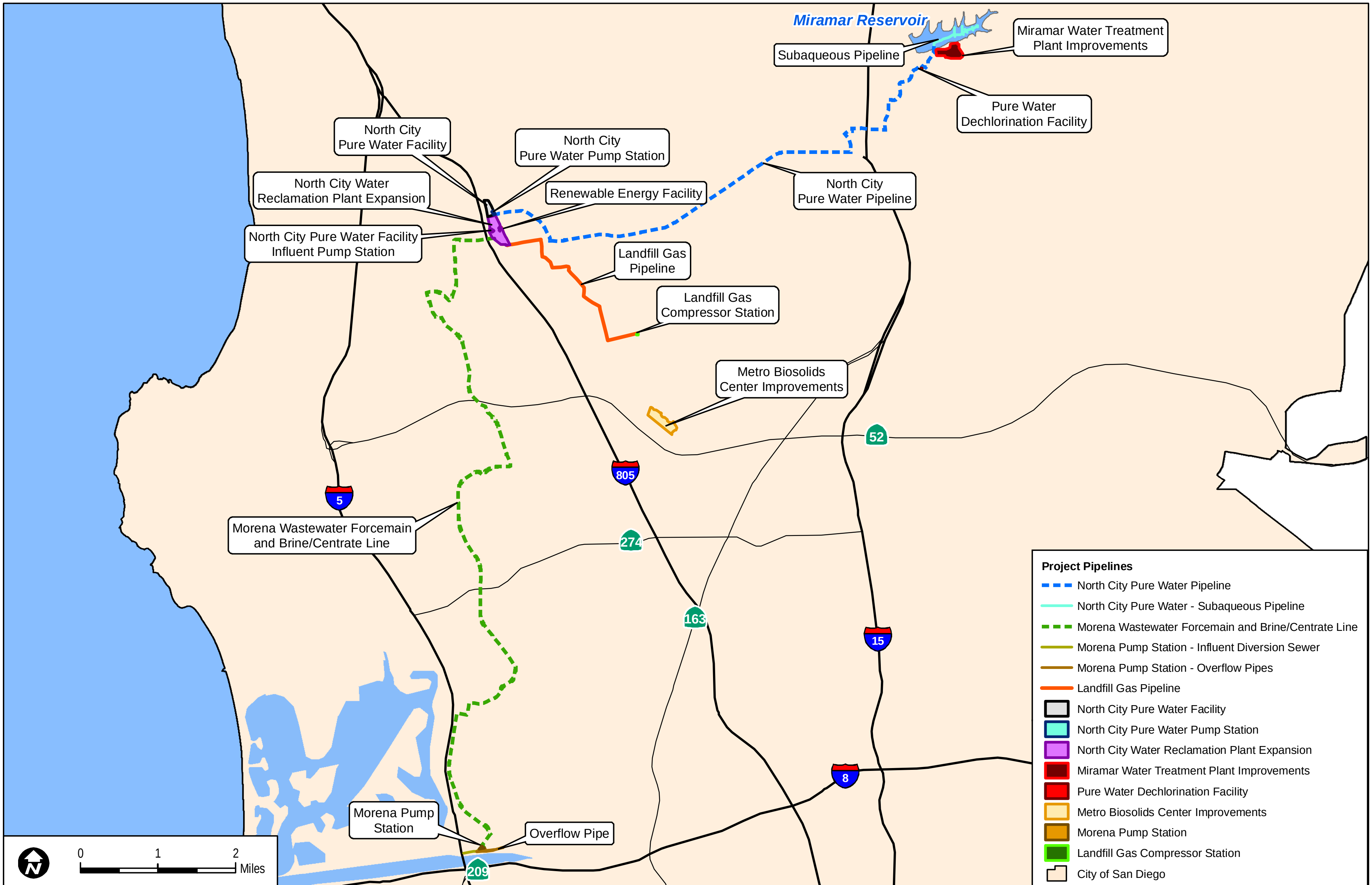

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SOURCE: City of San Diego, 2015, 2016; SanGIS 2016

FIGURE 3-1

Miramar Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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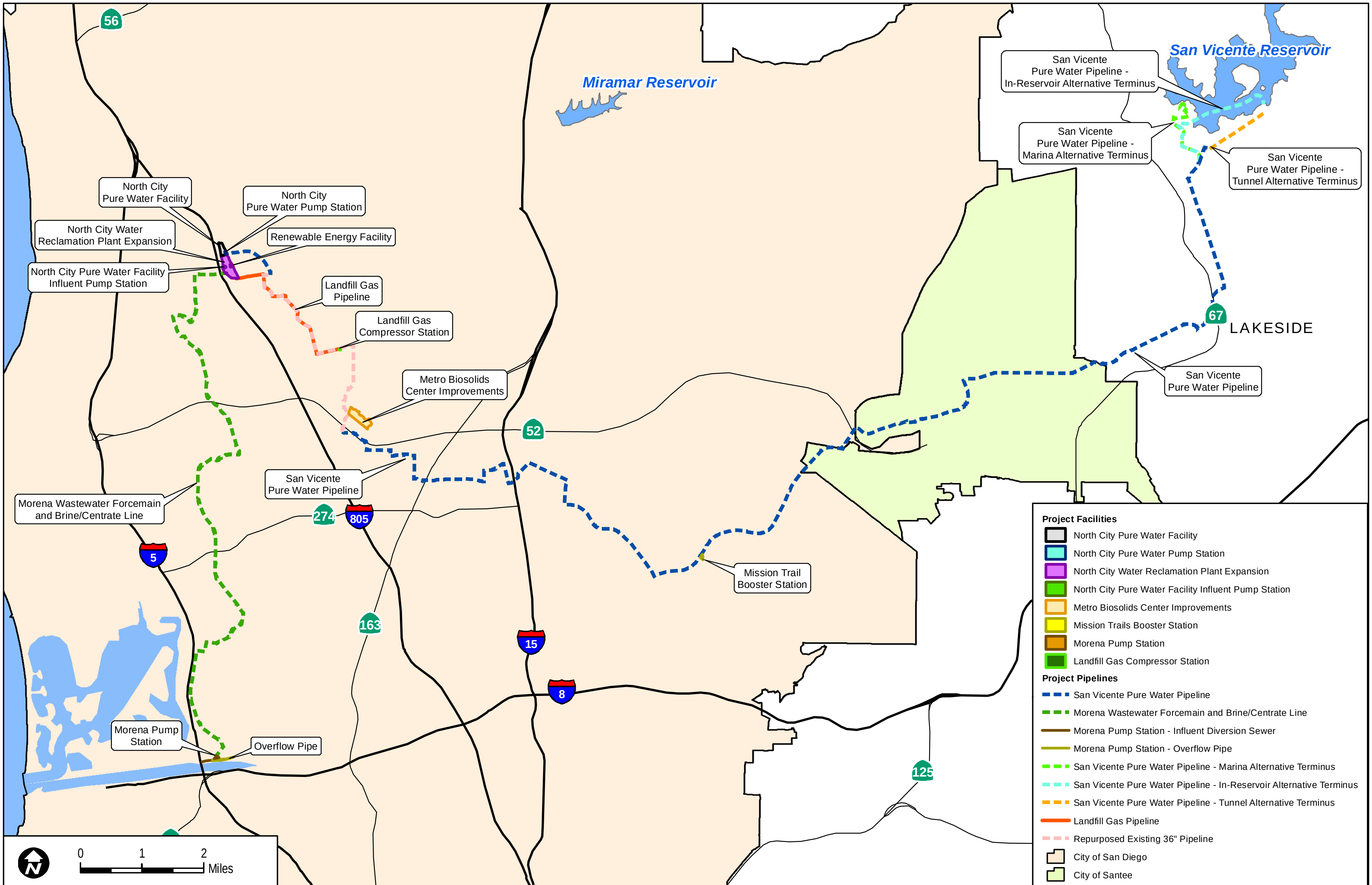

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SOURCE: City of San Diego, 2015, 2016; SanGIS 2016

FIGURE 3-2

San Vicente Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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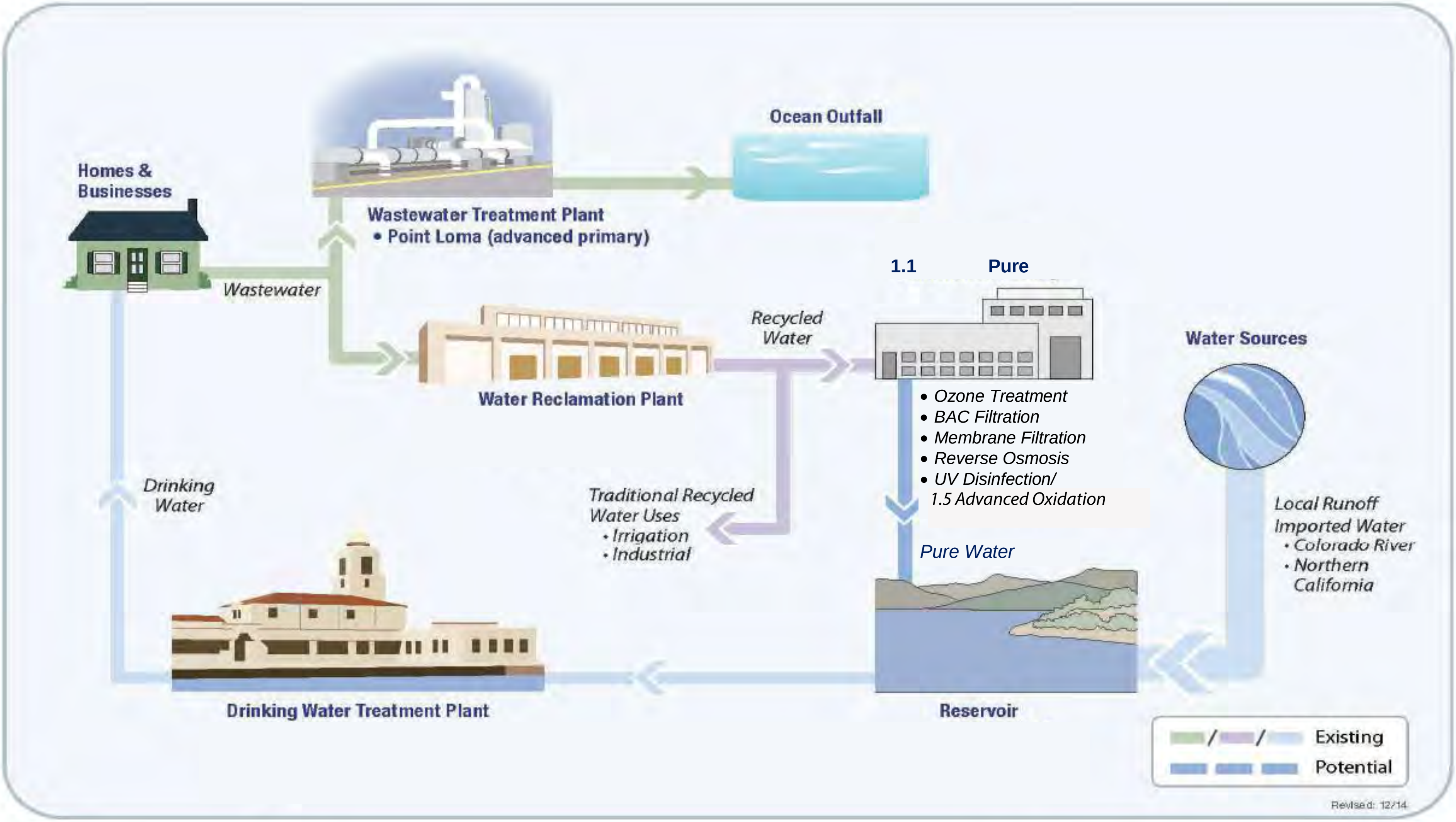

SOURCE: Brown and Caldwell 2016; Trussell Technology Inc., 2016;
North City Pure Water Facility 30% Engineering Design Report, Oct. 2016

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FIGURE 3-3
Pure Water System Overview - Miramar Reservoir

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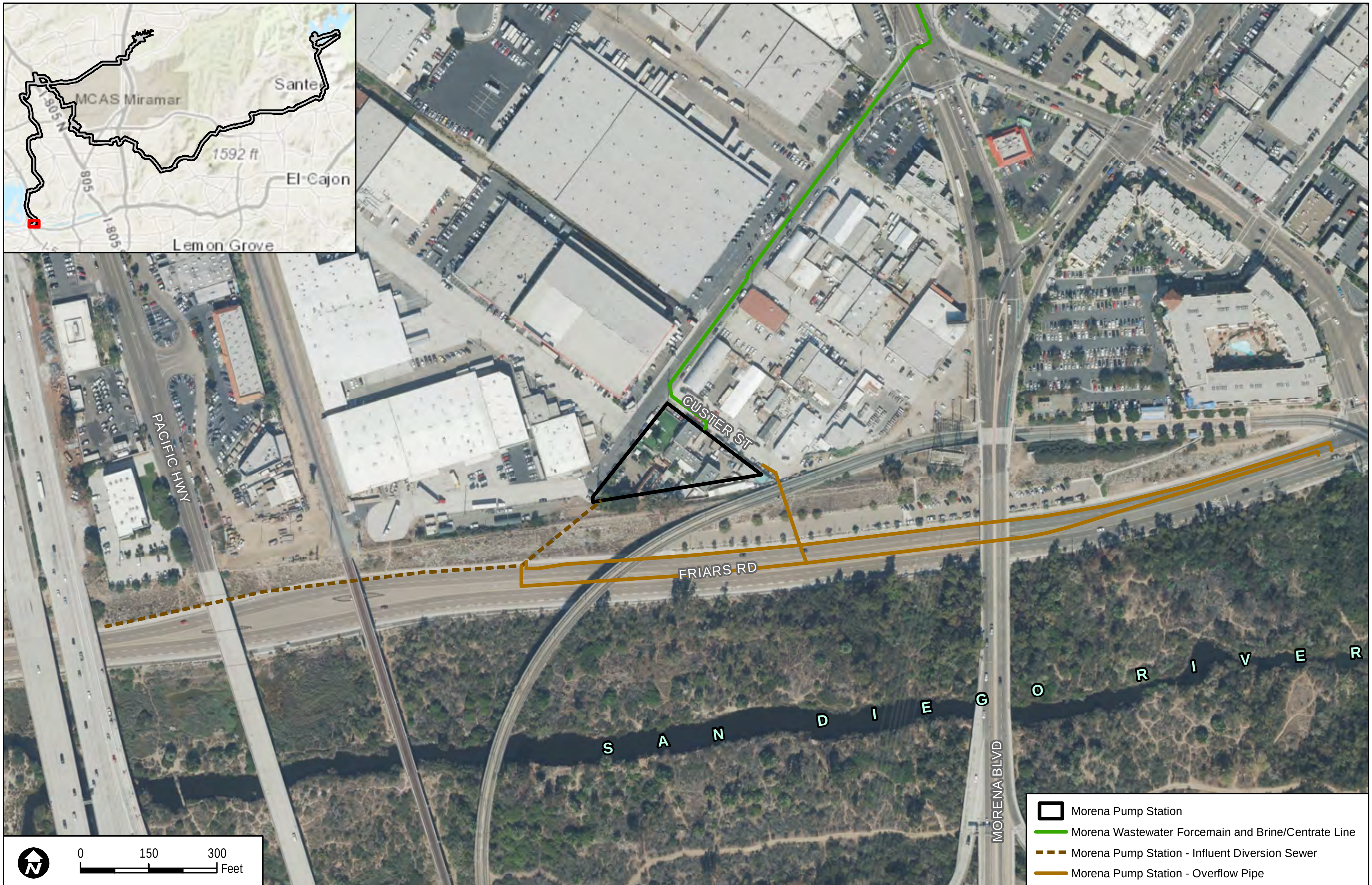

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SOURCE: City of San Diego 2016, 2017, 2018; SANDAG

FIGURE 3-4

Morena Pump Station Site

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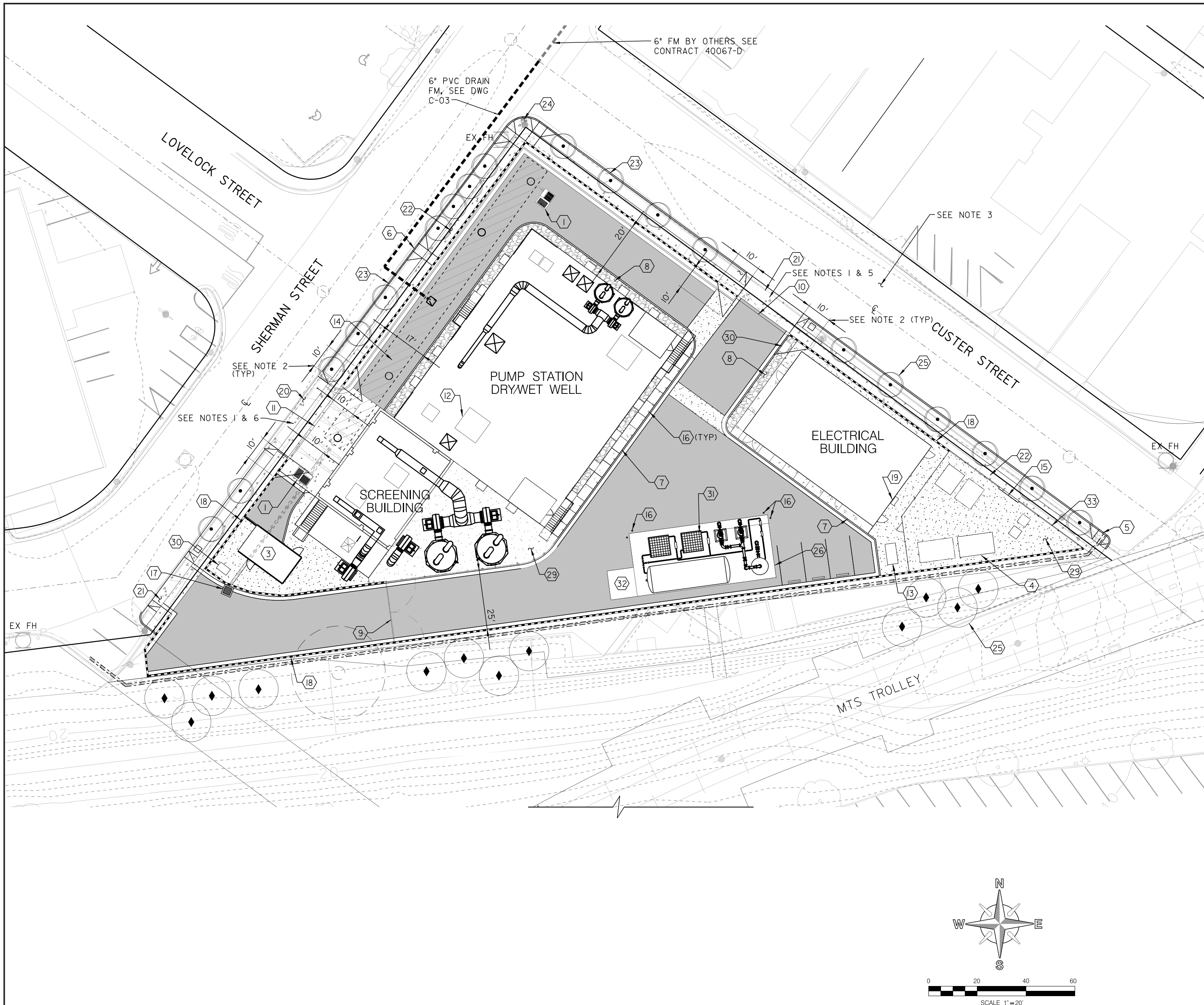

KEYNOTES

1. MODULAR WETLAND SYSTEM, PER MW-02, DWG C-24
2. NOT USED
3. MAINTENANCE BUILDING, PER DWG C-23
4. SDG&E EQUIPMENT, SEE DWG E-06
5. CURB RAMP, PER SDSD SDG-138
6. TYPE B CURB RAMP, PER SDSD SDG-133
7. 4'-0" WIDE CONCRETE WALKWAY PER SDSD SDG-155 (TYP)
8. 3/4" CRUSHED ROCK
9. 25' DOUBLE LEAF WROUGHT IRON ENTRANCE ONLY ACCESS GATE, SEE DETAIL 1, DWG C-08
10. 25' WIDE 8' HIGH ROLLING GATE, SEE DETAIL 2, DWG C-08
11. 35' WIDE, 8' HIGH WROUGHT IRON ROLLING GATE, SEE DETAIL 2, DWG C-08
12. 6'X6' DOUBLE LEAF EQUIPMENT HATCH (TYP OF 2)
13. ELECTRICAL BLDG CONDENSING UNIT, SEE H DWGS
14. HYDROMODIFICATION TANK, PER DWG C-06
15. 10' WIDE WROUGHT IRON SLIDING GATE
16. REMOVABLE PROTECTION POSTS @ 5'-0" OC, PER SDSD, WM-04 (TYPE "B") (TYP)
17. 3'X3' CATCH BASIN, PER SDSD, D-29
18. 8'-0" HIGH MASONRY BLOCK WALL, WITH 1.5 FEET HIGH WROUGHT IRON BARS ON TOP SIMILAR TO SDSD, C-5, SEE NOTE 1
19. MOTOR CONTROL ROOM CONDENSING UNIT, SEE H DWGS
20. 35' WIDE CONCRETE DRIVEWAY, PER SDSD, SDG-163
21. 25' WIDE CONCRETE DRIVEWAY PER SDSD, SDG-163
22. 5' CONCRETE SIDEWALK (NON-CONTIGUOUS) PER SDSD, SDG-155
23. 6-INCH CURB AND GUTTER PER SDSD, SDG-151
24. DUAL CURB RAMPS PER SDSD, SDG-134
25. PROPOSED LANDSCAPING, SEE DWG L-01
26. 18" REINFORCED CONCRETE SLAB ON GRADE PER DETAIL 4, DWG S-5
27. NOT USED
28. NOT USED
29. 6" PCC SURFACE PER SDSD, G-18
30. BACKFLOW PREVENTER, PER DWG C-03
31. HIGH PURITY OXYGENATION FACILITY, SEE DWG C-25
32. 12'-0" X 12'-0" LIQUID OXYGEN FILL CONCRETE APRON
33. 9'-6" H WROUGHT IRON FENCE PER DETAIL XX, DWG X-X

DUDEK

SOURCE: KEH & Associates 2018

FIGURE 3-5
Morena Pump Station Conceptual Site Layout

Pure Water San Diego Program North City Project EIR/EIS

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Morena Pumpstation
Trenchless Segments of Alignment
Morena Wastewater Forcemain and Brine/Centrate Line
Morena Pump Station - Overflow Pipe
Morena Pump Station - Influent Diversion Sewers
Air/Vacuum Release Valves

DUDEK

SOURCE: City San Diego, 2016, 2017; 2018; SanGIS 2017; SANDAG

FIGURE 3-6A

Morena Wastewater Forcemain and Brine/Centrate Line Alignment

Pure Water San Diego Program North City EIR/EIS

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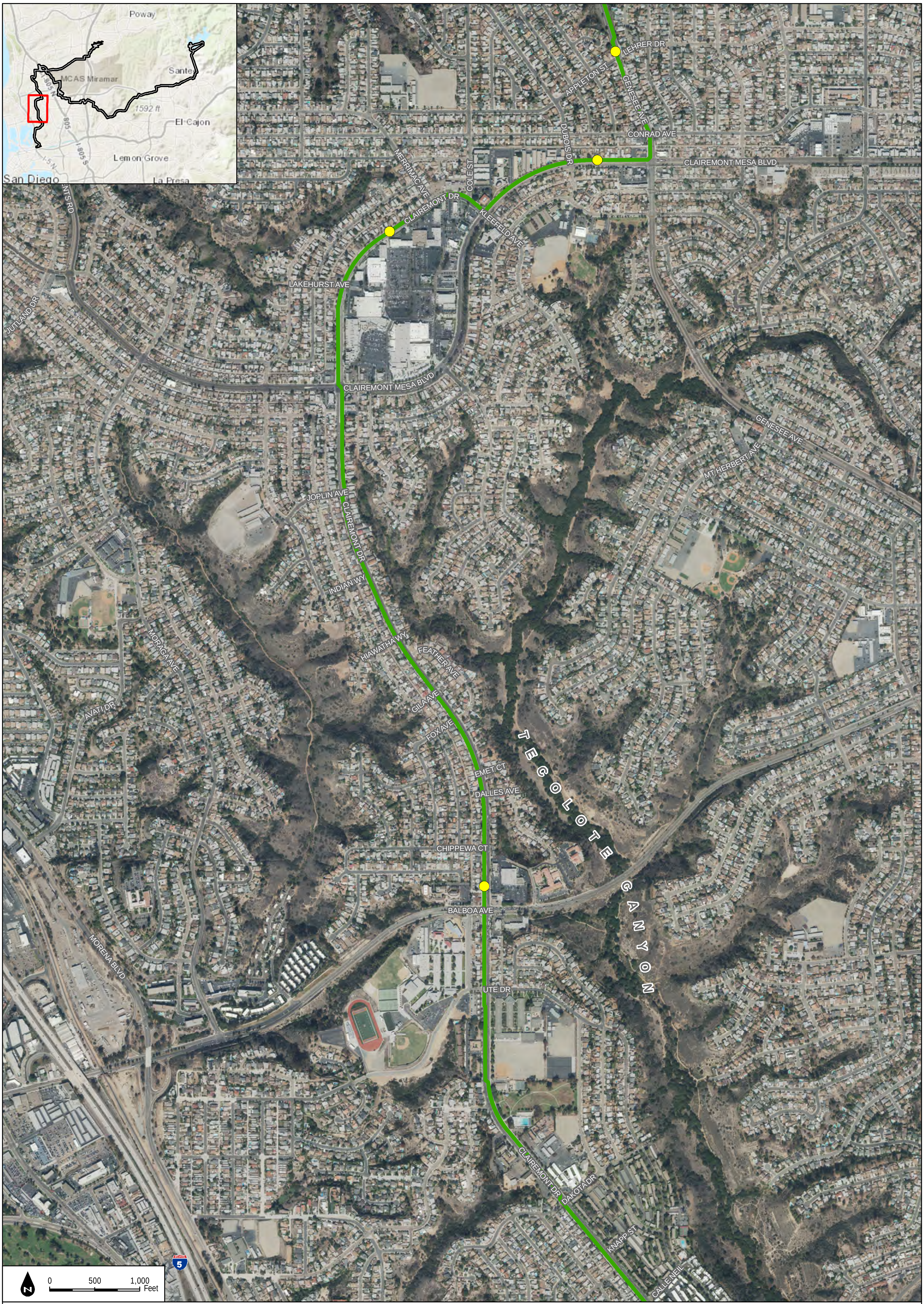

Morena Wastewater Forcemain and Brine/Centrate Line

Air/Vacuum Release Valves

DUDEK

SOURCE: City San Diego, 2016, 2017, 2018; SanGIS 2017; SANDAG

FIGURE 3-6B

Morena Wastewater Forcemain and Brine/Centrate Line Alignment

Pure Water San Diego Program North City EIR/EIS

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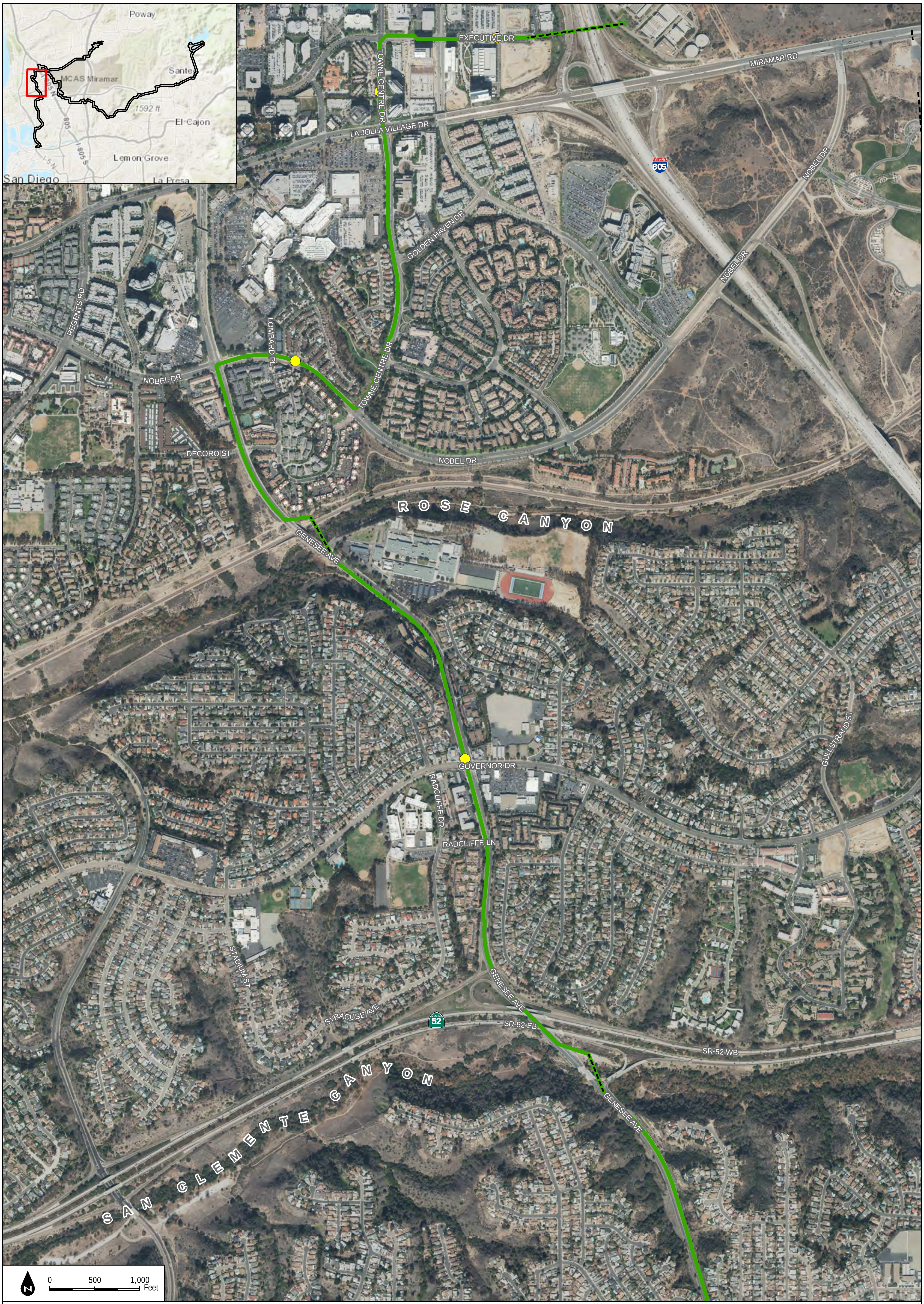

Trenchless Segments of Alignment

Morena Wastewater Forcemain and Brine/Centrate Line

Air/Vacuum Release Valves

DUDEK

SOURCE: City San Diego, 2016, 2017, 2018; SanGIS 2017; SANDAG

FIGURE 3-6C

Morena Wastewater Forcemain and Brine/Centrate Line Alignment

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DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG

FIGURE 3-7

North City Water Reclamation Plant Expansion Site

Pure Water San Diego Program North City Project EIR/EIS

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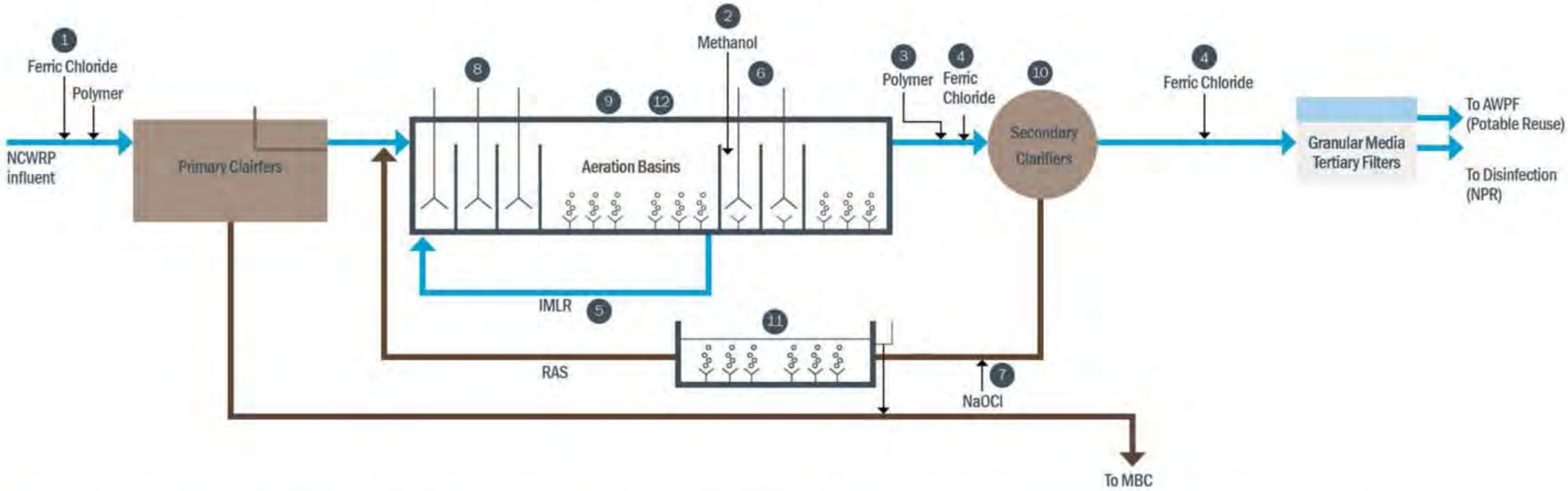
North City Water Reclamation Plant Expansion



1. Chemically enhanced primary treatment (CEPT) to reduce organic loading to the secondary process
2. Methanol addition to improve denitrification
3. Polymer addition to reduce secondary effluent turbidity
4. Ferric chloride addition to remove phosphorus in tertiary filters
5. Install pumps with new pumps equipped with VFDs to provide versatility for denitrification
6. Convert to 4- stage Bardenpho with swing zone for additional denitrification
7. Sodium hypochlorite addition to mitigate filamentous bulking
8. Replace submerged mixers with vertical shaft mixers to reduce maintenance time and cost
9. Install dissolved oxygen (DO) control to save energy
10. New circular flocculator secondary clarifiers with suction sludge removal
11. Install classifying selector for biological foam elimination
12. Install new diffusers to satisfy oxygen requirements

DUDEK

SOURCE: Brown and Caldwell 2016; Trussell Technology Inc., 2016;
North City Pure Water Facility 10% Engineering Design Report, Mar. 2016

FIGURE 3-8
North City WaterReclamation Plant Expansion Improvements

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SOURCE: ch2m 2017

DUDEK

FIGURE 3-9

North City Water Reclamation Plant Expansion Conceptual Site Plan

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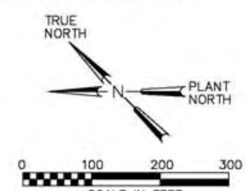
FACILITIES LEGEND

- 01 INFLUENT PUMP STATION
- 05 HEADWORKS
- 10 PRIMARY SEDIMENTATION TANKS
- 11 INTERMEDIATE PUMP STATION
- 12 FLOW EQUALIZATION
- 15 AERATION BASINS
- 20 SECONDARY CLARIFIERS
- 21 SECONDARY EFFLUENT SPLITTER BOX
- 22 COAGULATION AND METERING
- 25 TERTIARY FILTERS
- 26 WASTE BACKWASH TANK
- 30 CHLORINE CONTACT TANKS
- 33 EFFLUENT DROP STRUCTURE
- 34 EFFLUENT PUMP STATION
- 45 SLUDGE PUMP STATION
- 51 OPERATIONS BUILDING
- 55 CHEMICAL BUILDING
- 61 – 67 ELECTRICAL SUBSTATIONS
- 68 ELECTRICAL MAIN PLANT SWITCHGEAR
- 69 ELECTRICAL SUBSTATION (NIC)

Above: NCWRP Site Plan and Location of NCAWPF IPS



Right: NCAWPF Influent Pump Station and Pipeline Location

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DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG

FIGURE 3-11

North City Pure Water Facility Site

Pure Water San Diego Program North City Project EIR/EIS

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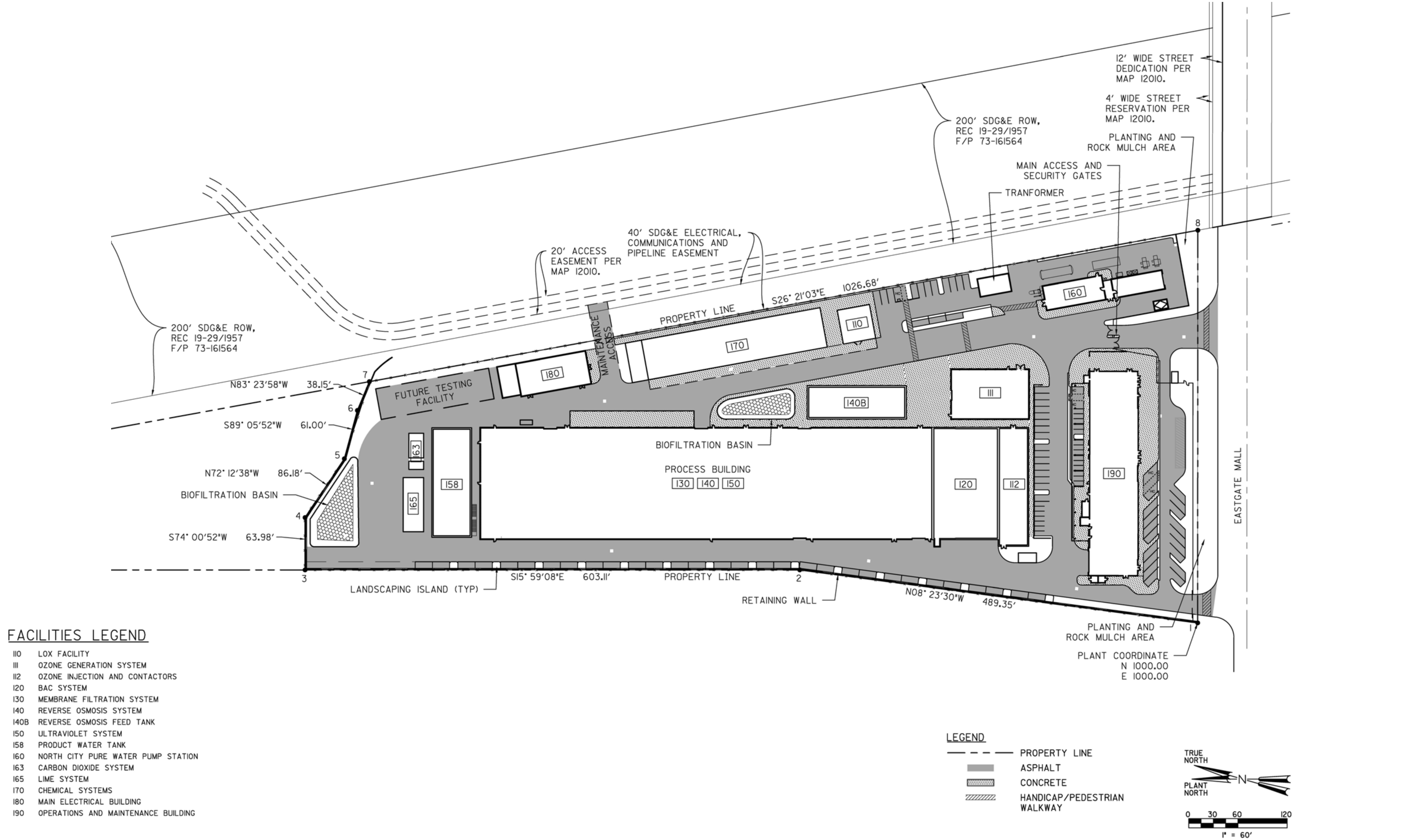

SOURCE: Brown and Caldwell 2016; Trussell Technology Inc., 2016; MWH; North City Pure Water Facility 30% Engineering Design Report

DUDEK

FIGURE 3-12

North City Pure Water Facility-Miramar Reservoir Conceptual Site Layout

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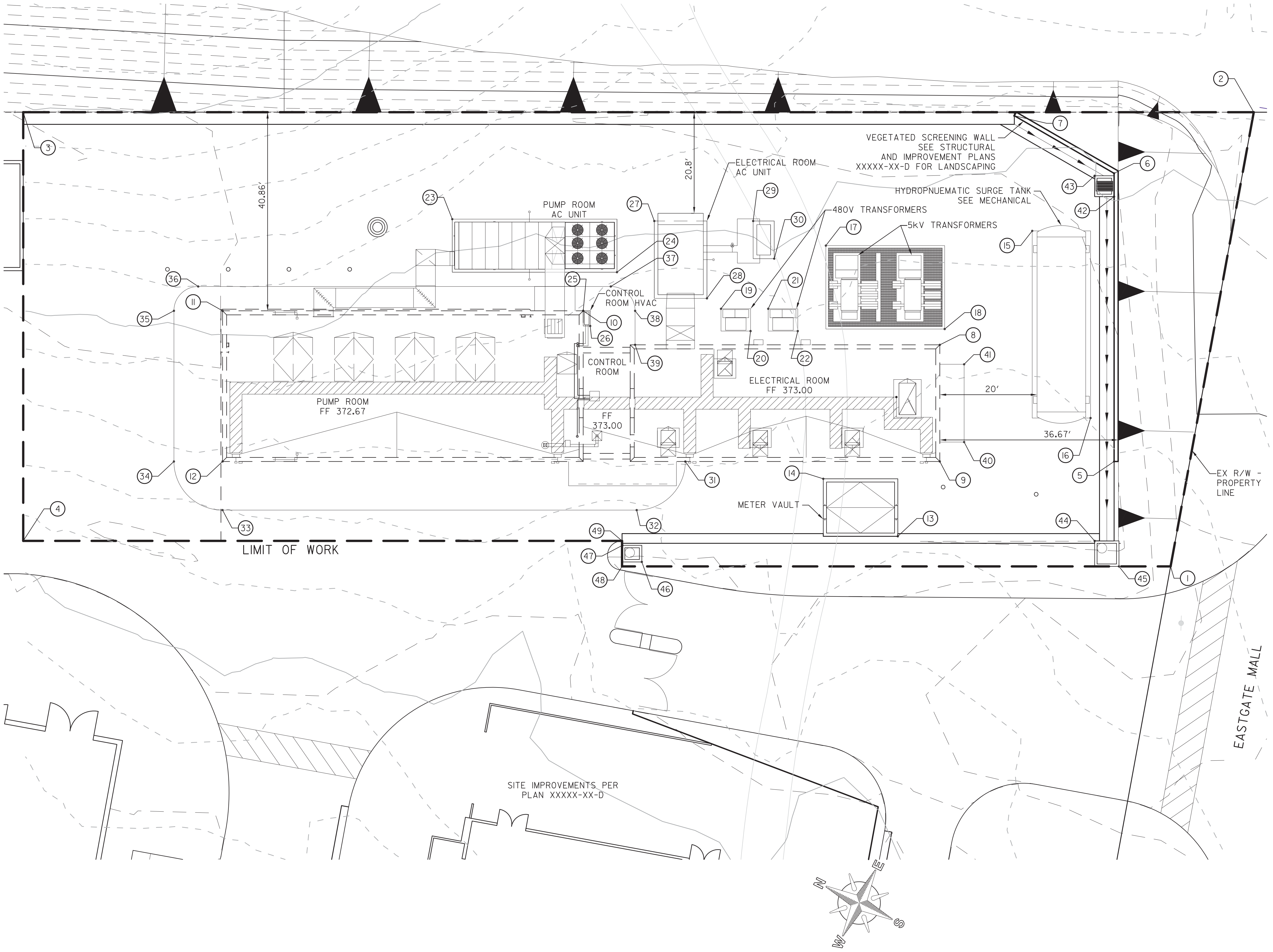

SOURCE: HDR 2017; North City Pure Water Facility 60% Engineering Design Report

DUDEK

FIGURE 3-13

North City Pump Station Conceptual Site Layout

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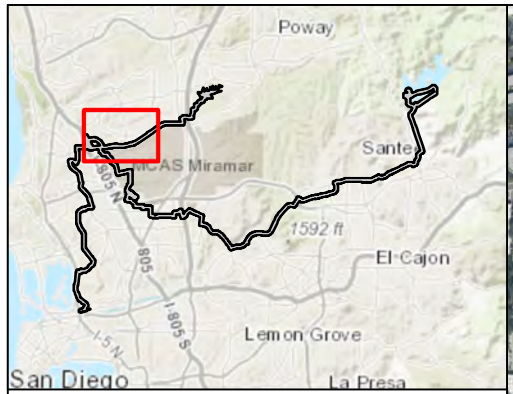

North City Pure Water Pipeline
Trenchless Segments of Alignment
MCAS Miramar

0 1,000 2,000 Feet

DUDEK

SOURCE: City San Diego, 2017, 2018; SanGIS 2016; SANDAG 2016

FIGURE 3-14A

North City Pure Water Pipeline Alignment

Pure Water San Diego Program North City Project EIR/EIS

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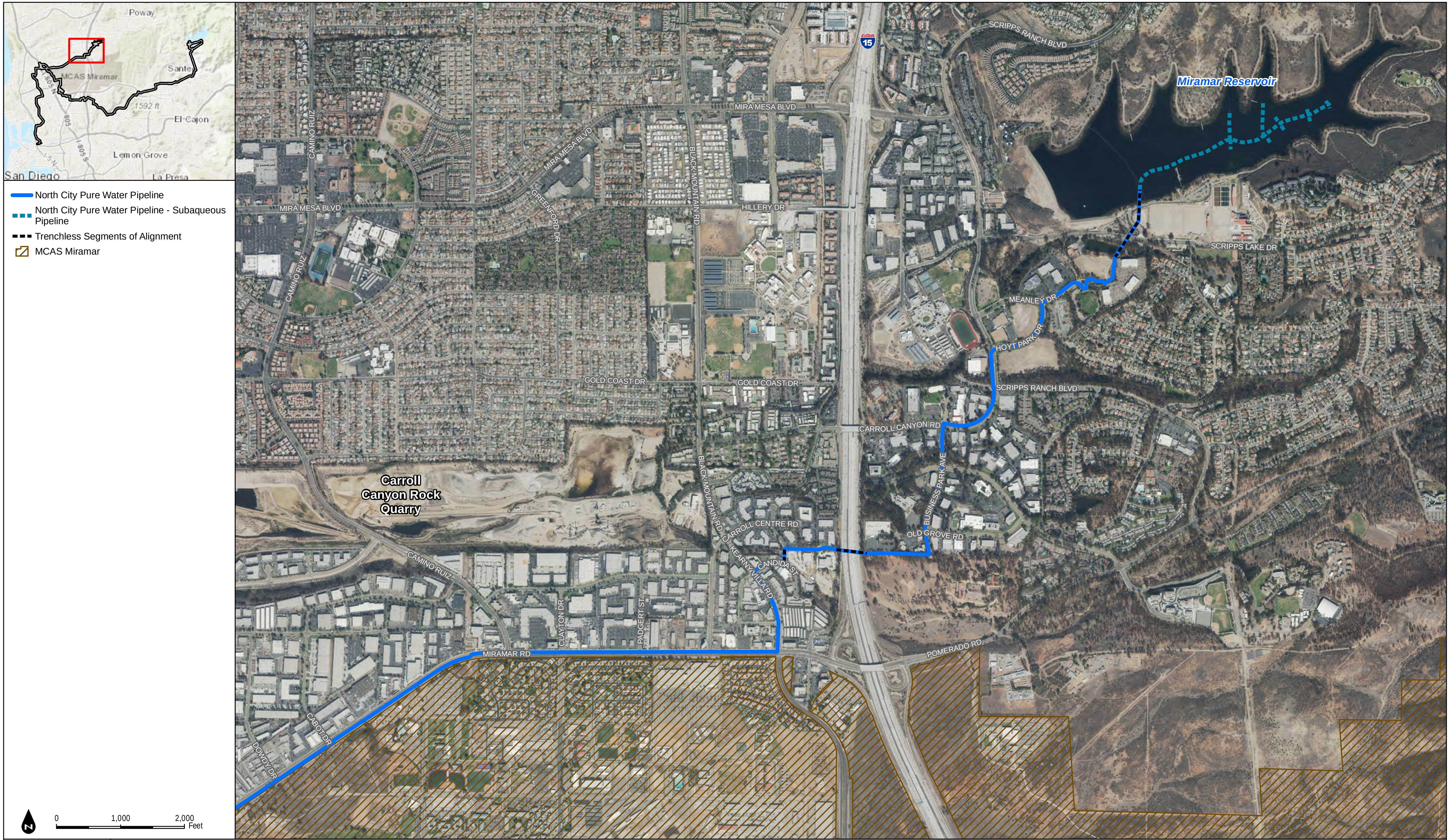

SOURCE: City San Diego, 2017, 2018; SanGIS 2016; SANDAG 2016

DUDEK

FIGURE 3-14B

North City Pure Water Pipeline Alignment

Pure Water San Diego Program North City Project EIR/EIS

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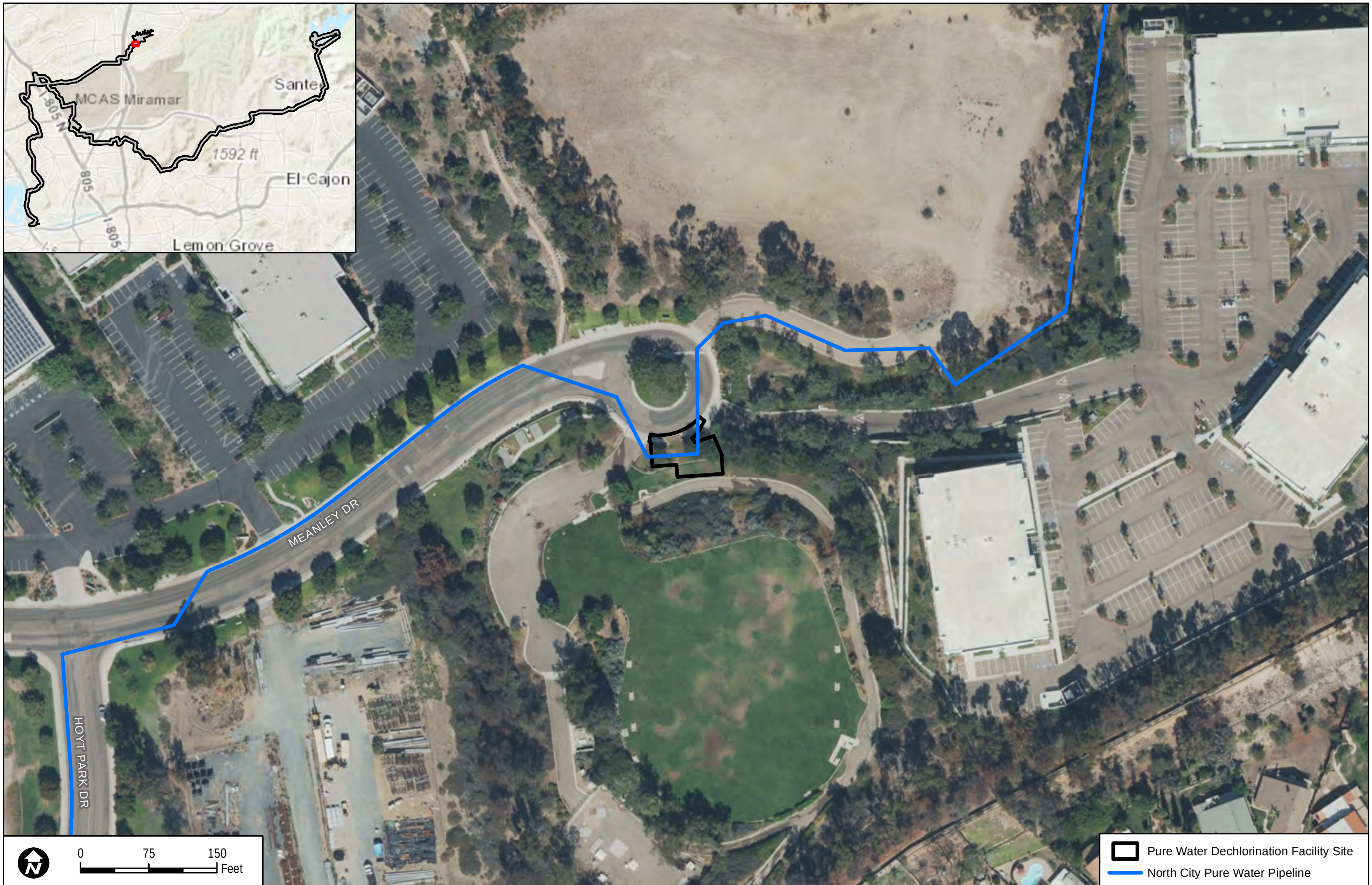

DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG

FIGURE 3-15

Pure Water Dechlorination Facility Site

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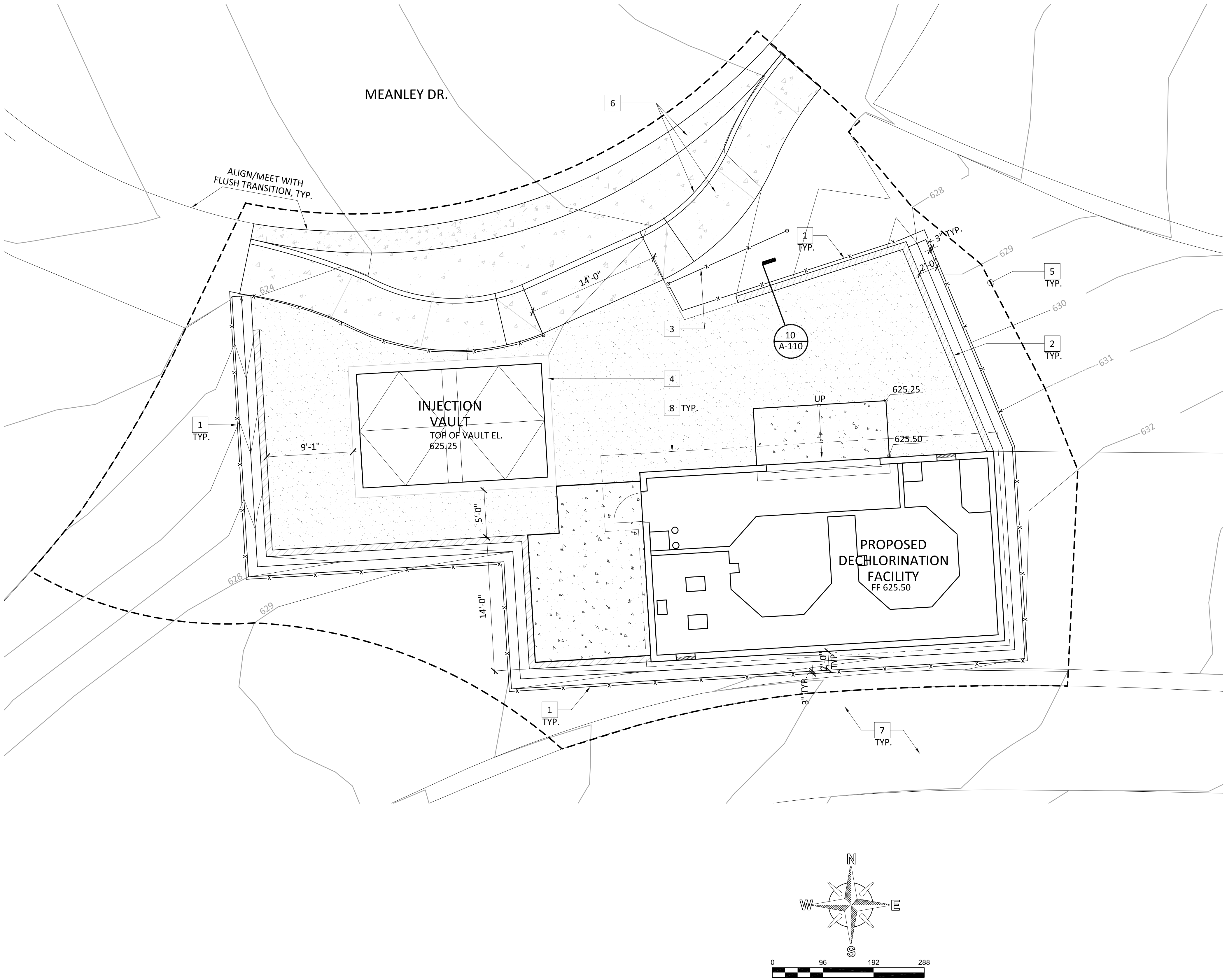

GENERAL NOTES

1. ALL ITEMS REFERENCED ARE NEW, UNLESS NOTED OTHERWISE.
2. REFER TO CIVIL, STRUCTURAL, MECHANICAL, ELECTRICAL, AND LANDSCAPE DRAWINGS FOR MORE INFORMATION.
3. REFER TO A-101 AND A-102 FOR ADDITIONAL NOTES AND INFORMATION.
4. FOR CITY OF SAN DIEGO USE:
   RETAINING WALL TOTAL LENGTH: APPROX. 123.42 FEET
   SECURITY FENCE TOTAL LENGTH: APPROX. 236.78 FEET

LEGEND

- REINFORCED CMU WALL PER STRUCTURAL SHEET S-106
- CONCRETE SLAB ON GRADE - REFER TO CIVIL FOR FURTHER INFORMATION
- AC PAVING - 2% MAX SLOPE AWAY FROM BUILDING - REFER TO CIVIL DRAWINGS FOR FURTHER INFORMATION
- STEEL PICKET FENCE

KEY NOTES

1. PERIMETER FENCE, REFER TO DETAIL 18/A-110
2. REINFORCED CMU RETAINING WALL WITH CAP
3. ROLLER ACCESS GATE, REFER TO DETAIL 20/A-110
4. UNDERGROUND VAULT PER MECHANICAL
5. DASHED LINE INDICATES CIVIL LIMIT OF WORK
6. SIDEWALK, CURB AND GUTTER PER CIVIL
7. EXISTING ACCESS ROAD ABOVE SITE - REFER TO CIVIL
8. LINE OF ROOF ABOVE

SOURCE: HDR 2018; North City Pure Water Facility 100% Engineering Design Report

DUDEK

FIGURE 3-16
Pure Water Dechlorination Facility Conceptual Site Layout

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DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG

FIGURE 3-17

North City Renewable Energy Facility Conceptual Site Layout

Pure Water San Diego Program North City Project EIR/EIS

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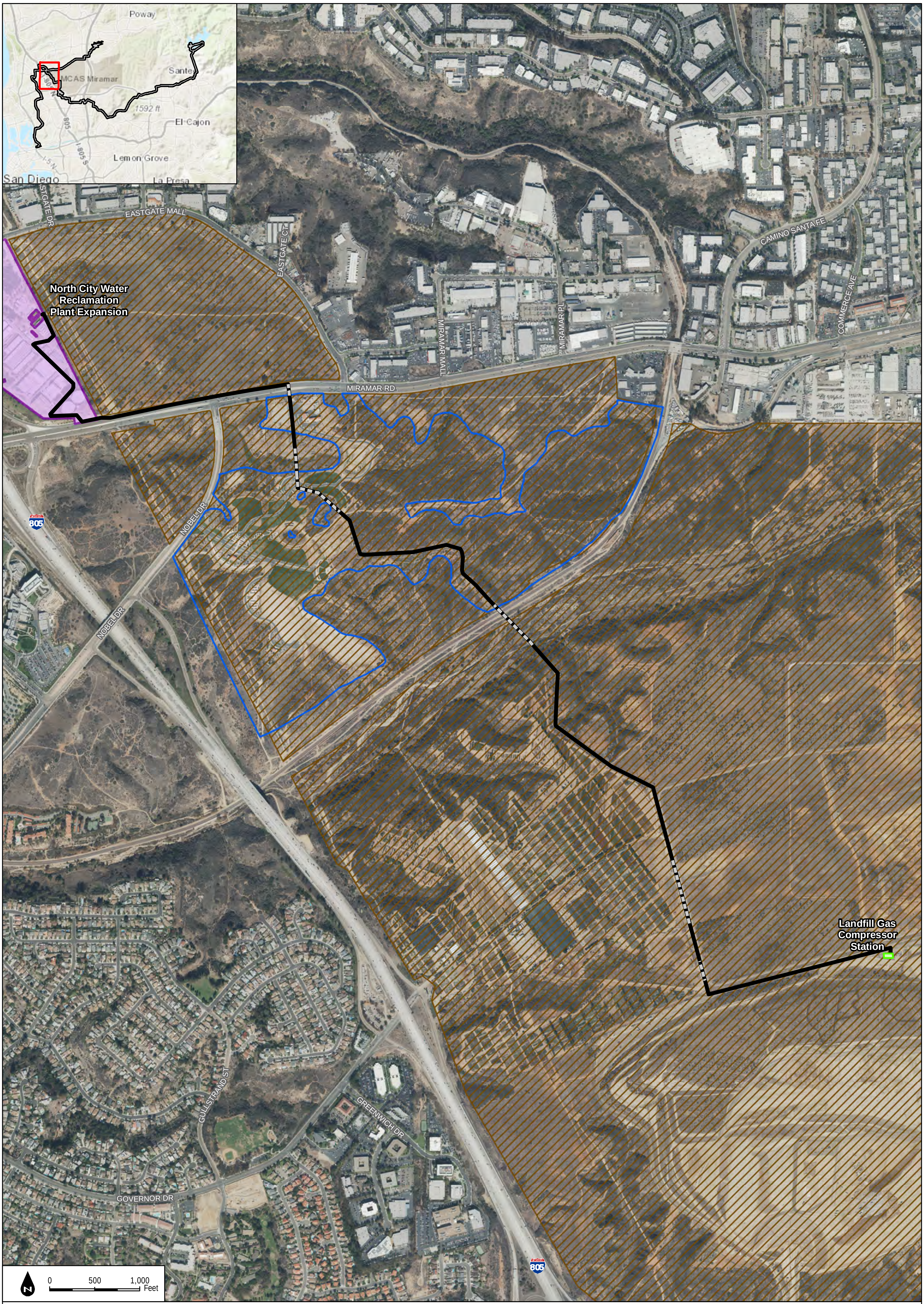

Trenchless Segments of Alignment
Landfill Gas Pipeline
Landfill Gas Compressor Station
Morena Pumpstation
VA Cemetery Boundary
MCAS Miramar

DUDEK

SOURCE: City San Diego, 2016, 2017; SanGIS 2017; SANDAG

FIGURE 3-18

Landfill Gas Pipeline Alignment

Pure Water San Diego Program North City EIR/EIS

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SOURCE: City of San Diego 2016, 2017; SANDAG

DUDEK

FIGURE 3-19

Metro Biosolids Center Site

Pure Water San Diego Program North City Project EIR/EIS

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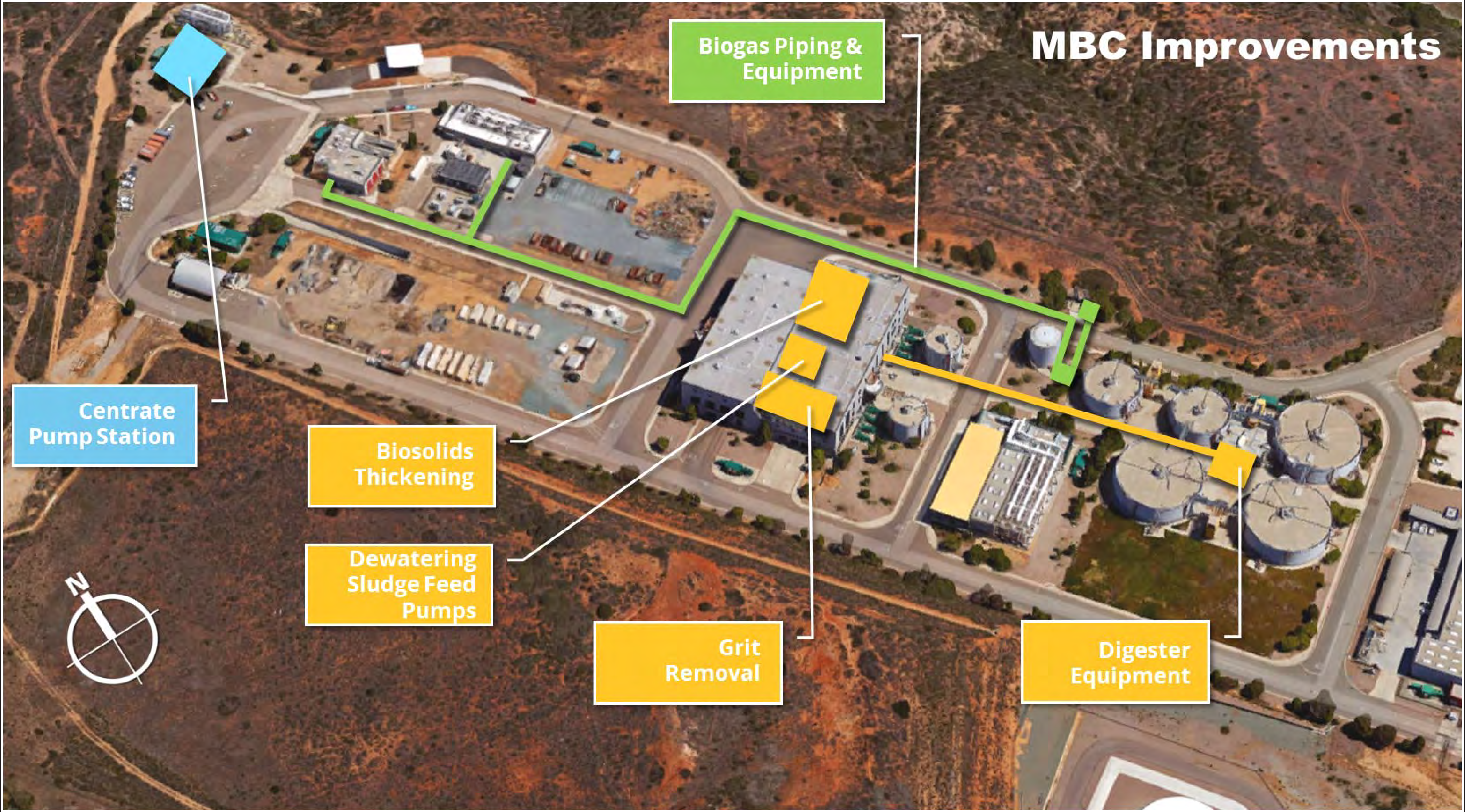

SOURCE: City of San Diego, 2017

DUDEK

FIGURE 3-20

Metro Biosolids Center Improvements Conceptual Site Layout

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DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG

FIGURE 3-21

Miramar Water Treatment Plant and Miramar Reservoir Pump Station Site

Pure Water San Diego Program North City Project EIR/EIS

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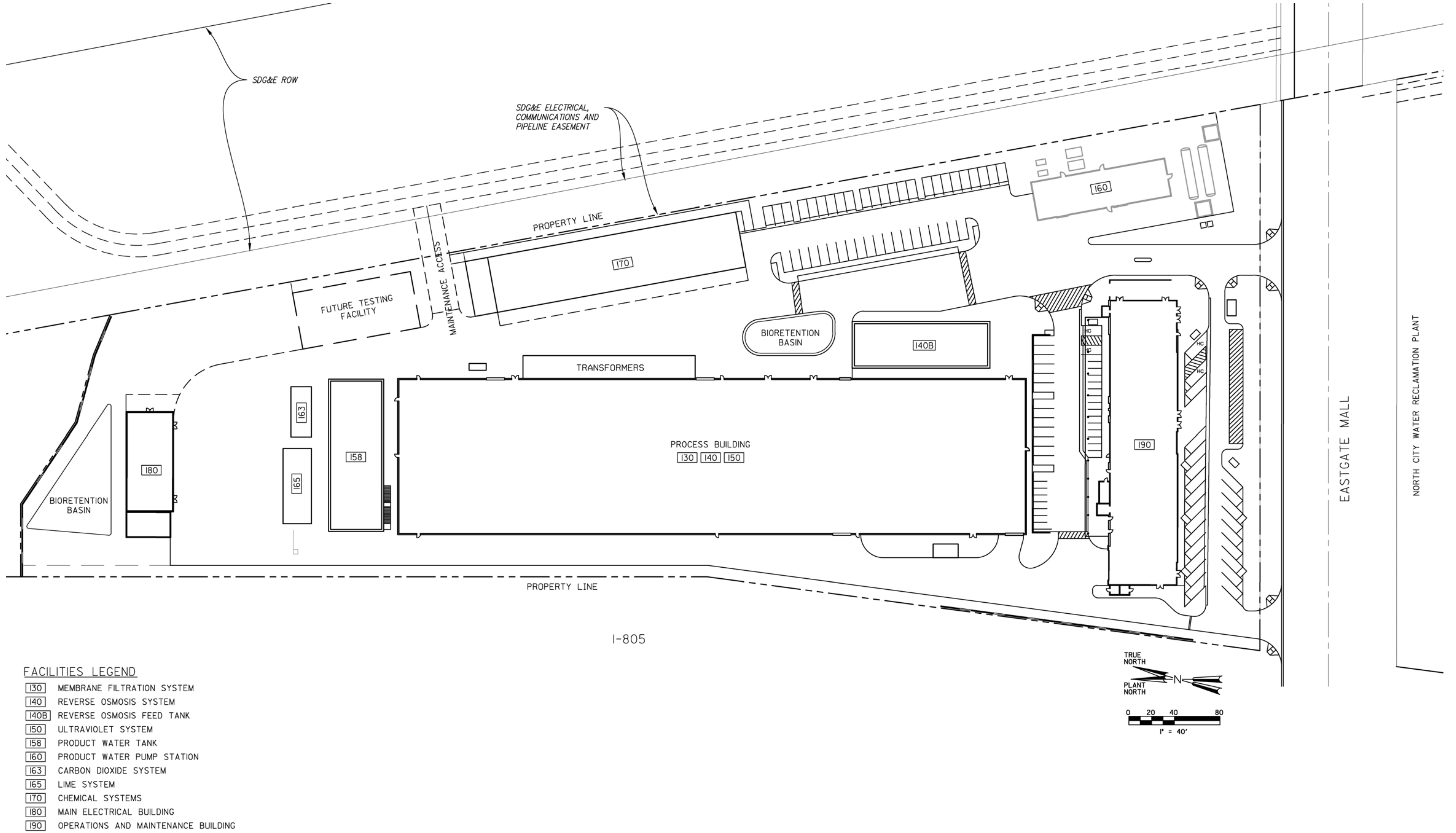

SOURCE: Brown and Caldwell 2016; Trussell Technology Inc., 2016; MWH 2016; Beyaz & Patel 2016

DUDEK

FIGURE 3-22
North City Pure Water Facility-San Vicente Reservoir Conceptual Site Layout

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SOURCE: City of San Diego 2016, 2017; SANDAG

FIGURE 3-23

Mission Trails Booster Station Site

Pure Water San Diego Program North City Project EIR/EIS

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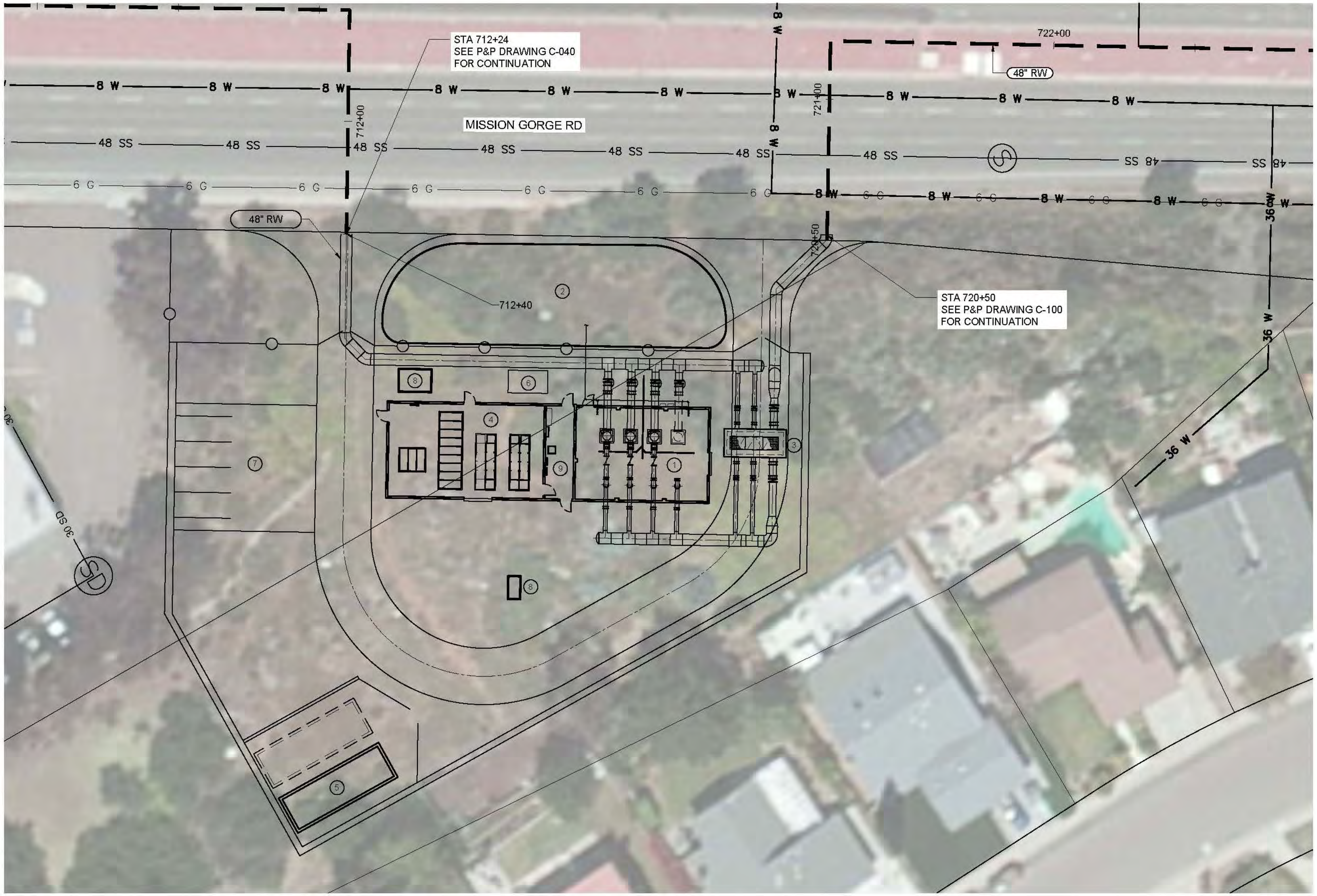

SITE
PLAN
SCALE: 1" = 20'-0"

0 20 40
SCALE IN FEET

CONSTRUCTION NOTES:

1. PUMP ROOM
2. DRAINAGE BASIN
3. PRESSURE RELIEF VALVE AND FLOW METER VAULT
4. ELECTRICAL ROOM
5. STANDBY GENERATORS
6. HVAC
7. PARKING
8. TRANSFORMERS
9. LOW VOLTAGE I&C ROOM

SOURCE: Brown and Caldwell 2016

DUDEK

FIGURE 3-24
Mission Trails Booster Station Conceptual Site Layout

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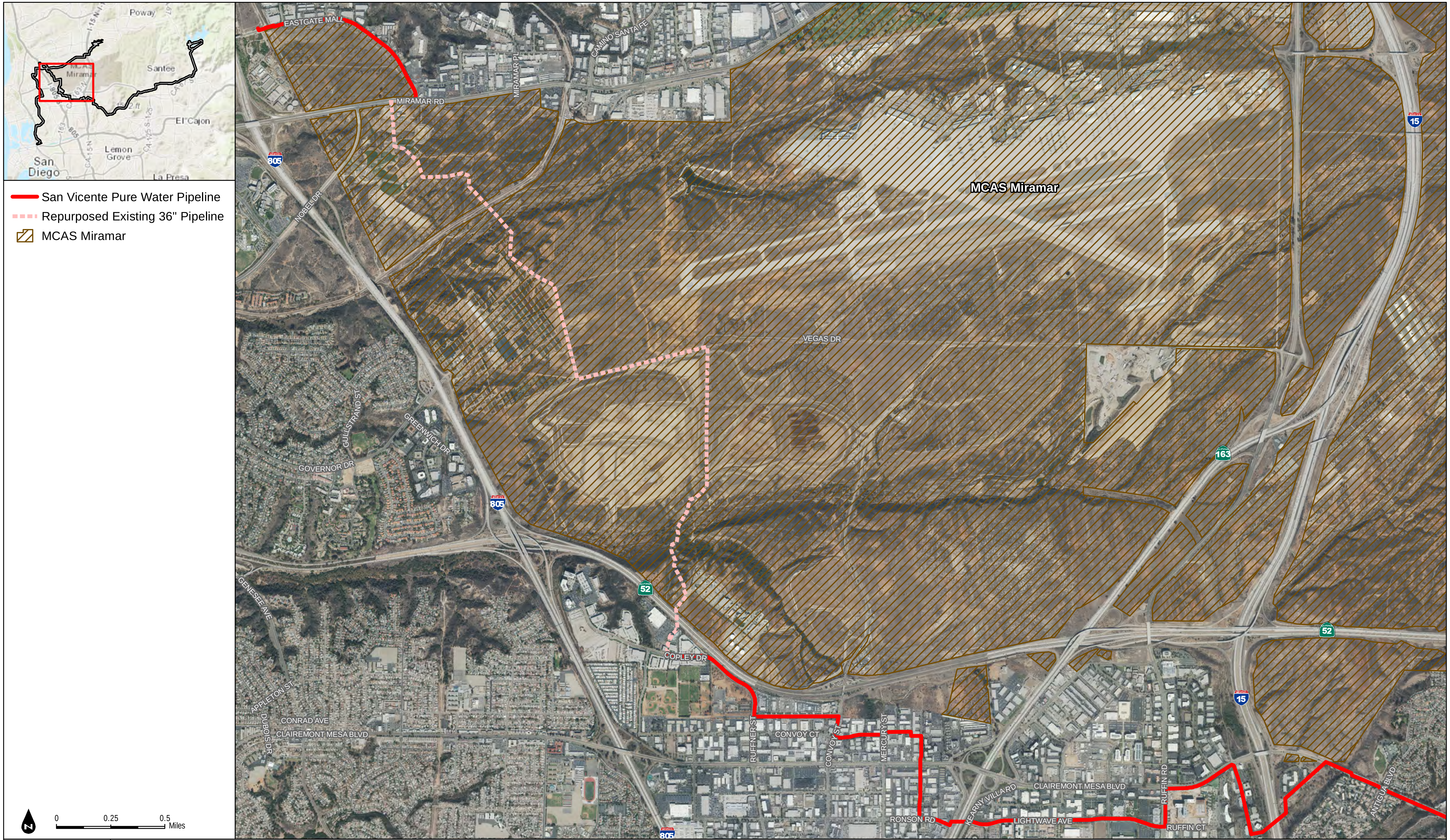

SOURCE: SanGIS 2016; SANDAG 2016

DUDEK

FIGURE 3-25A

San Vicente Pure Water Pipeline Alignment

Pure Water San Diego Program North City Project EIR/EIS

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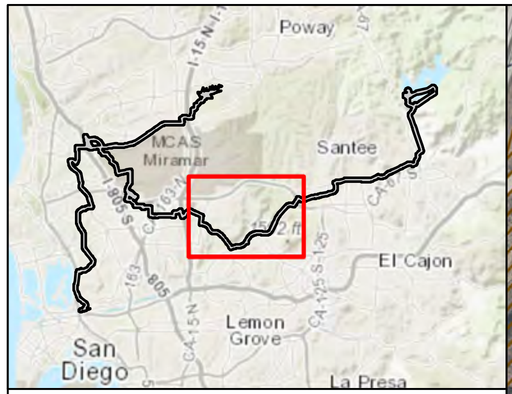

San Vicente Pure Water Pipeline
Trenchless Segments of Alignment
Morena Pumpstation
MCAS Miramar

0 0.25 0.5 Miles

DUDEK

SOURCE: SanGIS 2016; SANDAG 2016

FIGURE 3-25B

San Vicente Pure Water Pipeline Alignment

Pure Water San Diego Program North City Project EIR/EIS

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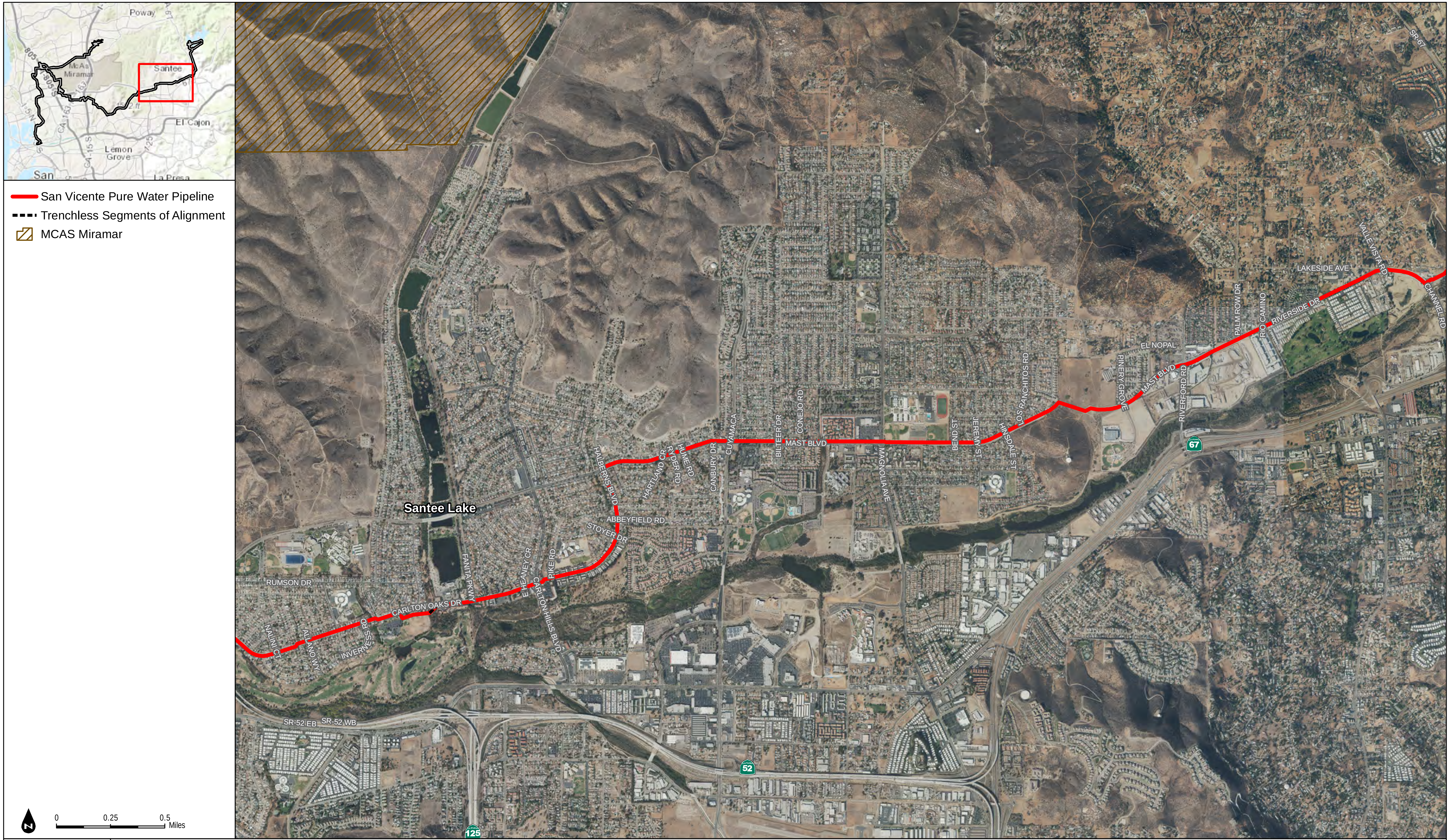

SOURCE: SanGIS 2016; SANDAG 2016

FIGURE 3-25C

San Vicente Pure Water Pipeline Alignment

Pure Water San Diego Program North City Project EIR/EIS

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San Vicente Pure Water Pipeline

DUDEK

SOURCE: City San Diego, 2016, 2016; SanGIS 2017; SANDAG

FIGURE 3-25D
San Vicente Pure Water Pipeline Alignment

Pure Water San Diego Program North City EIR/EIS

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DUDEK

SOURCE: SanGIS 2016; SANDAG 2016

FIGURE 3-26

San Vicente Reservoir Inlet Terminus Alternatives

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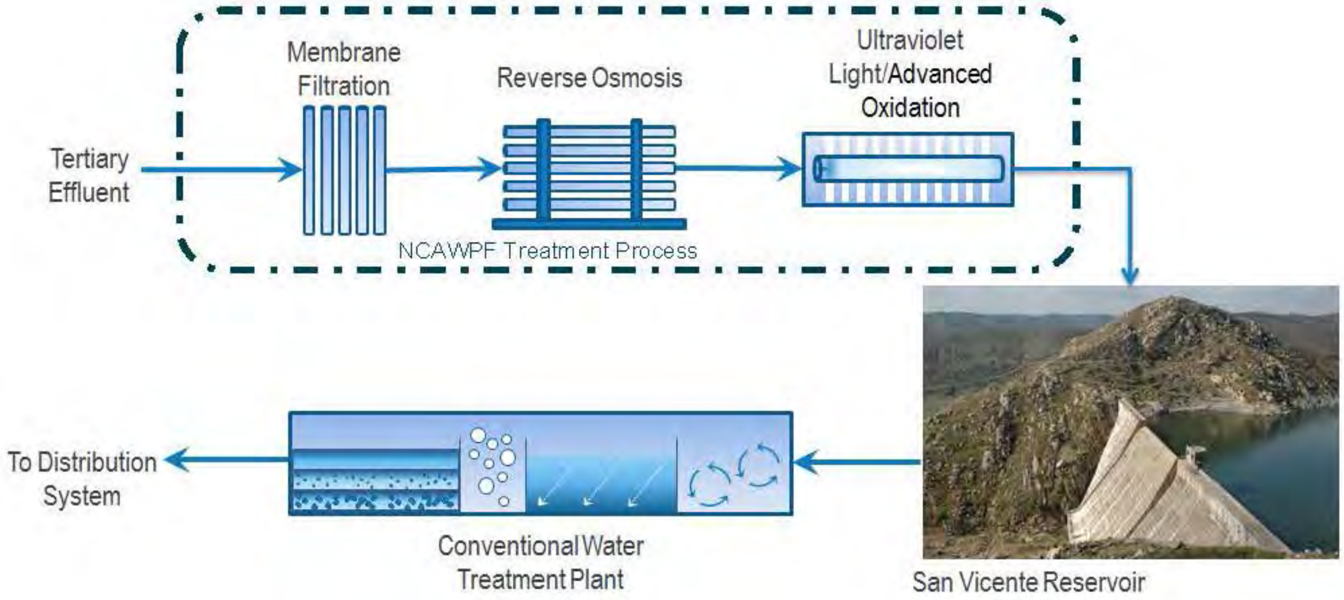

SOURCE: North City Pure Water Facility 30% Engineering Design Report, Jul. 2016

DUDEK

FIGURE 3-27

Pure Water System Overview San Vicente Reservoir Alternative

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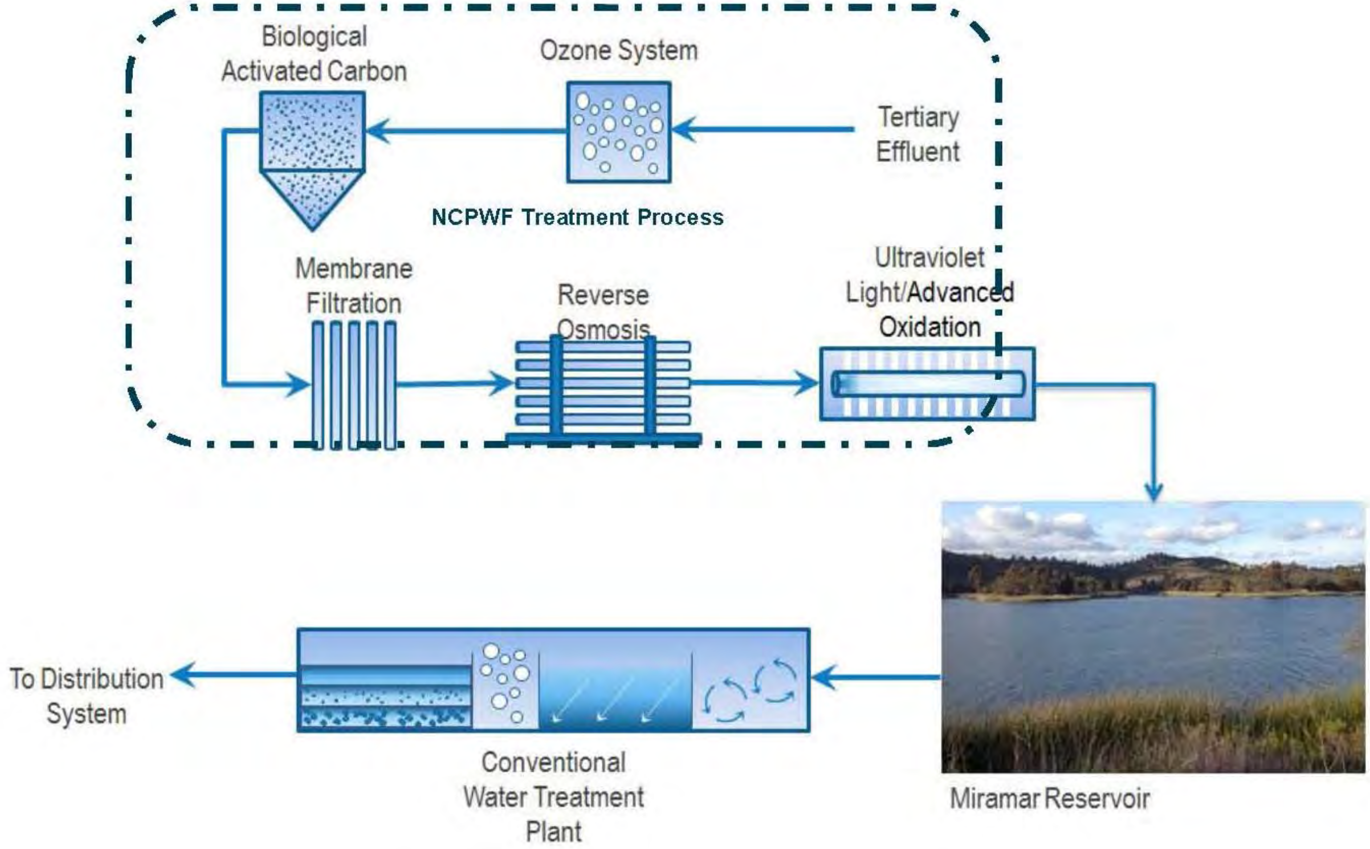

SOURCE: North City Pure Water Facility 30% Engineering Design Report, Oct. 2016

DUDEK

FIGURE 3-28

Pure Water System Overview Miramar Reservoir Alternative

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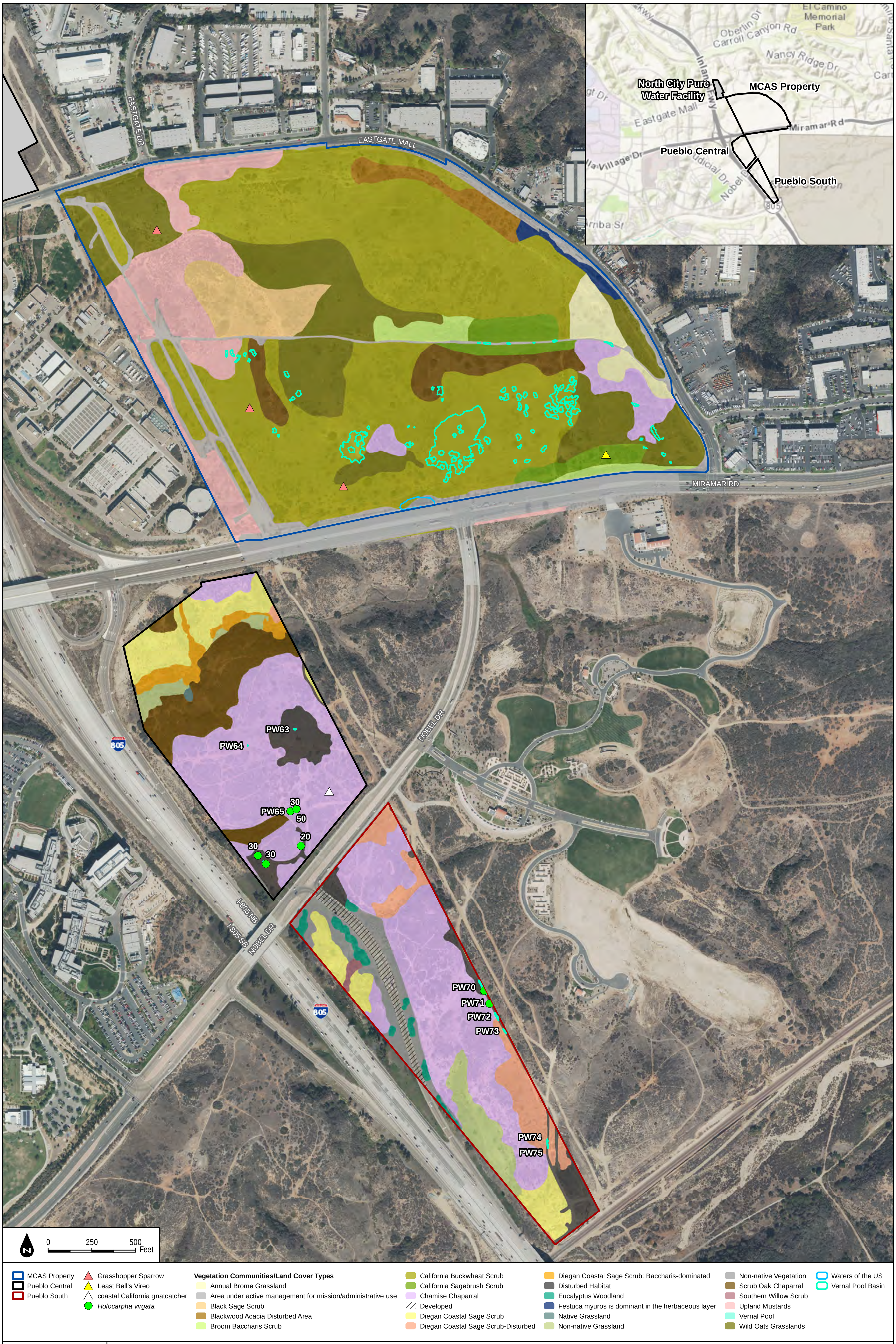

DUDEK

SOURCE: City San Diego, 2016, 2017; SanGIS 2017; SANDAG

FIGURE 3-29

Alternative North City Pure Water Facility Sites

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DUDEK

SOURCE: MWH Americas & Brown and Caldwell; Morena Pump Station, WW Forcemain, and Brine Conveyance 10% Engineering Design Report, January 2016

FIGURE 3-30

Morena Wastewater Forcemain and Brine/Centrate Line Alternative Alignments

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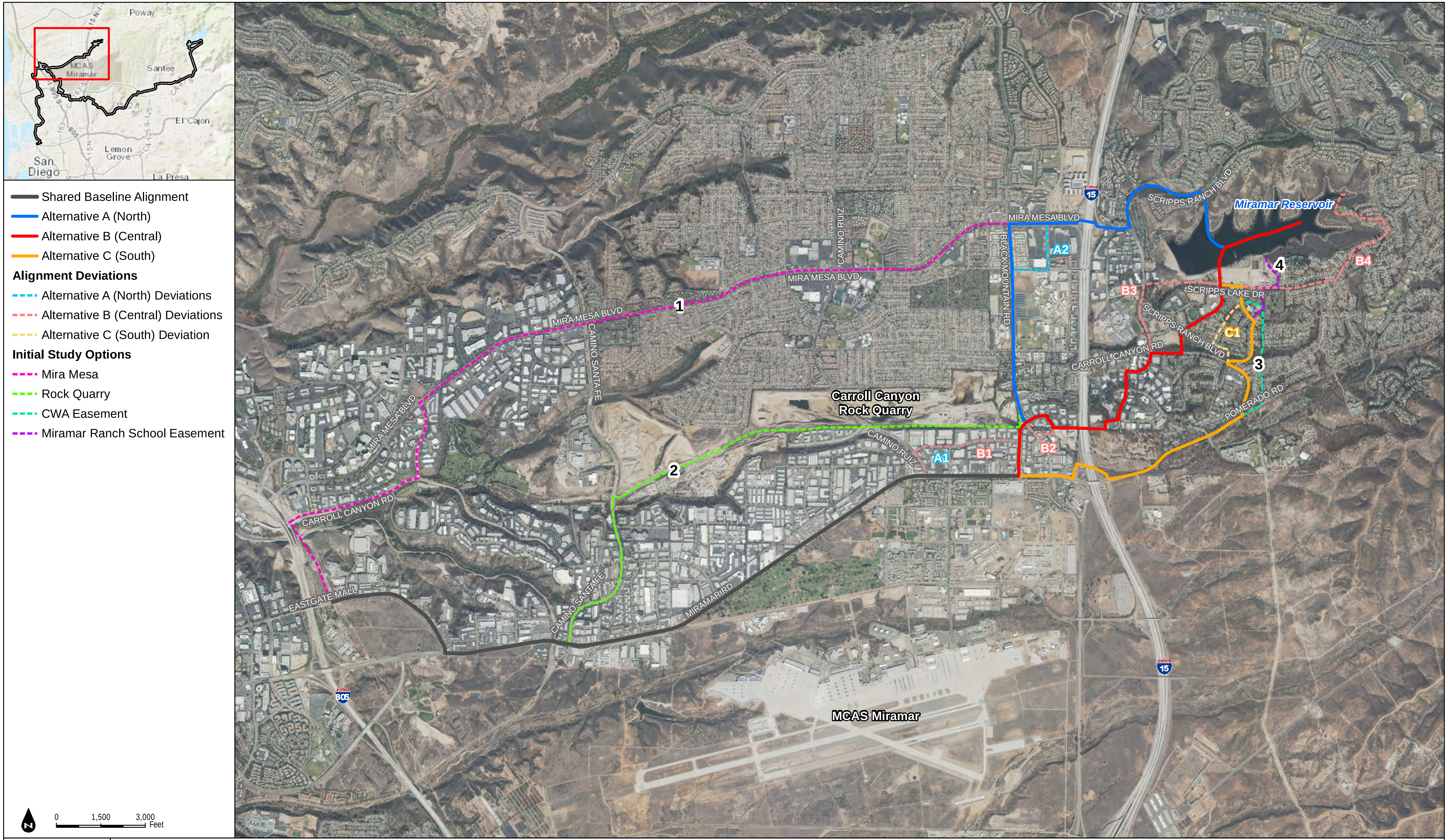

SOURCE: Brown and Caldwell, 2017; MWH, 2017; SANDAG 2014, SanGIS 2017

DUDEK

FIGURE 3-31A

North City Pure Water Pipeline Alternative Alignments

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SOURCE: Brown and Caldwell, 2017; MWH, 2017; SANDAG 2014, SanGIS 2017

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FIGURE 3-31B

North City Pure Water Pipeline Alternative Alignments

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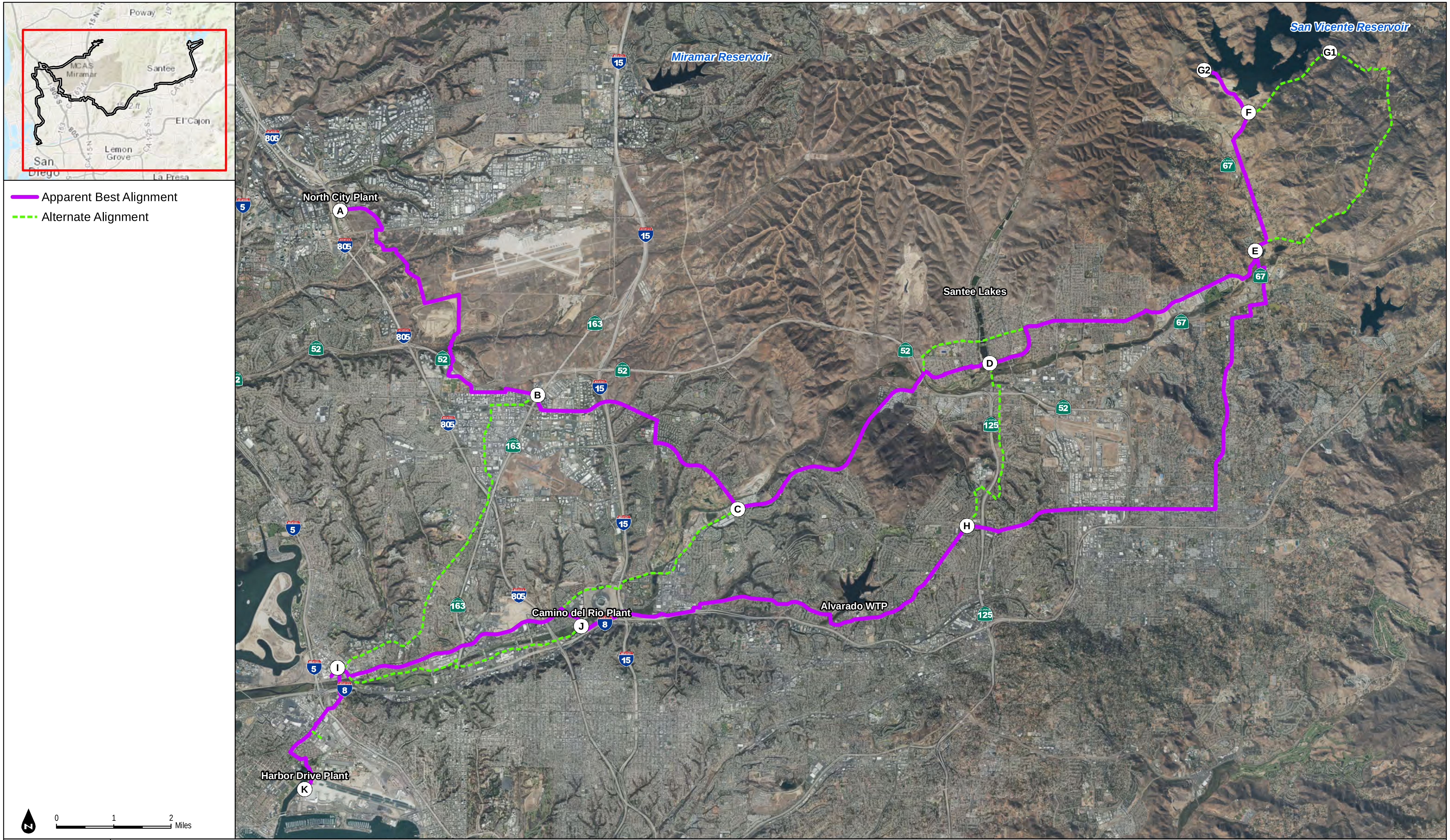

SOURCE: Brown and Caldwell, 2017; SANDAG 2014, SanGIS 2017

FIGURE 3-32A

San Vicente Pure Water Pipeline Alternative Alignments

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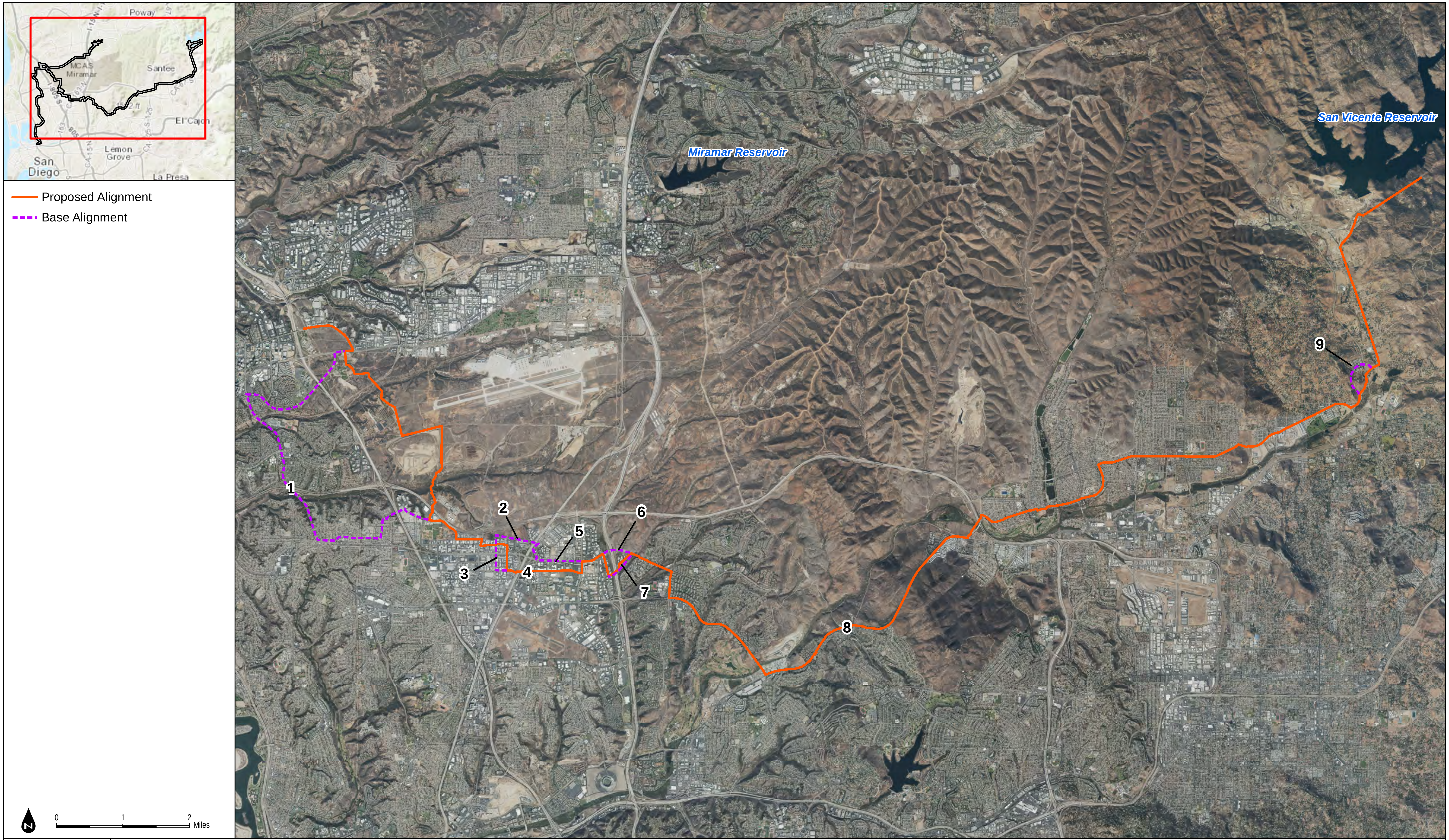

SOURCE: Brown and Caldwell, 2017; SANDAG 2014, SanGIS 2017

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FIGURE 3-32B

San Vicente Pure Water Pipeline Alternative Alignments

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CHAPTER 4 HISTORY OF PROJECT CHANGES

The original North City Project outlined in the Public Notice of Preparation for the Pure Water San Diego Program, North City Project Environmental Impact Report/ Environmental Impact Statement (EIR/EIS) dated August 4, 2016, and the Notice of Intent dated August 5, 2016, did not include proposed improvements at the Miramar Water Treatment Plant or the Dechlorination Facility, both of which are now included in the Miramar Reservoir Alternative. The North City Project originally did not include improvements to the centrate system, but the City has recognized the need for new and improved facilities related to this system at both the Metro Biosolids Center and the North City Water Reclamation Plant (NCWRP).

At the time of the Notice of Preparation, three Electrical Transmission Line alignments were under consideration to connect the NCWRP to a future cogeneration facility at Metro Biosolids Center to deliver power for North City Project components. Since then, the City has decided to locate the North City Renewable Energy Facility at the NCWRP and to construct a Landfill Gas Pipeline between the Miramar Landfill gas collection system and the NCWRP. As the North City Renewable Energy Facility would no longer have independent utility, it is now considered a component of the North City Project.

Two alternative inlets into the San Vicente Reservoir have been identified for the San Vicente Purified Water Pipeline under the San Vicente Reservoir Alternative. In addition to the original "Tunnel Alternative," the "Marina Alternative" and "In-Reservoir Alternative" are now under consideration.

As a result of the extensive biological surveys and historical resources surveys that have been conducted, both the North City Pipeline and San Vicente Pipeline have undergone numerous changes to the alignment in order to avoid sensitive resources. The North City Pipeline has undergone additional alignment changes due to difficulty obtaining easements across private property. The Morena Pipelines alignment has also been revised, particularly in the northern section, to avoid the number of trenchless crossings necessary.

The titles of specific Project components have been refined and simplified since release of the Notice of Preparation to enhance the clarity and readability of the document. In particular, the North City Pure Water Pump Station is now referenced as the North City Pump Station. The North City Purified Water Pipeline and San Vicente Reservoir Purified Water Pipelines have each been abbreviated to North

City Pipeline and San Vicente Pipeline, respectively. The Wastewater Forcemain and Brine Pipeline has also been abbreviated to Morena Pipelines and "Centrate" has been added to the full title. The North City Power Generation Facility was renamed to the North City Renewable Energy Facility.

As a result of coordination with the University Community Planning Group, construction along Genesee Avenue was changed from nighttime construction to limited daytime hours, to minimize impacts to residents and to avoid peak commute hours.

As a result of coordination with Murphy Development, alignment changes were incorporated to address concerns that the proposed Miramar pipeline would prohibit the full development of the Scripps Ranch Technology Park. The proposed pipeline alignment was shifted into the setback zone of parcels within the technology park, to avoid conflict with future development plans.

CHAPTER 5 AFFECTED ENVIRONMENT/EXISTING CONDITIONS

5.1 LAND USE

5.1.1 INTRODUCTION

The following discussion describes the existing conditions related to existing uses, land use designations, zoning, and environmental plans including the City of San Diego's (City's) General Plan and Community Plans and Marine Corps Air Station (MCAS) Miramar's Integrated Natural Resources Management Plan 2011-2015 (MCAS Miramar INRMP 2011) in the vicinity of proposed facilities associated with the North City Project. Pursuant to California Government Code Section 53091 (e), "zoning ordinances of a county or city do not apply to the location of construction of facilities for the production, generation, storage, treatment, or transmission of water," and therefore, the development standards associated with zoning underlying North City Project facilities are not applicable. Noteworthy development regulations of zones underlying project facilities are, however, discussed in this section and are considered recommendations (and not required regulations) for project facility development. As proposed, the North City Project includes a number of facilities (including the North City Pure Water Facility (NCPWF), pump and booster stations, and a Dechlorination Facility) and pipelines primarily located in the northern and central portions of the City of San Diego (and across MCAS Miramar; applies to the North City Water Reclamation Plant (NCWRP), Landfill Gas Pipeline, and Metro Biosolids Center) but would also extend into the City of Santee and community of Lakeside in San Diego County. The examination of existing land uses was based on a review of aerial imagery and street view images. Planned land use information was obtained from geographic information system (GIS) data and local planning documents of the City of San Diego, City of Santee, and County of San Diego.

Potential conflicts with the provision of the City's MSCP Subarea Plan (or other adopted environmental plans) and with adopted Airport Land Use Compatibility Plans are described elsewhere in this EIR/EIS. See Section 5.4, Biological Resources; Section 5.9, Health and Safety/Hazards; and Section 5.12, Noise.

5.1.2 ENVIRONMENTAL SETTING

The North City Project includes a variety of facilities located throughout the North City geographic area of the City of San Diego (City). A new pure water facility and three pump stations would be located within the corporate boundaries of the City, and proposed pipelines would traverse a number of local jurisdictions, including the cities of San Diego and Santee, and the community of Lakeside in unincorporated San Diego County. Table 5.1-1 identifies the jurisdiction in which each proposed project facility and linear component would be located.

Table 5.1-1
North City Project: Jurisdiction of Facilities and Linear Components

Components Common to Project Alternatives		
Facility/Linear Components	*Jurisdiction*	*Community Plan Area/Community Plan*
Moreno Pump Station (including overflow pipes)	City of San Diego	Linda Vista (Mission Valley)
Morena Wastewater Forcemain and Brine/Centrate Line	City of San Diego	Linda Vista Clairemont Mesa University
North City Water Reclamation Plant Expansion	City of San Diego	University
North City Pure Water Facility	City of San Diego	University
North City Pure Water Facility Influent Pump Station and Conveyance	City of San Diego	University
North City Pure Water Pump Station	City of San Diego	University
Landfill Gas Pipeline (including *repurposed existing 36-inch pipeline*)	City of San Diego and MCAS Miramar	University Kearney Mesa N/A (MCAS Miramar)
Landfill Gas (LFG) Pipeline and Compressor Station Expansion	MCAS Miramar	N/A
Metro Biosolids Center Improvements	MCAS Miramar	N/A
Miramar Reservoir Alternative		
North City Pure Water Pipeline	City of San Diego and MCAS Miramar	University N/A (MCAS Miramar) Miramar County of San Diego (unincorporated County island) Scripps Miramar Ranch
Dechlorination Facility	City of San Diego	Scripps Miramar Ranch
Miramar Water Treatment Plant Improvements	City of San Diego	Scripps Miramar Ranch

Table 5.1-1
North City Project: Jurisdiction of Facilities and Linear Components

Components Common to Project Alternatives		
Facility/Linear Components	*Jurisdiction*	*Community Plan Area/Community Plan*
San Vicente Reservoir Alternative		
San Vicente Pure Water Pipeline	City of San Diego City of Santee County of San Diego	University Kearny Mesa Navajo East Elliott City of Santee Lakeside (County of San Diego)
Mission Trails Booster Station	City of San Diego	Navajo

5.1.2.1 Components Common to Project Alternatives

Morena Pump Station

The Morena Pump Station site encompasses two developed parcels (approximately 1.6 acres total) that currently support San Diego Humane Society, the Society for the Prevention of Cruelty to Animals, and Project Wildlife buildings/facilities. Adjacent parcels are developed public storage warehouses and distribution centers, home improvement showrooms and office development. The larger, approximately 1.0-acre northern parcel of the site is designated for Industrial Employment and the remaining approximately 0.6-acre parcel is designated for Park, Open Space, and Recreation use by the City's General Plan. The site is zoned for Industrial-Light (IL-3-1) use. The Morena Pump Station site is also located in the southwestern portion of the Linda Vista Community Plan area and according to Community Plan Figure 1, the site is designated for Industrial use. The General Plan land use and zoning designations underlying project components (including the Morena Pump Station) are depicted on Figures 5.1-1A through 5.1-1D and 5.1-2A and 5.1-2B.

The Industrial Employment designation provides for a range of office uses including scientific research and technology parks; business parks; and light (i.e., manufacturing, storage and distribution and transportation terminals) and heavy industrial including manufacturing, extractive, and processing (City of San Diego 2015a). The Park, Open Space, and Recreation designation provides for open space, population and resource-based parks, and private commercial recreation; however, given the constrained nature (i.e., the parcel is located adjacent to MTS Trolley right-of-way) and size, the southern parcel is designated for Open Space.

General Plan land use designation and zoning designations of lands underlying the Morena Pump Station and surrounding area are depicted on Figures 5.1-2A and 5.1-2B. Relevant goals and objectives of the City's General Plan are discussed in Section 5.1.3.

The IL-3-1 zone allows a mix of light industrial, offices, and commercial uses. While pump stations are not specifically listed within the Institutional Use category in Municipal Code Table 131-06B, Use Regulations for Industrial Zones, flood control facilities are listed and are considered a permitted use with limitations in the IL-3-1 zone. Noteworthy development regulations for the IL-3-1 zone include minimum lot area (15,000 square feet), setbacks (minimum front setback of 15 feet, minimum street side setback of 15 feet, and minimum rear setback of 0 feet), and maximum structure height (there are no height limits for structures in the industrial zones).

While the Linda Vista Community Plan does not contain descriptions of land use designation intended uses, it does describe the general goals of the community plan area. Please refer to Section 5.1.3 for a discussion of relevant goals of the Linda Vista Community Plan. City of San Diego Community Plan area boundaries are depicted on Figure 5.1-3.

Morena Wastewater Forcemain and Brine/Centrate Line

Travelling primarily along paved roadways between the Morena Pump Station in Linda Vista and the NCWRP in University Towne Center, the proposed alignment of the Morena Wastewater Forcemain and Brine/Centrate Line (Morena Pipelines) is depicted on Figure 3-1. As proposed, the Morena Pipelines would traverse the Linda Vista, Clairemont Mesa, and University communities and tunnel beneath a state highway (State Route 52 (SR-52)), an interstate (I-805), and canyons (San Clemente, Rose, and Miramar Canyons) between the Morena Pump Station and NCWRP. The pipelines' alignment would run through several neighborhoods and is located adjacent to industrial, commercial, residential and park, open space, & recreation uses associated with a variety of industrial, commercial, and residential zoning designations. General Plan land use designation and zoning designations of lands adjacent to the Morena Pipelines alignment are depicted on Figures 5.1-2A and 5.1-2B.

North City Water Reclamation Plant Expansion

The proposed NCWRP Expansion, North City Influent Pump Station, and North City Power Generation Facility would occur at the existing NCWRP, a City of San Diego water reclamation plant facility located south of the proposed NCPWF site and

Eastgate Mall. In addition, a new electrical transmission line would be constructed from the North City Power Generation Facility to the NCPWF. The NCWRP is located immediately east of I-805, west of a high-voltage transmission corridor and undeveloped lands within the boundary of MCAS Miramar, and immediately north of Miramar Road. Similar to the NCPWF site (described below), the NCWRP is located in the University community planning area and is designated for Public Facility/Institutional use, is designated for Institutional & Public and Semi-Public Facilities use by the General Plan, and is zoned RS-1-14. The general plan land use designations applied to the NCWRP and parcels in the surrounding area are depicted on Figure 5.1-1B.

According to Figure 2.2 of the Integrated Natural Resources Management Plan (INRMP) (MCAS Miramar INRMP 2011), the NCWRP is located immediately west of the western MCAS Miramar boundary (and the South/West Miramar sector) but is partially within Accident Potential Zone II area of MCAS Miramar. Accidental Potential Zone II (APZ II) is located adjacent to APZ I, which is located adjacent to areas immediately beyond ends of military airport runways (see Section 5.9, Health and Safety/Hazards, for more detail regarding accident potential zones). The NCWRP is identified in the INRMP as a current, non-military use located just west of MCAS Miramar boundary. Current, non-military uses on MCAS Miramar near the NCWRP include a SDG&E Electrical Transmission Lines/easements that parallel I-805, an SDG&E electrical transmission line/easement that traverse the site located immediately east of the NCWRP site, Miramar Wholesale Nursery, and the Miramar Landfill.

While the INRMP is not a generalized land use plan that designates lands on MCAS Miramar with general use designations, the plan identifies land use sectors, training areas, and special natural resource areas and designates management areas (MCAS Miramar INRMP 2011).

North City Pure Water Facility

The NCPWF site is located on an undeveloped and disturbed triangular-shaped parcel located north of the existing NCWRP. I-805 is located downslope to the west of the site, and Eastgate Mall is located immediately to the south. An existing San Diego Gas & Electric (SDG&E) electrical substation is located directly north of the NCPWF site, and a transmission corridor featuring multiple high-voltage electrical lines supported by tall wooden and steel poles borders the eastern extent of the site. Two large industrial warehouses and a cement mixing plant are located east of the transmission corridor and are accessible off Eastgate Drive. Land uses to the west of the NCPWF site and west of I-805 consist of undeveloped canyon lands that slope upwards to the west and a mesa landform developed with several industrial office complexes.

The NCPWF site is located within the boundaries of University community planning area. The community plan designates the southwestern corner of the site for Public Facility/Institutional use, and the remainder of the site is designated for Industrial use. Land use designations of the City of San Diego General Plan are also applied to the site; the southern portion of the site is designated for Institutional & Public and Semi-Public Facilities use, and the northern portion of the site is designated for Industrial Employment use. The site is zoned RS-1-14, which provides for single unit residential use (minimum 5,000-square-foot lots) with in a Planned Urbanized Community or Proposition A Land (San Diego Municipal Code Section 131.0403(b)(2), City of San Diego 2008). Noteworthy development regulations for the RS-1-14 zone include setbacks (minimum front setback of 15 feet and minimum rear setback of 10 feet), and maximum structure height (35 feet). The general plan land use designations applied to the NCPWF site and parcels in the surrounding area are depicted on Figure 5.1-1B.

Lands to the north of the NCPWF site are designated for Industrial Employment use and are zoned RS-1-14. The transmission corridor east of the site and undeveloped canyon lands to the northeast are designated Park, Open Space, & Recreation and are zoned IL-2-1, which provides for a mix of light industrial and office uses with limited commercial. South of Eastgate Mall, lands associated with the NCWRP are designated for Institutional & Public and Semi-Public Facilities use and are zoned RS-1-14. To the west, the I-805 corridor is designated for Roads, Freeway, and Transportation use, and office complexes are designated for Industrial Employment use. Zoning designations for industrial office development located west of I-805 and north and south of Eastgate Mall include Industrial-Heavy (IH-2-1, which provides for manufacturing uses with some office) and Industrial-Park (IP-1-1, which provides for research and development uses with some limited manufacturing).

Similar to the NCWRP, the NCPWF is located within APZ II of MCAS Miramar. Accident potential zones are described in greater detail in Section 5.9, Health and Safety/Hazards.

North City Pure Water Facility Influent Pump Station and Conveyance

The NCPWF Influent Pump Station would be constructed at the NCWRP, and thus, would be located in the University community planning area. With the exception of the Industrial Employment land designation applied to the northern portion of the North City Pure Water Facility–Miramar Reservoir (NCPWF-MR), the General Plan land use designations and zoning designations concerning the NCPWF-MR and NCWRP sites would also be applicable to the NCPWF Influent Pump Station and conveyance.

Since the NCPWF Influent Pump Station is proposed within the NCWRP boundary, it would also be located within APZ II of MCAS Miramar.

North City Pure Water Pump Station

The North City Pure Water Pump Station (North City Pump Station) site encompasses an approximate 0.7-acre site located adjacent to the southeastern corner of the NCPWF site. Located on a vacant yet disturbed site in the University community plan area (and designated for Industrial use by the community plan), the North City Pump Station site is designated for Institutional & Public and Semi-Public Facilities use by the City's General Plan and is zoned RS-1-14. Please refer to the NCPWF discussion above for a characterization of the existing land uses in the vicinity of the North City Pump Station.

The North City Pump Station site is located within APZ II of MCAS Miramar.

Landfill Gas Pipeline

The proposed underground Landfill Gas (LFG) Pipeline would primarily be located on MCAS Miramar land and would generally follow the existing disturbed City utility easement (recycled water line, centrate line, sludge line, landfill gas line, and fiber-optic cable) that runs between the Miramar Landfill and NCWRP. On MCAS Miramar, the LFG Pipeline alignment is proposed to be located within two utility easements across the base, which run generally north–south between the Miramar Landfill and the NCWRP and under a portion of Miramar Road between Miramar Mall and the BNSF Railway. The approximately 3-mile-long LFG Pipeline would be constructed using a combination of open cut and trenchless methods. Existing access roads would be used to access the underground alignment. The southern end of the LFG Pipeline would connect to a proposed landfill gas compressor station that would be located within the Miramar Landfill lease area.

Approximately 0.6 mile of the LFG Pipeline alignment is located in the University community plan area. This segment of the alignment is designated for Military Use by the City's General Plan and is zoned Agricultural-Residential (AR-1-1; requires minimum 10-acre lots). The purpose of the AR-1-1 zone is to accommodate a wide range of agricultural uses while also permitting the development of single dwelling unit homes at a very low density. The remaining segment of the alignment is located on designated Military land and as proposed would travel along the existing utility corridor through the Miramar National Cemetery, across Miramar Canyon and MTS railroad track, along the eastern boundary of a wholesale nursery (Miramar Wholesale Nursery), and along an existing access road at the northwestern extent of Miramar Landfill lease area. The compressor station is also proposed on designated Military land.

As stated above, the majority of the LFG Pipeline alignment is located on MCAS Miramar and more specifically, is located within the South/West Miramar sector of MCAS Miramar. While the INRMP does not designate all lands on MCAS Miramar with general use designations, it identifies existing and proposed non-military uses located on MCAS Miramar, constraints, and management areas. The proposed LFG Pipeline would border and traverse existing non-military uses on MCAS Miramar including Miramar Wholesale Nursery and Miramar Landfill. In addition, the alignment would traverse APZs II and I and Level II, III, and V Management Areas (MAs). Management Area (MA) levels generally denote the natural resource (primarily biological resources) sensitivity of MCAS Miramar lands with Level I MAs (vernal pools and associated watersheds) being the most sensitive and Level V MAs (developed land) being the least sensitive. MAs are discussed in more detail in Section 5.1.3.

Metro Biosolids Center Improvements

The Metro Biosolids Center is an existing regional biosolids treatment facility located on 39 acres adjacent to the Miramar landfill. The facility is located within the boundary of MCAS Miramar, is designated for Military use by the City's General Plan, and is zoned AR-1-1.

The Metro Biosolids Center is located on MCAS Miramar and is identified in the INRMP as being located on the "Old South Landfill" site (MCAS Miramar INRMP 2011). The facility is located within MCAS Miramar APZ I and within a Level V (developed land) MA.

5.1.2.2 Miramar Reservoir Alternative

North City Pure Water Pipeline and Dechlorination Facility

As proposed, the North City Pure Water Pipeline (North City Pipeline) alignment is primarily located within existing paved roadways and travels between the NCPWF-MR and the Miramar Reservoir. The alignment of the North City Pipeline is depicted on Figure 3-1 and as proposed, the alignment traverses MCAS Miramar and the City's University, Mira Mesa (primarily along Miramar Road), and Scripps Miramar Ranch communities. The alignment would also tunnel beneath I-15, briefly traverse private property located encompassing a San Diego County "island" of land surrounded by City jurisdictional lands, continue through the Scripps Miramar Ranch community, and ultimately end at the Miramar Reservoir. The pipeline alignment would run through industrial, commercial, office park, and parks and open space (i.e., lands surrounding Miramar Reservoir), and neighborhoods; and uses and adjacent lands are primarily zoned as industrial or commercial by the City. The General Plan land use designation and zoning designations of lands adjacent to the North City Pipeline alignment are depicted on Figures 5.1-1B and 5.1-2B. The City's community plan boundaries are depicted on Figure 5.1-3. As indicated on Figures 5.1-1B and 5.1-2B, immediately east of I-15 the North City Pipeline alignment briefly traverses an unincorporated island of San Diego County land designated for Office Professional and Village Residential (VR-24) use and zoned commercial and residential.

The Dechlorination Facility site is located in an industrial office park area off the Meanley Drive cul-de-sac in the Scripps Miramar Ranch community. Located approximately 0.2 mile south of the Miramar Reservoir, the site is designated for Industrial Employment by the City's General Plan, Industrial Park use by the Scripps Miramar Ranch Community Plan, and is zoned Industrial-Park (IP-2-1). The IP-2-1 zone allows for research and development uses with some limited manufacturing and while Dechlorination Facilities are not expressly permitted within the IP-2-1 zone, flood control facilities are permitted with limitations. Noteworthy development regulations of the IP-2-1 zone include setbacks (minimum front setback of 20 feet, minimum street side setback of 20 feet, and minimum side setback abutting residential of 30 feet), and maximum structure height (there are no height limits for structures in the industrial zones).

A short segment of the North City Pipeline alignment along Miramar Road is located within APZ I and II of MCAS Miramar.

Miramar Water Treatment Plant Improvements

The existing Miramar Water Treatment Plant is located in the Scripps Miramar Ranch community and operates along the southern shoreline of the reservoir. The Miramar Water Treatment Plant and immediate surrounding lands are designated for Park, Open Space, & Recreation Use by the City's General Plan and are zoned AR-1-1. In addition to the reservoir, surrounding land uses include an elementary school and single-and multi-family residences to the south across Scripps Lake Drive, and single- and multi-family residences to the east. According to the City, "the reservoir is very popular for bicycling, jogging, walking, rollerblading and picnicking" (City of San Diego 2016a).

5.1.2.3 San Vicente Reservoir Alternative

San Vicente Reservoir Pure Water Pipeline

The San Vicente Reservoir Pure Water Pipeline (San Vicente Pipeline) alignment is primarily located within existing paved roadways between the North City Pure Water Facility–San Vicente Reservoir (NCPWF-SVR) and the San Vicente Reservoir. The NCPWF-SVR is located on the same vacant 8.7-acre City-owned lot across Eastgate Mall to the north of the NCWRP as the NCPWF-MR. Similar to the NCPWF-MR, a pump station would also be located adjacent to the NCPWF-SVR. The alignment of the San Vicente Pipeline is depicted on Figure 3-1 and as proposed, the alignment traverses MCAS Miramar and the City's University, Kearney Mesa, Tierrasanta, East Elliott, and Navajo communities. Near Mission Trail Regional Park, the alignment exits City jurisdiction and enters the City of Santee, tunnels beneath SR-52, travels along Carlton Oaks Drive, Mast Boulevard, and Riverside Drive, tunnels beneath SR-67, enters County of San Diego jurisdiction (i.e., the community of Lakeside) and ends at the San Vicente Reservoir. The pipeline alignment would run through industrial, residential, recreational, commercial, school, and rural residential neighborhoods and uses and adjacent lands are primarily zoned industrial residential, or commercial. The General Plan land use designation and zoning designations of lands adjacent to the San Vicente Pipeline alignment are depicted on Figures 5.1-1A, 5.1-1C, 5.1-1D, 5.1-2A, 5.1-2C, and 5.1-2D. In addition to the City's community plan boundaries, the City of Santee and County of San Diego boundaries are depicted on Figure 5.1-3.

Mission Trails Booster Station

The Mission Trails Booster Station (MTBS) would be on an approximate 1.2-acre site located along Mission Gorge Road and north of a small commercial center. The site abuts single-family residential land uses to the east and is located atop an elevated landform that severely slopes to the west towards Mission Gorge Road. The surrounding area is characterized by a mix of single-family and multi-family residential land uses. The site is located in the Navajo community plan area and is designated for Single-Family Residential use by the community plan and Park, Open Space, & Recreation and Commercial Employment, Retail, & Services by the City's General Plan and is zoned RS-1-7 and Commercial Neighborhood (CN-1-2). The CN-1-2 zone allows development with an auto orientation and permits a maximum density of one dwelling unit for each 3,000 square feet of lot area. While booster stations are not expressly permitted in the CN-1-2 zone, flood control facilities are permitted with limitations. Noteworthy development regulations of the RS-1-7 zone include minimum front setback (15 feet), minimum rear setback (13 feet), and maximum structure height (24 feet). Noteworthy development regulations of the CN-1-2 zone include minimum lot area (5,000 square feet) and maximum lot area (10 acres), minimum front and rear setbacks (10 feet), and maximum structure height (30 feet).

5.1.3 REGULATORY FRAMEWORK

Federal

MCAS Miramar Integrated Natural Resources Management Plan

The MCAS Miramar strategy for conservation and management is to (1) limit activities, minimize development, and mitigate actions in areas supporting high densities of vernal pool habitat, threatened or endangered species, and other wetlands and (2) manage activities and development in areas of low densities, or no regulated resources, with site-specific measures and programmatic instructions (MCAS Miramar INRMP 2011). To that end, MCAS Miramar adopted an Integrated Natural Resources Management Plan (INRMP) in 2011 (MCAS Miramar INRMP 2011). The INRMP establishes guidelines for management of natural resources on lands administered by MCAS Miramar. While the INRMP does not dictate land use decisions, it does provide important resource information to support sound land use decisions and natural resource management. For example, the INRMP considers the interrelationships between individual components of natural resources management (e.g., soils, vegetation, wetlands, wildlife), mission requirements, and other land-use activities affecting MCAS Miramar natural resources. This information is in turn intended to provide technical guidance for the integration of natural resource issues and concerns into facilities and operational planning, in accordance with the National Environmental Policy Act (NEPA) decision-making processes.

MCAS Miramar has developed Management Areas (MAs) to highlight the area's supporting differing regulated resources. MAs also serve as a basis for planning natural resource management actions. Regardless of sensitivity, all of MCAS Miramar's undeveloped areas are subject to natural resource management, conservation, and best management practices.

The current INRMP covers 2011 through 2015, and is reviewed and updated on a 5-year schedule.

State

California Government Code Section 53091

Pursuant to Section 53091 (d) of the California Government Code, "building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency." Furthermore, per California Government Code Section 53091 (e), "zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water." Although Section 53091 does not expressly exempt cities and counties from each other's building and zoning ordinances, it was held in 40 Ops.Cal.Atty.Gen. 243 (1962) that such exemption is implicit in section 53090, despite excluding cities and counties from the definition of "local agencies." (Id., at pp. 245-247.) 40 Ops.Cal.Atty.Gen. Thus, cities and counties are mutually exempt from each other's zoning regulations relative to property that one such entity may own within the territory of the other. (*Lawler v. City of Redding* (1992) 7 Cal.App.4th 778, 783-784; 40 Ops.Cal.Atty.Gen. 243 (1962)).

Local

City of San Diego General Plan

The City's General Plan was unanimously adopted by the City Council on March 10, 2008, and was subsequently amended in 2010 and again in 2012. The General Plan builds upon many of the goals and strategies of the previously adopted 1979

General Plan, in addition to offering new policy direction in the areas of urban form, neighborhood character, and conservation. It recognizes and explains the critical role of the community planning program as the vehicle to tailor the "City of Villages" strategy for each neighborhood. The General Plan consists of the following elements: Land Use Community Planning, Mobility, Urban Design, Economic Prosperity, Public Facilities, Services & Safety, Recreation, Conservation, Noise, and Historic Preservation. A discussion of elements that are particularly relevant to an analysis of potential land use impacts is provided below.

Land Use and Community Planning Element. The purpose of this element is to guide future growth and development into a sustainable citywide development pattern while maintaining or enhancing quality of life in the City's communities. The Land Use and Community Planning Element addresses land use issues that apply to the City as a whole. The community planning program is the mechanism to refine citywide policies, designate land uses, and make additional site-specific recommendations as needed. The Land Use and Community Planning Element establishes the structure to respect the diversity of each community and includes policy direction to govern the preparation of community plans. The element also provides policy direction in areas including zoning and policy consistency, the plan amendment process, coastal planning, airport land use compatibility planning, annexation policies, balanced communities, equitable development, and environmental justice.

Applicable goals of the Land Use and Community Planning Element include the following:

- City of Villages Strategy Goal: Mixed-use villages located throughout the City and connected by high-quality transit.
- Consistency Goal: Zoning concurrent with community plan updates and amendments to ensure consistency with community plan land use designations.
- Airport Land Use Compatibility Goal: Protection of public use airports and military air installations from the encroachment of incompatible land uses within an airport influence area that could unduly constrain airport operations.

Urban Design Element. The purpose of this element is the guide physical development toward a desired scale and character that is consistent with the social, economic, and aesthetic values of the City. According to the Urban Design Element, "San Diego's distinctive character results from its unparalleled natural setting, including beaches, bays, hills, canyons and mesas that allow the evolution of geographically distinct neighborhoods."

Applicable goals of the Urban Design Element include the following:

- General Urban Design: A pattern and scale of development that provides visual diversity, choice of lifestyle, opportunities for social interaction, and that respects desirable community character and context.
- Office and Business Park Development: Promote the enhanced visual quality of office and industrial development.
- Public Spaces and Civic Architecture: Distinctive civic architecture, landmarks and public facilities.
- Public Art and Cultural Amenities: A City enhanced with distinctive public art and cultural amenities.

Applicable aesthetics/visual resources and neighborhood character policies from the Urban Design Element are discussed in Section 5.2, Aesthetics/Visual Resources and Neighborhood Character.

Public Facilities, Services, and Safety Element. This element addresses facilities and services that are publicly managed and have a direct influence on the location of land use. These include Fire-Rescue, Police, Wastewater, Storm Water, Water Infrastructure, Waste Management, Libraries, Schools, Information Infrastructure, Disaster Preparedness, and Seismic Safety. Public Facilities, Services, and Safety Element goals and policies are associated with providing adequate public facilities and services to serve the existing population and new growth. The following wastewater, water, and public utility goals are specifically applicable to the North City Project:

- Wastewater: Environmental sound collection, treatment, re-use, disposal, and monitoring of wastewater.
- Wastewater: Increased use of reclaimed water to supplement the region's limited water supply.
- Water: A safe, reliable, and cost-effective water supply for San Diego.
- Water: Water supply infrastructure that provides for the efficient and sustainable distribution of water.

- Public Utilities: Public utilities that sufficiently meet existing and future demand with facilities and maintenance practices that are sensible, efficient, and well-integrated into the natural and urban landscape.

Conservation Element. The overarching purpose of the Conservation Element is to provide for the long term conservation and sustainable management of the rich natural resource that help define the City's identity, contribute to its economy, and improve its quality of life. The following water resources management goal is applicable to the North City Project:

- A safe and adequate water supply that effectively meets the demand for the existing and future population through water efficiency and reclamation.

University Community Plan

According to the University Community Plan, dominant existing uses include UCSD, University Towne Center, the research and corporate headquarters, and medical centers in the northern portion of the planning area and the major parkland resources of the Torrey Pines, Rose Canyon and San Clemente Canyon areas (City of San Diego 2016b). The NCWRP and NCPWF are located in the Miramar Subarea whose visual character is "dominated by open space with restricted industrial development" (City of San Diego 2016b). Project components located in the University Community Plan area are depicted on Figure 5.1-3.

Relevant goals and objectives of the University Community Plan are listed below:

- Overall Urban Design Goal: Ensure that San Diego's climate and the community's unique topography and vegetation influence the planning and design of new projects.
- Overall Urban Design Goal: Ensure that every new development contributes to the public realm and street livability by providing visual amenities and a sense of place.
- Objective: Improve the visual image of the industrially developed portion of Miramar Road.
- Objective: Enhance the eastern entrance into the community.
- Industrial Element D: Encourage the development of industrial land uses that are compatible with adjacent non-industrial uses and match the skills of the local labor force.

Mira Mesa Community Plan

The Mira Mesa community is approximately 10,500 acres in area and is located in the northcentral portion of the City of San Diego (City of San Diego 2011a). As proposed, the North City Pipeline alignment would traverse the southern boundary of the community plan area (i.e., Miramar Road), which is characterized by industrial land uses occasionally separated by pockets of commercial centers. Through the community, the North City Pipeline alignment is proposed entirely in existing paved roadways.

Relevant goals of the Mira Mesa community plan include:

- Industrial Land Use Goal: Improvement in the visual quality of industrial development in the community.

Clairemont Mesa Community Plan

Clairemont Mesa is an urbanized residential community with several shopping centers, parks and recreational facilities and educational opportunities. The community has well-established single-family neighborhoods with streetscape parkways (City of San Diego 2015b). Identified goals and objectives were developed to provide a general framework for the continued development of the Clairemont Mesa Community. Applicable goals, objectives, and recommendations include the following:

- Primary Goal for Industrial Development: Provide new, high quality office and industrial park development within the community and rehabilitate older office and industrial development.
- Industrial Development Objective 3: Decrease potential land use conflicts between industrial and residential or commercial development.
- Primary Goal for Open Space and Environmental Resources: Provide an open space system that preserves existing canyons and hillsides and dedicate open space areas as infill development occurs in the community.
- Open Space and Environmental Resources 4: Protect the resource value of canyon areas and plant and animal wildlife within the community.
- Recommendations for Open Space and Resource Based Parks – Design: All public improvements such as roads, drainage channels and utility service and maintenance facilities should be developed in a manner that minimizes the visual and physical impacts of such improvements on the open space system.

As depicted on Figure 5.1-3, a segment of the Morena Pipelines, which would be installed primarily within existing paved roadways, is the lone project component located in the Clairemont Mesa community plan area.

Linda Vista Community Plan

Linda Vista is a primarily residential community with distinct neighborhoods. It is centrally located near Centre City, Mission Valley, and Mission Bay, with easy freeway access and a street system with relatively good traffic flow (City of San Diego 2011b). In addition to residential, significant land uses in the plan area include light industrial and commercial in the Morena area, a university, and retail uses in central Linda Vista.

Applicable goals of the Linda Vista community plan are listed below:

- Commercial and Industrial Land Use Goal 2: Retain the existing industrial area west of Morena Boulevard as a diverse employment base for the community and the City. Encourage more utilization of existing rail facilities.
- Commercial and Industrial Land Use Goal 3: Ensure that development in the Morena area presents a positive visual image to viewers from Interstate 5, Pacific Highway, Interstate 8, and Mission Bay Park.

An approximate 0.7-mile-long segment of the Morena Pipelines and the Morena Pump Station are proposed in the industrial southwestern area of Linda Vista (see Figure 5.1-3).

Mission Valley Community Plan

The Mission Valley planning area comprises approximately 2,418 net acres and is located near the geographic center of the City of San Diego. It is bounded on the west by Interstate 5 (I-5), on the north by Friars Road west of State Route 163 (SR-163) and by the northern slopes of the valley east of SR-163, on the east by the eastern bank of the San Diego River, and on the south by approximately the 150-foot elevation contour line (City of San Diego 2013). Piping associated with the Morena Pump Station located within Friars Road is located within this community plan area.

Kearney Mesa Community Plan

The community of Kearny Mesa is a major industrial and commercial center occupying a central location in the City of San Diego and the community meets employment, business, and retail needs for a large portion of the City (City of San Diego 2011c).

Applicable goals of the Kearney Mesa community plan are listed below:

- Urban Design Element Primary Goal: Preserve and enhance the physical environment, visual appearance, identity and character of the Kearny Mesa community.
- Conservation and Open Space Element Recommendation: Developments within the MCAS Miramar "airport influence area" should be reviewed for consistency with the MCAS Miramar Airport Land Use Compatibility Plan. Refer to Airport Element-Montgomery Field of this Plan.
- Airport Element – Montgomery Field Primary Goal: Encourage the provision of "compatible" development in areas adjacent to airport property.

A segment of the San Vicente Pipeline that would be installed within existing paved roadways is the lone project component located in the Kearney Mesa community plan area. See Figure 5.1-3.

Scripps Miramar Ranch Community Plan

Scripps Miramar Ranch is located on the north central part of metropolitan San Diego and the planning area contains approximately 4,365 acres of land (City of San Diego 2011d). The predominant land use in the planning area is residential although business park uses are concentrated in a southwestern portion of the community. Relevant overall community goals and industrial elements objectives include the following:

- Preserve and enhance the valued natural resources of the Scripps Miramar Ranch community: hills, trees, water resources, Miramar Reservoir, Carroll Canyon and subsidiary canyons; maximize public benefit through public ownership and/or access, both visual and physical, to these resources.
- Encourage development of open space buffers, which will effectively screen disparate elements of the community.

- Preserve the existing sense of neighborhood identity, which unifies residents and promotes social interaction and civic cooperation.
- Protect areas designated for industrial use from encroachment by incompatible land uses.
- Encourage the development of industries which would provide desirable employment opportunities within Scripps Miramar Ranch.

Tierrasanta Community Plan

The Tierrasanta community is centrally located within the greater San Diego metropolitan area, and with the exception of the Open Space portion of the plan area in Mission Trails Regional Park, the predominant land use in Tierrasanta is residential (City of San Diego 2011e).

Applicable goals and objectives of the Tierrasanta community plan are listed below:

- Industrial Goal: Accommodate uses which are compatible with the designated site.
- Industrial Objective: To protect surrounding uses from visual impact or other disruption caused by uses on the industrially designated sites.
- Industrial Objective: To ensure that industrial development is sensitive to the surrounding open space areas.
- Open Space Objective: To preserve canyons and hillsides as open space.
- Open Space Objective: To preserve the San Diego River environs and protect surrounding uses from flooding.

A segment of the San Vicente Pipeline that would be installed within existing paved roadways is the lone project component located in the Tierrasanta community plan area. See Figure 5.1-3.

Navajo Community Plan

Of the total zoned land in the Navajo area, 4,018 acres, is zoned for single-family homes; 389 acres, is zoned for multiple family use; 315 acres, is zoned for commercial use; and 56 acres, is zoned for industrial use. The remaining 3,018 acres, located predominantly in the southern and eastern sections of the area, including Cowles Mountain, is zoned for agriculture and the San Diego River floodway (City of San Diego 2015c). Public and semi-public uses and single-family homes are the predominant land uses within the community. While not a residential land use, the proposed MTBS site is split zoned for residential and commercial use and the Site Design proposals for residential land uses including recontour rather cut and fill and develop hillsides to complement the existing terrain are relevant. Further, community environment proposals including the screening of unaesthetic land uses are also relevant due to the proximity of the MTBS to residential land uses.

A portion of the San Vicente Pipeline primarily along Mission Gorge Road and the MTBS site are located in the Navajo community plan area. See Figure 5.1-3.

City of San Diego Municipal Code

Referred to as the Land Development Code (LDC), Chapters 11 through 14 of the City's Municipal Code contain the City's planning, zoning, subdivision, and building regulations that provide the framework for how land is to be developed within the City. The City of San Diego Zoning Ordinance, found in Chapter 13 of LDC, establishes base zones to help ensure that the general land use designations applied to properties under the jurisdiction of the City are properly located and that adequate space is provided for each type of development identified. Furthermore, base zones are intended to regulate uses; to minimize the adverse impacts of these uses; to regulate the zone density and intensity; to regulate the size of buildings; and to classify, regulate, and address the relationships of uses of land and buildings (San Diego Municipal Code Section 131.0101, City of San Diego 2008). The LDC also contains overlay zones and supplemental regulations that provide additional development requirements.

The City's base zone designations applied to lands underlying above ground facilities are identified and described in Section 5.1.2.

City of San Diego Land Development Code – Environmentally Sensitive Lands Regulations

The purpose of the Environmentally Sensitive Lands (ESL) Regulations is to protect, preserve, and where damaged, restore the environmentally sensitive lands of San Diego and the viability of the species supported by those lands ((LDC Chapter 14, Article 1, Division 1; City of San Diego 2000). These regulations are intended to assure that development, including, but not limited to coastal development in the Coastal Overlay Zone, occurs in a manner that protects the overall quality of the resources and the natural and topographic character of the area, encourages a sensitive form of development, retains biodiversity and interconnected habitats, maximizes physical and visual public access to and along the shoreline, and reduces hazards due to flooding in specific areas while minimizing the need for construction of flood control facilities. These regulations are intended to protect the public health, safety, and welfare while employing regulations that are consistent with sound resource conservation principles and the rights of private property owners.

Environmentally sensitive lands include sensitive biological resources, steep hillsides, coastal beaches, sensitive coastal bluffs, and special flood hazard areas (San Diego Municipal Code Chapter 14, Article 3, Division 1; City of San Diego 2006).

Please refer to Section 5.1.2.3. With the exception of San Vicente Pipeline components along the south side of the reservoir, project components would not traverse City of San Diego environmentally sensitive lands.

City of Santee General Plan

Adopted in 2003, the City of Santee General Plan 2020 contains four elements: Community Development, Resource Management, Public Health and Safety, and Community Design.

Through the City of Santee, the San Vicente Pipeline would be located within existing roadways including Carlton Oaks Drive and Mast Boulevard. No other project components are proposed in Santee. Through the City, the alignment is located adjacent to a number of residentially designated lands (including low medium (R2), medium (R7), high (R22) density residential), planned development (PD), park/open space (P/OS), neighborhood commercial (NC), office professional (OP) and town center (TC) (City of Santee 2003). Relevant goals and objectives of the Land Use Element (consolidated into the Community Development Element), and Conservation Element, are listed below:

- Land Use Goal 6.0: Promote development of a well-balanced and functional mix of residential, commercial, industrial, open space, recreation, and civic uses that will create and maintain a high quality environment.
- Land Use Objective 5.0: Develop industrial uses which are compatible with adjacent land uses.
- Land Use Objective 9.0: Minimize land use conflicts between land uses in adjacent areas and existing and planned land uses in the City.
- Conservation Element Objective 1.0: Protect areas of unique topography or environmental significance to the greatest extent possible.

County of San Diego General Plan

Land Use Element. The County's Land Use Element provides a framework to accommodate future development in an efficient and sustainable manner that is compatible with the character of unincorporated communities and the protection of valuable and sensitive natural resources. The San Vicente Pipeline would primarily be aligned within existing roads travelling adjacent to land designated for Specific Plan Area, General Commercial, Village Residential, Semi-Rural Residential, Medium-Impact Industrial, Public Agency Lands, and Open Space (Recreation). Relevant goals of the Land Use Element are listed below:

- **Goal LU-2: Maintenance of the County's Rural Character.** Conservation and enhancement of the unincorporated County's varied communities, rural setting, and character.
- **Goal LU-4: Inter-jurisdictional Coordination.** Coordination with the plans and activities of other agencies and tribal governments that relate to issues such as land use, community character, transportation, energy, other infrastructure, public safety, and resource conservation and management in the unincorporated County and the region.
- **Goal LU-2: Infrastructure and Services Supporting Development.** Adequate and sustainable infrastructure, public facilities, and essential services that meet community needs and are provided concurrent with growth and development.

Conservation Element. The primary focus of the Conservation and Open Space Element is to provide direction to future growth and development in the County of San Diego with respect to the following:

- The conservation, management, and utilization of natural and cultural resources.
- The protection and preservation of open space.
- The provision of park and recreation resources.

Relevant goals of the Conservation Element are listed below:

- **Goal COS-4: Water Management.** A balanced and regionally integrated water management approach to achieve the long-term viability of the County's water quality and supply.

- **Goal COS-7: Protection and Preservation of Archaeological Resources.** Protection and preservation of the County's important archaeological resources for their cultural importance to local communities, as well as their research and educational potential.
- **Goal COS-8: Protection and Conservation of the Historical Built Environment.** Protection, conservation, use, and enjoyment of the County's important historic resources.
- **Goal COS-12: Preservation of Ridgelines and Hillsides.** Ridgelines and steep hillsides that are preserved for their character and scenic value.

Lakeside Community Plan

Lakeside is essentially a rural residential community that has experienced pressure to urbanize and accommodate suburban residential developments. The segment of the San Vicente Pipeline alignment through Lakeside is located within a rural residential neighborhood composed of larger lots featuring modest residences, equestrian facilities, and landscaping. Relevant goals and recommendations of the Lakeside community plan are listed below:

- **Community Character Goal:** Foster development which will preserve a rural atmosphere and enhance a sense of spaciousness.
- **Community Character Recommendation 1:** Protect Lakeside's unique natural environment, and preserve its rural way of life and cultural heritage.
- **Land Use Recommendation 4:** Provide for the preservation of open space areas, such as steep slopes and canyons, floodplains, agricultural lands, and unique scenic views and vistas, which serve to reinforce Lakeside's rural identity by locating residential development away from such areas.
- **Industrial Goal:** Provide for the kind of industrial development that does not detract from the existing rural character of the community.
- **Industrial Recommendation 4:** Encourage new and existing industrial facilities to blend with their surroundings by utilizing harmonious architectural design, undergrounding utilities, landscaping, and a high standard of maintenance.
- **Industrial Recommendation 12:** Industrial development that detracts from the rural character of Lakeside shall not be approved.

- **Conservation Recommendation 4:** Ensure that land uses within or adjacent to recreational, natural preserve, agricultural, or industrial areas are compatible with those areas.

San Diego Forward

The San Diego Association of Governments (SANDAG) San Diego Forward: The Regional Plan (Regional Plan) is the long-range planning document developed that addresses how the San Diego region will grow and how SANDAG will invest in transportation infrastructure that will provide more choices, strengthen the economy, promote a healthy environment, an support thriving communities (SANDAG 2015). San Diego Forward essentially combines the Regional Comprehensive Plan (RCP), the Regional Transportation Plan, and its Sustainable Communities Strategy (RTP/SCS). Adopted in 2004, the RCP laid out key principles for managing the region's growth while preserving natural resources and limiting urban sprawl. The plan covered eight policy areas including urban form, transportation, housing, healthy environment, economic prosperity, public facilities, our borders, and social equity. These policy areas were addressed in the 2050 Regional Transportation Plan and its Sustainable Communities Strategy (2050 RTP/SCS) and are now fully integrated into the Regional Plan.

At the core of the Regional Plan is a Sustainable Communities Strategy (SCS) that "charts a course toward lower greenhouse gas emissions related to cars and light trucks, and proposes other measures to make the San Diego Region more environmentally sustainable" (SANDAG 2015). The five strategies intended to move the region toward sustainability (per the Regional Plan) include the following:

- Focus housing and job growth in urbanized areas where there is existing and planned transportation infrastructure, including transit.
- Protect the environment and help ensure the success of smart growth land use policies by preserving sensitive habitat, open space, cultural resources, and farmland.
- Invest in a transportation network that gives people transportation choices and reduces greenhouse gas emissions.
- Address the housing needs of all economic segments of the population.
- Implement the Regional Plan through incentives and collaboration.

Goals of the Regional Plan are to provide innovative mobility choices and planning to support a sustainable and healthy region, a vibrant economy, and an outstanding quality of life for all (SANDAG 2015). While the Regional Plan places an emphasis on transportation and planning, it also shows concern for and addresses water resources and water supply. For example, when implemented, the Regional Plan is intended to result in a more efficient use of the region's water supply through the construction of more compact developments, which use less water per capita compared to suburban housing developments (SANDAG 2015).

While the 2004 RCP stressed a need for the region to diversify its water sources including through the development of local recycling, groundwater and desalination projects (SANDAG 2004), the Regional Plan generally emphasizes the need to protect water resources. Regarding the Regional Plan's Habitat and Open Space Preservation Objective, protection and restoration of our region's urban canyons, coastlines, beaches, and water resources is included as a specific objective.

Multiple Species Conservation Program

The City of San Diego is a participant in the San Diego Multiple Species Conservation Program (MSCP), a comprehensive, regional long-term habitat conservation program designed to provide permit issuance authority for take of covered species to the local regulatory agencies. The MSCP addresses habitat and species conservation within approximately 900 square miles in the southwestern portion of San Diego County (County of San Diego 1998). It serves as an approved habitat conservation plan pursuant to an approved Natural Communities Conservation Plan in accordance with the state Natural Communities Conservation Planning Act (County of San Diego 1998).

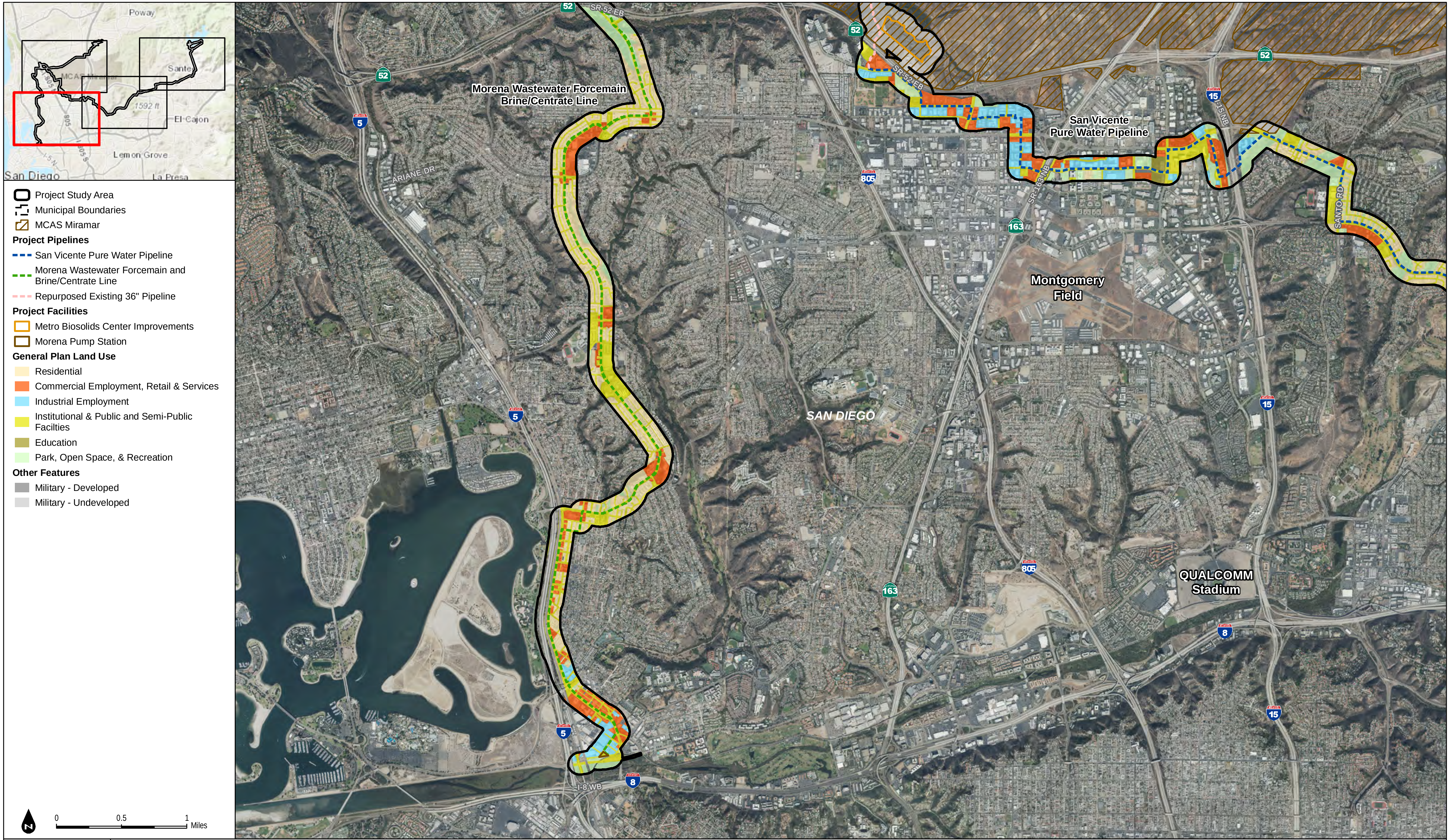
The MSCP establishes a preserve system designed to conserve large blocks of interconnected habitat having high biological value that are delineated in Multi-Habitat Planning Areas (MHPAs). The City MHPA is a "hard line" preserve developed by the City in cooperation with the wildlife agencies, property owners, developers, and environmental groups. The MHPA identifies biological core resource areas and corridors targeted for conservation, in which only limited development may occur (City of San Diego 1997). The City MHPA is shown on Figure 5.1-4A and the County of San Diego MSCP is shown on Figure 5.1-4B.

Please refer to Section 5.4, Biological Resources, for additional information regarding the MSCP and other local habitat conservation plans or policies.

Airport Land Use Compatibility Plans

The San Diego Regional Airport Authority acts as the Airport Land Use Commission (ALUC) for the San Diego region as provided in Section 21670.3 of the California Public Utilities Code and is charged with developing airport land use compatibility plans (ALUCPs) for each airport in the County, including military air installations. ALUCPs provide guidance on appropriate land uses surrounding airports to protect the health and safety of people and property within the vicinity of an airport, as well as the public in general. An ALUCP focuses on a defined area around each airport known as the Airport Influence Area (AIA). The AIA is composed of noise, safety, airspace protection and overflight factors. ALUCPs have been adopted for 16 airports countywide, including rural airports, military installations, and urban airports, such as SDIA. Airport Review Area boundaries for airports near project components are depicted on Figures 5.1-5A, 5.1-5B, and 5.1-5C.

Please refer to Sections 5.9, Health and Safety/Hazards, and Section 5.12, Noise, for additional information regarding ALUCPs and safety and noise factors considered in this EIR/EIS analysis.



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SOURCE: SanGIS 2016; SANDAG 2016

FIGURE 5.1-1A

General Plan Land Use Designations

Pure Water San Diego Program North City Project EIR/EIS

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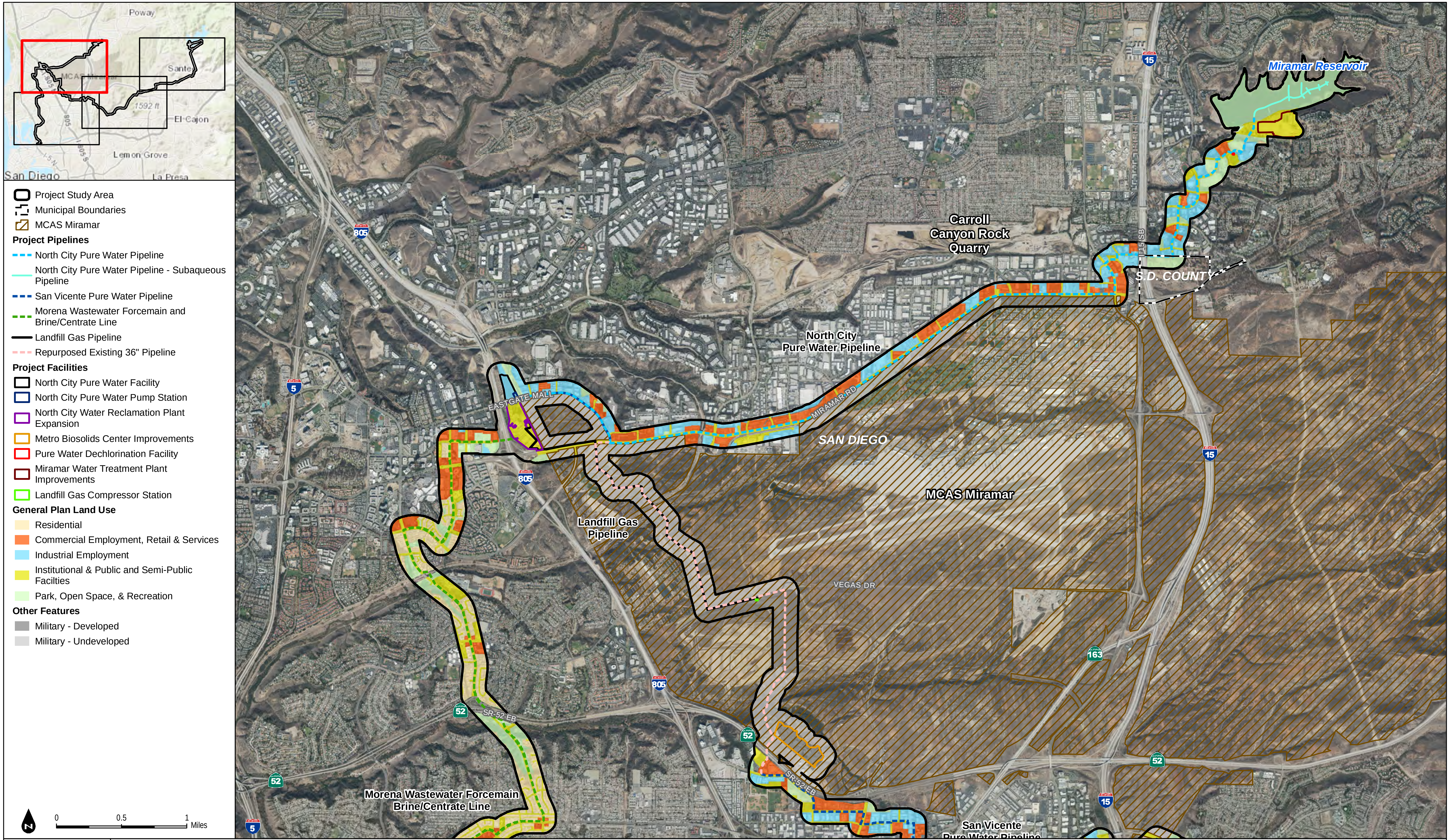

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SOURCE: SanGIS 2016; SANDAG 2016

FIGURE 5.1-1B

General Plan Land Use Designations

Pure Water San Diego Program North City Project EIR/EIS

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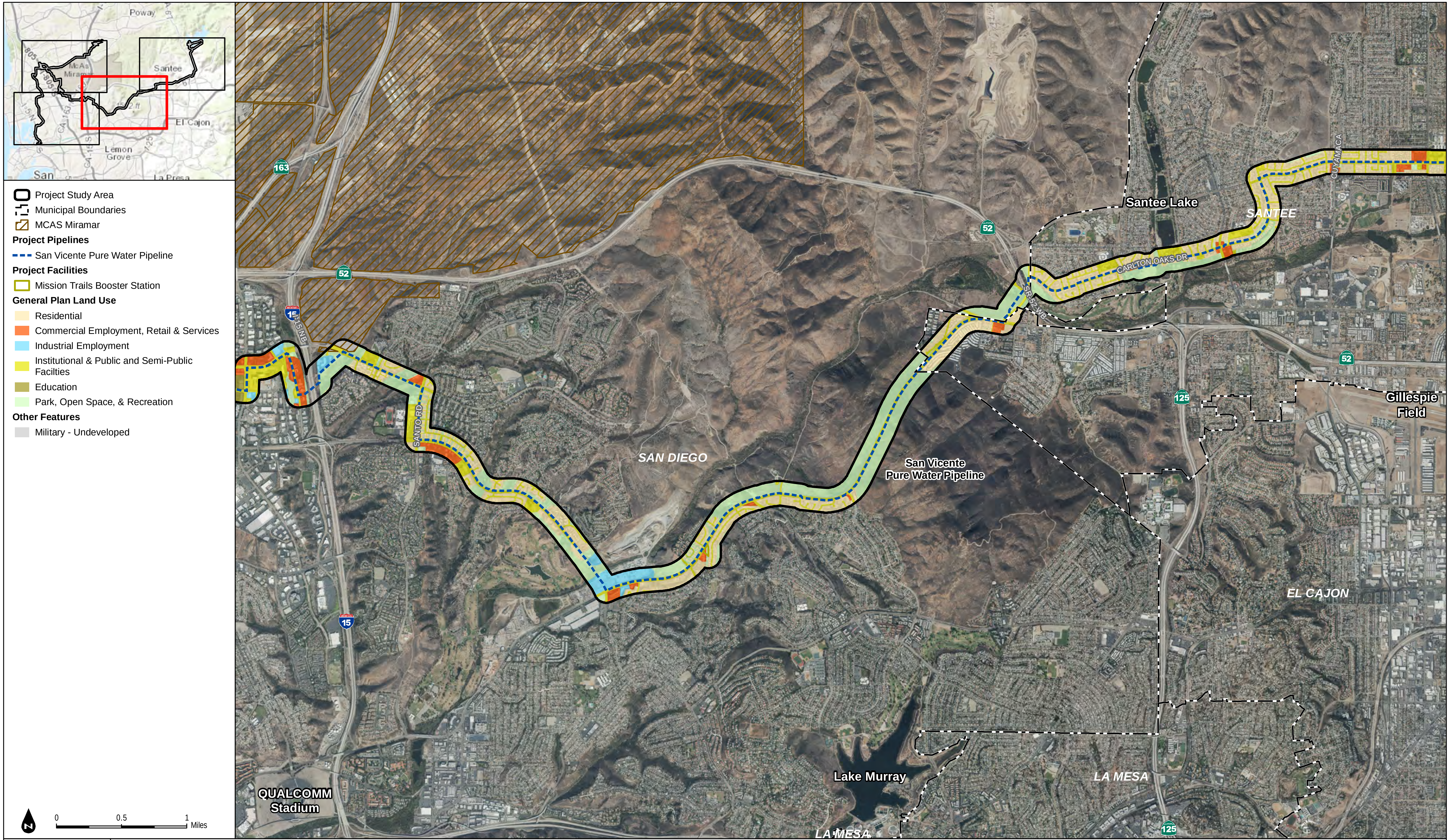

SOURCE: SanGIS 2016; SANDAG 2016

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FIGURE 5.1-1C

General Plan Land Use Designations

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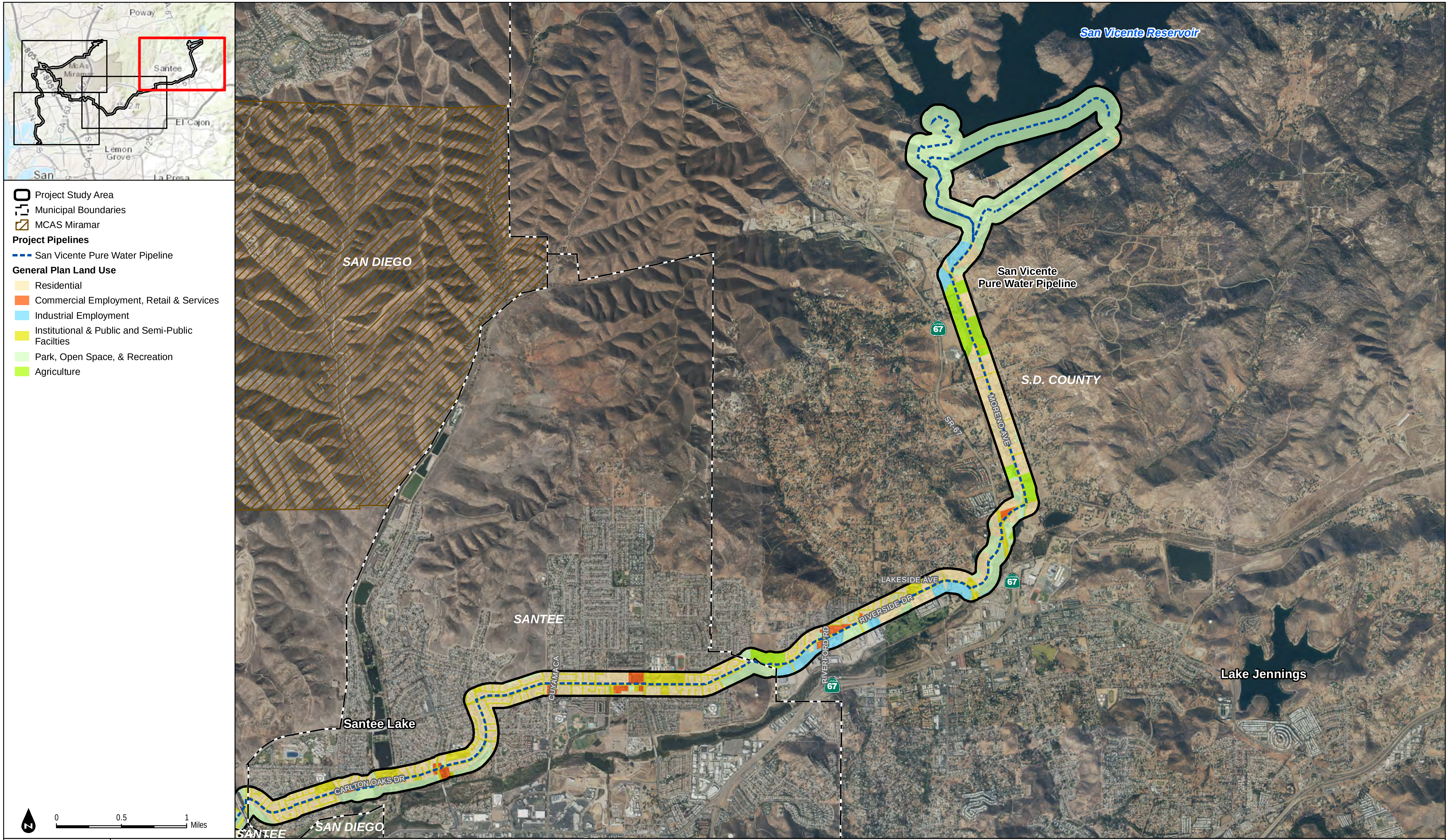

SOURCE: SanGIS 2016; SANDAG 2016

FIGURE 5.1-1D

General Plan Land Use Designations

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Pure Water San Diego Program North City Project EIR/EIS

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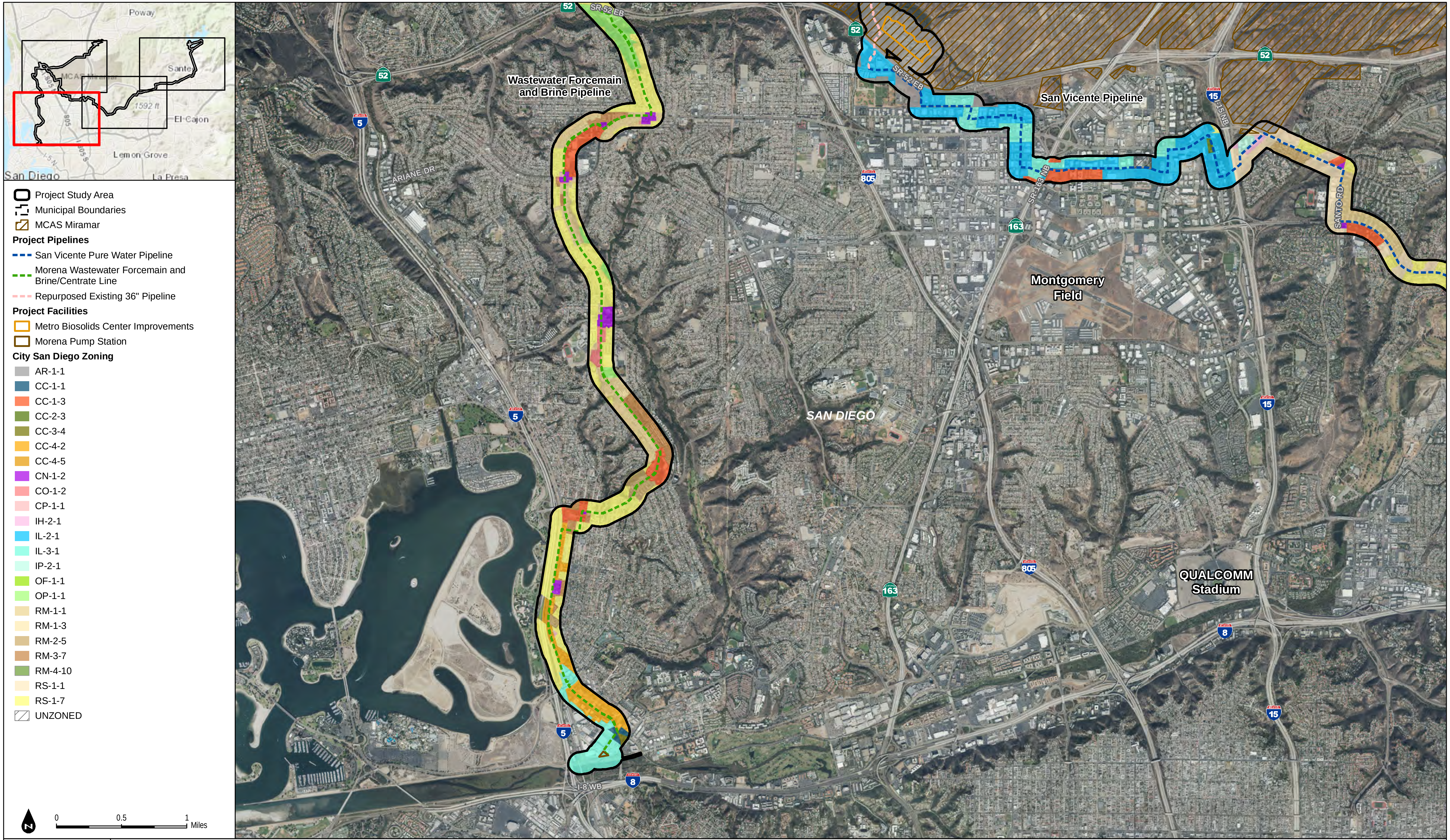

SOURCE: SanGIS 2016; SANDAG 2016; City of Santee

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FIGURE 5.1-2A

Zoning Designations

Pure Water San Diego Program North City Project EIR/EIS

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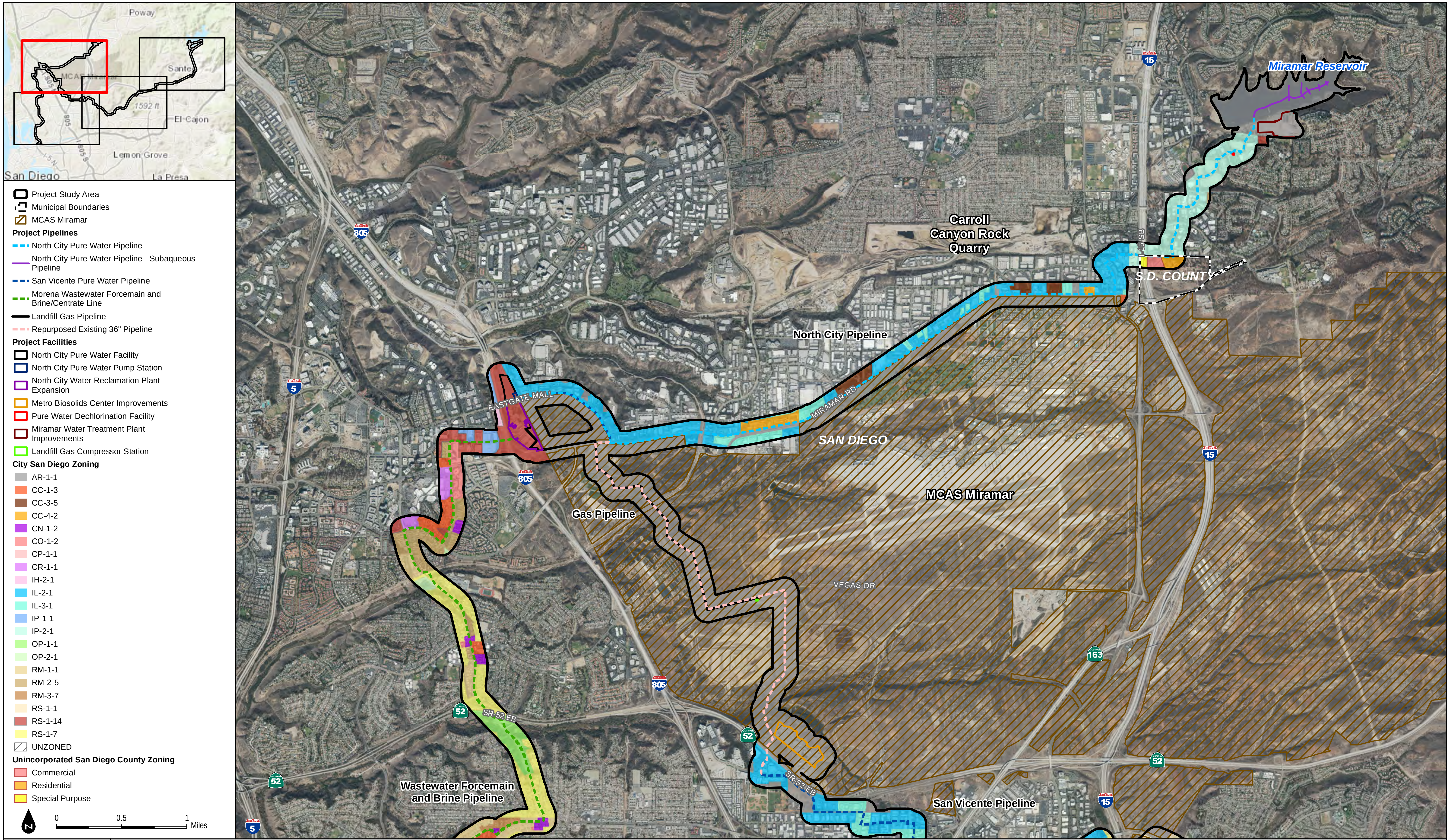

SOURCE: SanGIS 2016; SANDAG 2016; City of Santee

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FIGURE 5.1-2B

Zoning Designations

Pure Water San Diego Program North City Project EIR/EIS

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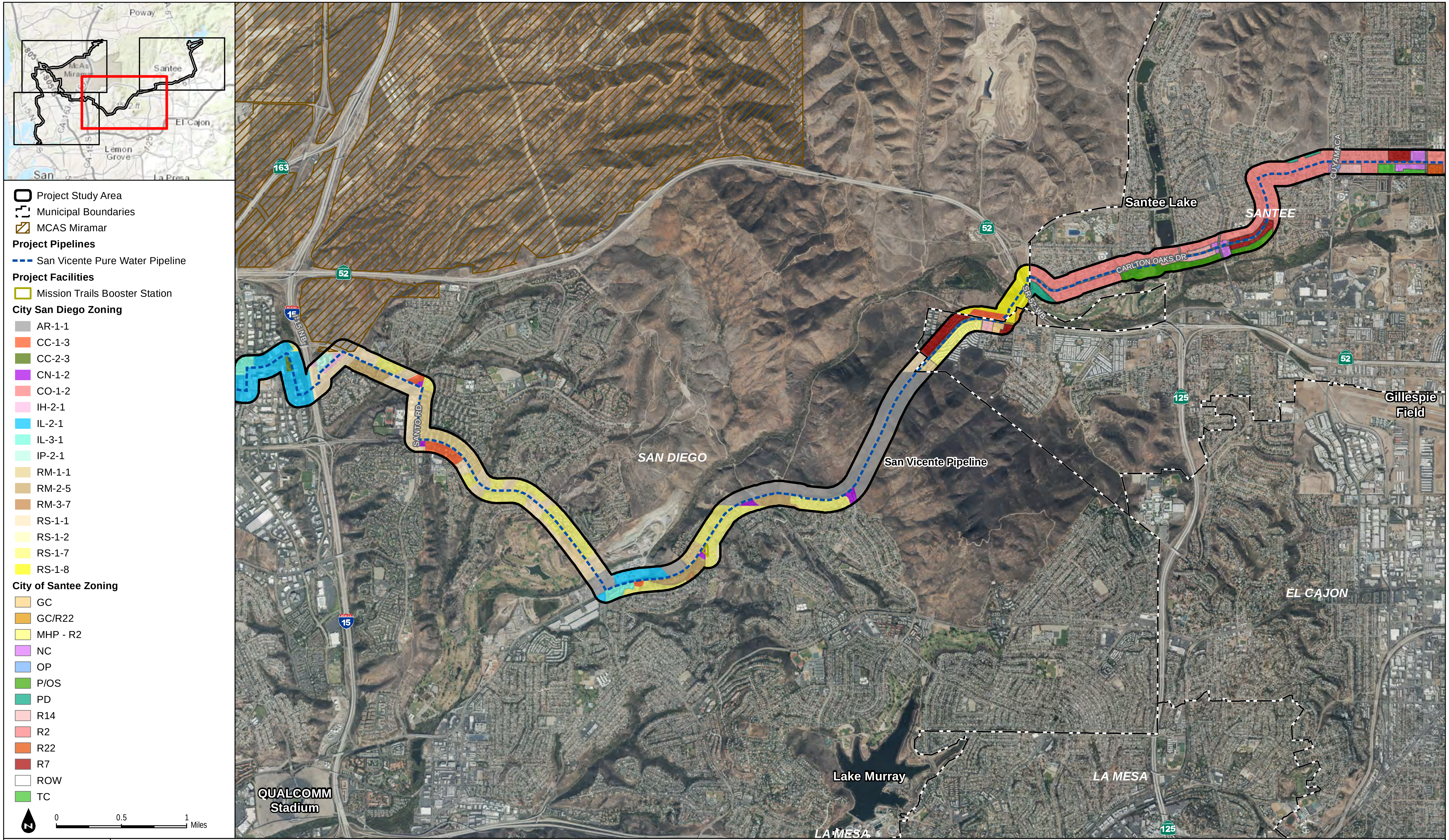

SOURCE: SanGIS 2016; SANDAG 2016; City of Santee

FIGURE 5.1-2C

Zoning Designations

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Pure Water San Diego Program North City Project EIR/EIS

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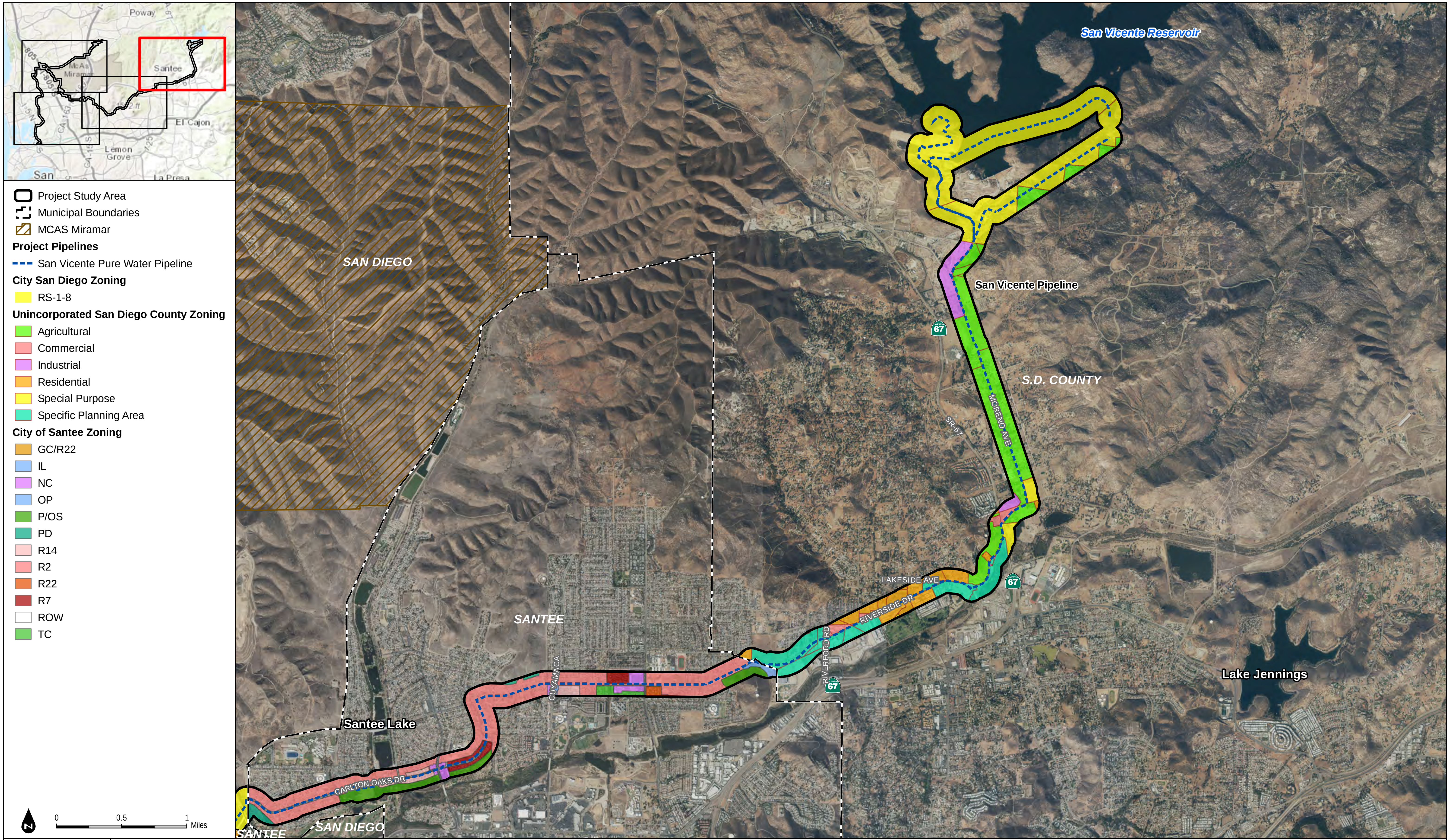

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SOURCE: SanGIS 2016; SANDAG 2016; City of Santee

FIGURE 5.1-2D

Zoning Designations

Pure Water San Diego Program North City Project EIR/EIS

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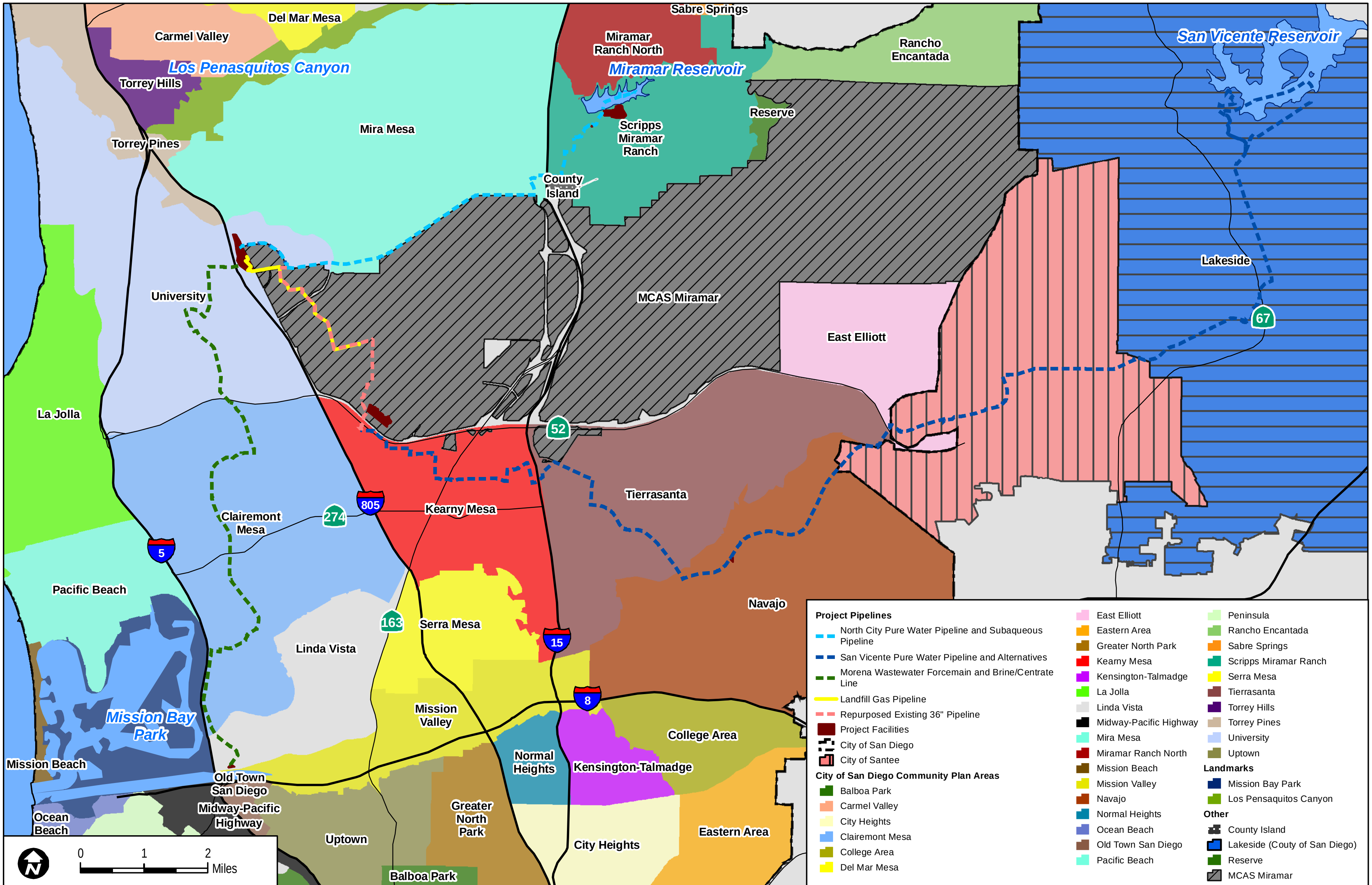

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SOURCE: City of San Diego, 2015, 2016; SanGIS 2016

FIGURE 5.1-3

Community Plans

Pure Water San Diego Program North City Project EIR/EIS

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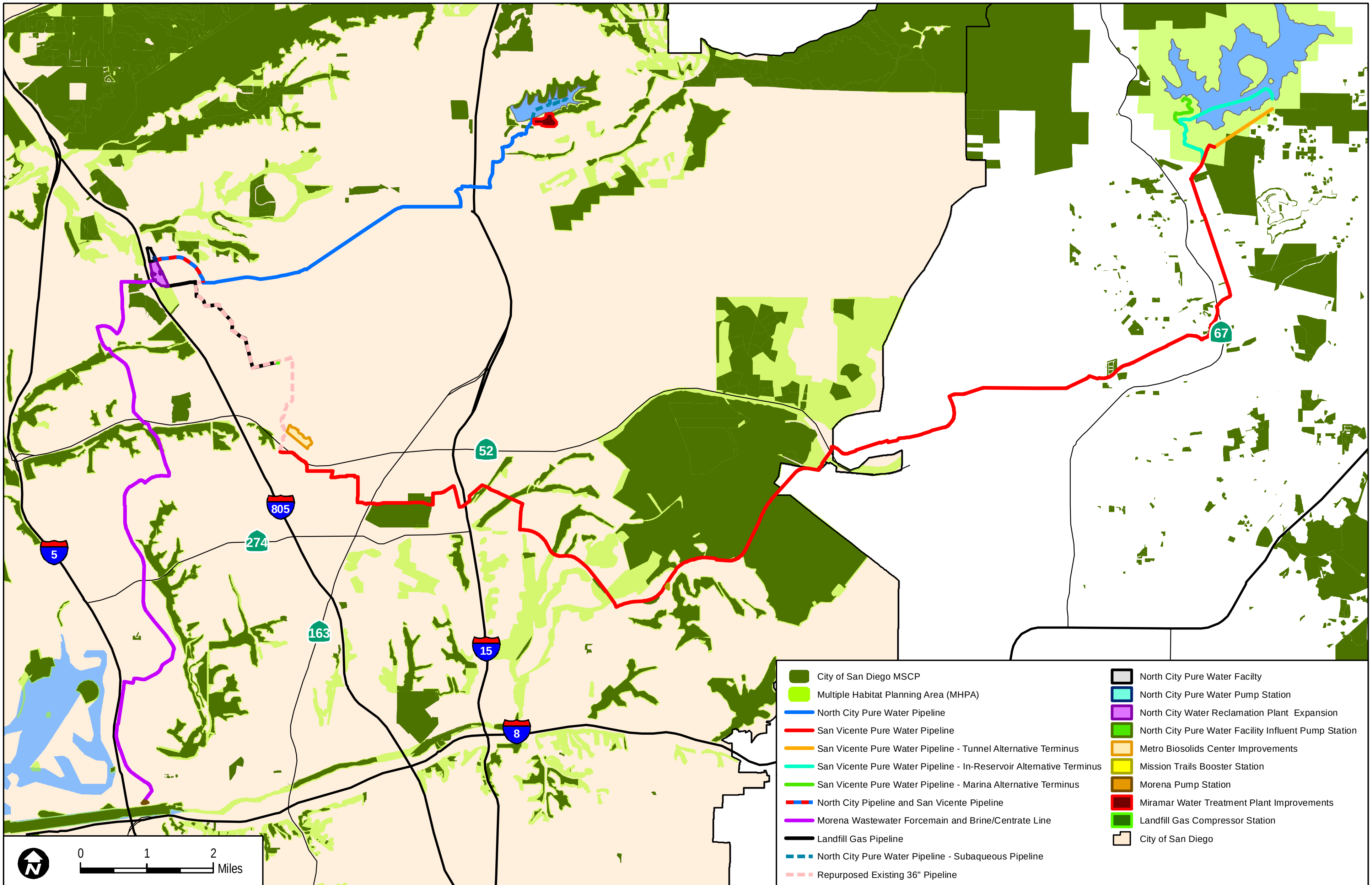

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SOURCE: City of San Diego, 2015, 2016; SanGIS 2016

FIGURE 5.1-4A

City of San Diego MHPA

Pure Water San Diego Program North City Project EIR/EIS

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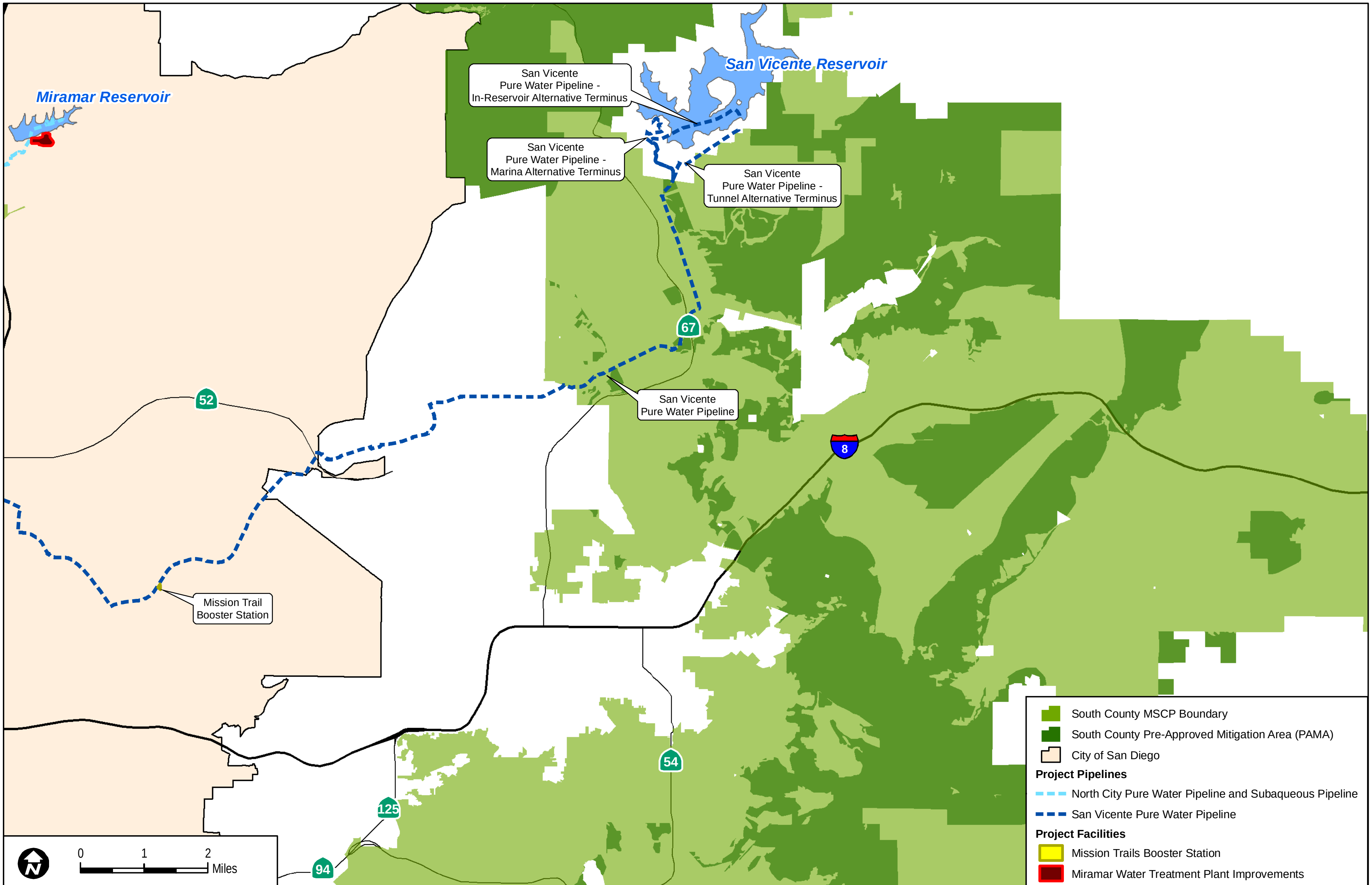

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SOURCE: City of San Diego, 2015, 2016; SanGIS 2016

FIGURE 5.1-4B

County of San Diego MSCP

Pure Water San Diego Program North City Project EIR/EIS

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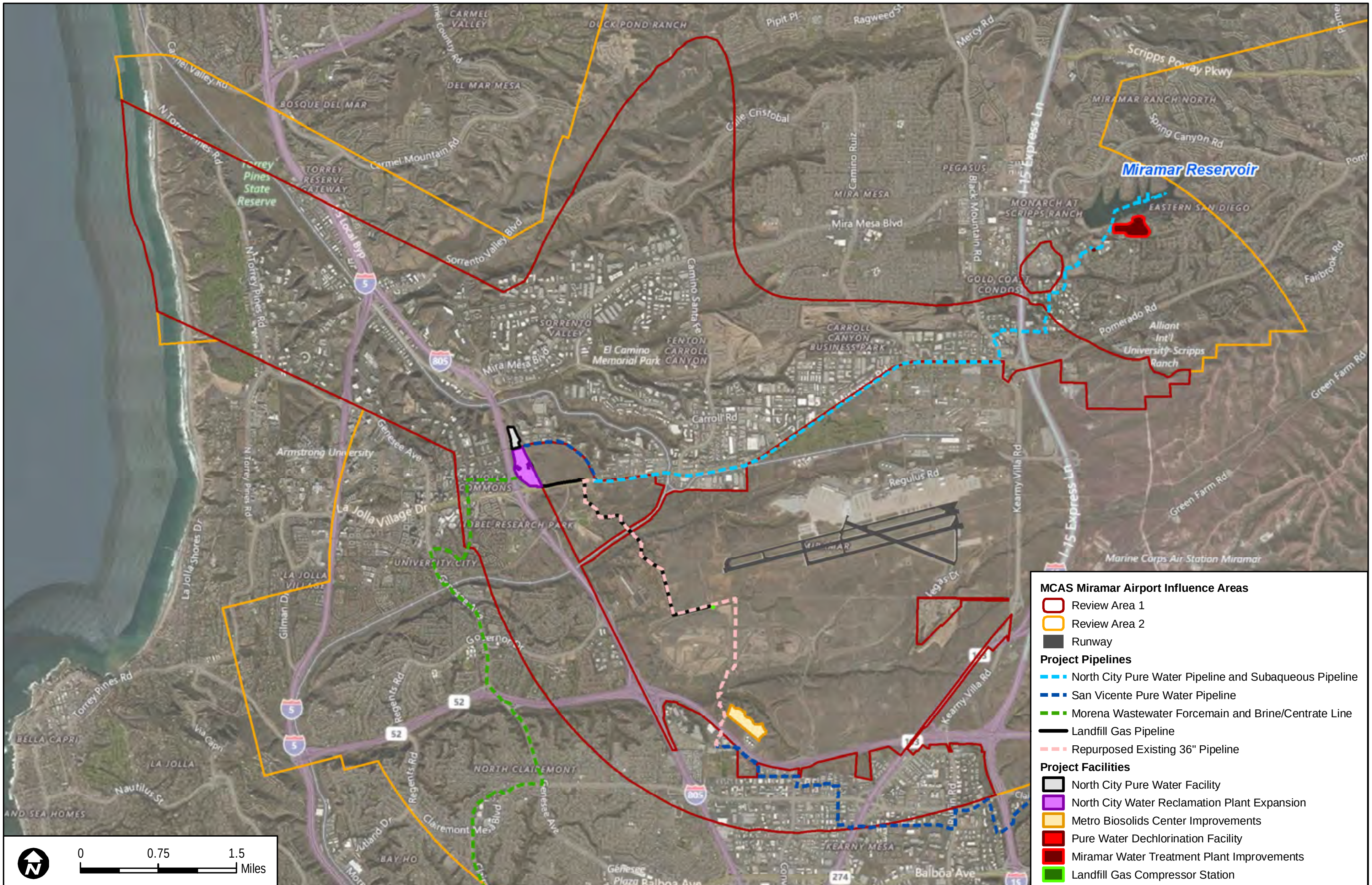

SOURCE: City of San Diego, 2015, 2016; SanGIS 2016; Bing Maps 2016

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FIGURE 5.1-5A

Airport Land Use Compatibility Plan - MCAS Miramar Airport Review Areas

Pure Water San Diego Program North City Project EIR/EIS

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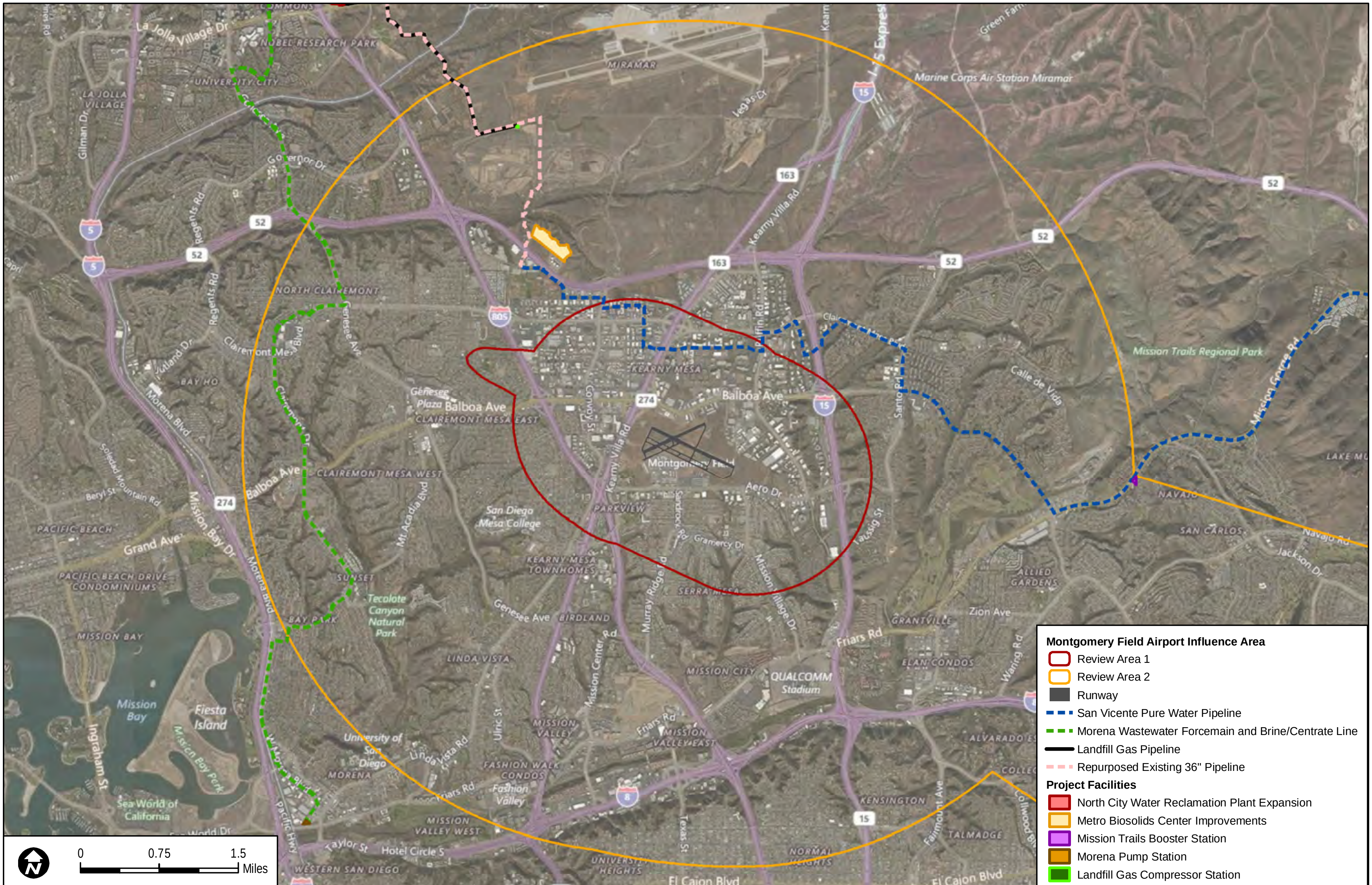

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SOURCE: City of San Diego, 2015, 2016; SanGIS 2016; Bing Maps 2016

FIGURE 5.1-5B

Airport Land Use Compatibility Plan - Montgomery Field Airport Review Areas

Pure Water San Diego Program North City Project EIR/EIS

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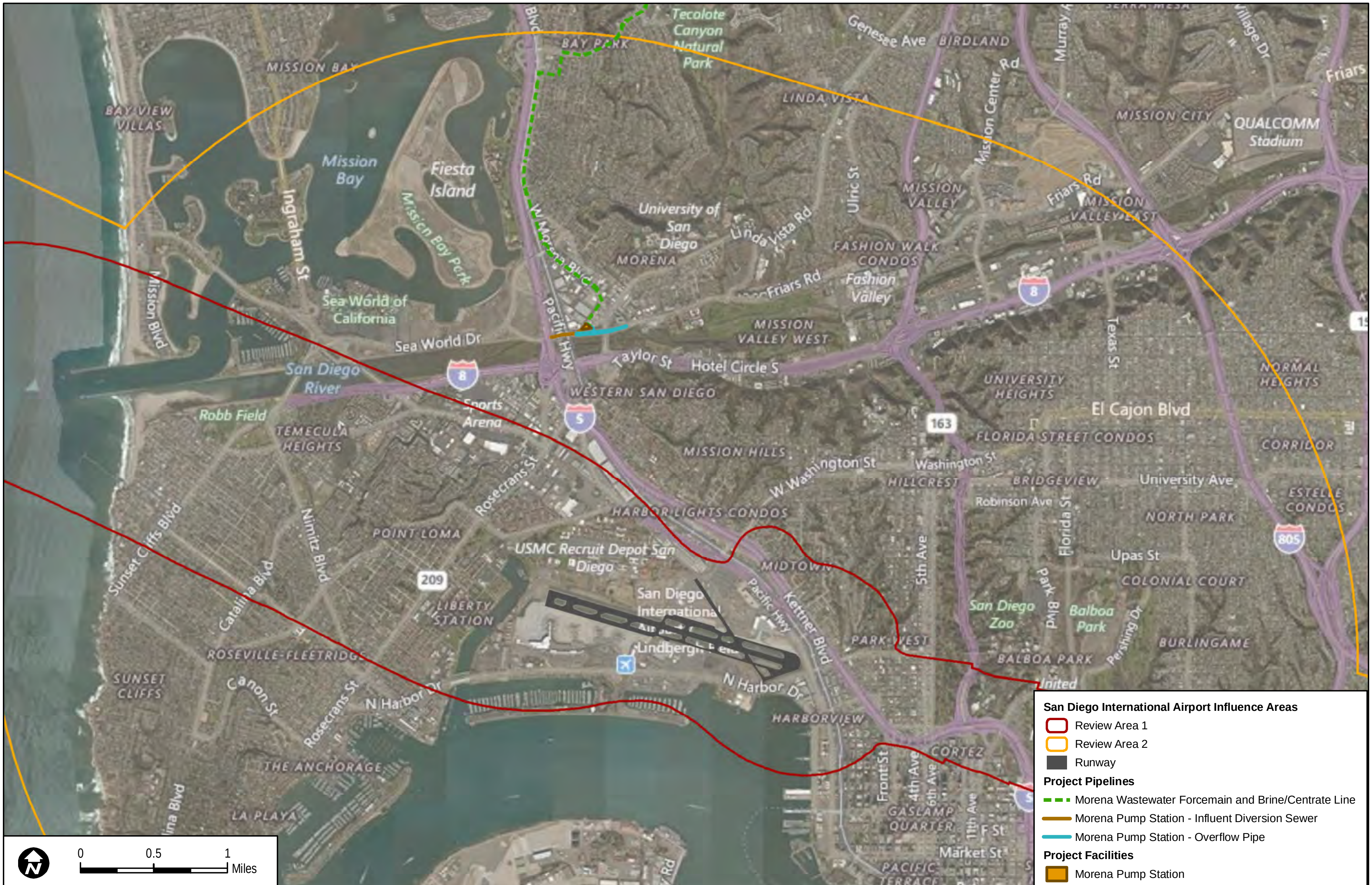

SOURCE: City of San Diego, 2015, 2016; ALUCP 2014; Bing Maps 2016

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FIGURE 5.1-5C

Airport Land Use Compatibility Plan - San Diego International Airport Review Areas

Pure Water San Diego Program North City Project EIR/EIS

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5.2 AESTHETICS/VISUAL EFFECTS AND NEIGHBORHOOD CHARACTER

5.2.1 INTRODUCTION

This section describes the existing environmental and regulatory setting of the North City Project area as it relates to aesthetics/visual effects and neighborhood character.

5.2.2 ENVIRONMENTAL SETTING

The following discussion describes the general existing conditions from an aesthetics/visual effects and neighborhood character viewpoint. Refer to Section 5.1, Land Use, for detailed on- and off-site land uses and zoning designation discussion for all North City Project components (project components).

5.2.2.1 Components Common to Project Alternatives

Morena Pump Station

As proposed, the Morena Pump Station would be located on a developed, triangular-shaped area situated east of Pacific Highway, west of Morena Boulevard, and north of the San Diego River, Metropolitan Transit System trolley tracks, and Friars Road. More specifically, the Morena Pump Station site is bound by Sherman Street to the north and west and Custer Street to the north and east. Currently home to San Diego Humane Society, the Society for the Prevention of Cruelty to Animals, and Project Wildlife facilities, the site is developed with several lightly colored stucco exterior structures (primarily one-story but also including two two-story buildings), two single-story portable buildings, synthetic-turf-covered surfaces, and paved surface parking areas. The Morena Pump Station site is designated for Industrial Employment and Park, Open Space, and Recreation use by the City's General Plan and is zoned for Industrial-Light (IL-3-1) use. See Section 5.1, Land Use, for information regarding General Plan and zoning designations.

Characterized by light industrial and large commercial/warehouse land uses, the site is located within the industrial Morena area of the Linda Vista Community Plan. City of San Diego Community Plan area boundaries are depicted on Figure 5.1-3, Community Plans. Several large and long one- and two-story public storage warehouses and distribution centers dominate the visual environment however, the area is also marked by smaller, siding covered showrooms and a blocky, three-story concrete and glass office development. The area generally lacks consistency in building materiality or form and features minimal vegetation, which largely consists of small pockets of shrubs and street trees along the frontages of the public storage buildings and office development.

Due to the presence of existing one- and two-story development in the industrial Morena area, vegetation along the southern boundary of the Morena Pump Station site, and bermed land between the southern boundary of the neighborhood and Friars Road, significant visual landmarks such as the San Diego River, Mission Bay, or the ocean or scenic vistas are not visible from the Morena Pump Station site and immediate surrounding area.

Morena Wastewater Forcemain and Brine/Centrate Line

The alignment of the Morena Wastewater Forcemain and Brine/Centrate Line (Morena Pipelines) would follow the same alignment as depicted in Figure 3-1, Miramar Reservoir Alternative. The vast majority of the Morena Pipelines would be located within existing paved roadways. The alignment would begin in an open cut section near the north corner of the Morena Pump Station site, entering the public street right-of-way on Custer Street. The alignment would generally head north along Sherman Street, Morena Boulevard, and West Morena Boulevard through an industrial and commercial area of southwest Linda Vista. The alignment would cross under Tecolote Road bridge and Tecolote Creek (entering the community of Clairemont Mesa) and then continue generally heading north and east along ~~Ingulf~~ Jellett Street, Denver Street, Clairemont Drive, Clairemont Mesa Boulevard, and Genesee Avenue. With the exception of one- and two-story structures housing industrial/commercial businesses including City Lights, Bayside Paint Company, and Coronado Brewing Company, residential and commercial land uses generally abut the Morena Pipelines alignment through Clairemont Mesa.

At the northern boundary of the Clairemont Mesa community, the alignment would cross under San Clemente Canyon and beneath the elevated travel lanes of State Route 52 (SR-52) along Genesee Avenue and would enter the University Community Plan Area. North of SR-52, the alignment would continue along Genesee Avenue, traversing a landscape marked by single- and multi-family residential development and dotted with occasional neighborhood commercial shopping centers and a high school (i.e., University City High School). After crossing under railroad tracks within Rose Canyon, the alignment would continue north along Genesee Avenue and then head east on La Jolla Village Drive near the southern end of the Westfield University Town Center shopping mall. The alignment would then travel along La Jolla Village Drive and Towne Center Drive, traversing the residential and commercial office area that surrounds the Westfield University Town Center. At Executive Drive, the alignment would head east through an office complex and towers neighborhood prior to crossing Miramar Canyon and beneath Interstate 805 (I-805). The alignment would end at the existing North City Water Reclamation Plant (NCWRP).

Due to the presence of tall landscaping along I-5, views to significant visual landmarks such a Mission Bay are not visible along the Morena Boulevard segment of the Morena Pipelines alignment. Scenic vistas are also not available along the Morena Boulevard segment of the alignment. The remaining portion of the alignment traverses the developed Clairemont Mesa and University communities. With the exception of views to Mount Soledad at the Rose Canyon crossing, significant visual landmarks are not visible along the alignment and scenic vistas are generally not available.

North City Water Reclamation Plant Expansion

As proposed, the existing approximately 35-acre NCWRP would be expanded from a capacity of 30 million gallons per day (MGD) to 52 MGD (AADF) and 90 MGD on a peak daily flow, and additional wastewater flows would be delivered from the Morena Pump Station and the Morena Pipelines. The NCWRP is located east of I-805, south of Eastgate Mall, and north of Miramar Road in the University Community Plan Area. The existing facility is zoned for Residential use (RS-1-14) but is designated by the City's General Plan for Institutional & Public and Semi-Public Facilities use. In addition to I-805, landscaped and undeveloped canyon slopes are located west of the NCWRP (large office complexes and towers are located west of I-805) and primarily undeveloped military lands traversed by electrical distribution poles and line but otherwise covered with chaparral vegetation portion are located immediately to the east. As described in more detail below, east of the NCWRP Eastgate Mall is abutted on the north and east by two-story industrial concrete tilt-up buildings; concrete, glass, and wood exterior business park development; a Mission-style office complex; and a large, concrete and dark glass office development. Equipment rental yards and auto repair service businesses are also present along Eastgate Mall and contribute to the overall industrial character of the corridor.

As eastbound La Jolla Village Drive motorists pass Judicial Drive and proceed towards the Miramar Road I-805 span, distant mountainous terrain is briefly visible past the NCWRP to the northeast. Dark and hazy silhouettes of mountainous terrain also becomes visible to the east along the Miramar Road corridor as eastbound Miramar Road motorists travel past the southern boundary of the NCWRP. No other significant visual landmarks are visible near the NCWRP. Long easterly views to

Sorrento Valley development and mountain ridgelines are available to eastbound Eastgate Mall motorists over the I-805 span. No other significant visual landmarks are visible or scenic vistas are available near the NCWRP.

North City Pure Water Facility—Miramar Reservoir

The North City Pure Water Facility—Miramar Reservoir (NCPWF-MR) site is an undeveloped, previously disturbed, approximately 8.7-acre triangular-shaped parcel located north of Eastgate Mall and the existing NCWRP. The site is relatively flat; however, the northernmost portion of the site gradually slopes downward toward an existing electrical substation. The southern portion of the NCPWF-MR site is designated for (1) Institutional and (2) Public and Semi-Public Facilities use, and the northern portion of the site is designated for Industrial Employment use by the City of San Diego (City) General Plan. The site is zoned RS-1-4.

The NCPWF-MR site (and the NCWRP to the south) is located within the boundaries of University Community Plan Area and more specifically, within the Miramar Subarea. This area is dominated by mixes of industrial uses, distribution centers, and strip commercial. The University Community Plan describes the visual character of the area surrounding the NCPWF-MR site as “a chaotic conglomeration of structures and signs” (City of San Diego 2016). The visual impact of industrial development is a key issue in this area and has marked the visual environment.

The area east of I-805 and along Eastgate Mall is heavily disjointed visual environment. Heading east on Eastgate Mall from I-805, the NCPWF-MR site lies to the north and appears as disturbed chaparral dotted land scarred by an east–west and a north–south dirt road. The southernmost portion of the site is adjacent to the wide, exposed soil right-of-way of Eastgate Mall and is lined by wooden poles supporting electrical line, a long jersey barrier, and several utility boxes. Thin metal poles with wooden cross arms and numerous climbing pegs line the eastern boundary of the site (a transmission corridor with multiple transmission lines is located adjacent to the site) and route electrical transmission lines past the electrical substation locate north of the site. In addition to large, concrete tilt-up industrial warehouses, a building materials quarry is located immediately east of the transmission corridor. The area south of Eastgate Mall (the land occupied by the NCWRP) is substantially more aesthetically pleasing due to the large amount of tall, mature trees installed on the northern portion of the NCWRP property. Due to the combination of extensive landscape screening and substantial setbacks from the roadway, the NCWRP is minimally visible from Eastgate Mall.

Continuing east along Eastgate Mall, the current one- to two-story warehouses and industrial land uses create a distinctive boxy architectural style along the roadway with similar bulk, scale, and massing of buildings. Existing development includes a mix of industrial concrete tilt up buildings, concrete, glass, and wood exterior business park development, a Mission-style office complex, a large, concrete and dark glass office development, equipment rental yards, and auto repair service businesses. As such, the area currently lacks consistency in use of building materials and design theme. For the majority of this segment of Eastgate Mall, the shoulder is unimproved; pedestrian sidewalks appear along the southern frontages of the existing warehouses. To the south of the existing warehouses and east of the NCWRP is a large area of open space between Eastgate Mall and Miramar Road. This area of open space is characterized by rolling hills with chaparral vegetation. Standard size utility poles, along with very large transmission lines, travel in a north to south direction, perpendicular to Eastgate Mall. These utility lines contribute to the disjointed existing visual environment surrounding the NCPWF-MR site.

When looking toward the NCPWF-MR site from eastbound Eastgate Mall near the I-805 bridge, relatively distant views to the north and northeast to hazy mountain ridgelines are afforded to passing motorists due to the relatively flat topography of the site and the elevated nature of the roadway. However, from westbound Eastgate Mall and from both west- and east-bound Eastgate Mall immediately south of the site, views towards the site tend to be of scattered office buildings, electrical transmission infrastructure, and other industrial land uses to the north that as opposed to scenic resources such as mountainous terrain or the ocean.

The majority of potential viewers of the NCPWF-MR site would be motorists traveling past the site on Eastgate Mall, with the remainder of viewers being workers in the surrounding industrial and office centers. When a viewer is located on Eastgate Mall, west of I-805, views of the NCPWF-MR site are direct and unobstructed. Views of the NCPWF-MR site from the warehouses to the east are likely direct and unobstructed, depending on the location of the viewer. As the NCPWF-MR site is located at a higher elevation than I-805 to the west, only views of the very western edge of the site are afforded to freeway motorists.

North City Pure Water Facility Influent Pump Station

As proposed, the NCPWF Influent Pump Station would be constructed at the NCWRP and would convey tertiary effluent from the NCWRP to the NCPWF. A pump station and associated pipes and appurtenances are currently located within the site. These components would be removed prior to construction of the NCPWF Influent Pump Station. The site is relatively flat and in addition to concrete surfaces and facilities associated with the existing pump station, a portion of the proposed site consists of located within the boundaries of the site.

Because the NCPWF is located at a greater elevation than the I-805 travel lanes (the local terrain slopes upwards to the east and west of the interstate) and intervening slopes are landscaped with tall, mature pine, sycamore, and other indeterminate trees, passing motorists on I-805 are not afforded views to the site. Black wrought-iron fencing installed along the western perimeter of the facility and an existing facility building located immediately west of the NCPWF Influent Pump Station site also screens the site from view of passing interstate motorists. Lastly, existing views from I-805 near the NCPWF Influent Pump Station site are rather limited in extent due to sloping terrain to the east and west and mesa landforms to the north. Significant visual landmarks and scenic vistas are generally not available along I-805 near the proposed NCPWF Influent Pump Station site.

The NCPWF Influent Pump Station would be located primarily within the development footprint of the NCWRP Expansion site. Therefore, please refer to the North City Water Reclamation Plant Expansion section for a discussion of views to significant visual landmarks and scenic vistas available near the NCPWF Influent Pump Station.

North City Pure Water Pump Station

The North City Pure Water Pump Station (North City Pump Station) would be located on an approximate 0.75-acre site at the southeast corner of the NCPWF-MR site. Similar to the adjacent NCPWF-MR site, the existing terrain underlying the North City Pump Station is flat and is covered by disturbed land and disturbed chaparral vegetation. The site is located adjacent to an approximately 430-foot-wide electrical transmission corridor featuring tall tubular steel poles and geometric steel lattice structures that support high-voltage electrical lines. The transmission corridor is also traversed by several dirt and gravel access roads that provide access to the transmission line structures and the electrical substation located to the north of the NCPWF-MR. A tall and large, two-story concrete tilt-up industrial warehouse with a simple, unadorned south-facing façade is located immediately east of the transmission corridor and north of Eastgate Mall. Please refer to the North City Pure Water Facility—Miramar Reservoir discussion in regard to the existing character of development along Eastgate Mall near the North City Pump Station and availability of views across the site from Eastgate Mall and adjacent industrial land uses.

The North City Pump Station site is located immediately adjacent to the NCPWF-MR site. Therefore, please refer to the North City Pure Water Facility—Miramar Reservoir section for a discussion of views to significant visual landmarks and scenic vistas available near the North City Pump Station site.

Landfill Gas Pipeline

The proposed Landfill Gas (LFG) Pipeline would primarily be located on Marine Corps Air Station (MCAS) Miramar land and would generally follow the existing disturbed City utility easement (recycled water line, centrate line, sludge line, landfill gas line, and fiber optic cable) from the northern part of the Miramar Landfill to NCWRP. From the Miramar Landfill the LFG Pipeline would head west, paralleling a landfill road paralleling Johnson Road, and would then turn north and border the eastern boundary of a large public wholesale nursery. North of the nursery, the alignment would be following the corridor across Miramar Canyon and military lands traversed by dirt access roads and Metropolitan Transit System railroad track. The alignment would briefly enter the Miramar National Cemetery and would follow existing roadways (paved and dirt) towards the cemetery's service yard and eventually, Miramar Road. Lastly, the alignment would head west along Miramar Road for approximately 0.4 mile prior to interconnecting with the NCWRP.

Metro Biosolids Center Improvements

Located on 39 acres adjacent to the Miramar Landfill, the Metro Biosolids Center (MBC) is an existing wastewater biosolids treatment facility composed of multiple aboveground tanks; a large, two-story concrete and glass exterior operations building; rock landscaping; surface parking areas; and equipment laydown/storage yards. The developed site is relatively flat; however, the topography of lands to the north consists of a series of low hills separated by descending terrain that eventually falls into San Clemente Canyon. The MBC is designated for Military use by the City's General Plan and is zoned for agricultural-residential use (AR-1-1). The MBC is occasionally visible to passing SR-52 motorists; however, the presence of four large cylindrical tanks west of the MBC and rising and/or bermed chaparral-covered terrain east of the state route regularly interrupt available views to the facility.

The primary viewer groups afforded views to the MBC are north- and southbound motorists on SR-52. Views to the MBC from SR-52 are available along an approximate 0.4-mile segment of the state route beginning near the westbound SR-52 Convoy Street on-ramp. Although MBC facilities are visible along this segment of SR-52, facilities are regularly obscured by vegetation, bermed lands, and four large cylindrical storage tanks located south of the MBC. Although views to mountainous terrain in Mission Trails Regional Park is visible to eastbound SR-52 motorists along this segment, significant visual landmarks are not visible to westbound motorists. Also, due to the presence of developed industrial land uses in Kearny Mesa to the south and existing facilities (i.e., the MBC and aboveground storage tanks), rising terrain, and mounded landforms to the north, scenic vistas are not available near the MBC.

5.2.2.2 Miramar Reservoir Alternative

North City Pure Water Pipeline

As proposed, the alignment of the North City Pure Water Pipeline (North City Pipeline) primarily follows existing roadways between the NCPWF-MR and the Miramar Reservoir. The North City Pipeline would exit the NCPWF-MR and run east along Eastgate Mall prior to turning east on Miramar Road and heading towards Camino Santa Fe. The approximate 1.7-mile-long segment of the North City Pipeline located in the University Community Plan area would traverse an industrial neighborhood marked with warehouses, office complexes, auto repair businesses, self-storage businesses and home improvement showrooms. East of Camino Santa Fe, the North City Pipeline would traverse the Mira Mesa Community Plan area through a largely industrial setting featuring occasional commercial shopping centers and base housing associated with Marine Corps Air Station Miramar. At Kearny Villa Road, the proposed alignment would head north and then east, continuing through an industrial neighborhood populated by self –storage units, and one- and two-story business park development. At the eastern terminus of Via Excelencia, the alignment would continue to the east, crossing beneath I-15, and would briefly traverse the wooded (eucalyptus) northwestern corner of a private equestrian center (Scripps Miramar Saddlebreds). The remaining portion of the alignment would be located in the Scripps Miramar Ranch Community Plan area.

At Business Park Avenue, the alignment would then turn and head north through an industrial business park area. One- to two-story glass and stucco exterior office complexes, one-story concrete tilt-up buildings, and surface parking lots separated by natural turf areas and groves of tall and mature eucalyptus trees dot the Business Park Avenue adjacent landscape. With the exception of several vacant but previously graded lots, the remaining portion of the alignment along Carrol Canyon Road, Hoyt Park Drive, and across Scripps Lake Drive is located in a landscape marked by office development and an industrial facility (i.e., the Miramar Water Treatment Plant (WTP)). The alignment would cross the western end of the treatment facility and would terminate within the Miramar Reservoir.

Views to distant mountainous terrain along the Miramar Road corridor and views to Miramar Reservoir are available along the North City Pipeline alignment. No other significant visual landmarks are visible from public viewing locations along the North City Pipeline alignment. Also, due to the developed nature of the alignment corridors, scenic vistas are general not available along the North City Pipeline alignment.

Pure Water Dechlorination Facility

A Pure Water Dechlorination Facility (Dechlorination Facility) will be located at the end of Meanley Drive off the cul-de-sac on the City's property for the Miramar Recycled Water Storage Tank. The site encompasses Meanley Drive sidewalk and a low, yellow-bollard-lined slope that gradually rises to the south and is landscaped with low spreading shrubs and two maintained Brazilian pepper (*Schinus terebinthifolius*) trees. Surrounding land uses include the natural-turf-covered Miramar Recycled Water Storage Tank, which is surrounded by dense landscape trees and a paved perimeter roadway, a vacant yet disturbed lot surrounded by tall eucalyptus trees to the north, and lightly colored exterior concrete tilt-up office buildings to the northwest and east. Development within the surrounding area is generally setback from local roads (i.e., Meanley Drive and Hoyt Park Drive) that are lined with mature trees and low groundcover. Due to its proximity to Meanley Drive, views to the Dechlorination Facility site from passing motorists are unobstructed.

The area surrounding the Dechlorination Facility site includes two-story industrial office development, the City's property for the Miramar Recycled Water Storage Tank, the tree-lined Meanley Drive, and an undeveloped lot located south of the Scripps Miramar Ranch Library Center that is lined planted with tall eucalyptus trees along its western and southern boundary. Due to the presence of these elements, views to significant visual landmarks are not available and scenic vistas are not present.

Miramar Water Treatment Plant Improvements

The Miramar WTP is an existing industrial facility sited along the south shore of the Miramar Reservoir and north of Scripps Lake Drive. The cluster of visible facility buildings located in the southeastern corner of the site display grey concrete exterior walls that support slightly convex to arching, red metal roofs and overhangs. An approximate 600-foot-long portion of the site's frontage along

Scripps Lake Drive is lined with a black wrought iron fence that affords passing motorists views to facility buildings in the southeastern corner of the site. A vine covered concrete masonry unit wall is erected along the remaining portion of the Scripps Lake Drive frontage and helps to obscure portions of the facility from view. Scenic resources such as the Miramar Reservoir are not visible from Scripps Lake Drive due to the presence of WTP buildings and fencing and intervening terrain and vegetation. Further, vegetated slopes and landscaping help to screen portions of the Miramar WTP from view of residential neighborhoods located to the east of the facility.

With the exception of Miramar Reservoir and surrounding topography, significant visual landmarks are not visible from public viewing locations near Miramar WTP and in the immediate surrounding area. Due to its elevated position, views to the west from the walking/running path along the Miramar Reservoir dam are considered to be a publicly accessible scenic vista. No other public scenic vistas near Miramar WTP and in the immediate surrounding area are considered in this analysis. Further, because Miramar WTP improvements would be located east of the walking/running path along the Miramar Reservoir dam, improvements would not impact existing views. As such, views to the west from the walking/running path along the Miramar Reservoir dam are not further discussed in this Environmental Impact Report/Environmental Impact Statement (EIR/EIS).

5.2.2.3 San Vicente Reservoir Alternative

San Vicente Pure Water Pipeline

The majority of the San Vicente Pure Water Pipeline (San Vicente Pipeline) is proposed to be constructed using open cut construction methods. Trenchless construction is proposed at eight locations along the alignment: Clairemont Mesa Boulevard crossing, SR-163 crossing, I-15 crossing, Tierrasanta/San Diego River crossing, SR-52 crossing/San Diego River crossing, Carlton Oaks crossing, SR-67 crossing, and the Willow Ridge Bridge crossing.

As proposed, the San Vicente Pipeline alignment travels through the City of San Diego communities of Kearny Mesa and Tierrasanta, the City of Santee, the County of San Diego community of Lakeside, and unincorporated areas of the County of San Diego. While it would primarily be installed in roadways and existing utility right-of-way using open cut construction methods, trenchless construction methods would be used at select roadway, state route, interstate, river, and bridge crossings. Between the NCPWF—San Vicente Reservoir (SVR) (proposed to be located on the same 8.7-acre City-owned lot located north of the existing NCWRP as the NCPWF-MR) and MBC, the San Vicente Pipeline would repurpose an existing 36-inch recycled water line. From just south of the MBC, the San Vicente Pipeline would tunnel beneath SR-52 and then follow roadways including Copley Drive, Convoy Court, and Industrial Park Driveway through a largely industrial area of Kearny Mesa marked by RV sales lots, boxy one- and two-story (and occasionally three-story) concrete and CMU exterior office buildings, industrial business parks featuring unadorned concrete tilt-up buildings, and large, busy auto dealerships. The San Vicente Pipeline would then tunnel beneath SR-163 and continue along Lightwave Avenue, Ruffin Court, and Clairemont Mesa Boulevard through an industrial setting that is briefly interrupted by multifamily apartment complexes east of SR-163. After tunneling beneath I-15 and the San Diego River, San Vicente Pipeline would proceed easterly along roadways through the single-family residential western portion of Tierrasanta. East of Tierrasanta, the alignment would follow Mission Gorge Road through the Navajo community, passing through single-family residential areas and a canyon through undeveloped mountainous terrain.

The remaining segments of the San Vicente Pipeline would primarily be aligned within existing paved roadways through the City of Santee and community of Lakeside. The alignment would be located in local, primarily residential access roadways including Carlton Oaks Drive in Santee and Moreno Avenue in Lakeside and major roads such as Mast Boulevard. In addition to residential lands located adjacent to the alignment, limited commercial shopping centers, school facilities, office/distribution center development, extraction operations, and undeveloped mountainous terrain near the San Vicente Reservoir comprise the alignment adjacent landscape.

Significant visual landmarks visible from public viewing locations along the San Vicente Pipeline alignment include mountainous terrain in Mission Trails Regional Park, the San Vicente Reservoir, and mountainous terrain located south of San Vicente Reservoir. Long and expansive views along the and near the alignment are available north of the San Diego River crossing on Colina Dorado Drive, on the Rancho Mission Canyon Trail (located on undeveloped lands east of Mission Gorge Road and the Mission Trails Booster Station (MTBS) site), and on Mission Gorge Road near West Hills Parkway in Santee. However, since the San Vicente Pipeline would be installed underground, the San Vicente Pipeline would not affect the long and expansive nature of existing views from these locations.

Mission Trails Booster Station

The MTBS would be located along Mission Gorge Road north of a small commercial center. The site abuts single-family residential land uses to the east and is located atop an elevated landform that severely slopes to the west towards Mission Gorge Road. The surrounding area is characterized by a mix of single-family and multi-family residential land uses. The roadway and surrounding land uses are lined with mature landscaping that provide for visual relief and screening.

Similar to the San Vicente Pipeline, near the MTBS mountainous terrain in Mission Trails Regional Park is visible from Mission Gorge Road. Due to the presence of existing residential development located west of Mission Gorge Road, the San Diego River is not visible from Mission Gorge Road near the MTBS or from other publicly accessible vantage points in the immediate area near the MTBS site. Long and expansive views near the MTBS are available from the Rancho Mission Canyon Trail; however, because the MTBS site is located downslope from the trail, is sited adjacent to Mission Gorge Road, and would not block or obstruct views from the trail, the MTBS would not affect the long and expansive nature of existing views from the trail. As such, these views are not further discussed in this EIR/EIS.

5.2.3 REGULATORY FRAMEWORK

Federal

Federal Highway Administration's Visual Impact Assessment for Highway Projects

Although the Federal Highway Administration is not a responsible agency for the North City Project and the North City Project does not involve highway construction, the Federal Highway Administration's Visual Impact Assessment for Highway Projects methodology was reviewed and considered during preparation of the EIR/EIS. The methodology employed in the preparation of this EIR/EIS as it relates to aesthetics/visual effects and neighborhood character was partly based on the Visual Impact Assessment for Highway Projects process of establishment, inventory, analysis, and mitigation (FHWA 2016). The primary purpose of the establishment phase is to define/establish the study area of the analysis. The purpose of the inventory phase is to examine visual quality and character by describing the form, line, color, and texture of terrain, vegetation, and manmade development/structures. During the analysis phase project impacts are evaluated and lastly, mitigation and enhancement efforts to be included in the project design are addressed in the mitigation phase (FHWA 2016).

State

Caltrans Scenic Highway Program

The California Scenic Highway Program was created in 1963 with the intent "to protect and enhance the natural scenic beauty of California highways and adjacent corridors, through special conservation treatment." The state laws that govern the Scenic Highway Program are Sections 260 through 263 of the Streets and Highways Code. Highways that are eligible for state scenic designation consist of those listed in Section 263 of the Streets and Highways Code. If a highway is not listed in Section 263 of the Streets and Highway Code, it is the responsibility of local jurisdictions to apply for scenic highway eligibility and additions to Section 263 can only be made through legislative action (Caltrans 2008). The Scenic Highway Program includes both officially designated scenic highways and highways that are eligible for designation. A highway may be designated as scenic based upon aesthetic quality of viewable landscape, extent of views upon the natural landscape, and the degree to which development impedes these views.

Once a state route is in Streets and Highways Code Section 263, it may be nominated for official designation by the local governing body with jurisdiction over the lands adjacent to the proposed scenic highway. Preparation of a visual assessment and Scenic Highway Proposal (a proposal must include a letter of intent from the local governing body, topographic and zoning maps, and a narrative description of the scenic elements in the corridor that includes a discussion of any visual intrusions on scenic views) is required and must be submitted with the application to nominate eligible scenic highways for official designation (Caltrans 2008).

There are five officially designated state scenic highways in San Diego County and with the exception of the San Vicente Pipeline tunneling beneath SR-52, state scenic highways would not be crossed by Project components. SR-52 is a designated state scenic highway from near Santo Road to near Mast Boulevard (Caltrans 2016). In addition, due to proximity and the presence of intervening terrain, vegetation, and development, North City Project facilities would not be visible from officially designated state scenic highways.

Local

City of San Diego General Plan

The City's General Plan was unanimously adopted by the City Council on March 10, 2008, and was subsequently amended in 2010, 2012, and 2016. The General Plan builds upon many of the goals and strategies of the previously adopted 1979 General Plan, in addition to offering new policy direction in the areas of urban form, neighborhood character, and conservation. It recognizes and explains the critical role of the community planning program as the vehicle to tailor the "City of Villages" strategy for each neighborhood.

Urban Design Element. The purpose of this element is the guide physical development toward a desired scale and character that is consistent with the social, economic and aesthetic values of the City. According to the Urban Design Element, "San Diego's distinctive character results from its unparalleled natural setting, including beaches, bays, hills, canyons and mesas that allow the evolution of geographically distinct neighborhoods." (City of San Diego 2015a) The policies of the Urban Design Element listed below relate to grading, proximity to natural features, building materials, and architecture and as such, are particularly relevant to aboveground facilities/structures proposed by the North City Project:

- **Policy UD-A.3:** Design development adjacent to natural features in a sensitive manner to highlight and complement the natural environment in areas designated for development.
  - Integrate development on hillside parcels with the natural environment to preserve and enhance views, and protect areas of unique topography.
  - Minimize grading to maintain the natural topography, while contouring any landform alterations to blend into the natural terrain.
  - Provide increased setbacks from canyon rims or open space areas to ensure that the visibility of new development is minimized.
  - Screen development adjacent to natural features as appropriate so that development does not appear visually intrusive, or interfere with the experience within the open space system. The provision of enhanced landscaping adjacent to natural features could be used to soften the appearance of or buffer development from the natural features.
  - Use building and landscape materials that blend with and do not create visual or other conflicts with the natural environment in instances where new buildings abut natural areas. This guideline

must be balanced with a need to clear natural vegetation for fire protection to ensure public safety in some areas.

- Ensure that the visibility of new development from natural features and open space areas is minimized to preserve the landforms and ridgelines that provide a natural backdrop to the open space systems. For example, development should not be visible from canyon trails at the point the trail is located nearest to proposed development. Lines-of-sight from trails or the open space system could be used to determine compliance with this policy.
- Protect views from public roadways and parklands to natural canyons, resource areas, and scenic vistas.

- **Policy UD-A-5:** Design buildings that contribute to a positive neighborhood character and relate to neighborhood and community context.
  - Encourage designs that are sensitive to the scale, form, rhythm, proportions, and materials in proximity to commercial areas and residential neighborhoods that have a well-established, distinctive character.
  - Provide architectural features that establish and define a building's appeal and enhance the neighborhood character.
  - Encourage the use of materials and finishes that reinforce a sense of quality and permanence.
  - Provide architectural interest to discourage the appearance of blank walls for development. This would include not only building walls, but fencing bordering the pedestrian network, where some form of architectural variation should be provided to add interest to the streetscape and enhance the pedestrian experience. For example, walls could protrude, recess, or change in color, height or texture to provide visual interest (City of San Diego 2008a).

Land Use and Community Planning Element. The purpose of this element is to guide future growth and development into a sustainable citywide development pattern, while maintaining or enhancing quality of life in the City's communities. The Land Use and Community Planning Element addresses land use issues that apply to the City as a whole. The community planning program is the mechanism to refine citywide policies, designate land uses, and make additional site-specific recommendations as needed (City of San Diego 2015a). The Land Use and Community Planning Element establishes the structure to respect the diversity of each community and includes policy direction to govern the preparation of community plans.

Table LU-4, General Plan and Community Plan Land Use Categories, provides a description of each General Plan Land Use designation. The General Plan land use designation of lands underlying proposed aboveground structures (i.e., NCPWF, Pump Stations, etc.) is listed below:

- Morena Pump Station: Industrial Employment
- NCWRP: Institutional & Public/Semi-Public Facilities
- NCPWF and NCPWF Influent Pump Station: Industrial Employment and Institutional & Public/Semi-Public Facilities
- MBC: Military Use
- Dechlorination Facility: Industrial Employment
- MTBS: Commercial Employment, Retail & Services, and Open Space, Parks & Preserves

Proposed pipelines and the electrical transmission line are primarily proposed to be located in existing roadways and/or would follow existing access roads and utility corridors. Land use designation and zoning underlying lands associated with project components is discussed in greater detail in Section 5.1, Land Use.

University Community Plan

According to the University Community Plan, the dominant existing land uses include University of California–San Diego; University Towne Center; and research, corporate headquarters, and medical centers in the northern portion of the planning area. Further, and in regard to the Miramar Subarea of the community plan (the NCPWF, North City Pump Station, and NCPWF Influent Pump Station are proposed to be located in the Miramar Subarea; the NCWRP is an existing facility in the community plan boundaries), the community plan states that "visual character [of the area] will be dominated by open spaces with restricted industrial development" (City of San Diego 2016). Per the community plan, the subarea is developed with industrial uses, including warehouses, distribution centers, storage facilities, and automotive-related commercial uses in a typical strip commercial pattern. Speaking to the busy clustering of development, the community plan describes the industrial portion on the north side of Miramar Road as a "chaotic conglomeration of structures and signs." In regard to planning issues, the community plan states that "the uses and activities which may be provided in this subarea are very limited and must not concentrate large numbers of people." Lastly, to improve the visual image of the industrially developed portion of Miramar Road, the community plan makes the following recommendations:

- Screen mechanical equipment and appurtenances and outdoor storage and design the utilitarian aspects of development as integral parts of the overall design of the building. Fences, walls, grill work, etc. should be of a similar material and color as the main building.
- Painting buildings in the spectrum of earth tones which blend with the natural open space character of Subarea 3.
- Landscaping as required by the Citywide Landscape Ordinance.

In addition to the NCPWF and NCPWF Influent Pump Station, the NCWRP and segments of the Morena Pipelines, LFG Pipeline, and North City Pipeline are located within the University Community Plan area.

Mira Mesa Community Plan

The Mira Mesa community is located in the north-central portion of the City of San Diego (City of San Diego 2011a). As proposed, the North City Pipeline alignment would traverse the southern boundary of the community plan area (i.e., Miramar Road) which is characterized by industrial land uses (including warehouses and home improvement showrooms) occasionally separated by pockets of small, neighborhood commercial centers. Through the community, the North City Pipeline alignment is proposed entirely in existing paved roadways.

Relevant goals of the Mira Mesa Community Plan include:

- Industrial Land Use Goal: Improvement in the visual quality of industrial development in the community.
- Industrial Land Use Goal: Compliance with the Airport Land Use Compatibility Plan for MCAS Miramar (City of San Diego 2011a).

Clairemont Mesa Community Plan

Clairemont Mesa is an urbanized residential community with several shopping centers, parks and recreational facilities and educational opportunities (City of San Diego 2015b). The majority of the Morena Pipelines alignment is located in the Clairemont Mesa Community Plan area and because the Morena Pipelines would be installed in existing roadways through the community, the development standards and regulations of the community plan related to aesthetics/visual effects and neighborhood character are not particularly relevant to the North City Project.

Linda Vista Community Plan

Linda Vista is a primarily residential community with distinct neighborhoods including the Morena industrial area which encompasses the proposed Morena Pump Station site and surrounding industrial warehouses and offices in the southwestern corner of the Linda Vista Community Plan area. In regards to the existing uses in the Morena industrial area, the community plan states that these uses should be maintained as they "do not negatively affect surrounding neighborhoods" (City of San Diego 2011b). Relevant goals and policies of the Linda Vista Community Plan are listed below and are particularly applicable to the Morena Pump Station because it would entail the construction and operation of an aboveground facility:

- **Goal 2:** Retain the existing industrial area west of Morena Boulevard as a diverse employment base for the community and the City. Encourage more utilization of existing rail facilities.
- **Goal 3:** Ensure that development in the Morena area presents a positive visual image to viewers from Interstate 5, Pacific Highway, Interstate 8, and Mission Bay Park.

In addition to the Morena Pump Station, an approximately 0.75-mile-long segment of the Morena Pipelines is proposed primarily within existing roadways through the Linda Vista Community Plan area.

Mission Valley Community Plan

There are five functional categories which will require special design considerations and guidelines: 1) Design Protection Areas (San Diego river, hillsides, and landmarks; 2) Transportation corridors (freeways, major roads, local streets, parking areas, light rail transit and pedestrian areas); 3) Energy and Conservation (solar access, water and noise); 4) Street Graphics; and 5) Water Reclamation Plant (City of San Diego 2013). Piping associated with the Morena Pump Station located within Friars Road is located within this community plan area.

Kearny Mesa Community Plan

The community of Kearny Mesa is a major industrial and commercial center occupying a central location in the City of San Diego (City of San Diego 2011c). Approximately 4 miles of the San Vicente Pipeline alignment are proposed in the Kearny Mesa Community Plan area. Because the San Vicente Pipeline would be installed underground and in existing roadways through the community, the development standards and regulations of the community plan related to aesthetics/visual effects and neighborhood character are not particularly relevant to the North City Project.

Scripps Miramar Ranch Community Plan

Scripps Miramar Ranch is located in the north-central part of metropolitan San Diego (City of San Diego 2011d). The predominant land use in the planning area is residential although business park uses are concentrated in a southwestern portion of the community. Relevant overall community goals and industrial elements objectives include the following:

- Preserve and enhance the valued natural resources of the Scripps Miramar Ranch community: hills, trees, water resources, Miramar Reservoir, Carroll Canyon and subsidiary canyons; maximize public benefit through public ownership and/or access, both visual and physical, to these resources.
- Encourage development of open space buffers, which will effectively screen disparate elements of the community.
- Preserve the existing sense of neighborhood identity, which unifies residents and promotes social interaction and civic cooperation.
- Protect areas designated for industrial use from encroachment by incompatible land uses.

Tierrasanta Community Plan

Tierrasanta is primarily a residential community bordered by the San Diego River on the south and the canyon and mountainous terrain of Mission Trails Regional Park in the eastern plan area (City of San Diego 2011e). An approximately 3.3-mile-long segment of the San Vicente Pipeline alignment would primarily follow existing roadways through the Tierrasanta Community Plan area. Because the San Vicente Pipeline would be installed underground and in existing roadways through the community, the development standards and regulations of the community plan related to aesthetics/visual effects and neighborhood character are not particularly relevant to the North City Project.

Navajo Community Plan

Similar to Tierrasanta, Navajo is primarily a residential community that contains canyon and mountainous terrain in its eastern planning area and industrial businesses including extraction activities along the San Diego River (City of San Diego 2015c). The MTBS site is located atop elevated terrain along the mission Gorge Road corridor, adjacent to the single-family residential uses to the east and a single-story strip commercial center to the south. The following building proposals/policies of the Navajo Community Plan are pertinent to landform alteration and aesthetics and are thus, relevant to the North City Project:

- Encourage an overall quality of design by using materials, color and texture to give identity and focus to groups of structures within the urban landscape.
- Develop points of visual relief in the urban landscape through the use of open spaces and landscaping, building setbacks, building materials, location of public facilities, and street and right-of-way design and maintenance.
- Protect distinct areas and communities from intrusion and encroachment of incompatible uses.
- Minimize nuisances to adjacent uses through the control of noise, odor, pollution, vibration and glare, and the screening of unaesthetic land uses.

In addition to the MTBS, an approximately 3.5-mile-long segment of the San Vicente Pipeline alignment would be located within existing roadways through the Navajo Community Plan area.

City of San Diego Municipal Code

Chapter 13, Zones, of the City's Municipal Code establishes base zones in the City. Base zones are intended to regulate uses; to minimize the adverse impacts of these uses; to regulate the zone density and intensity; to regulate the size of buildings; and to classify, regulate, and address the relationships of uses of land and buildings. The Municipal Plan also identifies permitted, limited, and conditionally permitted uses within the base zones. The base zones of lands underlying aboveground structures/buildings associated with the North City Project are listed below:

- Morena Pump Station: Industrial-Light (IL-3-1; allows a mix of light industrial, office, and commercial uses)
- NCWRP: Residential-Single Unit (RS-1-14; Planned Urbanized Communities requiring minimum 5,000-square-foot lots)
- NCPWF and NCPWF Influent Pump Station: Residential-Single Unit (RS-1-14)
- MBC: Agricultural-Residential (AR-1-1; requires minimum 10-acre lots)
- Dechlorination Facility: Industrial Employment
- MTBS: Residential Single (RS-1-7; requiring minimum 5,000-square-foot lots) and Commercial Neighborhood (CN-1-2; allows development with an auto orientation and permits a maximum density of 1 dwelling unit for each 1,500 square feet of lot area

Refer to Section 5.1, Land Use, for detailed on- and off-site land uses and zoning designation discussion for all project components.

City of San Diego Council Policy 900-11: Inclusion of Public Art in Selected Capital Improvements Program and Redevelopment Agency Projects

The City Council is intended to promote the cultural heritage and artistic development of the City and to increase opportunities for City residents to experience and participate in the visual, performing, and literary arts by directing the inclusion of public art in Capital Improvements Program (CIP) projects initiated by the City (City of San Diego 2004). For eligible construction projects with eligible project funds in excess of $250,000 (costs for pre-design, design, construction, and contingency are included; land acquisition, furniture and fixtures are not included), 2% of the total amount appropriated for the construction project must fund the City's public art program. Further, when a CIP project is financed by an unrestricted funding source, the public art allocation authorized by the City Council may be transferred to the public art fund for public art at any location in the City. However, when a CIP project is financed in whole or in part by restricted funding sources such as enterprise funds, loans, or grants, the public art program allocation which is authorized by the City Council shall be expended only on works of public art placed at the project site.

The North City Project is subject to Council Policy 900-11, and yet-to-be defined or designed public art would be incorporated at the NCPWF.

City of Santee General Plan

As proposed, a segment of the San Vicente Pipeline would be located primarily within existing roadways including Carlton Oaks Drive, Mast Boulevard, and Riverside Drive through the City of Santee. Because the San Vicente Pipeline would be installed belowground and would not require aboveground structures or components, the aesthetic/visual effects and neighborhood character policies and regulations of the City of Santee General Plan are not particularly relevant to the North City Project.

County of San Diego General Plan Conservation Element

The County's General Plan Conservation Element establishes a County Scenic Highway System composed of freeways, highways, roads, or other vehicular rights-of-way along a corridor with considerable natural or otherwise scenic landscape (County of San Diego 2011). From the Santee city limits to SR-78 (excluding a segment in the City of Poway), SR-67 is a County-designated scenic highway. In addition, Willow and El Monte roads (from SR-67 to the southern end of the El Capitan Reservoir) is a County-designated scenic highway.

After tunneling beneath SR-67, an approximately 0.25-mile segment of the San Vicente Pipeline alignment would be located in or adjacent to Willows Road.

The following policies of the Conservation Element concern scenic resources and are applicable to components of the North City Project located in the County:

- **Policy COS-11.1: Protection of Scenic Resources.** Require the protection of scenic highways, corridors, regionally significant scenic vistas, and natural features, including prominent ridgelines, dominant landforms, reservoirs, and scenic landscapes.
- **Policy COS-11.7: Underground Utilities.** Require new development to place utilities underground and encourage "undergrounding" in existing development to maintain viewsheds, reduce hazards associated with hanging lines and utility poles, and to keep pace with current and future technologies.

Lakeside Community Plan

Lakeside is essentially a rural residential community that has experienced pressure to urbanize and accommodate suburban residential developments. The segment of the San Vicente Pipeline alignment through Lakeside is located within a rural residential neighborhood comprised of larger lots featuring modest residences, equestrian facilities, and landscaping. An overhead electrical distribution line supported by tall wood poles is aligned along Morena Avenue and parallels the San Vicente Pipeline alignment to the San Vicente Reservoir.

Although a segment of the San Vicente Pipeline alignment is sited in the County of San Diego community of Lakeside, the San Vicente Reservoir is owned and operated by the City of San Diego.

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5.3 AIR QUALITY AND ODOR

5.3.1 INTRODUCTION

The purpose of this section is to estimate and evaluate the potential air quality impacts associated with implementation of the North City Project relative to the City of San Diego's California Environmental Quality Act Significance Determination Thresholds (City of San Diego 2016). The following information is based on the Air Quality Technical Report for the North City Project, City of San Diego, California prepared by Dudek, dated ~~July 2017~~February 2018 (provided as Appendix B).

5.3.2 ENVIRONMENTAL SETTING

Climate and Topography

The weather of the San Diego region, as in most of Southern California, is influenced by the Pacific Ocean and its semi-permanent high-pressure systems that result in dry, warm summers and mild, occasionally wet winters. The average temperature ranges (in degrees Fahrenheit (°F)) from the mid-40s to the high 90s. Most of the region's precipitation falls from November to April, with infrequent (approximately 10%) precipitation during the summer. The average seasonal precipitation along the coast is approximately 10 inches; the amount increases with elevation as moist air is lifted over the mountains (WRCC 2016).

The topography in the San Diego region varies greatly, from beaches on the west to mountains and desert on the east; along with local meteorology, it influences the dispersal and movement of pollutants in the basin. The mountains to the east prohibit dispersal of pollutants in that direction and help trap them in inversion layers.

The interaction of ocean, land, and the Pacific High Pressure Zone maintains clear skies for much of the year and influences the direction of prevailing winds (westerly to northwesterly). Local terrain is often the dominant factor inland, and winds in inland mountainous areas tend to blow through the valleys during the day and down the hills and valleys at night.

San Diego Air Basin Climatology

The North City Project area is located within the San Diego Air Basin (SDAB) and is subject to the San Diego Air Pollution Control District (SDAPCD) guidelines and regulations. The SDAB is one of 15 air basins that geographically divides the State of

California. The SDAB is currently classified as a federal nonattainment area for ozone (O_3) and a state nonattainment area for particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), and ozone (O_3).

The SDAB lies in the southwest corner of California and comprises the entire San Diego region, covering 4,260 square miles, and is an area of high air pollution potential. The basin experiences warm summers, mild winters, infrequent rainfalls, light winds, and moderate humidity. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds.

The climate also drives the pollutant levels. The climate of San Diego is classified as Mediterranean, but it is incredibly diverse due to the topography. The climate is dominated by the Pacific High pressure system that results in mild, dry summers and mild, wet winters. The Pacific High drives the prevailing winds in the SDAB. The winds tend to blow onshore during the daytime and offshore at night. In the fall months, the SDAB is often impacted by Santa Ana winds. These winds are the result of a high pressure system over the Nevada–Utah region that overcomes the westerly wind pattern and forces hot, dry winds from the east to the Pacific Ocean (SDAPCD 2015a). The winds blow the SDAB's pollutants out to sea. However, a weak Santa Ana can transport air pollution from the SDAB and greatly increase the San Diego O_3 concentrations. A strong Santa Ana also primes the vegetation for firestorm conditions.

The SDAB experiences frequent temperature inversions. Subsidence inversions occur during the warmer months as descending air associated with the Pacific High Pressure Zone meets cool marine air. The boundary between the two layers of air creates a temperature inversion that traps pollutants. 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. As the pollutants become more concentrated in the atmosphere, photochemical reactions occur that produce O_3, which contributes to the formation of smog. Smog is a combination of smoke and other particulates, O_3, hydrocarbons, oxides of nitrogen (NO_x), and other chemically reactive compounds, which, under certain conditions of weather and sunlight, may result in a murky brown haze that causes adverse health effects (CARB 2014).

Light daytime winds, predominately from the west, further aggravate the condition by driving air pollutants inland, toward the mountains. During the fall and winter, air quality problems are created due to carbon monoxide (CO) and NO_x emissions. CO concentrations are generally higher in the morning and late evening. In the morning, CO levels are elevated due to cold temperatures and the large number of motor vehicles traveling. Higher CO levels during the late evenings are a result of stagnant atmospheric conditions trapping CO in the area. Since CO is produced almost entirely from automobiles, the highest CO concentrations in the basin are associated with heavy traffic. Nitrogen dioxide (NO_2) levels are also generally higher during fall and winter days.

~~Under certain conditions, atmospheric oscillation results in the offshore transport of air from the Los Angeles region to San Diego County. This often produces high O_3 concentrations, as measured at air pollutant monitoring stations within the County. The transport of air pollutants from Los Angeles to San Diego has also occurred within the stable layer of the elevated subsidence inversion, where high levels of O_3 are transported.~~

Sensitive Receptors

Air quality varies as a direct function of the amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Air quality problems arise when the rate of pollutant emissions exceeds the rate of dispersion. Reduced visibility, eye irritation, and adverse health impacts upon those persons termed sensitive receptors are the most serious hazards of existing air quality conditions in the area.

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air pollution-sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (CARB 2005). In regards to the analysis of potential impacts to sensitive receptors, the City specifically recommends consideration of sensitive receptors in locations such as day care centers, schools, retirement homes, and hospitals, or medical patients in residential homes close to major roadways or stationary sources, which could be impacted by air pollutants.

The North City Project's proposed pipelines would have segments that would be located within 1,000 feet of sensitive receptors such as those previously listed (see Figures 5.3-1A through 5.3-1D). However, the treatment facilities and would not be located within 1,000 feet of any sensitive land uses.

5.3.3 POLLUTANTS AND EFFECTS

5.3.3.1 Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include: O_3, NO_2, CO, sulfur dioxide (SO_2), PM_{10}, $PM_{2.5}$, and lead (Pb). These pollutants are discussed in the following paragraphs.[1] In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

Ozone. O_3 is a colorless gas that is formed in the atmosphere when volatile organic compounds (VOCs), sometimes referred to as reactive organic gases, and NO_x react in the presence of ultraviolet sunlight. O_3 is not a primary pollutant; it is a secondary pollutant formed by complex interactions of two pollutants directly emitted into the atmosphere. The primary sources of VOCs and NO_x, the precursors of O_3, are automobile exhaust and industrial sources. Meteorology and terrain play major roles in O_3 formation and ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. Short-term exposures (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes.

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1 The following descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on the U.S. Environmental Protection Agency's "Criteria Air Pollutants" (EPA 2017) and the California Air Resources Board's "Glossary of Air Pollutant Terms" (CARB 2014) published information.

Nitrogen Dioxide. Most NO_2, like O_3, is not directly emitted into the atmosphere but is formed by an atmospheric chemical reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_x and are major contributors to O_3 formation. High concentrations of NO_2 can cause breathing difficulties and result in a brownish-red cast to the atmosphere with reduced visibility. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis, and some increase in bronchitis in children (2 and 3 years old) has also been observed at concentrations below 0.3 parts per million by volume (ppm).

Carbon Monoxide. CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, such as the North City Project area, automobile exhaust accounts for the majority of CO emissions. CO is a non-reactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February. The highest levels of CO typically occur during the colder months of the year when inversion conditions are more frequent. In terms of health, CO competes with oxygen, often replacing it in the blood, thus reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can be dizziness, fatigue, and impairment of central nervous system functions.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 is an irritant gas that attacks the throat and lungs and can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also yellow plant leaves and erode iron and steel.

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Fine particulate matter, or $PM_{2.5}$, is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SO_x), NO_x, and VOC. Inhalable or coarse particulate matter, or PM_{10}, is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances, such as Pb, sulfates, and nitrates, can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport absorbed gases, such as chlorides or ammonium, into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

Lead. Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline, the manufacturing of batteries, paint, ink, ceramics, and ammunition and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phase-out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emission sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance including intelligence quotient performance, psychomotor performance, reaction time, and growth.

5.3.3.2 Non-criteria Pollutants

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic noncancer health effects. A toxic substance released into the air is considered a toxic air contaminant (TAC). Examples include certain aromatic and chlorinated hydrocarbons, formaldehyde, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources such as automobiles; and area sources such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced either on short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel Particulate Matter. Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. CARB classified "particulate emissions from diesel-fueled engines" (DPM) as a TAC in August 1998 (17 CCR 93000). DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars, and off-road diesel engines including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000). To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000 (CARB 2000).

Odorous Compounds. Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. Known as odor fatigue, a person can become desensitized to almost any odor and recognition may only occur with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, there are no quantitative or formulaic methodologies to determine if potential odors would have a significant impact. Examples of land uses and industrial operations that are commonly associated with odor complaints include agricultural uses, wastewater treatment plants, food processing facilities, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. In addition to the odor source, the distance between the sensitive receptor(s) and the odor source, as well as the local meteorological conditions, are considerations in the potential for a project to frequently expose the public to objectionable odors. Although localized air quality impacts are focused on potential impacts to sensitive receptors, such as residences and schools, other land uses where people may congregate (e.g., workplaces), or uses with the intent to attract people (e.g., restaurants and visitor-serving accommodations), should also be considered in the evaluation of potential odor nuisance impacts.

Valley Fever. Coccidioidomycosis, more commonly known as "Valley Fever," is an infection caused by inhalation of the spores of the *Coccidioides immitis* fungus, which grows in the soils of the southwestern United States. The fungus is very prevalent in the soils of California's San Joaquin Valley, particularly in Kern County. Kern County is considered a highly endemic county (i.e., more than 20 cases annually of Valley Fever per 100,000 people) based on the incidence rates reported through 2016 (California Department of Public Health 2017). The ecologic factors that appear to be most conducive to survival and replication of the spores are high summer temperatures, mild winters, sparse rainfall, and alkaline, sandy soils.

San Diego County is not considered a highly endemic region for Valley Fever as the latest report from the California Department of Public Health listed San Diego County as having 4.4 cases per 100,000 people (California Department of Public Health 2017). Similarly, among the total reported incidents of Valley Fever in San Diego County from 2007 through 2016, only 7% of the cases were in in the zip codes where the project is located (County of San Diego 2017).

Local Air Quality

SDAB Attainment Designation

An area is designated in attainment when it is in compliance with the National Ambient Air Quality Standards (NAAQS) and/or California Ambient Air Quality Standards (CAAQS). These standards are set by the U.S. Environmental Protection

Agency (EPA) or California Air Resources Board (CARB) for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare. The criteria pollutants of primary concern that are considered in this analysis are O_3, NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$. Although there are no ambient standards for VOCs or NO_x, they are important as precursors to O_3.

The portion of the SDAB where the project site is located is designated by the EPA as an attainment area for the 1997 8-hour NAAQS for O_3 and as a marginal nonattainment area for the 2008 8-hour NAAQS for O_3.The SDAB is designated in attainment for all other criteria pollutants under the NAAQS with the exception of PM_{10}, which was determined to be unclassifiable. The SDAB is currently designated nonattainment for O_3 and particulate matter, PM_{10} and $PM_{2.5}$, under the CAAQS. It is designated attainment for the CAAQS for CO, NO_2, SO_2, lead, and sulfates.

Table 5.3-1, SDAB Attainment Classification, summarizes the SDAB's federal and state attainment designations for each of the criteria pollutants.

Table 5.3-1
SDAB Attainment Classification

Pollutant	Federal Designation[a]	State Designation[b]
O_3 (1 hour)	Attainment (Maintenance)[c]	Nonattainment
O_3 (8 hours – 1997) (8 hours – 2008)	Attainment (Maintenance) Nonattainment (Moderate)	Nonattainment
CO	Unclassifiable/Attainment[d]	Attainment
PM_{10}	Unclassifiable/Attainment	Nonattainment
$PM_{2.5}$	Unclassifiable/Attainment	Nonattainment
NO_2	Unclassifiable/Attainment	Attainment
SO_2	Attainment	Attainment
Pb	Attainment	Attainment
Sulfates	(no federal standard)	Attainment
Hydrogen sulfide	(no federal standard)	Unclassified
Visibility-reducing particles	(no federal standard)	Unclassified

Notes:

[a] EPA 2014

[b] CARB 2016a

[c] The federal 1-hour standard of 0.12 was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in State Implementation Plans.

[d] The western and central portions of the SDAB are designated attainment, while the eastern portion is designated unclassifiable/attainment.

Air Quality Monitoring Data

The SDAPCD operates a network of ambient air monitoring stations throughout San Diego County, which measure ambient concentrations of pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. The SDAPCD monitors air quality conditions at 10 locations throughout the basin. The Overland Avenue monitoring station represents the closest monitoring station to the project for concentrations for all pollutants, except CO and SO_2. The downtown San Diego monitoring station at Beardsley Street is the most representative location where CO concentrations are monitored and the Redwood Avenue monitoring station is most representative for SO_2. Ambient concentrations of pollutants from 2013 through 2015 are presented in Table 5.3-2, Ambient Air Quality Data. The number of days exceeding the ozone ambient air quality standards is shown in Table 5.3-3, Frequency of Air Quality Standard Violations; no ambient air quality standards for other pollutants were reported during the monitoring period. The state 8-hour O_3 standard was exceeded in 2013 and 2014, and the state 1-hour O_3 standard was exceeded in 2014, while the federal 8-hour O_3 standard was exceeded in 2014. Air quality within the project region was in compliance with both CAAQS and NAAQS for NO_2, CO, PM_{10}, $PM_{2.5}$, and SO_2 during this monitoring period.

Table 5.3-2
Ambient Air Quality Data

Pollutant	Averaging Time	2013	2014	2015	Most Stringent Ambient Air Quality Standard	Monitoring Station
O_3	8 hours	0.071 ppm	0.082 ppm	0.070 ppm	0.070 ppm	Kearny Villa Road
	1 hour	0.081 ppm	0.099 ppm	0.077 ppm	0.090 ppm	
NO_2	Annual	0.011 ppm	0.010 ppm	0.090 ppm	0.030 ppm	Kearny Villa Road
	1 hour	0.067 ppm	0.051 ppm	0.051 ppm	0.180 ppm	
CO	8 hours*	2.10 ppm	1.90 ppm	1.90 ppm	9.0 ppm	Beardsley Street
	1 hour*	3.0 ppm	2.7 ppm	2.6 ppm	20 ppm	
SO_2	Annual*	0.00014 ppm	0.00014 ppm	0.00011 ppm	0.030 ppm	Redwood Avenue
	24 hours*	0.0006 ppm	0.0003 ppm	0.0004 ppm	0.040 ppm	
PM_{10}	Annual	20.0 $\mu g/m^3$	19.5 $\mu g/m^3$	16.7 $\mu g/m^3$	20 $\mu g/m^3$	Kearny Villa Road
	24 hours	39.0 $\mu g/m^3$	39.0 $\mu g/m^3$	39.0 $\mu g/m^3$	50 $\mu g/m^3$	
$PM_{2.5}$	Annual	8.3 $\mu g/m^3$	8.1 $\mu g/m^3$	7.2 $\mu g/m^3$	12 $\mu g/m^3$	Kearny Villa Road
	24 hours	22.0 $\mu g/m^3$	20.2 $\mu g/m^3$	25.7 $\mu g/m^3$	35 $\mu g/m^3$	

Sources: CARB 2016b, EPA 2016a.

Notes:
ppm = parts per million; μg/m^3 = micrograms per cubic meter
Data represent maximum values.
* Data were taken from EPA 2016a.

Table 5.3-3
Frequency of Air Quality Standard Violations

Monitoring Site	Year	Number of Days Exceeding Standard		
		State 1-Hour O_3	*State 8-Hour O_3*	*National 8-Hour O_3*
Overland Avenue	2013	0	1	0
	2014	1	4	1
	2015	0	0	0

Source: CARB 2016b.

5.3.4 REGULATORY FRAMEWORK

Federal

Clean Air Act

The federal Clean Air Act (CAA), passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the CAA, including the setting of NAAQS for major air pollutants, hazardous air pollutant standards, approval of state attainment plans, motor vehicle emission standards, stationary source emission standards and permits, acid rain control measures, stratospheric O_3 protection, and enforcement provisions.

NAAQS are established by the EPA for "criteria pollutants" under the CAA, which are O_3, CO, NO_2, SO_2, particulate matter (PM_{10} and $PM_{2.5}$), and Pb.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The CAA requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a State Implementation Plan that demonstrates how those areas will attain the standards within mandated time frames.

Federal General Conformity Rule

Federal projects are subject to either the Transportation Conformity Rule (40 CFR, Part 51, Subpart T), which applies to federal highway and transit projects, or the General Conformity Rule (40 CFR, Part 51, Subpart W), which applies to all other federal projects. The General Conformity Rule implements Section 176(c) of the federal CAA, which requires that a federal agency ensure conformity with an approved State Implementation Plan for air emissions generated by an agency action. Conformity determinations for federal actions are required for each pollutant where the total of direct and indirect emissions in a nonattainment or maintenance area caused by a federal action equaling or exceeding 100 tons per year for affected pollutants. Because the North City Project area is located within the SDAB, which is in nonattainment for O_3 and a maintenance area for carbon monoxide, conformity determination requirements do apply. If a project's emissions would exceed the *de minimis* thresholds for CO, NO_X, or VOCs, the project would be considered to have a significant impact related to O_3.

Hazardous Air Pollutants

The 1977 federal CAA Amendments required the EPA to identify National Emission Standards for Hazardous Air Pollutants to protect public health and welfare. Hazardous air pollutants (HAPs) include certain VOCs, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 federal CAA Amendments, which expanded the control program for HAPs, 189 substances and chemical families were identified as HAPs.

State

California Clean Air Act

The California CAA was adopted in 1988 and establishes the state's air quality goals, planning mechanisms, regulatory strategies, and standards of progress. Under the California CAA, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB is responsible for ensuring implementation of the California CAA, responding to the federal CAA, and regulating emissions from motor vehicles and consumer products. Pursuant to the authority granted to it, CARB has established CAAQS, which are generally more restrictive than the NAAQS.

The NAAQS and CAAQS are presented in Table 5.3-4, Ambient Air Quality Standards.

Table 5.3-4
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary*[c,d]	*Secondary*[c,e]
O_3	1 hour	0.09 ppm (180 μg/m^3)	—	Same as Primary Standard[f]
	8 hours	0.070 ppm (137 μg/m^3)	0.070 ppm (137 μg/m^3)[f]	
NO_2[g]	1 hour	0.18 ppm (339 μg/m^3)	0.100 ppm (188 μg/m^3)	Same as Primary Standard
	Annual Arithmetic Mean	0.030 ppm (57 μg/m^3)	0.053 ppm (100 μg/m^3)	
CO	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	None
	8 hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	
SO_2[h]	1 hour	0.25 ppm (655 μg/m^3)	0.075 ppm (196 μg/m^3)	—
	3 hours	—	—	0.5 ppm (1,300 μg/m^3)
	24 hours	0.04 ppm (105 μg/m^3)	0.14 ppm (for certain areas)[g]	—
	Annual	—	0.030 ppm (for certain areas)[g]	—
PM_{10}[i]	24 hours	50 μg/m^3	150 μg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	20 μg/m^3	—	
$PM_{2.5}$[i]	24 hours	—	35 μg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	12 μg/m^3	12.0 μg/m^3	15.0 μg/m^3
Lead[j,k]	30-day Average	1.5 μg/m^3	—	—
	Calendar Quarter	—	1.5 μg/m^3 (for certain areas)[k]	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 μg/m^3	
Hydrogen sulfide	1 hour	0.03 ppm (42 μg/m^3)	—	—
Vinyl chloride[j]	24 hours	0.01 ppm (26 μg/m^3)	—	—
Sulfates	24- hours	25 μg/m^3	—	—

Table 5.3-4
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary*[c,d]	*Secondary*[c,e]
Visibility-reducing particles	8 hour (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to the number of particles when the relative humidity is less than 70%	—	—

Source: CARB 2016a.

Notes: μg/m³ = micrograms per cubic meter; CO = carbon monoxide; mg/m³= milligrams per cubic meter; NO_2 = nitrogen dioxide; O_3 = ozone; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns; ppm = parts per million by volume; SO_2 = sulfur dioxide

[a] California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m³ is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25° Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

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

[f] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[g] To attain the national 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb. California standards are in units of ppm. To directly

compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

h On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the national 1-hour standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

i On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 $\mu g/m^3$ were also retained. The form of the annual primary and secondary standards is the annual mean averaged over 3 years.

j CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

k The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

Toxic Air Contaminants

California regulates TACs primarily through the Tanner Air Toxics Act (Assembly Bill 1807) and the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (Assembly Bill 2588). The Tanner Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified over 21 TACs and has adopted the EPA's list of HAPs as TACs. Once a TAC is identified, CARB then adopts an airborne toxics control measure for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate best available control technology for toxics to minimize emissions. None of the TACs identified by CARB have a safe threshold.

Under the Air Toxics "Hot Spots" Act, existing facilities that emit air pollutants above specified levels were required to (1) prepare a TAC emission inventory plan and report, (2) prepare a risk assessment if TAC emissions were significant, (3) notify the public of significant risk levels, and (4) if health impacts were above specified levels, prepare and implement risk reduction measures.

California Health and Safety Code Section 41700

Section 41700 of the Health and Safety Code states that a person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any of those persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property. This section also applies to sources of objectionable odors.

Local

San Diego Air Pollution Control District

While CARB is responsible for the regulation of mobile emission sources within the state, local air quality management districts and air pollution control districts are responsible for enforcing standards and regulating stationary sources. The North City Project site is located within the SDAB and is subject to the guidelines and regulations of the SDAPCD.

In San Diego County, O_3 and particulate matter are the pollutants of main concern, since exceedances of CAAQS for those pollutants are experienced here in most years. For this reason, the SDAB has been designated as a nonattainment area for the state PM_{10}, $PM_{2.5}$, and O_3 standards. The SDAB is also a federal O_3 attainment (maintenance) area for 1997 8-hour O_3 standard, an O_3 nonattainment area for the 2008 8-hour O_3 standard, and a CO maintenance area (western and central part of the SDAB only). The North City Project area is in the CO maintenance area.

The SDAPCD and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The County Regional Air Quality Strategy (RAQS) was initially adopted in 1991 and is updated on a triennial basis, most recently in 2009 (SDAPCD 2009a). The RAQS outlines SDAPCD's plans and control measures designed to attain the state air quality standards for O_3. The RAQS relies on information from CARB and SANDAG, including mobile and area source emissions, and information regarding projected growth in the cities and San Diego County, to project future emissions and determine the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by the cities and San Diego County as part of the development of their general plans.

In December 2016, SDAPCD revised the RAQS for San Diego County. Since 2007, the San Diego region reduced daily VOC emissions and NO_x emissions by 3.9% and 7.0% respectively; the SDAPCD expects to continue reductions through 2035. These reductions were achieved through implementation of six VOC control measures and three NO_x control measures adopted in the SDAPCD's 2009 RAQS; in addition, the SDAPCD is considering additional measures, including three VOC measures and four control measures to reduce 0.3 daily ton of VOC and 1.2 daily tons of NO_x, provided they are found to be feasible region-wide. In addition, the SDAPCD has implemented nine incentive-based programs, has worked with SANDAG to implement regional transportation control measures, and has reaffirmed the state emission offset repeal.

The Eight-Hour Ozone Attainment Plan for San Diego County indicates that local controls and state projects would allow the region to reach attainment of the federal 1997 8-hour O_3 standard by 2009 (SDAPCD 2007). In this plan, SDAPCD relies on the RAQS to demonstrate how the region will comply with the federal O_3 standard. The RAQS details how the region will manage and reduce O_3 precursors (oxides of nitrogen (NO_x) and VOCs) by identifying measures and regulations intended to reduce these contaminants. The control measures identified in the RAQS generally focus on stationary sources; however, the emissions inventories and projections in the RAQS address all potential sources, including those under the authority of CARB and the EPA. Incentive projects for reduction of emissions from heavy-duty diesel vehicles, off-road equipment, and school buses are also established in the RAQS. According to the Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard for San Diego County, the SDAB did not reach attainment of the federal 1997 standard until 2011 (SDAPCD 2012). This plan, however, demonstrates the region's attainment of the 1997 O_3 NAAQS and outlines the plan for maintaining attainment status.

Also in December 2016, the SDAPCD released an updated 8-hour ozone attainment plan for San Diego County. Currently, the County is in moderate nonattainment for the 2008 NAAQS. As a nonattainment area, the County must establish a State Implementation Plan that outlines how the County will reach an attainment status. As documented in the 2016 8-hour ozone attainment plan, the County has a likely chance of obtaining attainment due to the transition to low emission cars, stricter new source review rules, and continuing the requirement of general conformity for military growth and the San Diego International Airport. The County will also continue emission control measures: ongoing implementation of existing regulations in ozone precursor reduction to stationary and area-wide sources, subsequent inspections of facilities and sources, and the adoption of laws requiring Best Available Retrofit Control Technology for control of emissions.

In December 2005, SDAPCD prepared a report titled Measures to Reduce Particulate Matter in San Diego County to address implementation of Senate Bill 656 in San Diego County (Senate Bill 656 required additional controls to reduce ambient concentrations of PM_{10} and $PM_{2.5}$) (SDAPCD 2005). In the report, SDAPCD evaluated the implementation of source-control measures that would reduce particulate matter emissions associated with residential wood combustion; various construction activities including earthmoving, demolition, and grading; bulk material storage and handling; carryout and trackout removal and cleanup methods; inactive disturbed land; disturbed open areas; unpaved parking lots/staging areas; unpaved roads; and windblown dust.

As stated earlier, the SDAPCD is responsible for planning, implementing, and enforcing federal and state ambient standards in the SDAB. The following rules and regulations apply to all sources in the jurisdiction of SDAPCD:

- **SDAPCD Regulation IV: Prohibitions; Rule 51: Nuisance.** Prohibits the discharge, from any source, of such quantities of air contaminants or other materials that cause or have a tendency to cause injury, detriment, nuisance, annoyance to people and/or the public, or damage to any business or property (SDAPCD 1976).
- **SDAPCD Regulation IV: Prohibitions; Rule 55: Fugitive Dust.** Regulates fugitive dust emissions from any commercial construction or demolition activity capable of generating fugitive dust emissions, including active operations, open storage piles, and inactive disturbed areas, as well as track-out and carry-out onto paved roads beyond a project site (SDAPCD 2009b).
- **SDAPCD Regulation IV: Prohibitions; Rule 67.0.1: Architectural Coatings.** Requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories (SDAPCD 2015b).

City of San Diego

The San Diego Municipal Code addresses air quality and odor impacts in Chapter 14, Article 2, Division 7 paragraph 142.0710, "Air Contaminant Regulations," which states: "Air contaminants including smoke, charred paper, dust, soot, grime, carbon, noxious acids, toxic fumes, gases, odors, and particulate matter, or any emissions that endanger human health, cause damage to vegetation or property, or cause soiling shall not be permitted to emanate beyond the boundaries of the premises upon which the use emitting the contaminants is located" (City of San Diego 2000).

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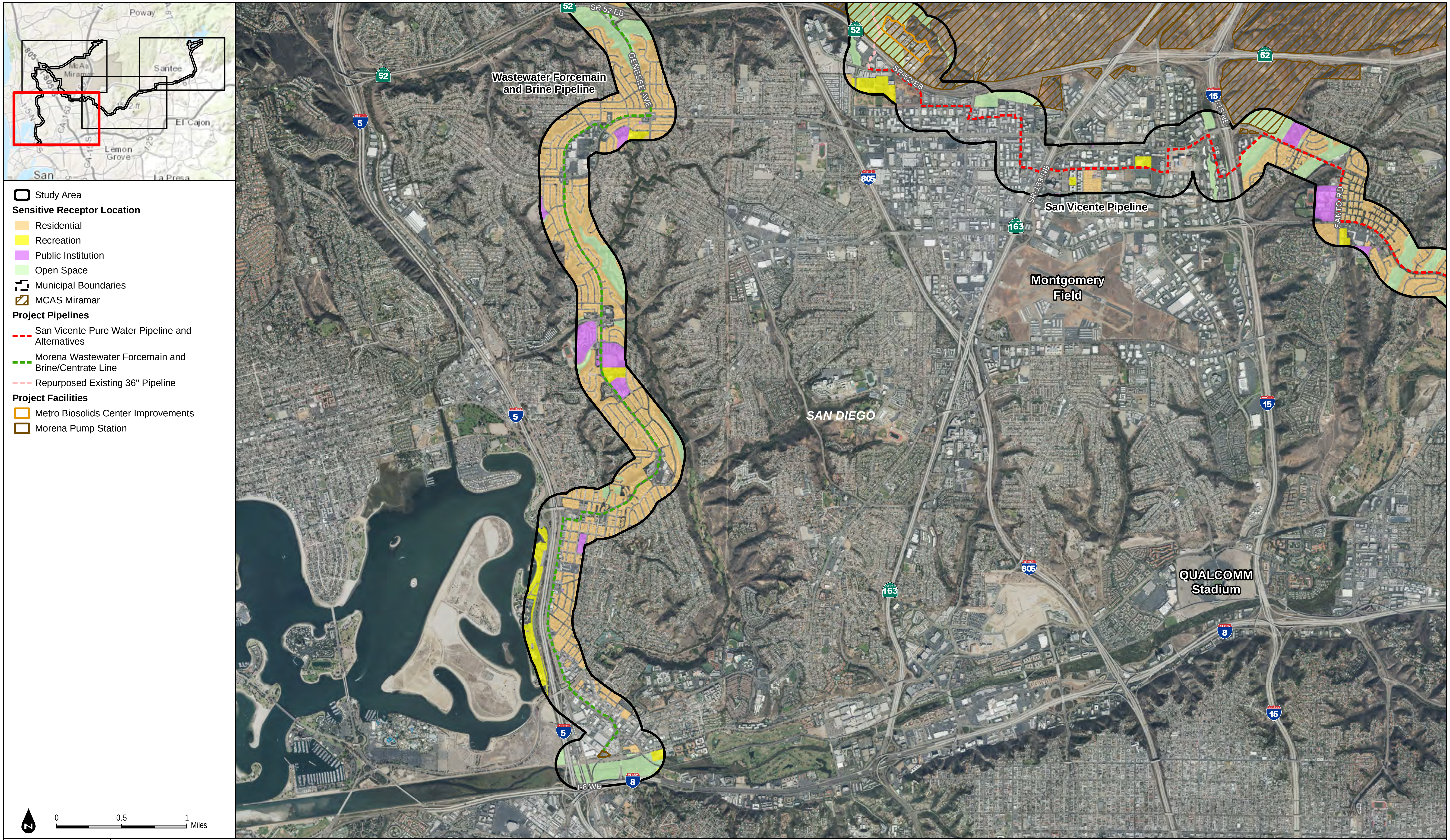

DUDEK

SOURCE: SanGIS 2016; SANDAG 2016

FIGURE 5.3-1A

Air Quality Sensitive Receptor Locations

Pure Water San Diego Program North City Project EIR/EIS

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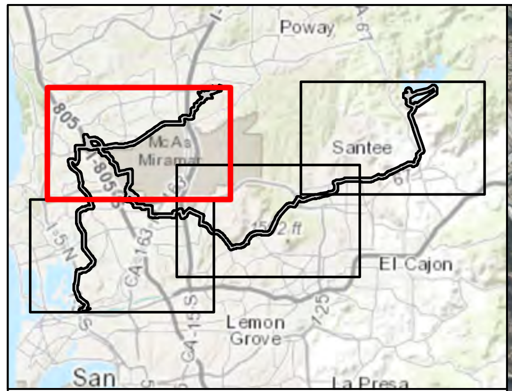


Study Area

Sensitive Receptor Location

- Residential
- Recreation
- Public Institution
- Open Space
- Municipal Boundaries
- MCAS Miramar

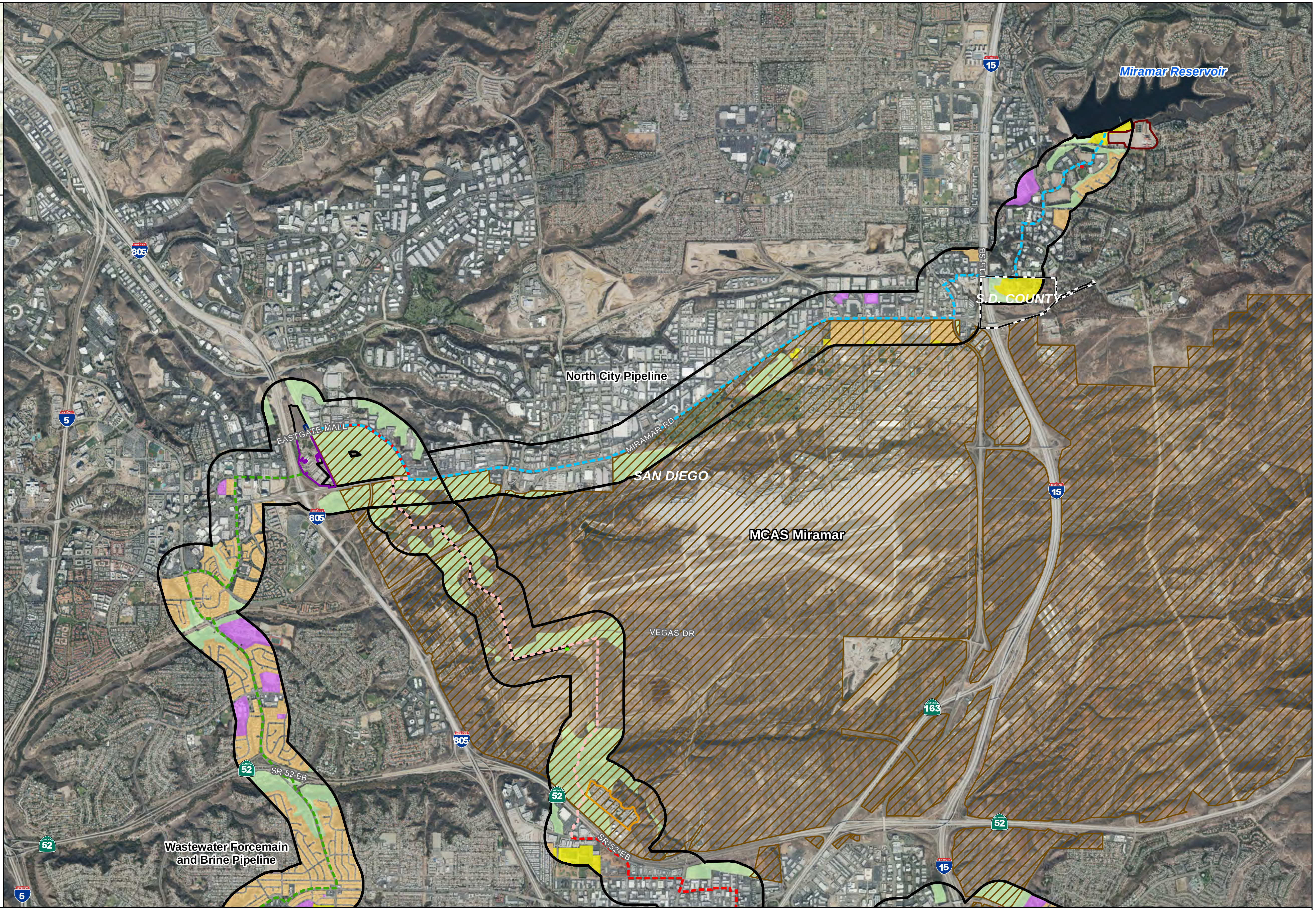
Project Pipelines

- North City Pure Water Pipeline
- San Vicente Pure Water Pipeline and Alternatives
- Morena Wastewater Forcemain and Brine/Centrate Line
- Landfill Gas Pipeline
- Repurposed Existing 36" Pipeline

Project Facilities

- North City Pure Water Facility
- North City Pure Water Pump Station
- North City Water Reclamation Plant Expansion
- Metro Biosolids Center Improvements
- Pure Water Dechlorination Facility
- Miramar Water Treatment Plant Improvements
- Landfill Gas Compressor Station

0 0.5 1 Miles



DUDEK

SOURCE: SanGIS 2016; SANDAG 2016

FIGURE 5.3-1B

Air Quality Sensitive Receptor Locations

Pure Water San Diego Program North City Project EIR/EIS

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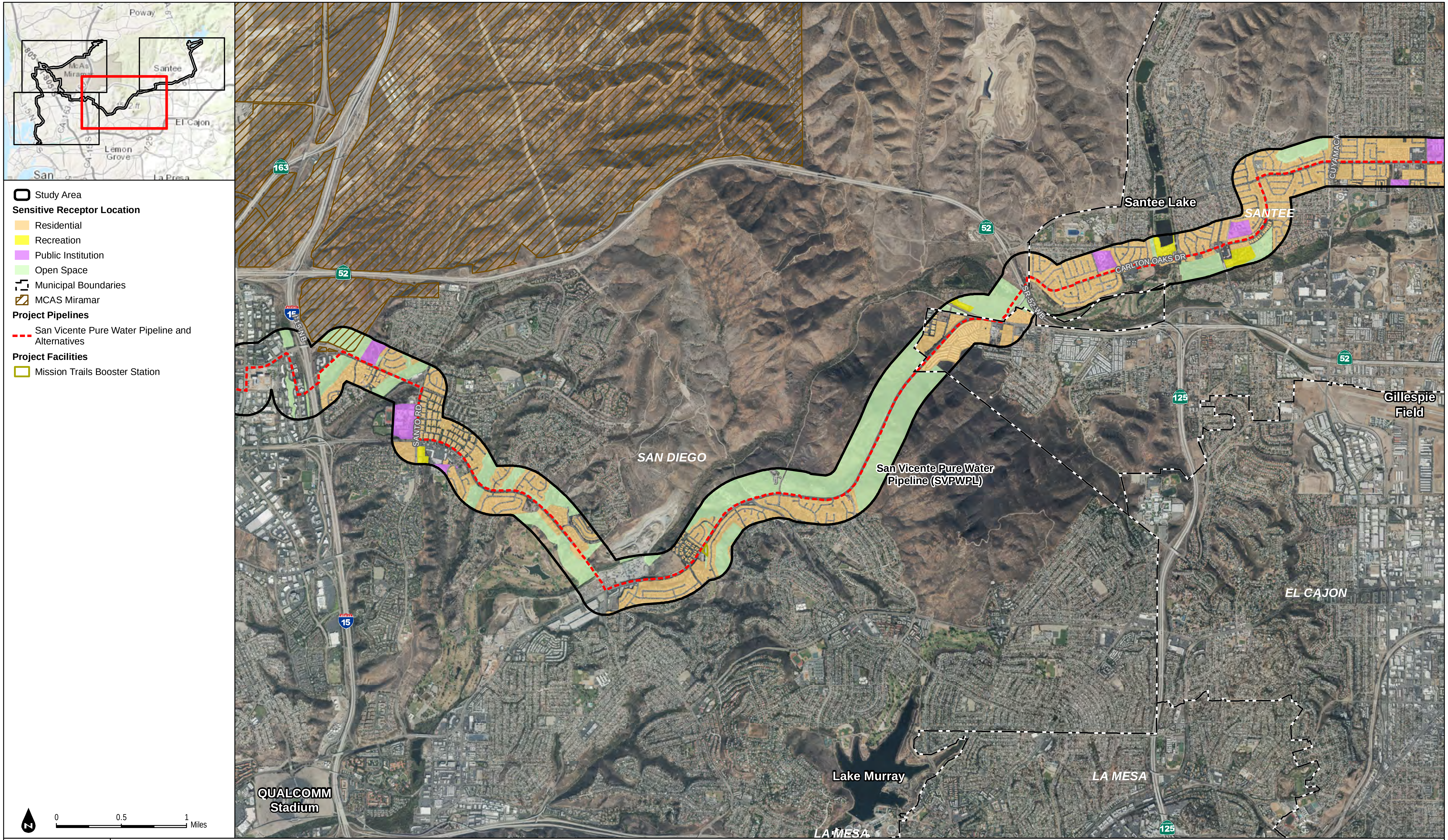

SOURCE: SanGIS 2016; SANDAG 2016

DUDEK

FIGURE 5.3-1C

Air Quality Sensitive Receptor Locations

Pure Water San Diego Program North City Project EIR/EIS

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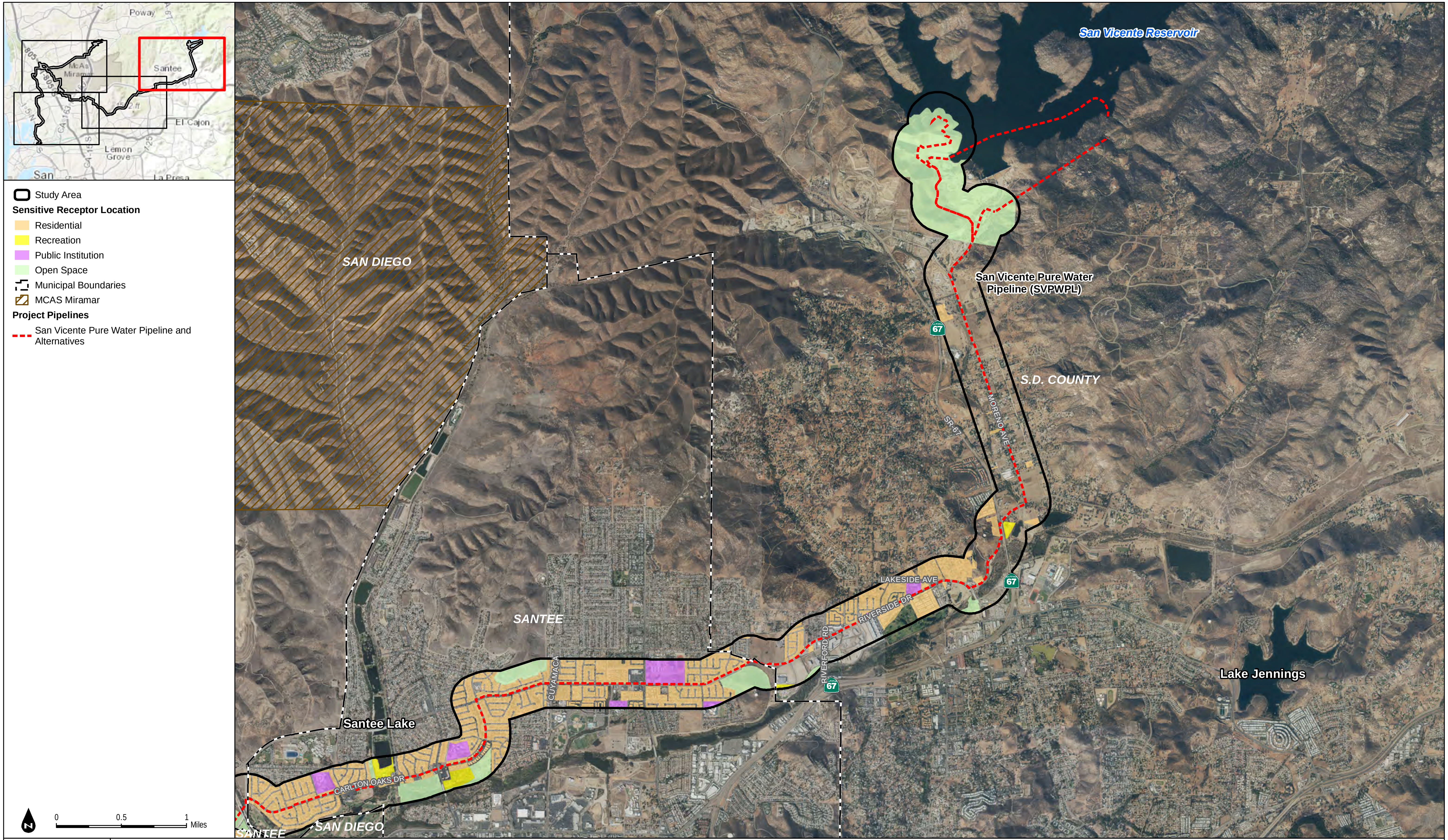

SOURCE: SanGIS 2016; SANDAG 2016

FIGURE 5.3-1D

Air Quality Sensitive Receptor Locations

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5.4 BIOLOGICAL RESOURCES

5.4.1 INTRODUCTION

The following section describes the environmental setting and regulatory framework related to biological resources for the North City Project.

The information provided in this section is based on the Biological Resources Report for the North City Project, City of San Diego, California prepared by Dudek, dated ~~September 2017~~February 2018 (provided as Appendix C). Data regarding biological resources present in the Project Area were obtained through a review of pertinent literature and through field reconnaissance.

Each Project Alternative study area is comprised of survey areas and corresponding appropriate survey buffers. Survey areas were determined based on suitable habitat for the resource for which the survey was conducted. For vegetation mapping (except for areas surrounding the Miramar Reservoir), focused surveys for coastal California gnatcatcher (*Polioptila californica californica*), southwestern willow flycatcher (*Empidonax traillii extimus*), least Bell's vireo (*Vireo bellii pusillus*), burrowing owl (*Athene cunicularia*), and vernal pool branchiopods, the survey area is defined as the Project Alternatives alignment and facilities footprint, including a 500-foot surrounding study buffer. For vegetation mapping surrounding the Miramar Reservoir, and focused surveys for sensitive plants, Quino checkerspot butterfly (*Euphydryas editha quino*) and larval host plants (except 500-foot buffer within MCAS Miramar), and Hermes copper butterfly (*Lycaena hermes*) and larval host plants, the survey area was limited to a 100-foot buffer surrounding the Project Alternatives alignment and facilities footprint. The jurisdictional delineation survey area was limited to a 50-foot buffer surrounding the Project Alternatives alignments and facilities footprint.

5.4.2 ENVIRONMENTAL SETTING

This section describes the existing biological conditions within the Project Area.

Additionally, sensitive biological resources are defined as follows: (1) species that have been given special recognition by federal, state, or local agencies and organizations due to limited, declining, or threatened population sizes; (2) habitat types recognized by local and regional agencies as sensitive; (3) habitat areas or plant communities that are unique, are of relatively limited distribution, or are of particular value to wildlife; and (4) wildlife corridors and habitat linkages. Sources used for determination of sensitive biological resources are as follows: plants–USFWS (2016a), CDFW (2016), and

CNPS (2017~~6~~); wildlife–USFWS (2016a) and CDFW (2016a); plant communities–City of San Diego MSCP Subarea Plan (City of San Diego 1997), and City of San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).

5.4.2.1 Survey Methods

Literature Review

The following data sources were reviewed to assist with the biological resources analysis:

- U.S. Department of Agriculture Web Soil Survey (USDA 2016a)
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CDFW 2016)
- California Native Plant Society Inventory of Rare and Endangered Plants (CNPS 2017~~5, CNPS 2016~~)
- San Diego Multiple Species Conservation Program (MSCP) Subarea Plan (City of San Diego 1997)
- San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012)
- U.S. Fish and Wildlife Service (USFWS) Species Occurrence Data (USFWS 2016a)
- San Diego Geographic Information Source (SanGIS) database (SanGIS 2013)
- Existing Conditions Letter Report for the Pure Water San Diego Program North City Water Purifications Project (Appendix B, of Appendix C)
- Pure Water San Diego Program North City Water Purification Project, Dry Season Fairy Shrimp Survey and Hatching Report (Appendix C, of Appendix C)
- Surveys for Coastal California Gnatcatcher at Marine Corps Air Station Miramar, California. Draft. (SDNHM 2016)
- USFWS National Wetlands Inventory (USFWS 2016b)
- U.S. Geological Survey National Hydrography Dataset (USGS 2016)
- Overview of San Diego Watershed Management Areas (SDRWQCB 2002)
- Aerial maps from the San Diego Association of Governments (SANDAG 2014) and Bing (Microsoft 2016)
- Topographic maps (Google Earth 2016)

- Historical Aerials online (Historical Aerials 2016a–d)
- Miramar Reservoir limnological data (City of San Diego 2012–2014)
- Fundamentals of Aquatic Systems (Barnes and Mann 1991)
- A Trophic State Index for Lakes (Carlson 1977)
- Lake Miramar General Fish Survey Fall 2014 (CDFW 2014)
- Zebra mussels in North America: The invasion and its implications (Snyder et al. 1997)
- Water Quality Modeling of Miramar Reservoir in Support of Assessment of Nutrients and Productivity (Appendix G of this EIR/EIS)

Field Reconnaissance

Biological field surveys for the North City Project were conducted in 2015–2017 by Dudek and HELIX, and their respective subconsultants, Balk Biological Inc. and Rocks Biological. Field surveys included vegetation and land cover mapping, jurisdictional delineation, Quino checkerspot butterfly habitat assessment and host plant mapping, Hermes copper butterfly habitat assessment and host plant mapping, burrowing owl habitat assessment, and vernal pool branchiopods habitat assessments. Focused surveys were conducted for coastal California gnatcatcher, southwestern willow flycatcher, least Bell's vireo, burrowing owl, Quino checkerspot butterfly, Hermes copper butterfly, San Diego fairy shrimp (*Branchinecta sandiegonensis*), Riverside fairy shrimp (*Streptocephalus woottoni*), and western pond turtle (*Actinemys marmorata*).

Vegetation mapping for the North City Project was conducted by Dudek in March, April, and May in 2016, and a formal jurisdictional delineation was conducted in September and October 2016. Focused botanical surveys were conducted for the North City Project by Dudek and HELIX subconsultants Balk Biological Inc. and Rocks Biological, respectively, in March, April, May, June, August, September and October 2016. Due to an unusually wet weather year, follow-up plant surveys were conducted for the 2017 season. The following focused surveys were conducted by Dudek in spring 2016: Quino checkerspot butterfly and host plant mapping, coastal California gnatcatcher, burrowing owl, southwestern willow flycatcher, least Bell's vireo, and Hermes copper butterfly and habitat assessment. Western pond turtle focused visual surveys were conducted by Dudek in September and October 2016 and trapping surveys were conducted by U.S. Geological Survey in August and September 2017 (Appendix C).

Focused surveys for fairy shrimp were conducted by HELIX and Rocks Biological from 2015 through 2016. For areas of the Project not surveyed by HELIX, Dudek conducted GIS modelling to identify potential vernal pools by using parameters (i.e., less than 10% slope and clay soils) that are suitable for vernal pools. These areas were surveyed during the 2016/2017 wet season and the 2017 dry season. Additionally, due to record rainfall in the region, additional previously undescribed features were documented on the North City Pure Water Facility (NCPWF) site. Dudek verified and mapped all depression features that held water for 24 hours and contained vernal pool indicator species (i.e., those listed in Appendix A of the ~~Draft~~ Final Vernal Pool Habitat Conservation Plan (VPHCP)) as vernal pools. These same events increased the known surface area of previously documented pools. It is likely that many of these features will not meet these criteria or express the same surface area in future years, unless similar record-breaking rainfall events occur.

Various survey efforts for vernal pool branchiopods have been conducted on the NCPWF, including a wet season survey in 2001 (Merkel & Associates Inc. 2001), a dry season survey in 2006 (URS 2006), a visual mapping effort between 2002 and 2003 (City of San Diego 2003), and genetic testing conducted in support of the 2002/2003 Vernal Pool Inventory (Bohonak 2004). Neither the 2001 or the 2006 survey efforts meet the requirements for a complete survey according to USFWS survey protocol (i.e., sampling did not take place across an entire wet season, and two surveys were not conducted within a 3-year period). Additionally, the 2002/2003 Vernal Pool Inventory (City of San Diego 2003) did not conduct a protocol-level survey on the NCPWF site but was used instead as a collection site for genetic testing of versatile fairy shrimp (*Branchinecta lindahli*) (Bohonak 2004; Appendix H of the 2002/2003 Vernal Pool Inventory). Other data taken into account by the City regarding the vernal pools on the NCPWF site includes precipitation during each survey year and vernal pool indicator species based on Appendix A of the VPHCP (City of San Diego 2017). Average annual rainfall for San Diego between 2000 and 2017 is approximately 9.40 inches (NOAA 2017). Wet season surveys were conducted in 2001 and 2015/2016; dry season surveys were conducted in 2006, 2016, and 2017; and a visual inspection for fairy shrimp was conducted during the 2002/2003 Vernal Pool Inventory. The rainfall totals for each survey effort year on the NCPWF include the following: 6.69 inches from November 2000 through June 2001, 11.30 inches from November 2002 through June 2003, 7.31 inches from November 2005 through June 2006, 10.64 inches from November 2015 through June 2016, and 15.80 inches from November 2016 through June 2017. Vernal pool indicator species were mapped within all 13 vernal pools identified in 2001. Vernal pool indicator species were not mapped during the 2006 survey effort; however, pool 33 overlaps two pools mapped during more recent surveys, which did have indicator species present. Vernal pool indicator species were mapped within all features recorded during the 2015/2016 and 2017 surveys on the NCPWF.

Additional detail regarding the schedule of surveys; protocols followed; and survey techniques, conditions and limitations can be found in Appendix C.

5.4.2.2 Physical and Biological Characteristics

The physical and biological characteristics of the individual project components that make up the North City Project are presented in the following sections and included in Figures 5.4-1A through 5.4-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives. Table 5.4-1 identifies each project component and to which Project Alternative it is applicable.

Table 5.4-1
Project Components for Each Alternative

Component	Component Acronym/Abbreviation	Miramar Reservoir Alternative	San Vicente Reservoir Alternative
Morena Pump Station	N/A	X	X
Morena Pipelines (Morena Wastewater Forcemain and Brine/Centrate Line)	Morena Pipelines	X	X
North City Water Reclamation Plant Expansion	NCWRP	X	X
North City Pure Water Facility - Influent Pump Station	NCPWF Influent Pump Station	X	X
North City Pure Water Facility	NCPWF	X	X
North City Pure Water Pump Station	North City Pump Station	X	X
North City Pure Water Pipeline	North City Pipeline	X	—
San Vicente Pipeline – Repurposed 36-inch Recycled Water Line[1]	N/A	—	X
San Vicente Pure Water Pipeline[2]	San Vicente Pipeline	—	X
San Vicente Pipeline – Tunnel Alternative Terminus	San Vicente Pipeline – TAT	—	X
San Vicente Pipeline – In-Reservoir Alternative Terminus	San Vicente Pipeline – IRAT	—	X
San Vicente Pipeline – Marina Alternative Terminus	San Vicente Pipeline – MAT	—	X

Table 5.4-1
Project Components for Each Alternative

Component	Component Acronym/Abbreviation	Miramar Reservoir Alternative	San Vicente Reservoir Alternative
Mission Trails Booster Station	MTBS	—	X
Renewable Energy Facility	N/A	X	X
Landfill Gas Pipeline	LFG Pipeline	X	X
Metro Biosolids Center Improvements[1]	MBC	X	X
Miramar Water Treatment Plant Improvements[1]	Miramar WTP	X	—
Pure Water Dechlorination Facility	Dechlorination Facility	X	—

Note:
1 Approximately 21,295 linear feet of the San Vicente Pipeline would include a repurposed 36-inch-diameter recycled water line; along this section disturbance would occur at the location of air and blow-off valves.
2 A dechlorination facility would be located along the pipeline prior to discharge at San Vicente Reservoir; however, the exact location and design details of this facility are unknown.

Section 3.1 and 3.2 of Appendix C contain detailed descriptions of the physical characteristics of each project component as well as a list of soil types found within the component's' study area. Sections 3.3.1 and 3.5.1 of Appendix C contain detailed descriptions of each vegetation community. Section 3.3.3 and 3.5.3 of Appendix C contain general descriptions and locations for sensitive plant species. Section 3.3.4 and 3.5.4 of Appendix C contain general descriptions and locations for sensitive wildlife species.

It should be noted that because some of the components are connected or within close proximity to one another, there may be overlapping survey buffers. The biological resource found in these overlapping areas is included within all components affected by the overlap area, therefore the sum of resources for all components' study areas will not match the overall sum within the Miramar Reservoir Alternative study area.

Morena Pump Station

The Morena Pump Station is located at the intersection of Sherman Street and Custer Street. Within the Morena Pump Station, the topography is generally flat. The site ranges in elevation from approximately 14 feet to 18 feet above mean sea level (AMSL). According to the U.S. Department of Agriculture Natural Resources Conservation Service Web Soil Survey, one soil type, Urban land, is mapped within the Morena Pump Station

(USDA 2016a). Existing land use at the Morena Pump Station is developed land. Adjacent land uses include existing commercial development immediately surrounding the site to the west and north, Morena Boulevard to the east, and Friars Road to the south. The San Diego River lies within the vicinity, approximately 260 feet south of the Morena Pump Station, on the other side of Friars Road. The San Diego River is within the Multi-Habitat Planning Area (MHPA) of the City's MSCP Subarea Plan. Additionally, the portion of the San Diego River floodplain within Coastal Overlay Zone would be considered City-regulated wetlands.

Vegetation Communities/Land Cover Types

The Morena Pump Station study area includes the Morena Pump Station footprint and a 500-foot buffer that supports 13 vegetation communities and/or land cover types (Table 5.4-2). Urban/developed land cover type is not considered a sensitive community by the City's MSCP.

Table 5.4-2
Vegetation Communities and Land Cover Types Within the Morena Pump Station Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier/ Wetland[1]	Morena Pump Station Footprint, Overflow Pipes, and Influent Sewers Acres	Total Acres in Study Area
Disturbed and Developed Areas (10000)	Non-native Vegetation (11000)	IV	~~—~~0.93	3.77~~3.57~~
	Disturbed Wetland (11200)	Wetland	—	0.75
	Disturbed Habitat (11300)	IV	—	0.81
	Urban/Developed (12000)	IV	6.12~~1.73~~	22.05 ~~19.61~~
		Disturbed and Developed Areas Total[2]	*7.05* ~~*1.73*~~	*27.38* ~~*24.74*~~
Bog and Marsh (50000)	Cismontane Alkali Marsh (52310)	Wetland	—	2.32
	Coastal and Valley Freshwater Marsh (52410)	Wetland	—	0.43
	Herbaceous Wetland (52510)	Wetland	—	0.76
		Bog and Marsh Total[2]	—	*3.52*

Table 5.4-2
Vegetation Communities and Land Cover Types Within the Morena Pump Station Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier/ Wetland[1]	Morena Pump Station Footprint, Overflow Pipes, and Influent Sewers Acres	Total Acres in Study Area
Riparian and Bottomland Habitat (60000)	Mulefat Scrub (63310)	Wetland	—	0.71
	Southern Willow Scrub (63320)	Wetland	—	5.98
	Southern Willow Scrub (disturbed) (63320)	Wetland	—	1.05
	Open Water – Freshwater (64140)	Wetland	—	0.18
	Non-vegetated Channel or Floodway (64200)	Wetland	—	0.93
	Arundo-Dominated Riparian (65100)	Wetland	—	0.03
Riparian and Bottomland Habitat Total[2]			—	*8.88*
Total[2]			**7.05** ~~1.73~~	**39.78** ~~37.14~~

Notes:
1 City Subarea Plan tiers and wetland identification are from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).
2 Totals may not sum due to rounding.

Sensitive Plant Species

Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*) (396 individuals) is the only sensitive plant species observed in the Morena Pump Station survey area. No other sensitive plant species ~~were observed or~~ have a moderate to high potential to occur in the Morena Pump Station survey area. No USFWS Critical Habitat occurs on within or immediately adjacent to the Morena Pump Station.

Sensitive Wildlife Species

No sensitive wildlife species were observed in the Morena Pump Station survey area. Five sensitive wildlife species have moderate potential to occur—Yuma myotis (*Myotis yumanensis*), yellow warbler (*Setophaga petechia*), least Bell's vireo, southwestern willow flycatcher, and yellow-breasted chat (*Icteria virens*)—and no other sensitive wildlife species has a high potential to occur in the Morena Pump Station study area (see Appendix N, Special Status Wildlife Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the Morena Pump Station.

Jurisdictional Aquatic Resources

U.S. Army Corps of Engineers (ACOE)-, Regional Water Quality Control Board (RWQCB)-, and CDFW-jurisdictional areas within the Morena Pump Station study area total 0.22 acre of jurisdictional wetlands/riparian habitat. All of the jurisdictional aquatic resources are considered wetlands by the City of San Diego. There is one overflow pipe at the Morena Pump Station that is within 100 feet of the of the San Diego River floodplain. The San Diego River floodplain is within designated MHPA lands. Although the overflow pipe is part of the Morena Pump Station and located within Friars Road, it is described in this resource section because of the proximity (less than 100 feet) to the San Diego River. The portion of the study area that extends into the Coastal Overlay Zone is considered a City-regulated wetlands; therefore, adherence to the City wetland buffer regulations is required (City of San Diego 2012). However, because there is a functional barrier (i.e., concrete berm) that would prevent any indirect impacts to the San Diego River, the buffer may be reduced in consultation with the agencies. Additionally, the impacts within Friars Road may be subject to ACOE jurisdiction if they affect the San Diego River Levee system. Table 5.4-3 shows the riparian habitats part of the San Diego River floodplain that are within the 50-foot jurisdictional delineation study area.

Table 5.4-3
Jurisdictional Aquatic Resources in the
Morena Pump Station Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
Wetland or Riparian Areas			
Cismontane Alkali Marsh	0.02	0.02	0.02
Coastal and Valley Freshwater Marsh	0.01	0.01	0.01
Mulefat Scrub	0.01	0.01	0.01
Southern Willow Scrub	0.18	0.18	0.18
Total jurisdictional area[2]	**0.22**	**0.22**	**0.22**

Notes:

1 The acreages listed in the ACOE/RWQCB, CDFW, CCC Wetlands, and City of San Diego Wetlands columns overlap and should not be summed together.

2 Acreage may not total due to rounding.

Morena Pipelines

The proposed Morena Pipelines would begin in an open cut section near the north corner of the Morena Pump Station site and end at the North City Water Reclamation Plant (NCWRP) and run north for approximately 11 miles.

The topography is generally sloped from north to south. The site ranges in elevation from approximately 40 feet AMSL at the southern end along Morena Boulevard to 400 feet AMSL at the northern end along La Jolla Village Drive. The majority of the proposed Morena Pipelines would occur within existing developed roads and only occasionally cross native habitat communities. Adjacent land uses include existing commercial development, residential, and open space areas associated with MHPA. The proposed Morena Pipelines would cross over two segments of MHPAs lands.

See Appendix C for a list of soil types mapped within the Morena Pipelines.

Vegetation Communities/Land Cover Types

The Morena Pipelines study area includes the Morena Pipelines footprint and a 500-foot buffer. Twenty-two vegetation communities and/or land cover types were documented (Table 5.4-4).

Table 5.4-4
Vegetation Communities and Land Cover Types
Within the Morena Pipelines Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	Morena Pipelines Footprint Acres	Total Acres in Study Area
Disturbed and Developed Areas (10000)	Non-native Vegetation (11000)	IV	<0.01~~0.20~~	39.94~~40.14~~
	Disturbed Wetland (11200)	Wetland	—	0.81
	Disturbed Habitat (11300)	IV	0.91~~1.06~~	32.83
	Urban/Developed (12000)	IV	42.72~~45.68~~	1,066.76~~1,069.09~~
	Developed – Concrete Channel (12000)	IV	0.03	0.60
		Disturbed and Developed Areas Total[2]	*43.66~~47.97~~*	*1,140.94~~1,143.47~~*
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub (32500)	II	0.18	44.70
	Diegan Coastal Sage Scrub (disturbed) (32500)	II	0.13~~0.12~~	13.75
	Diegan Coastal Sage Scrub—Baccharis-dominated (32530)	II	—	0.32
		Scrub and Chaparral Total[2]	*0.31~~0.30~~*	*58.77*

Table 5.4-4
Vegetation Communities and Land Cover Types Within the Morena Pipelines Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	Morena Pipelines Footprint Acres	Total Acres in Study Area
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Non-native Grassland (42200)	IIIB	—	0.28
Grasslands, Vernal Pools, Meadows, and Other Herb Communities Total[2]			—	*0.28*
Bog and Marsh (50000)	Coastal and Valley Freshwater Marsh (52410)	Wetland	—	0.12
	Coastal and Valley Freshwater Marsh (disturbed) (52410)	Wetland	—	0.01
Bog and Marsh Total[2]			—	*0.13*
Riparian and Bottomland Habitat (60000)	Southern Riparian Forest (61300)	Wetland	—	5.15
	Southern Riparian Forest (disturbed) (61300)	Wetland	—	0.02
	Southern Coast Live Oak Riparian Forest (61310)	Wetland	—	3.57
	Southern Arroyo Willow Riparian Forest (61320)	Wetland	—	4.64
	Mulefat Scrub (63310)	Wetland	—	0.18
	Southern Willow Scrub (63320)	Wetland	—	3.00
	Southern Willow Scrub (disturbed) (63320)	Wetland	—	0.71
	Non-vegetated Channel or Floodway (64200)	Wetland	—	0.45
Riparian and Bottomland Habitat Total[2]			—	*17.71*
Woodland (70000)	Coast Live Oak Woodland (71160)	I	—	29.76
	Coast Live Oak Woodland (disturbed) (71160)	I	—	1.22
	Eucalyptus Woodland (79100)	IV	0.08	22.75
Woodland Total[2]			*0.08*	*53.73*
Total[2]			**44.05~~48.36~~**	**1,271.56~~1,274.08~~**

Notes:

1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).

2 Totals may not sum due to rounding.

Sensitive Plant Species

Four sensitive plant species, San Diego sagewort (*Artemisia palmeri*) (255 ~~39~~ individuals), Coulter's matilija poppy *Romneya coulteri*) (28 individuals), wart-stemmed ceanothus (*Ceanothus verrucosus*) (1 individual), and San Diego marsh elder (*Iva hayesiana*) (31 individuals), were ~~is the only sensitive plant species~~ observed in Morena Pipelines survey area. No other species have moderate or high potential to occur in the Morena Pipelines survey area (Appendix L, Sensitive Plant Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the Morena Pipelines survey area.

Sensitive Wildlife Species

The following sensitive wildlife species were observed in Morena Pipelines survey area: Cooper's hawk (*Accipiter cooperii*), yellow warbler, and western pond turtle. Sensitive wildlife species that have a moderate to high potential to occur in the Morena Pipelines study area include: orangethroat whiptail (*Aspidoscelis hyperythra*), San Diegan tiger whiptail (*Aspidoscelis tigris stejnegeri*), San Diego ringneck snake (*Diadophis punctatus*), silvery legless lizard (*Anniella pulchra*), Blainville's horned lizard (*Phrynosoma blainvillii)*, red diamondback rattlesnake (*Crotalus ruber*), two-striped gartersnake (*Thamnophis hammondii)*, least Bell's vireo, white-tailed kite (*Elanus leucurus*), yellow-breasted chat, coastal California gnatcatcher, southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), western bluebird (*Sialia mexicana*), pallid bat (*Antrozous pallidus*), Yuma myotis, monarch (*Danaus plexippus*), mule deer (*Odocoileus hemionus*), and western spadefoot (*Spea hammondii*) (Appendix N, Sensitive Wildlife Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the Morena Pipelines.

Jurisdictional Aquatic Resources

ACOE- and RWQCB-jurisdictional areas within the Morena Pipelines study area total 0.56 acre of non-wetland stream channels. CDFW-jurisdictional areas within the Morena Pipelines study area total 0.67 acre, including 0.19 acre of riparian habitat and 0.48 acre of streambed. All of the jurisdictional aquatic resources, except for 0.03 acre of ephemeral stream channel (developed – concrete channel), are considered wetlands by the City of San Diego. Table 5.4-5 summarizes these features.

Table 5.4-5
Jurisdictional Aquatic Resources in the Morena Pipelines Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
Wetland or Riparian Areas			
Coast Live Oak Woodland	—	0.09	0.09
Disturbed Coast Live Oak Woodland	—	0.06	0.06
Disturbed Southern Riparian Forest	—	0.02	0.02
Southern Arroyo Willow Riparian Forest	—	0.02	0.02
Total Riparian/Wetlands	—	*0.19*	*0.19*
Non-wetland Waters/Streambed			
Ephemeral Stream Channel (Developed – Concrete Channel)	0.03	0.03	—
Ephemeral Stream Channel (Disturbed Wetland)	0.11	0.11	0.11
Ephemeral Stream Channel (Non-vegetated Channel)	0.42	0.37	0.37
Total Non-wetland Waters/Streambed	*0.56*	*0.52*	*0.48*
Total jurisdictional area[2]	**0.56**	**0.70**	**0.67**

Notes:

1 The acreages listed in the ACOE/RWQCB, CDFW, and City of San Diego Wetlands columns overlap and should not be summed together.

2 Acreage may not total due to rounding.

North City Water Reclamation Plant Expansion

The NCWRP Expansion is located immediately east of Interstate 805 (I-805). The site is bound by Eastgate Mall to the north and Miramar Road to the south. Within the NCWRP, the topography is generally flat. The site ranges in elevation from approximately 320 feet to 360 feet AMSL. Existing land use at the NCWRP is mostly developed land; however, there is a small area of native habitat immediately adjacent to the existing fence line. Adjacent land uses include existing commercial and residential development to the north and west, and open space to the south and east. There is designated MHPA land directly south of the site, south of Miramar Road. The NCPWF Influent Pump Station and North City Renewable Energy Facility are included within the NCWRP Expansion footprint.

Vegetation Communities/Land Cover Types

The NCWRP Expansion study area includes the NCWRP Expansion footprint and a 500-foot buffer that supports 7 vegetation communities and/or land cover types (Table 5.4-6).

Table 5.4-6
Vegetation Communities and Land Cover Types in the North City Water Reclamation Plant Expansion, Influent Pump Station, and North City Renewable Energy Facility Study Area

General Vegetation Community/ Land Cover Category	General Vegetation Type (Holland/ Oberbauer Code)	Tier[1]	Influent Pump Station Footprint Acres	North City Power Generation Facility Footprint Acres	NCWRP Expansion Footprint Acres	Total Acres in Study Area
Disturbed and Developed Areas (10000)	Disturbed Habitat (11300)	IV	—	—	0.81	3.03
	Non-native Vegetation (11000)	IV	—	—	0.56	8.19
	Urban/ Developed (12000)	IV	0.30	0.36	31.89~~32.55~~	45.99
Disturbed and Developed Areas Total[2]			*0.30*	*0.36*	*33.26~~33.92~~*	*57.20*
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Non-native Grassland (42200)	IIIB	—	—	0.99	4.92
Grasslands, Vernal Pools, Meadows, and Other Herb Communities Total[2]			—	—	*0.99*	*4.92*
Riparian and Bottomland Habitat (60000)	Mulefat Scrub (63310)	Wetland	—	—	—	0.39
Riparian and Bottomland Habitat Total[2]			—	—	—	*0.39*

Table 5.4-6
Vegetation Communities and Land Cover Types in the North City Water Reclamation Plant Expansion, Influent Pump Station, and North City Renewable Energy Facility Study Area

General Vegetation Community/ Land Cover Category	General Vegetation Type (Holland/ Oberbauer Code)	Tier[1]	Influent Pump Station Footprint Acres	North City Power Generation Facility Footprint Acres	NCWRP Expansion Footprint Acres	Total Acres in Study Area
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub (32500)	II	—	—	0.17	14.12
	Diegan Coastal Sage Scrub (disturbed) (32500)	II	—	—	—	4.76
		Scrub and Chaparral Total[2]	—	—	*0.17*	*18.88*
		Total[2]	**0.30**	**0.36**	**34.42~~35.08~~**	**81.40**

Notes:
1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).
2 Totals may not sum due to rounding.

Sensitive Plant Species

The following sensitive plant species were observed in the NCWRP Expansion survey area: graceful tarplant (*Holocarpha virgata* ssp. *elongata*) (11,043 ~~240~~ individuals), ashy spike-moss (*Selaginella cinerascens*) (6~~3~~ polygons[1]), Nuttall's scrub oak (*Quercus dumosa*) (3~~2~~ individuals), ~~decumbent goldenbush (*Isocoma menziesii* var. *decumbens*) (1 individual),~~ and San Diego County viguiera (*Viguiera laciniata*) (118~~40~~ individuals). There are no other sensitive plant species that have a moderate to high potential to occur in the NCWRP Expansion portion of the survey area (Appendix L, Sensitive Plant Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the NCWRP study area.

1 This number represents the number of polygons mapped. This species is a fern and grows as a continuous mat, which makes it difficult to provide accurate population counts.

Sensitive Wildlife Species

One sensitive wildlife species, the coastal California gnatcatcher, was observed in the NCWRP Expansion study area. One sensitive wildlife species, San Diegan tiger whiptail, has a moderate to high potential to occur in the NCWRP Expansion study area (Appendix N, Sensitive Wildlife Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the NCWRP Expansion study area.

Jurisdictional Aquatic Resources

There are no ACOE- or RWQCB-jurisdictional areas within the NCWRP Expansion study area. CDFW-jurisdictional areas within the NCWRP Expansion study area total 0.03 acre of riparian habitat. All of the jurisdictional aquatic resources are considered wetlands by the City of San Diego. Table 5.4-7 summarizes these features.

Table 5.4-7
Jurisdictional Aquatic Resources in the North City Water Reclamation Plant Expansion Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW/City[1]	City of San Diego Wetlands[1]
Wetland or Riparian Areas			
Mulefat Scrub	—	0.03	0.03
Total jurisdictional area	**—**	**0.03**	**0.03**

Note:
[1] The acreages listed in the ACOE/RWQCB, CDFW, and City of San Diego Wetlands columns overlap and should not be summed together.

North City Pure Water Facility Influent Pump Station

The NCPWF Influent Pump Station is located within the NCWRP footprint. As such, all physical and biological resources discussed above under the NCWRP Expansion are also applicable to the NCPWF Influent Pump Station. Table 5.4-6 above includes the land cover type (urban/developed) for the NCPWF Influent Pump Station within the footprint of the NCWRP Expansion.

North City Renewable Energy Facility

The North City Renewable Energy Facility is located within the footprint of the NCWRP Expansion. As such, all biological resource data for the North City Renewable Energy Facility is discussed above in the NCWRP Expansion. Table 5.4-6 above describes the land cover type (urban/developed) for the North City Renewable Energy Facility within the footprint of the NCWRP Expansion.

North City Pure Water Facility

The proposed NCPWF is located east of I-805 and north of the NCWRP, across Eastgate Mall. Within the proposed NCPWF, the topography is generally flat. The site is approximately 360 feet AMSL in elevation. The NCPWF is proposed at an undeveloped location which is not part of the MHPA; however, open space west of I-805 is part of the MHPA lands.

Vegetation Communities/Land Cover Types

The NCPWF study area includes the NCPWF footprint and a 500-foot buffer that supports 8 vegetation communities and/or land cover types (Table 5.4-8). The North City Pump Station is included within the NCPWF footprint.

Table 5.4-8
Vegetation Communities and Land Cover Types Within the North City Pure Water Facility and North City Pump Station Study Areas

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	North City Pump Station Footprint Acres	NCPW Facility Footprint Acres	Total Acres in Study Area
Disturbed and Developed Areas (10000)	Non-native Vegetation (11000)	IV	–	<0.01	2.34
	Disturbed Habitat (11300)	IV	0.11	0.93	4.47
	Urban/Developed (12000)	IV	<0.1	0.52	15.11
		Disturbed and Developed Areas Total[2]	*0.11*	*1.45*	*21.91*
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Native Grassland (42100)	I	0.04	1.30	1.31
	Non-native Grassland (42200)	I	0.56	5.10	8.22
	Vernal Pool (44000)	Wetland	–	0.38	0.38
		Grasslands, Vernal Pools, Meadows, and Other Herb Communities Total[2]	*0.60*	*6.78*	*9.91*
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub(32500)	II	–	2.72	6.70
	Diegan Coastal Sage Scrub (disturbed) (32500)	II	–	0.03	9.74
		Scrub and Chaparral Total[2]	–	*2.76*	*16.44*
		Total[2]	**0.72**	**10.99**	**48.26**

Notes:

1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).

2 Totals may not sum due to rounding.

Sensitive Plant Species

~~One~~ Two sensitive plant species, graceful tarplant (992 ~~60~~ individuals) and ashy spike-moss (1 polygon), ~~was~~ were observed within the NCPWF survey area during ~~HELIX~~ the 2017 surveys. No other sensitive plant species have moderate to high potential to occur within the NCPWF survey area (Appendix L, Sensitive Plant Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the NCPWF study area.

Sensitive Wildlife Species

The white-tailed kite is the only sensitive wildlife species observed in the NCPWF study area. Sensitive wildlife species that have a moderate to high potential to occur in the NCPWF study area include San Diegan tiger whiptail, western spadefoot, orangethroat whiptail, red diamond rattlesnake, southern California rufous-crowned sparrow, and pallid bat (Appendix N, Sensitive Wildlife Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). Although there are vernal pools on the NCPWF, San Diego fairy shrimp protocol-level surveys in 2015/2016 and 2017 were negative. Survey reports from 2001 (Merkel & Associates Inc. 2001) and 2006 (URS 2006) state that San Diego fairy shrimp occurred in two pools (V2 and 33) on the NCPWF site. Pool V2 was found to be occupied by San Diego fairy shrimp in 2001. Pool V2 was not surveyed during the 2015/2016 wet season because it did not inundate nor was it recorded as a potential pool in 2017 even though both 2015/2016 and 2017 were larger rainfall years than in 2000/2001. Dudek biologist Paul Lemons (#TE-051248-5) conducted a site visit on December 7, 2017, to document the current conditions of pool V2. The pool is located within the northern part of the dirt road that runs through the site. It is not anticipated that this area will pond due to the slope of the road and existing cover of vegetation. It is likely that off-roading activity may have changed the site and damaged this pool so that it no longer exists. Pool 33 was considered occupied by San Diego fairy shrimp in 2006; this pool occurs within PW56, which was surveyed during 2015/2016. Only versatile fairy shrimp was observed in this pool during both the wet and dry season surveys conducted in 2015/2016. Additionally, a collection effort for the genetic testing of versatile fairy shrimp was completed within PW56 as summarized in *Conservation Genetics of the Endangered Fairy Shrimp Species Branchinecta Sandiegonensis* (Bohonak 2004; Appendix H of the 2002/2003 Vernal Pool Inventory). According to Andrew Bohonak, author of the genetic testing report, San Diego fairy shrimp does not occur within this pool

(Bohonak, pers. comm. 2017). Versatile fairy shrimp is known to occur in disturbed sites, and the continual disturbance of off-roading vehicles has increased the distribution of the species in San Diego County (USFWS 2008). Despite appropriate exclusion fencing, the NCPWF has been highly disturbed by off-roading activity. Hybridization or competition between species, depletion of the San Diego fairy shrimp cyst bank, replacement by versatile fairy shrimp, or sample contamination are all possible explanations for the apparent discrepancy or possible elimination of San Diego fairy shrimp within this pool (USFWS 2008). Based on the most current survey results, which were the only complete protocol-level surveys conducted on the NCPWF, there are no federally listed vernal pool branchiopod species occurring within the NCPWF site. No USFWS Critical Habitat occurs within or immediately adjacent to the NCPWF study area.

Jurisdictional Aquatic Resources

City-jurisdictional areas within the NCPWF study area total 0.38 acre of vernal pools (Table 5.4-9). HELIX mapped 6 vernal pools (0.04 acre) on the NCPWF in 2015/2016, and an additional 0.34 acre of vernal pools were mapped in 2017. The 2017 pools expanded the surface area of the 6 HELIX pools to 0.24 acre and created 11 new pools (0.14 acre). Given the expanded area of the HELIX vernal pools, protocol-level wet and dry season surveys conducted by HELIX in 2015/2016 determined that three pools (0.19 acre) were occupied by non-listed species, and seven pools (0.05 acre) were unoccupied. The new 2017 vernal pools (0.14 acre) were not surveyed because they did not stay inundated long enough (i.e., less than 7 days) during the 2015/2016 wet season for sampling to occur; therefore, no dry season sampling occurred. All pools mapped by HELIX on the NCPWF are described in their report as having vernal pool indicator plant species present (Appendix B), and therefore are considered City wetlands. The 11 new pools (0.14 acre) have indicator species present; therefore, all vernal pools on the NCPWF (0.38 acre) are considered City wetlands, with potential to be RWQCB jurisdictional. A protocol-level dry season survey was conducted for the 11 additional vernal pools (0.14 acre) in 2017 to confirm that these pools are not occupied by listed fairy shrimp species. Only two pools (VP8 and VP11; 0.05 acre) had fairy shrimp cysts, which were determined to be non-listed species, and the remaining 9 pools (0.09 acre) were unoccupied. The record rainfall in 2017 led to possibly non-repeatable conditions and increased surface area for all pools, and it may not be possible to perform wet season surveys on some or all of the new pools.

The vernal pools mapped on the NCPWF site are considered isolated from navigable waters with no federal nexus that would allow these pools to be considered jurisdictional wetlands by the ACOE under the federal Clean Water Act (Appendix B). The RWQCB may assert jurisdiction over the vernal pools as wetland waters of the state under the Porter–Cologne Act; however, these pools are small, isolated, and based on 2015/2016 and 2017 protocol-level surveys, contain limited biological value given that they do not support listed species (Appendix B). The vernal pools would be considered City wetlands in accordance with the City's Biology Guidelines (City of San Diego 2012). Table 5.4-9 summarizes these features.

Table 5.4-9
Jurisdictional Aquatic Resources in the North City Pure Water Facility Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
Wetland or Riparian Areas			
Vernal Pool	—	—	0.38[2]
Total jurisdictional area	**—**	**—**	**0.38**

Note:
1 The acreages listed in the ACOE/RWQCB, CDFW, and City of San Diego Wetlands columns overlap and should not be summed together.
2 This 0.38 acre of vernal pool is also potentially regulated by the RWQCB.

North City Pure Water Pump Station

The proposed North City Pump Station is located within the southeastern portion of the proposed NCPWF. As such, all physical and biological resources descriptions provided for the NCPWF are also applicable to the North City Pump Station. Table 5.4-8 above describes the four vegetation communities and land covers for the North City Pump Station within the footprint of the NCPWF.

North City Pure Water Pipeline

The proposed North City Pure Water Pipeline (North City Pipeline) would begin at the NCPWF and head northeast until it ends at the Miramar Reservoir. The proposed pipeline runs for approximately 39,500 linear feet, mainly along the following streets: Meanley Drive, Scripps Ranch, Carroll Canyon Boulevard, Businesspark Avenue, Kearny Villa Road, Miramar Road, La Jolla Village Drive, and Eastgate Mall.

The topography is generally sloped from east to west. The extent of the roads range in elevation from approximately 360 feet AMSL at the western end along Eastgate Mall to 720 feet AMSL at the northeastern end at the Miramar Reservoir.

The majority of the proposed pipeline would occur within existing developed roads and only occasionally within vegetated communities. Adjacent land uses include existing commercial development, residential, and the Miramar Reservoir contained within the MHPA.

Owned, operated, and maintained by the City of San Diego, Miramar Reservoir is used for various recreational opportunities including fishing, cycling, running, rollerblading, and picnicking. A paved, approximately 4.9-mile long service road encircles the reservoir and is popular for walking, running, and cycling. While the majority of use is from runners, cyclists, and other forms of recreation besides fishing, Miramar Reservoir is also available for sport fishing. Miramar Reservoir includes a concessions building from which recreationists can rent boats (private boats, kayaks, and float tubes are also permitted on Miramar Reservoir) and purchase bait. Miramar Reservoir is open to fishing and private boats, kayaks and float tubes seven days a week from one-half hour before sunrise to sunset. Further, the gates are open from 5:30 a.m. to 8:00 p.m. during Daylight Savings Time and 5:30 a.m. to 6:30 p.m. when Daylight Savings Time is not in effect.

See Appendix C for a list of soil types mapped within the North City Pipeline.

Vegetation Communities/Land Cover Types

The North City Pipeline study area includes the North City Pipeline footprint and a 500-foot buffer that supports 22 vegetation communities and/or land cover types (Table 5.4-10).

Table 5.4-10
Vegetation Communities and Land Cover Types within the North City Pipeline Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	North City Pipeline Footprint Acres	Total Acres in Study Area
Disturbed and Developed Areas (10000)	Non-native Vegetation (11000)	IV	—	2.10
	Disturbed Wetland (11200)	Wetland	—	0.07
	Disturbed Habitat (11300)	IV	1.77	15.49
	Urban/Developed (12000)	IV	33.35~~34.43~~	651.50
	Developed – Concrete Channel (12000)	IV	—	0.70
Disturbed and Developed Areas Total[2]			*35.12~~36.20~~*	*669.86*

Table 5.4-10
Vegetation Communities and Land Cover Types within the North City Pipeline Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	North City Pipeline Footprint Acres	Total Acres in Study Area
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub (32500)	II	—	16.32
	Diegan Coastal Sage Scrub (disturbed) (32500)	II	—	36.20
	Diegan Coastal Sage Scrub—Baccharis-dominated (32530)	II	—	2.50
	Diegan Coastal Sage Scrub—Baccharis-dominated (disturbed) (32530)	II	—	0.21
	Southern Mixed Chaparral (37120)	IIIA	—	10.32
	Southern Mixed Chaparral (disturbed) (37120)	IIIA	—	0.42
	Chamise Chaparral (37200)	IIIA	—	18.92
	Coastal Sage—Chaparral Transition (37G00)	II	—	0.53
		Scrub and Chaparral Total[2]	—	*85.42*
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Non-native Grassland (42200)	IIIB	0.13~~0.10~~	57.78
	Vernal Pool (44000)	Wetland	—	0.39
		Grasslands, Vernal Pools, Meadows, and Other Herb Communities Total[2]	*0.13~~0.10~~*	*58.17*
Bog and Marsh (50000)	Coastal and Valley Freshwater Marsh (52410)	Wetland	—	25.06
		Bog and Marsh Total[2]	—	*25.06*
Riparian and Bottomland Habitat (60000)	Mulefat Scrub (63310)	Wetland	—	0.51
	Southern Willow Scrub (63320)	Wetland	—	0.45
	Open Water – Freshwater (64140)	Wetland	—	121.46[3]
	Arundo-Dominated Riparian (65100)	Wetland	—	0.52
		Riparian and Bottomland Habitat Total[2]	—	*122.94*

Table 5.4-10
Vegetation Communities and Land Cover Types within the North City Pipeline Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	North City Pipeline Footprint Acres	Total Acres in Study Area
Woodland (70000)	Non-native Woodland (79000)	IV	—	0.29
	Eucalyptus Woodland (79100)	IV	1.95	70.06
		Woodland Total[2]	*1.95*	*70.34*
		Total[2]	**37.21~~38.25~~**	**1,031.79**

Notes:
1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).
2 Totals may not sum due to rounding.
3 The total acreage of open water-freshwater habitat includes the Miramar Reservoir (120.26 acres).

Sensitive Plant Species

Eight sensitive plant species, California adolphia (*Adolphia californica*) (1,038 individuals), ashy spike-moss (4 polygons), San Diego barrel cactus (*Ferocactus viridescens*) (1 individual), San Diego marsh-elder (18 individuals), Nuttall's scrub oak (1 individual), golden-rayed pentachaeta (*Pentachaeta aurea* ssp. *aurea*) (3,150 individuals), graceful tarplant (1,295 individuals), and San Diego County viguiera (three individuals), ~~is~~were ~~the only sensitive plant species~~ observed within the North City Pipeline survey area. The majority of these 2017 observations were made around the Miramar Reservoir, which was not included in the 2016 survey area. There are no other sensitive plant species that have a moderate to high potential to occur in North City Pipeline survey area (Appendix L, Sensitive Plant Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the North City Pipeline study area.

Sensitive Wildlife Species

The following sensitive wildlife species were observed or have been previously documented within the North City Pipeline study area: San Diego fairy shrimp and western pond turtle. Sensitive wildlife species that have a moderate to high potential to occur in the North City Pipeline study area include coastal California gnatcatcher, orangethroat whiptail, Southern California rufous-crowed sparrow, red diamondback rattlesnake, San Diegan tiger whiptail, two-striped gartersnake, Cooper's hawk, osprey (*Pandion haliaetus*), pallid bat, Yuma myotis, monarch, and mule deer (Appendix N, Sensitive Wildlife Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the North City Pipeline study area.

Jurisdictional Aquatic Resources

ACOE- and RWQCB-jurisdictional areas within the North City Pipeline study area total 0.95 acre, including 0.44 acre of wetlands/riparian habitat and 0.51 acre of non-wetland stream channels and reservoir features. CDFW-jurisdictional areas total 0.85 acre. All of the jurisdictional aquatic resources are considered wetlands by the City of San Diego, as well as a total of 0.12 acre of vernal pool (a portion of the pools are occupied by San Diego fairy shrimp) occurring south of Miramar Road within MCAS Miramar (0.10 acre of ACOE/RWQCB/City jurisdiction) and one vernal pool along Eastgate Mall (0.02 acre of City jurisdiction only). The vernal pool along Eastgate Mall, PW1, was surveyed by Dudek during the 2016/2017 wet season and determined unoccupied by fairy shrimp but contains one vernal pool plant indicator species: pale spike rush (*Eleocharis macrostachya*). Therefore, this pool meets the criteria outlined in the ~~Draft~~ Final ~~Vernal Pool~~ VPHCP (City of San Diego ~~2016~~2017) to be designated as a vernal pool under City jurisdiction. Table 5.4-11 summarizes these features.

Table 5.4-11
Jurisdictional Aquatic Resources in the North City Pipeline Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
Wetland or Riparian Areas			
Coastal and Valley Freshwater Marsh	0.34	0.34	0.34
Vernal Pool	0.10	—	0.12
Total Riparian/Wetlands	*0.44*	*0.34*	*0.46*
Non-wetland Waters/Streambed			
Perennial Stream Channel/Open Water[2]	0.51	0.51	0.51
Total Non-wetland Waters/Streambed	*0.51*	*0.51*	*0.51*
Total jurisdictional area[3]	**0.95**	**0.85**	**0.97**

Notes:

1 The acreages listed in the ACOE/RWQCB, CDFW, and City of San Diego Wetlands columns overlap and should not be summed together.

[2] Impacts are not expected within the Miramar Reservoir; therefore, the jurisdictional resources within the Miramar Reservoir are not included in the study area.
[3] Acreage may not total due to rounding.

Landfill Gas Pipeline

The proposed Landfill Gas (LFG) Pipeline would run from the existing Miramar Landfill north along the western portion of the MCAS Miramar property to the NCWRP Expansion site. The LFG Pipeline would primarily be located on MCAS Miramar land and would generally follow the existing City utility easement. The proposed LFG Pipeline is approximately 3 miles; approximately 2.6 miles passes through the open space of MCAS Miramar. Adjacent land uses include existing commercial development, residential to the west and north, and open space areas contained within the MHPA to the west.

The topography is generally sloped down from the center of the LFG Pipeline towards the north and south ends. The LFG Pipeline ranges in elevation, from approximately 272 feet AMSL at the northern and southern ends, to 412 feet AMSL at the center within MCAS Miramar.

The LFG Pipeline study area includes the LFG Pipeline footprint and a 500-foot buffer that supports 20 vegetation communities and/or land cover types (Table 5.4-12).

Table 5.4-12
Vegetation Communities and Land Cover Types Within the Landfill Gas Pipeline Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	LFG Pipeline Footprint Acres	Total Acres in Study Area
Disturbed and Developed Areas (10000)	Non-native Vegetation (11000)	IV	0.04	6.21
	Disturbed Habitat (11300)	IV	4.90~~4.96~~	22.47~~22.33~~
	Urban/Developed (12000)	IV	3.63	27.62
	Extensive Agriculture – Field/Pasture, Row Crops (18300)	IV	0.33~~0.45~~	33.20~~33.32~~
		Disturbed and Developed Areas Total[2]	*8.89~~9.07~~*	*89.50~~89.48~~*
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub (32500)	II	3.88~~3.97~~	77.28~~77.30~~
	Diegan Coastal Sage Scrub (disturbed) (32500)	II	0.68	26.01
	Diegan Coastal Sage Scrub (restored) (32500)	II	—	0.46

Table 5.4-12
Vegetation Communities and Land Cover Types Within the Landfill Gas Pipeline Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	LFG Pipeline Footprint Acres	Total Acres in Study Area
	Diegan Coastal Sage Scrub—Baccharis-dominated (32530)	II	0.03	14.51
	Diegan Coastal Sage Scrub—Baccharis-dominated (disturbed) (32530)	II	—	1.30
	Flat-Topped Buckwheat (32800)	II	<0.01	2.40
	Flat-Topped Buckwheat (disturbed) (32800)	II	0.01	1.74
	Southern Mixed Chaparral (37120)	IIIA	<0.01	13.36
	Chamise Chaparral (37200)	IIIA	0.50	42.32
	Coastal Sage—Chaparral Transition (37G00)	II	0.14	2.19
Scrub and Chaparral Total[2]			*5.23~~5.32~~*	*181.57~~181.59~~*
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Non-native Grassland (42200)	IIIB	0.03	31.45
	Vernal Pool (44000)	Wetland	—	1.63
Grasslands, Vernal Pools, Meadows, and Other Herb Communities Total[2]			*0.03*	*33.09*
Bog and Marsh (50000)	Coastal and Valley Freshwater Marsh (52410)	Wetland	—	1.46
Bog and Marsh Total[2]			—	*1.46*
Riparian and Bottomland Habitat (60000)	Mulefat Scrub (63310)	Wetland	—	0.43
	Southern Willow Scrub (63320)	Wetland	—	0.51
	Non-vegetated Channel or Floodway (64200)	Wetland	—	0.91
Riparian and Bottomland Habitat Total[2]			—	*1.84*
Total[2]			**14.15~~14.42~~**	**307.46**

Notes:

1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).

2 Totals may not sum due to rounding.

Sensitive Plant Species

The following sensitive plant species were observed in the LFG Pipeline survey area: Orcutt's brodiaea (*Brodiaea orcuttii*) (430 ~~2,209~~ individuals), wart-stemmed ceanothus

~~(*Ceanothus verrucosus*)~~ (353~~34~~ individuals), long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*) (300~~326~~ individuals), graceful tarplant (716,191~~659~~ individuals), small-flowered microseris (*Microseris douglasii* ssp. *platycarpha*) (100 individuals), Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*) (151 individuals), golden-rayed pentachaeta ~~(*Pentachaeta aurea* ssp. *aurea*)~~ (2,989~~167~~ individual), ashy spike-moss (43~~17~~ polygons[2]), Nuttall's scrub oak (4 individuals), and San Diego County viguiera (13~~56~~ individuals)~~, and San Diego sagewort (11 individuals)~~. There are no other sensitive plant species that have a moderate to high potential to occur in the LFG Pipeline survey area (Appendix L, Sensitive Plant Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the LFG Pipeline study area.

Sensitive Wildlife Species

The following sensitive wildlife species were observed or previously documented within the LFG Pipeline study area: San Diego fairy shrimp and coastal California gnatcatcher. Sensitive wildlife species that have a moderate to high potential to occur in the LFG Pipeline study area include yellow warbler, yellow-breasted chat, Blainville's horned lizard, red diamondback rattlesnake, San Diegan tiger whiptail, grasshopper sparrow (*Ammodramus savannarum*), Cooper's hawk, white-tailed kite, California horned lark (*Eremophila alpestris actia*), western bluebird, southern California rufous-crowned sparrow, pallid bat, San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), mule deer, western spadefoot, and orangethroat whiptail (Appendix M, Sensitive Wildlife Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the LFG Pipeline study area.

Jurisdictional Aquatic Resources

ACOE- and RWQCB-jurisdictional areas within the LFG Pipeline study area total 0.66 acre, including 0.57 acre of wetlands (including 0.45 acre of vernal pool) and 0.09 acre of non-wetland stream channels. CDFW-jurisdictional areas within the LFG Pipeline study area total 0.21 acre, including 0.12 acre of riparian habitat and 0.09 acre of streambed. All of the jurisdictional aquatic resources are considered wetlands by the City of San Diego, as well as 0.45 acre of vernal pool occurring within MCAS Miramar (PW36, VP653, VP656, and VP654) and with the Miramar National Cemetery (basins were unoccupied and not assigned identifiers). Table 5.4-13 summarizes these features.

[2] This number represents the number of polygons mapped. This species is a fern and grows as a continuous mat, which makes it difficult to provide accurate population counts.

Table 5.4-13
Jurisdictional Aquatic Resources in the Landfill Gas Pipeline Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
Wetland or Riparian Areas			
Coastal and Valley Freshwater Marsh	0.02	0.02	0.02
Mulefat Scrub	0.03	0.03	0.03
Southern Willow Scrub	0.07	0.07	0.07
Vernal Pool	0.45	—	0.45
Total Riparian/Wetlands	*0.57*	*0.12*	*0.57*
Non-wetland Waters/Streambed			
Ephemeral Stream Channel (Non-vegetated Channel)	0.09	0.09	0.09
Total Non-wetland Waters/Streambed	*0.09*	*0.09*	*0.09*
Total jurisdictional area[2]	**0.66**	**0.21**	**0.66**

Notes:

1 The acreages listed in the ACOE/RWQCB, CDFW, and City of San Diego Wetlands columns overlap and should not be summed together.

2 Acreage may not total due to rounding.

Metro Biosolids Center Improvements

The Metro Biosolids Center (MBC) is located north of State Route 52 (SR-52), adjacent to the Miramar Landfill. Upgrades at the MBC are required to handle the additional brine and sludge produced by the NCWRP and advanced water purification process. Adjacent land uses include existing commercial development, residential to the west and north, and MHPA lands to the west. The topography of the MBC is generally flat with ranges in elevation from approximately 400 to 440 feet AMSL.

Vegetation Communities/Land Cover Types

The MBC study area includes the MBC footprint and a 500-foot buffer that supports 9 vegetation communities and/or land cover types (Table 5.4-14).

Table 5.4-14
Vegetation Communities and Land Cover Types within the Metro Biosolids Center Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	MBC Footprint Acres	Total Acres in Study Area
Disturbed and Developed Areas (10000)	Non-native Vegetation (11000)	IV	—	0.06
	Disturbed Habitat (11300)	IV	0.09	4.57
	Urban/Developed (12000)	IV	29.22	40.61
Disturbed and Developed Areas Total[2]			*29.32*	*45.24*
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Non-native Grassland (42200)	IIIB	—	2.62
	Vernal Pool (44000)	Wetland	—	0.03
Grasslands, Vernal Pools, Meadows, and Other Herb Communities Total[2]			—	*2.65*
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub (32500)	II	0.60	23.68
	Southern Mixed Chaparral (37120)	IIIA	—	28.95
	Coastal Sage—Chaparral Transition (37G00)	II	0.30	14.73
Scrub and Chaparral Total[2]			*0.91*	*67.37*
Riparian and Bottomland Habitat (60000)	Southern Willow Scrub (63320)	Wetland	—	0.65
Riparian and Bottomland Habitat Total[2]			—	*0.65*
Total[2]			**30.22**	**115.91**

Notes:
1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).
2 Totals may not sum due to rounding.

Sensitive Plant Species

The following sensitive plant species were observed in MBC survey area: wart-stemmed ceanothus (647~~21~~ individuals), long-spined spineflower (707~~724~~ individuals), graceful tarplant (390~~105~~ individuals), decumbent goldenbush (193~~399~~ individuals), Robinson's pepper-grass (206 individuals), Nuttall's scrub oak (13~~29~~ individuals), and ashy spike-moss (4~~7~~ polygons[3]). There are no other sensitive plant species that have a moderate to high potential to occur in the MBC survey area (Appendix L, Sensitive Plant Species Potential to Occur within the Miramar Reservoir

3 This number represents the number of polygons mapped. This species is a fern and grows as a continuous mat, which makes it difficult to provide accurate population counts.

Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the MBC study area.

Sensitive Wildlife Species

One sensitive wildlife species, coastal California gnatcatcher, was observed in the MBC study area. Sensitive wildlife species that have a moderate to high potential to occur in the MBC study area include orangethroat whiptail, San Diegan tiger whiptail, white-tailed kite, yellow-breasted chat, southern California rufous-crowned sparrow, and mule deer (Appendix N, Sensitive Wildlife Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the MBC study area.

Jurisdictional Aquatic Resources

City-jurisdictional areas within the MBC study area total 0.03 acre of vernal pools (Table 5.4-15). One pool, PW8, was surveyed by Dudek during the 2016/2017 wet season and was determined to be occupied by non-listed fairy shrimp and the vernal pool plant indicator species pale spike rush. Therefore, this pool meets the criteria outlined in the ~~Draft~~ Final ~~Vernal Pool~~VPHCP (City of San Diego ~~2016~~2017) to be designated as a vernal pool under City jurisdiction.

Table 5.4-15
Jurisdictional Aquatic Resources in the Metro Biosolids Center Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
Wetland or Riparian Areas			
Vernal Pool	—	—	0.03[2]
Total jurisdictional area	**—**	**—**	**0.03**

Note:
1 The acreages listed in the ACOE/RWQCB, CDFW, and City of San Diego Wetlands columns overlap and should not be summed together.
2 This 0.03 acre of vernal pool is also potentially regulated by the RWQCB.

Miramar Water Treatment Plant Improvements

The Miramar Water Treatment Plant (WTP) and Miramar Reservoir Pump Station are located directly south of the Miramar Reservoir. Adjacent land uses include existing commercial and residential development, and open space areas of the reservoir and within canyons considered MHPA lands. The topography of the Miramar WTP is generally flat with ranges in elevation, from approximately 720 to 780 feet AMSL.

Vegetation Communities/Land Cover Types

The Miramar WTP footprint supports four vegetation communities and/or land cover types (Table 5.4-16). Resources were only evaluated within the Miramar WTP footprint.

Table 5.4-16
Vegetation Communities and Land Cover Types Within the Miramar Water Treatment Plant Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/ Oberbauer Code)	Tier[1]	Miramar WTP Pump Station Footprint Acres	Miramar Water Treatment Plant Footprint Acres	Total Acres
Disturbed and Developed Areas (10000)	Disturbed Habitat (11300)	IV	0.39	0.01	0.39
	Urban/Developed (12000)	IV	0.66	26.49	27.15
		Disturbed and Developed Areas Total[2]	*1.04*	*26.50*	*27.54*
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub (disturbed) (32500)	II	—	1.32	1.32
		Scrub and Chaparral Total[2]	*—*	*1.32*	*1.32*
Woodland (70000)	Eucalyptus Woodland (79100)	IV	0.27	—	0.27
		Woodland Total[2]	*0.27*	*—*	*0.27*
		Total[2]	**1.31**	**27.82**	**29.13**

Notes:
1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).
2 Totals may not sum due to rounding.

Sensitive Plant Species

No sensitive plant species were observed in Miramar WTP footprint. Further, no sensitive plant species have a moderate to high potential to occur in the Miramar WTP footprint (Appendix L, Sensitive Plant Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the Miramar WTP.

Sensitive Wildlife Species

There were no sensitive wildlife species observed in the Miramar WTP footprint. Sensitive wildlife species that have moderate to high potential to occur in Miramar WTP footprint include osprey and Canada goose (*Branta canadensis*). Appendix N, Sensitive Wildlife Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the Miramar WTP.

Jurisdictional Aquatic Resources

There are no jurisdictional aquatic resources within the Miramar WTP footprint.

Pure Water Dechlorination Facility

The Dechlorination Facility is located at the end of Meanly Drive, south of Miramar Reservoir, and east of Scripps Ranch Boulevard. Within the Dechlorination Facility, the topography is generally flat. The site ranges in elevation from approximately 625 feet to 630 feet AMSL. Existing land use at the Dechlorination Facility is developed and eucalyptus woodland. Adjacent land uses include a mixture of existing commercial and residential development, and Miramar Reservoir, which is located within the MHPA boundary.

Vegetation Communities/Land Cover Types

The Dechlorination Facility study area includes the Dechlorination Facility footprint and a 500-foot buffer that supports 3 vegetation communities and/or land cover types (Table 5.4-17).

Table 5.4-17
Vegetation Communities and Land Cover Types
Within the Pure Water Dechlorination Facility Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	Dechlorination Facility Footprint Acres	Total Acres in Study Area
Disturbed and Developed Areas (10000)	Urban/Developed (12000)	IV	0.01	7.75~~7.76~~
	Disturbed and Developed Areas Total[2]		*0.01*	*7.75~~7.76~~*

Table 5.4-17
Vegetation Communities and Land Cover Types Within the Pure Water Dechlorination Facility Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	Dechlorination Facility Footprint Acres	Total Acres in Study Area
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Non-native Grassland (42200)	IIIB	—	2.61
Grasslands, Vernal Pools, Meadows, and Other Herb Communities Total[2]			—	*2.61*
Woodland (70000)	Eucalyptus Woodland (79100)	IV	0.06	3.11~~3.17~~
Woodland Total[2]			*0.06*	*3.11~~3.17~~*
Total[2]			0.07	**13.57~~13.54~~**

Notes:
1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).
2 Totals may not sum due to rounding.

Sensitive Plant Species

No sensitive plant species were observed or have moderate to high potential to occur in the Dechlorination Facility survey area (Appendix L, Sensitive Plant Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the Dechlorination Facility study area.

Sensitive Wildlife Species

No sensitive wildlife species were observed or have moderate to high potential to occur in Dechlorination Facility study area (Appendix N, Sensitive Wildlife Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the Dechlorination Facility study area.

Jurisdictional Aquatic Resources

There are no jurisdictional aquatic resources within the Dechlorination Facility study area.

San Vicente Pure Water Pipeline

The proposed San Vicente Pure Water Pipeline (San Vicente Pipeline) would begin at the NCPWF and head southeast until it ends at the San Vicente Reservoir. The proposed pipeline runs for approximately 28 miles or 147,000 linear feet, mainly along the following streets: Eastgate Mall, Copley Drive, Copley Park Place, Lightwave Avenue, Claremont Mesa Boulevard, Santo Road, Tierrasanta Boulevard, Mission Gorge Road, Carlton Oaks Drive, Mast Boulevard, Riverside Drive, Lakeside Avenue, Willow Road, and Morena Avenue. The pipeline spans the cities of San Diego, Santee, and Lakeside. Topography within the pipeline's vicinity includes canyons separating mesas and the San Diego River, which a portion of the pipeline parallels. The pipeline ranges in elevation from approximately 120 feet AMSL, where the pipeline crosses over the San Diego River, to 1,080 feet AMSL at the San Vicente Reservoir. The majority of the proposed pipeline would occur within existing developed roads and would only occasionally cross into native habitat communities within the San Diego River and around the San Vicente Reservoir.

Adjacent land uses include existing commercial development, residential, and open space areas contained within the MHPA of the City's MSCP Subarea Plan. The proposed pipeline would intersect the MHPA seven times, including areas associated with the San Vicente Reservoir and Mission Trails Regional Park. However, areas that are excluded from the MHPA in order to provide for current and future requirements of the Public Utilities Department include the existing San Vicente Reservoir and dam, and all lands within 300 feet horizontally from the ultimate high water level (MSCP Subarea Plan 1997).

Vegetation Communities and Land Cover Types

The San Vicente Pipeline study area includes the San Vicente Pipeline footprint and a 500-foot buffer that supports 35 vegetation communities and/or land cover types (Table 5.4-18). The urban/developed land cover type is not considered a sensitive community by the City's MSCP.

Table 5.4-18
Vegetation Communities and Land Cover Types Within the San Vicente Pipeline Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	San Vicente Pipeline Footprint Acres	Total Acres in Study Area
Disturbed and Developed Areas (10000)	Non-native Vegetation (11000)	IV	0.01	22.64
	Disturbed Wetland (11200)	Wetland	—	1.36
	Disturbed Habitat (11300)	IV	0.77	88.08
	Urban/Developed (12000)	IV	96.27	1,849.09
	Developed – Concrete Channel (12000)	IV	—	0.46
	General Agriculture (18000)	IV	—	9.68
	Intensive Agriculture – Dairies, Nurseries, Chicken Ranches (18200)	IV	0.05	12.74
		Disturbed and Developed Areas Total[2]	*97.10*	*1,984.06*
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub (32500)	II	0.63	329.10
	Diegan Coastal Sage Scrub (disturbed) (32500)	II	1.58	52.14
	Diegan Coastal Sage Scrub (restored) (32500)	II	0.07	4.65
	Diegan Coastal Sage Scrub—Baccharis-dominated (32530)	II	—	10.72
	Diegan Coastal Sage Scrub—Baccharis-dominated (disturbed) (32530)	II	—	2.99
	Southern Mixed Chaparral (37120)	IIIA	0.03	26.84
	Chamise Chaparral (37200)	IIIA	<0.01	<0.01
	Scrub Oak Chaparral (37900)	I	—	1.37
	Coastal Sage—Chaparral Transition (37G00)	II	—	6.89
		Scrub and Chaparral Total[2]	*2.32*	*434.70*
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Native Grassland (42100)	I	—	6.64
	Non-native Grassland (42200)	IIIB	1.24	131.20
	Vernal Pool (44000)	Wetland	—	1.06
		Grasslands, Vernal Pools, Meadows, and Other Herb Communities Total[2]	*1.24*	*138.90~~105.51~~*

Table 5.4-18
Vegetation Communities and Land Cover Types Within the San Vicente Pipeline Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	San Vicente Pipeline Footprint Acres	Total Acres in Study Area
Bog and Marsh (50000)	Coastal and Valley Freshwater Marsh (52410)	Wetland	—	2.00
		Bog and Marsh Total[2]	*—*	*2.00*
Riparian and Bottomland Habitat (60000)	Southern Riparian Forest (61300)	Wetland	—	1.42
	Southern Coast Live Oak Riparian Forest (61310)	Wetland	—	2.62
	Southern Arroyo Willow Riparian Forest (61320)	Wetland	0.11	24.33
	Southern Cottonwood–Willow Riparian Forest (61330)	Wetland	—	25.63
	Southern Sycamore—Alder Riparian Woodland (62400)	Wetland	—	7.70
	Mulefat Scrub (63310)	Wetland	—	4.66
	Mulefat Scrub (disturbed) (63310)	Wetland	—	1.89
	Southern Willow Scrub (63320)	Wetland	0.40	41.98
	Southern Willow Scrub (disturbed) (63320)	Wetland	—	2.31
	Open Water – Freshwater (64140)	Wetland	—	1.51
	Non-vegetated Channel or Floodway (64200)	Wetland	0.08	2.50
	Arundo-Dominated Riparian (65100)	Wetland	—	6.95
		Riparian and Bottomland Habitat Total[2]	*0.59*	*123.50*
Woodland (70000)	Coast Live Oak Woodland (71160)	I	0.01	7.79
	Eucalyptus Woodland (79100)	IV	0.09	43.65
	Non-native Woodland (79000)	IV	0.15	16.60
		Woodland Total[2]	*0.25*	*68.04*
		Total[2]	**101.51[3]**	**2,751.19**

Notes:

1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).

2 Totals may not sum due to rounding.

3 Total includes impacts from air and blow off-valves associated with the San Vicente Pipeline Repurposed 36-inch Recycled Water Line.

Sensitive Plant Species

The following sensitive plant species were observed in San Vicente Pipeline survey area: San Diego barrel cactus ~~(*Ferocactus viridescens*)~~ (23 individuals), Robinson's pepper-grass (approximately 7,680 individuals), ashy spike-moss (4 polygons[4]), Southern California black walnut (*Juglans californica*) (4 individuals), white rabbit-tobacco (*Pseudognaphalium leucocephalum*) (5 individuals), and San Diego County viguiera (approximately 4,320 individuals). There are no other sensitive plant species that have a moderate to high potential to occur in the San Vicente Pipeline survey area (Appendix M, Sensitive Plant Species Potential to Occur within the San Vicente Reservoir Alternative, of Appendix C). USFWS Critical Habitat for San Diego ambrosia (*Ambrosia pumila*) occurs within the San Diego River Watershed near SR-52 and would be intersected by the San Vicente Pipeline.

Sensitive Wildlife Species

The following sensitive wildlife species were observed in San Vicente Pipeline study area: orangethroat whiptail, two-striped gartersnake, coastal California gnatcatcher, Cooper's hawk, yellow warbler, southern California rufous-crowned sparrow, western bluebird, least Bell's vireo, yellow-breasted chat, and mule deer. Sensitive wildlife species that have a high to moderate potential to occur in the San Vicente Pipeline study area include San Diegan tiger whiptail, Blainville's horned lizard, red diamondback rattlesnake, rosy boa (*Lichanura trivirgata*), white-tailed kite, California horned lark, pallid bat, Yuma myotis, San Diego black-tailed jackrabbit, cougar (*Puma concolor*), and monarch (Appendix O, Sensitive Wildlife Species Potential to Occur within the San Vicente Reservoir Alternative, of Appendix C). USFWS Critical Habitat for coastal California gnatcatcher and least Bell's vireo occurs within the San Vicente Pipeline study area. The Critical Habitat for least Bell's vireo occurs within the San Diego River Watershed near SR-52 and would be intersected by the proposed pipeline footprint. There is a small area of Critical Habitat for coastal California gnatcatcher that is within the San Vicente Pipeline study area, north of Mast Boulevard, but the San Vicente Pipeline would not intersect this area.

[4] This number represents the number of polygons mapped. This species is a fern and grows as a continuous mat, which makes it difficult to provide accurate population counts.

Jurisdictional Aquatic Resources

ACOE- and RWQCB-jurisdictional areas within the San Vicente Pipeline study area total 4.27 acres, including 3.13 acres of wetlands and 1.13 acres of non-wetland stream channels/open water. CDFW-jurisdictional areas within the San Vicente Pipeline study area total 5.26 acres, including 4.81 acres of riparian habitat and 0.45 acre of streambed. All of the jurisdictional aquatic resources are considered wetlands by the City of San Diego, as well as 0.87 acre of vernal pools (PW36, VP697, and VP699) within the study area for the air and blow-off valves associated with the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line. These three basins (PW36, VP697, and VP699) are all occupied by San Diego fairy shrimp. Table 5.4-19 summarizes these features.

Table 5.4-19
Jurisdictional Aquatic Resources in the
San Vicente Pure Water Pipeline Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
Wetland or Riparian Areas			
Arundo-Dominated Riparian	0.33	0.39	0.39
Coastal and Valley Freshwater Marsh	0.25	0.25	0.25
Disturbed Mulefat Scrub	—	0.17	0.17
Mulefat Scrub	—	0.16	0.16
Southern Arroyo Willow Riparian Forest	1.12	1.54	1.54
Southern Cottonwood–Willow Riparian Forest	—	0.08	0.08
Southern Sycamore-Alder Riparian Woodland	—	0.58	0.58
Southern Willow Scrub	0.55	1.63	1.63
Vernal Pool	0.87	—	0.87
Total Riparian/Wetlands	*3.13*	*4.81*	5.69
Non-wetland Waters/Streambed			
Ephemeral Stream Channel (Non-vegetated channel)	0.89	0.21	*0.20*
Intermittent Stream Channel	0.06	0.06	*0.06*
Perennial Stream Channel/Open Water	0.18	0.18	*0.18*
Total Non-wetland Waters/Streambed	*1.13*	*0.45*	*0.44*
Total jurisdictional area[2]	**4.27**	**5.26**	**6.13**

Notes:

1 The acreages listed in the ACOE/RWQCB, CDFW, and City of San Diego Wetlands columns overlap and should not be summed together.

2 Acreage may not total due to rounding.

San Vicente Pipeline - Tunnel Alternative Terminus

The San Vicente Pipeline - Tunnel Alternative Terminus (TAT) would be located on the south side of San Vicente Reservoir, east of Morena Avenue and would connect to the end of the San Vicente Pipeline. The San Vicente Pipeline - TAT area is sloped from the middle outwards with elevations ranging from approximately 520 feet to 1,080 feet AMSL. Adjacent land uses include a mixture of existing open space, low-density residential development, and the San Vicente Reservoir. The majority of the San Vicente Pipeline - TAT is within an MHPA area. This alternative also includes the installation of riprap below the outfall within the drainage to the immediate east. This would allow for the water to free flow into the reservoir.

Vegetation Communities and Land Cover Types

The San Vicente Pipeline - TAT study area supports 8 vegetation communities and/or land cover types (Table 5.4-20). The urban/developed land cover type is not considered a sensitive community by the City's MSCP.

Table 5.4-20
Vegetation Communities and Land Cover Types
Within the San Vicente Pipeline - TAT Study Area

General Vegetation Community/ Land Cover Category	General Vegetation Type (Holland/ Oberbauer Code)	Tier[1]	TAT Footprint Acres*	Total Acres in Study Area
Disturbed and Developed Areas (10000)	Disturbed Habitat (11300)	IV	0.11	1.94
	Urban/Developed (12000)	IV	0.07	5.91
		Disturbed and Developed Areas Total[2]	*0.18*	*7.85*
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub (32500)	II	—	44.67
	Diegan Coastal Sage Scrub (restored) (32500)	II	—	0.65
	Southern Mixed Chaparral (37120)	IIIA	0.26	79.59
		Scrub and Chaparral Total[2]	*0.26*	*124.91*
Riparian and Bottomland Habitat (60000)	Open Water – Freshwater (64140)	Wetland	0.02	1.16
	Non-vegetated Channel or Floodway (64200)	Wetland	<0.01	0.05
		Riparian and Bottomland Habitat Total[2]	*0.03*	*1.21*

Table 5.4-20
Vegetation Communities and Land Cover Types
Within the San Vicente Pipeline - TAT Study Area

General Vegetation Community/ Land Cover Category	General Vegetation Type (Holland/ Oberbauer Code)	Tier[1]	TAT Footprint Acres*	Total Acres in Study Area
Woodland (70000)	Coast Live Oak Woodland (71160)	I	0.07	0.57
		Woodland Total[2]	*0.07*	*0.57*
		Total[2]	**0.54**	**134.54**

Notes:
1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).
2 Totals may not sum due to rounding.
* The footprint acreage is based off the project alignment with a 30-foot buffer, for a total of a 60-foot corridor.

Sensitive Plants

One sensitive plant species, Robinson's pepper-grass (about 1,450 individuals) was observed in San Vicente Pipeline - TAT survey area. There are no other sensitive plant species that have a moderate to high potential to occur in the San Vicente Pipeline - TAT survey area (Appendix M, Sensitive Plant Species Potential to Occur within the San Vicente Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the San Vicente Pipeline - TAT study area.

Sensitive Wildlife Species

No sensitive wildlife species were observed in San Vicente Pipeline - TAT study area. Sensitive wildlife species that have moderate to high potential to occur within the San Vicente Pipeline - TAT study area include: rosy boa, San Diego ringneck snake, red diamondback snake, two-striped gartersnake, yellow warbler, coastal California gnatcatcher, white-tailed kite, cougar, monarch, Blainville's horned lizard, San Diegan tiger whiptail, Cooper's hawk, southern California rufous-crowned sparrow, mule deer, and orangethroat whiptail (Appendix O, Sensitive Wildlife Species Potential to Occur within the San Vicente Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the San Vicente Pipeline - TAT study area.

Jurisdictional Aquatic Resources

ACOE-, RWQCB-, and CDFW-jurisdictional areas within the San Vicente Pipeline - TAT study area total 0.40 acre of non-wetland stream channel/open water. The majority of the jurisdictional aquatic resources are considered wetlands by the City of San Diego. Table 5.4-21 summarizes these features.

Table 5.4-21
Jurisdictional Aquatic Resources in the San Vicente Pipeline - TAT Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
Non-wetland Waters/Streambed			
Ephemeral Stream Channel (Non-vegetated Channel)	0.01	0.01	—
Perennial Stream Channel/Open Water	0.39	0.39	0.39
Total jurisdictional area[2]	**0.40**	**0.40**	**0.39**

Notes:
1 The acreages listed in the ACOE/RWQCB, CDFW, and City of San Diego Wetlands columns overlap and should not be summed together.
2 Acreage may not total due to rounding.

San Vicente Pipeline - In-Reservoir Alternative Terminus

The San Vicente Pipeline - In-Reservoir Alternative Terminus (IRAT) would connect to the San Vicente Pipeline and occurs within the southern portion of the San Vicente Reservoir. The San Vicente Pipeline - IRAT area has elevations ranging from approximately 480 feet to 880 feet AMSL. There are both developed lands and native habitat within the San Vicente Pipeline - IRAT. Adjacent land uses include a mixture of existing open space, low-density residential development, and the San Vicente Reservoir. The entire length of the San Vicente Pipeline - IRAT is located within this MHPA area, with the majority occurring within the San Vicente Reservoir.

Vegetation Communities and Land Cover Types

The San Vicente Pipeline - IRAT study area supports seven vegetation communities and/or land cover types (Table 5.4-22). The urban/developed land cover type is not considered a sensitive community by the City's MSCP.

Table 5.4-22
Vegetation Communities and Land Cover Types Within the San Vicente Pipeline - IRAT Study Area

General Vegetation Community/ Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	IRAT Footprint Acres*	Total Acres in Study Area
Disturbed and Developed Areas (10000)	Disturbed Habitat (11300)	IV	—	1.59
	Urban/Developed (12000)	IV	5.99	13.20
		Disturbed and Developed Areas Total[2]	*5.99*	*14.79*
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub (32500)	II	1.74	53.19
	Southern Mixed Chaparral (37120)	IIIA	—	8.79
		Scrub and Chaparral Total[2]	*1.74*	*61.98*
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Non-native Grassland (42200)	IIIB	0.01	4.66
		Grasslands, Vernal Pools, Meadows, and Other Herb Communities Total[2]	*0.01*	*4.66*
Riparian and Bottomland Habitat (60000)	Open Water – Freshwater (64140)	Wetland	0.50	177.01
		Riparian and Bottomland Habitat Total[2]	*0.50*	*177.01*
Woodland (70000)	Coast Live Oak Woodland (71160)	I	<0.01	<0.01
		Woodland Total[2]	*<0.01*	*<0.01*
		Total[2]	**8.24**	**258.44**

Notes:

1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).

2 Totals may not sum due to rounding.

* The footprint acreage is based off the project alignment with a 30-foot buffer, for a total of a 60-foot corridor.

Sensitive Plants

The following sensitive plant species were observed in San Vicente Pipeline - IRAT survey area: delicate clarkia (*Clarkia delicata*) (10 individuals), San Diego County viguiera (approximately 1,570 individuals), and white rabbit-tobacco (760 individuals). There are no other sensitive plant species that have a moderate to high potential to occur in the San Vicente Pipeline - IRAT survey area (Appendix M, Sensitive Plant Species Potential to Occur within the San Vicente Reservoir

Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the San Vicente Pipeline - IRAT study area.

Sensitive Wildlife Species

The following sensitive wildlife species were observed in San Vicente Pipeline - IRAT study area: San Diegan tiger whiptail, orangethroat whiptail, southern California rufous-crowned sparrow, and coastal California gnatcatcher. Sensitive wildlife species that have moderate to high potential to occur in the San Vicente Pipeline - IRAT study area include Cooper's hawk, Blainville's horned lizard, western pond turtle, red diamondback rattlesnake, cougar, monarch, and mule deer (Appendix O, Sensitive Wildlife Species Potential to Occur within the San Vicente Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the San Vicente Pipeline - IRAT study area.

Jurisdictional Aquatic Resources

ACOE-, RWQCB-, and CDFW-jurisdictional areas within the San Vicente Pipeline - IRAT study area total 20.44 acres of non-wetland stream channel/open water. All of the jurisdictional aquatic resources are considered wetlands by the City of San Diego. Table 5.4-23 summarizes these features.

Table 5.4-23
Jurisdictional Aquatic Resources in the
San Vicente Pipeline - IRAT Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
Non-wetland Waters/Streambed			
Ephemeral Stream Channel (Non-vegetated Channel)	0.27	0.27	0.27
Perennial Stream Channel/Open Water	20.17	20.17	20.17
Total jurisdictional area[2,3]	**20.44**	**20.44**	**20.44**

Notes:

1 The acreages listed in the ACOE/RWQCB, CDFW, and City of San Diego Wetlands columns overlap and should not be summed together.

2 Acreage may not total due to rounding.

3 Approximately 0.15 acre of non-wetland waters overlaps with the Marina Alternative Study Area, but only one of these inlet alternatives would be selected.

San Vicente Pipeline - Marina Alternative Terminus

The San Vicente Pipeline - Marina Alternative Terminus (MAT) would connect to the San Vicente Pipeline and occurs within the southern portion of the San Vicente Reservoir. The San Vicente Pipeline - MAT runs north–south with elevations ranging from approximately 480 feet to 840 feet AMSL. Existing vegetation communities and land covers within the San Vicente Pipeline - MAT include Diegan coastal sage scrub (including restored), southern mixed chaparral, disturbed, and developed. Adjacent land uses include a mixture of existing open space, low-density residential development, and the San Vicente Reservoir. The San Vicente Reservoir is included within the MHPA boundary. The entire length of the San Vicente Pipeline - MAT is located within MHPA.

Vegetation Communities and Land Cover Types

The San Vicente Pipeline - MAT study area supports 7 vegetation communities and/or land cover types (Table 5.4-24). The urban/developed land cover type is not considered a sensitive community by the City's MSCP.

Table 5.4-24
Vegetation Communities and Land Cover Types
Within the San Vicente Pipeline - MAT Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	MAT Footprint Acres*	Total Acres in Study Area
Disturbed and Developed Areas (10000)	Disturbed Habitat (11300)	IV	2.16	15.66
	Urban/Developed (12000)	IV	7.89	17.32
Disturbed and Developed Areas Total[2]			*10.04*	*32.99*
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub (32500)	II	1.74	1.74
	Diegan Coastal Sage Scrub (restored) (32500)	II	0.37	10.27
	Southern Mixed Chaparral (37120)	IIIA	0.34	16.22
Scrub and Chaparral Total[2]			*2.45*	*28.23*
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Non-native Grassland (42200)	IIIB	0.01	0.01
Grasslands, Vernal Pools, Meadows, and Other Herb Communities Total[2]			*0.01*	*0.01*

Table 5.4-24
Vegetation Communities and Land Cover Types
Within the San Vicente Pipeline - MAT Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	MAT Footprint Acres*	Total Acres in Study Area
Riparian and Bottomland Habitat (60000)	Open Water – Freshwater (64140)	Wetland	1.64	42.54
		Riparian and Bottomland Habitat Total[2]	*1.64*	*42.54*
		Total[2]	**14.14**	**103.76**

Notes:
1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).
2 Totals may not sum due to rounding.
* The footprint acreage is based off the project alignment with a 30-foot buffer, for a total of a 60-foot corridor.

Sensitive Plants

The following sensitive plant species were observed in the San Vicente Pipeline - MAT survey area: delicate clarkia (10 individuals), Robinson's pepper-grass (approximately 6,000 individuals), ashy spike-moss (4 polygons[5]), San Diego County viguiera (approximately 1,500 individuals), and white rabbit-tobacco (approximately 760 individuals). There are no other sensitive plant species that have a moderate to high potential to occur in the San Vicente Pipeline - MAT survey area (Appendix M, Sensitive Plant Species Potential to Occur within the San Vicente Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the San Vicente Pipeline - MAT study area.

Sensitive Wildlife Species

The following sensitive wildlife species were observed in San Vicente Pipeline - MAT study area: southern California rufous-crowned sparrow. Sensitive wildlife species that have moderate to high potential to occur in the San Vicente Pipeline - MAT study area include coastal California gnatcatcher, mule deer, orangethroat whiptail, Blainville's horned lizard, red diamondback rattlesnake, osprey, cougar, monarch, San Diegan tiger whiptail, and Cooper's hawk (Appendix O, Sensitive Wildlife

5 This number represents the number of polygons mapped. This species is a fern and grows as a continuous mat, which makes it difficult to provide accurate population counts.

Species Potential to Occur within the San Vicente Reservoir Alternative, of Appendix C). No USFWS Critical Habitat occurs within or immediately adjacent to the San Vicente Pipeline - MAT study area.

Jurisdictional Aquatic Resources

ACOE-, RWQCB-, and CDFW-jurisdictional areas within the San Vicente Pipeline - MAT study area total 3.51 acre of non-wetland stream channel/open water. All of the jurisdictional aquatic resources are considered wetlands by the City of San Diego. Table 5.4-25 summarizes these features.

Table 5.4-25
Jurisdictional Aquatic Resources in the San Vicente Pipeline - MAT Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
Non-wetland Waters/Streambed			
Ephemeral Stream Channel (Non-vegetated Channel)	0.02	0.02	0.02
Perennial Stream Channel/Open Water	3.48	3.48	3.48
Total jurisdictional area[2,3]	**3.51**	**3.51**	**3.51**

Notes:
1 The acreages listed in the ACOE/RWQCB, CDFW, and City of San Diego Wetlands columns overlap and should not be summed together.
2 Acreage may not total due to rounding.
3 Approximately 0.15 acre of non-wetland waters overlaps with the San Vicente Pipeline - IRAT Study Area, but only one of these inlet alternatives would be selected.

Mission Trails Booster Station

The Mission Trails Booster Station (MTBS) is located on the east side of Mission Gorge Road, west of Hillandale Drive, and north of Laramie Way. Within the MTBS, the topography has a slight western and southwestern slope. The MTBS has an elevation of approximately 400 feet AMSL. Existing land use at the MTBS include developed land and disturbed Diegan coastal sage scrub. The MTBS is not within the MHPA boundary and is surrounded by existing residential development. Within the vicinity of the MTBS are open space areas designated as MHPA, including the San Diego River. The San Diego River lies 0.25 mile to the northwest of the MTBS.

Vegetation Communities and Land Cover Types

The MTBS study area supports five vegetation communities and/or land cover types (Table 5.4-26). The urban/developed land cover type and non-native woodland are not considered a sensitive community by the City's MSCP.

Table 5.4-26
Vegetation Communities and Land Cover Types Within the Mission Trails Booster Station Study Area

General Vegetation Community/ Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	MTBS Footprint Acres	Total Acres in Study Area
Disturbed and Developed Areas (10000)	Disturbed Habitat (11300)	IV	—	0.78
	Urban/Developed (12000)	IV	<0.01	24.54
	Disturbed and Developed Areas Total[2]		*<0.01*	*25.32*
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub (32500)	II	—	1.63
	Diegan Coastal Sage Scrub (disturbed) (32500)	II	1.22	2.31
	Scrub and Chaparral Total[2]		*1.22*	*3.94*
Woodland (70000)	Non-native Woodland (79000)	IV	—	0.64
	Woodland Total[2]		—	*0.64*
	Total[2]		**1.22**	**29.91**

Notes:
1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).
2 Totals may not sum due to rounding.

Sensitive Plant Species

One sensitive plant species, San Diego County viguiera (200 ~~one~~ individuals) was observed in the MTBS survey area. There are no other sensitive plant species that have a moderate to high potential to occur in the MTBS survey area (Appendix M, Sensitive Plant Species Potential to Occur within the San Vicente Reservoir Alternative, of Appendix C). No USFWS Critical Habitat, or MHPA, occurs within or immediately adjacent to the MTBS study area.

Sensitive Wildlife Species

No sensitive wildlife species were observed or have moderate to high potential to occur within the MTBS study area. No USFWS Critical Habitat, or MHPA, occurs within or immediately adjacent to the MTBS study area.

Jurisdictional Aquatic Resources

There are no jurisdictional aquatic resources within the MTBS study area.

5.4.2.3 Summary of Miramar Reservoir Alternative

Vegetation Communities and Land Cover Types

A total of 38 vegetation communities and/or land cover types were observed in the Miramar Reservoir Alternative study area (Table 5.4-27). The urban/developed land cover type, non-native vegetation, and extensive agriculture are not considered sensitive communities by the City's MSCP. Table 5.4-27 includes all of the vegetation within the 500-foot study area buffer for the Miramar Reservoir Alternative.

Table 5.4-27
Vegetation Communities and Land Cover Types Within
Miramar Reservoir Alternative Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier/Wetland[1]	Total Acres in Study Area	% of Miramar Reservoir Alternative Study Area
Disturbed and Developed Areas (10000)	Non-native Vegetation (11000)	IV	62.61	2.1
	Disturbed Wetland (11200)	Wetland	1.64	0.1
	Disturbed Habitat (11300)	IV	84.06~~83.91~~	2.9
	Urban/Developed (12000)	IV	1,904.56 ~~1,904.44~~	64.8
	Developed – Concrete Channel (12000)	IV	1.29	<0.1
	Extensive Agriculture – Field/Pasture, Row Crops (18300)	IV	33.20~~33.32~~	1.1
	Disturbed and Developed Areas Total[2]		*2,087.35* ~~*2,087.21*~~	*71.0*

Table 5.4-27
Vegetation Communities and Land Cover Types Within Miramar Reservoir Alternative Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier/Wetland[1]	Total Acres in Study Area	% of Miramar Reservoir Alternative Study Area
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub[3] (32500)	II	182.81~~182.83~~	6.2
	Diegan Coastal Sage Scrub (disturbed)[3] (32500)	II	91.78	3.1
	Diegan Coastal Sage Scrub (restored)[3] (32500)	II	0.46	<0.1
	Diegan Coastal Sage Scrub—Baccharis-dominated[3] (32530)	II	17.33	0.6
	Diegan Coastal Sage Scrub—Baccharis-dominated (disturbed)[3] (32530)	II	1.51	0.1
	Flat-Topped Buckwheat[3] (32800)	II	2.40	0.1
	Flat-Topped Buckwheat (disturbed)[3] (32800)	II	1.74	0.1
	Southern Mixed Chaparral[3] (37120)	IIIA	52.62	1.8
	Southern Mixed Chaparral (disturbed)[3] (37120)	IIIA	0.42	<0.1
	Chamise Chaparral[3] (37200)	IIIA	61.24	2.0
	Coastal Sage—Chaparral Transition[3] (37G00)	II	17.33~~17.45~~	0.6
Scrub and Chaparral Total[2]			*429.75~~429.78~~*	*14.6*
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Native Grassland[3] (42100)	I	1.31	<0.1
	Non-Native Grassland[3] (42200)	IIIB	107.89	3.7
	Vernal Pool (44000)	Wetland	2.42	<0.1
Grasslands, Vernal Pools, Meadows, and Other Herb Communities Total[2]			*111.62*	*3.8*

Table 5.4-27
Vegetation Communities and Land Cover Types Within Miramar Reservoir Alternative Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier/Wetland[1]	Total Acres in Study Area	% of Miramar Reservoir Alternative Study Area
Bog and Marsh (50000)	Cismontane Alkali Marsh (52310)	Wetland	2.32	0.1
	Coastal and Valley Freshwater Marsh (52410)	Wetland	27.07	0.9
	Coastal and Valley Freshwater Marsh (disturbed) (52410)	Wetland	0.01	<0.1
	Herbaceous Wetland (52510)	Wetland	0.76	<0.1
		Bog and Marsh Total[2]	*30.16*	*1.0*
Riparian and Bottomland Habitat (60000)	Southern Riparian Forest (61300)	Wetland	5.15	0.2
	Southern Riparian Forest (disturbed) (61300)	Wetland	0.02	<0.1
	Southern Coast Live Oak Riparian Forest (61310)	Wetland	3.57	0.1
	Southern Arroyo Willow Riparian Forest (61320)	Wetland	4.64	0.2
	Mulefat Scrub (63310)	Wetland	2.22	0.1
	Southern Willow Scrub (63320)	Wetland	10.59	0.4
	Southern Willow Scrub (disturbed) (63320)	Wetland	1.76	0.1
	Open Water – Freshwater (64140)	Wetland	121.63[4]	4.1
	Non-vegetated Channel or Floodway (64200)	Wetland	2.30	0.1
	Arundo-Dominated Riparian (65100)	Wetland	0.55	<0.1
		Riparian and Bottomland Habitat Total[2]	*152.42*	*5.2*
Woodland (70000)	Coast Live Oak Woodland[3] (71160)	I	29.76	1.0
	Coast Live Oak Woodland (disturbed)[3] (71160)	I	1.22	<0.1

Table 5.4-27
Vegetation Communities and Land Cover Types Within Miramar Reservoir Alternative Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier/Wetland[1]	Total Acres in Study Area	% of Miramar Reservoir Alternative Study Area
	Non-native Woodland (79000)	IV	0.29	<0.1
	Eucalyptus Woodland (79100)	IV	96.25	3.3
		Woodland Total[2]	*127.51*	*4.3*
		Total[2]	**2,938.82** ~~**2,938.71**~~	**100.0**

Notes:
1 City Subarea Plan tiers and wetland identification are from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).
2 Totals may not sum due to rounding.
3 Sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).
4 The majority of this total is from the Miramar Reservoir (120.26 acres).

Floral Diversity

A total of 466 species of vascular plants, including 309 native species (67%) and 157 non-native species (33%), were recorded during the biological reconnaissance surveys for the Miramar Reservoir Alternative. A cumulative list of all common and sensitive plant species observed in the study area are provided in Appendix J, Plant Compendium, of Appendix C.

Wildlife Diversity

The Miramar Reservoir Alternative study area supports habitat for upland and riparian wildlife species. Chaparral, coastal scrub, woodland, riparian, and non-native habitats (e.g., eucalyptus and non-native grassland) within the study area provide foraging and nesting habitat for migratory and resident bird species and other wildlife species. Chaparral, coastal scrub, and woodlands within the Miramar Reservoir Alternative study area provide cover and foraging opportunities for wildlife species, including reptiles and mammals.

As previously mentioned, wildlife species detected during the field survey by sight, calls, tracks, scat, or other signs were recorded directly onto a field notebook. Binoculars were used to aid in the identification of wildlife. In addition to species actually detected during the surveys, expected wildlife use of the site was determined by known habitat preferences of local species and knowledge of their relative distributions in the area. There were 66 wildlife species observed throughout the Miramar Reservoir Alternative study area. The majority of impacts associated with the Miramar Reservoir Alternative would occur within existing roads surrounded by developed land and wildlife species observed in these areas are common, disturbance-adapted species typically found in urban and suburban settings. Within these developed areas there is minimal suitable habitat for wildlife species due to the cover of impervious surfaces, the proximity to residential and commercial development, and the disturbed nature of the immediately surrounding habitat. Species observed within the study area were recorded during focused surveys, habitat assessments, vegetation mapping and sensitive plant surveys. A list of wildlife species observed in the Miramar Reservoir Alternative study area is presented in Appendix K, Wildlife Compendium, of Appendix C.

Of the total 66 wildlife species observed, 6 (9%) are considered special status (4 of which are MSCP Covered species). The study area does contain native habitat types surrounding the developed roads as well as proposed impacts within native habitats. All sensitive species occur within these native habitat areas. Species richness generally increases commensurate with the amount of native habitat and the presence of more habitat types and ecotones. Species richness in the study area is low due to the limited extent of native habitats, the isolated and fragmented context of the natural vegetation communities, and the majority of the proposed impacts occurring within existing development.

Sensitive Plant Species

Plant species are considered sensitive if they have been listed or proposed for listing by the federal or state government as rare, endangered, or threatened ("listed species"); have a California Rare Plant Rank (CRPR) of 1–4; are listed as a MSCP Covered Species; and/or have been adopted by the City as narrow endemic.

Sensitive plant surveys were conducted within the proposed Miramar Reservoir Alternative study area. As mentioned previously, the survey area for sensitive plants is defined as a 100-foot buffer surrounding suitable habitat within the alignment. Prior to special-status plant species surveys, an evaluation of known records in the

La Jolla, Del Mar, and Poway quadrangles and the surrounding nine quadrangles, including Encinitas, Rancho Santa Fe, Escondido, San Pasqual, San Vicente Reservoir, El Cajon, La Mesa, National City, and Point Loma (CDFW 2016; CNPS 2017~~6~~; USFWS 2016a) was conducted. In addition, Dudek's knowledge of biological resources and regional distribution of each species, as well as elevation, habitat, and soils present within the study area were evaluated to determine the potential for various special status species to occur.

Sensitive plant species directly observed during focused surveys or known to occur in the surrounding region are described in Appendix L, Sensitive Plant Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C.

The following sensitive plant species were directly observed within the Miramar Reservoir Alternative survey area for sensitive plants (i.e., within 100 feet of the components): California adolphia, San Diego sagewort, Orcutt's brodiaea, wart-stemmed ceanothus, long-spined spineflower, San Diego barrel cactus, graceful tarplant, decumbent goldenbush, San Diego marsh-elder, southwestern spiny rush, small-flowered microseris, Robinson's pepper-grass, golden-rayed pentachaeta, Nuttall's scrub oak, Coulter's matilija poppy, ashy spike-moss, and San Diego County viguiera. The MSCP covered species purple nightshade (*Solanum xanti*) was observed within the Miramar Reservoir Alternative survey area; however, the location was not mapped due to the species' low sensitivity. The sensitive plant species observed in the Miramar Reservoir Alternative study area are described in detail below and are shown on Figures 5.4-1A through 5.4-1 Z, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives.

Sensitive Wildlife Species

Sensitive wildlife species are those listed as federal/state endangered or threatened, proposed for listing, fully protected by CDFW, California Watch List (WL), California Species of Special Concern (SSC), or MSCP Covered Species. Protocol level surveys were conducted in the Miramar Reservoir Alternative study areas for the following sensitive wildlife species: coastal California gnatcatcher, southwestern willow flycatcher, and least Bell's vireo. Habitat assessments and focused surveys for other sensitive species included: four-passes for Quino checkerspot butterfly, larval host plant surveys for Quino checkerspot butterfly, protocol-level wet and dry season surveys for San Diego and Riverside fairy shrimp, burrowing owl focused surveys,~~;~~ ~~four-passes~~focused surveys for western pond turtle, and Hermes copper butterfly habitat assessment and focused surveys.

Sensitive wildlife species directly observed in the study area during focused surveys, or those known to occur in the surrounding region, are described in Appendix N, Sensitive Wildlife Species Potential to Occur within the Miramar Reservoir Alternative, of Appendix C. Appendix N describes the potential for each species to occur based on their general biology (primary habitat associations, range, and known elevation range) and known occurrences within the La Jolla, Del Mar, and Poway quadrangles and the surrounding nine quadrangles, including Encinitas, Rancho Santa Fe, Escondido, San Pasqual, San Vicente Reservoir, El Cajon, La Mesa, National City, and Point Loma (CDFW 2016; USFWS 2016a), as well as Dudek's knowledge of biological resources in the area and regional distribution of each species.

Sensitive wildlife species observed within the 500-foot buffer of the Miramar Reservoir Alternative study areas include Cooper's hawk, coastal California gnatcatcher, yellow warbler, white-tailed kite, San Diego fairy shrimp, and western pond turtle.

All sensitive wildlife species that were observed or for which focused surveys were conducted in the Miramar Reservoir Alternative study area are described in Appendix C, and sightings are shown in 5.4-1A through 5.4-1P, Vegetation Communities/Land Covers and Wildlife Observations – Miramar Reservoir Alternative.

Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the immigration and emigration of animals. Wildlife corridors contribute to population viability by (1) assuring the continual exchange of genes between populations, which helps maintain genetic diversity; (2) providing access to adjacent habitat areas, representing additional territory for foraging and mating; (3) allowing for a greater carrying capacity; and (4) providing routes for colonization of habitat lands following local population extinctions or habitat recovery from ecological catastrophes (e.g., fires).

Habitat linkages are patches of native habitat that function to join two larger patches of habitat. They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation. Although individual animals may not move through a habitat linkage, the linkage does represent a potential route for gene flow and long-term dispersal. Habitat linkages may serve as both habitat and avenues of gene flow for small animals such as reptiles and amphibians. Habitat linkages may be represented by continuous patches of habitat or by nearby habitat "islands" that function as "stepping stones" for dispersal.

The MSCP defines core and linkage areas as those maintaining ecosystem function and processes, including large animal movement. Each core area is connected to other core areas or to habitat areas outside of the MSCP either through common boundaries or through linkages. Core areas have multiple connections to help ensure that the balance in the ecosystem would be maintained (Figure 2-2, Generalized Core Biological Resource Areas and Linkages, in County of San Diego 1998). The Miramar Reservoir Alternative intersects both core areas and habitat linkages identified within the MSCP (Figure 5.4-2, Core Areas and Habitat Linkages). Habitat Linkage C surrounding the San Diego River borders the southern edge of the Morena Pump Station. The Morena Pipelines cross Marian Bear Memorial Park and Rose Canyon Open Space Park, which are a part of Biological Core Area 15, as it connects to the NCWRP Expansion. The NCPWF, NCWRP Expansion, LFG Pipeline, and MBC all sit within a core area, which contains both existing development as well as some areas of open space associated with MCAS Miramar (Biological Core Area 15).

The *Integrated Natural Resources Management Plan* (INRMP) identifies two corridors, Rose Canyon and San Clemente Canyon, that connect the east and west sides of MCAS Miramar and are within the Miramar Reservoir Alternative study area (MCAS Miramar INRMP 2011). Rose Canyon contains coastal sage scrub and chaparral with documented use by mule deer, bobcat (*Lynx rufus*), and occasionally cougar. San Clemente Canyon contains coastal sage scrub, chaparral, wetland, and riparian vegetation with use by mule deer. Both canyons have intermittent water flow. The LFG Pipeline crosses over Rose Canyon, and the MBC sits just south of the western end of San Clemente Canyon.

Jurisdictional Aquatic Resources

The results of the jurisdictional delineation conducted by Dudek in 2016 determined that there are a total of 2.96 acres of wetlands and non-wetland waters in the Miramar Reservoir Alternative study area under the jurisdiction of ACOE/RWQCB, streambeds and associated riparian areas under CDFW jurisdiction, and/or wetlands regulated by the City of San Diego. Jurisdictional aquatic resources mapped in the study area are shown on Figures 5.4-1A through 5.4-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives, and Table 5.4-28 provides a summary of these resources under the jurisdiction of the ACOE, RWQCB, CDFW, and/or City of San Diego.

Table 5.4-28
Jurisdictional Aquatic Resources in the Miramar Reservoir Alternative Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
Wetland or Riparian Areas			
Cismontane Alkali Marsh	0.02	0.02	0.02
Coast Live Oak Woodland	—	0.09	0.09
Coastal and Valley Freshwater Marsh	0.37	0.37	0.37
Disturbed Coast Live Oak Woodland	—	0.06	0.06
Disturbed Southern Riparian Forest	—	0.02	0.02
Mulefat Scrub	0.04	0.07	0.07
Southern Arroyo Willow Riparian Forest	—	0.02	0.02
Southern Willow Scrub	0.25	0.25	0.25
Vernal Pool	0.56	—	0.98[2]
Total Riparian/Wetlands	*1.23*	*0.89*	1.88
Non-wetland Waters/Streambed			
Ephemeral Stream Channel (Developed – Concrete Channel)	0.03	0.03	—
Ephemeral Stream Channel (Disturbed Wetland)	0.11	0.11	0.11
Ephemeral Stream Channel (Non-vegetated Channel)	0.51	0.46	0.46
Perennial Stream Channel/Open Water[3]	0.51	0.51	0.51
Total Non-wetland Waters/Streambed	*1.16*	*1.12*	*1.10*
Total jurisdictional area[4]	**2.40**	**2.01**	**2.96**

Notes:

1 The acreages listed in the ACOE/RWQCB, CDFW, and City of San Diego Wetlands columns overlap and should not be summed together.

2 This total includes 0.98 acre of vernal pool that may be regulated by the RWQCB.

3 Since there are no impacts within the Miramar Reservoir, only the portion where the North City Pipeline meets the Miramar Reservoir was included in the jurisdictional resource study area.

4 Acreage may not total due to rounding.

ACOE- and RWQCB-jurisdictional areas within the Miramar Reservoir Alternative study area total 2.40 acres, including 1.23 acre of jurisdictional wetlands and 1.16 acres of non-wetland stream channels or reservoir features. Vernal pools within MCAS Miramar are considered ACOE- and RWQCB-jurisdictional and total 0.56 acre. This total includes the vernal pools within the LFG Pipeline (0.45 acre), and North City Pipeline (0.10 acre) study areas.

CDFW jurisdiction extends over all areas under ACOE and RWQCB jurisdiction discussed above and includes areas that meet ACOE wetland (i.e., hydrophytic) vegetation criteria but lack wetlands hydrology and/or hydric soils indicators. CDFW-jurisdictional areas on site total 2.03 acres, including 0.89 acre of riparian habitat and 1.12 acres of streambed (including developed - concrete lined channel, non-vegetated channel or disturbed wetland) or reservoir features.

The majority of the jurisdictional aquatic resources are considered wetlands by the City of San Diego, with the exception of 0.03 acre of ephemeral stream channel (developed –concrete channel within Tecolote Creek) that does not meet the City's criteria for a wetland. Also included under City jurisdiction are vernal pools, totaling 0.98 acre. The vernal pools occur with the study area for four components: the LFG Pipeline (0.45 acre), MBC (0.03 acre), North City Pipeline (0.12 acre), and the NCPWF (0.38 acre). The vernal pools at the NCPWF, one vernal pool at MBC, and one vernal pool along the North City Pipeline are all small, isolated, and do not support listed species (Appendices B, C, G, and H of Appendix C). However, RWQCB may assert jurisdiction over the vernal pools as wetland waters of the state under the Porter Cologne Act. The vernal pools would be considered City wetlands in accordance with the City's Biology Guidelines (City of San Diego 2012).

The portion of the Miramar Reservoir Alternative study area that extends into the Coastal Overlay Zone includes 0.03 acre of City-regulated wetlands.

5.4.2.4 Summary of San Vicente Reservoir Alternative

Vegetation Communities and Land Cover Types

A total of 42 vegetation communities and/or land cover types were observed in the San Vicente Reservoir Alternative study area (Table 5.4-29). Table 5.4-29 includes all of the vegetation within the 500-foot study area buffer for the San Vicente Reservoir Alternative. All vegetation communities, including sensitive communities, occurring in the study area are defined below and further described in context of their location within the specific project components. Per the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012), sensitive vegetation communities are defined as those that are considered rare within the region, support sensitive plant and/or wildlife species, or are ranked Tier I–III or identified as wetlands. All vegetation communities located within San Vicente Reservoir Alternative study area are spatially represented on Figures 5.4-1A through 5.4-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives.

Table 5.4-29
Vegetation Communities and Land Cover Types in San Vicente Reservoir Alternative Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier/ Wetlands[1]	Total Acres in Study Area	% of San Vicente Reservoir Alternative Study Area
Disturbed and Developed Areas (10000)	Non-native Vegetation (11000)	IV	83.15	1.6
	Disturbed Wetland (11200)	Wetland	2.93	0.1
	Disturbed Habitat (11300)	IV	176.23~~176.08~~	3.4
	Urban/Developed (12000)	IV	3,122.21 ~~3,122.10~~	60.8
	Developed – Concrete Channel (12000)	IV	1.05	<0.1
	General Agriculture (18000)	IV	9.68	0.2
	Intensive Agriculture – Dairies, Nurseries, Chicken Ranches (18200)	IV	12.74	0.2
	Extensive Agriculture – Field/Pasture, Row Crops (18300)	IV	33.20~~33.32~~	0.6
Disturbed and Developed Areas Total[2]			*3,441.20~~3,441.06~~*	*67.0*
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub (32500)	II	595.07 ~~595.10~~	11.6
	Diegan Coastal Sage Scrub (disturbed) (32500)	II	108.71	2.1
	Diegan Coastal Sage Scrub (restored) (32500)	II	16.03	0.3
	Diegan Coastal Sage Scrub—Baccharis-dominated (32530)	II	25.55	0.5
	Diegan Coastal Sage Scrub—Baccharis-dominated (disturbed) (32530)	II	4.29	0.1
	Flat-Topped Buckwheat (32800)	II	2.40	<0.1
	Flat-Topped Buckwheat (disturbed) (32800)	II	1.74	<0.1

Table 5.4-29
Vegetation Communities and Land Cover Types in San Vicente Reservoir Alternative Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier/ Wetlands[1]	Total Acres in Study Area	% of San Vicente Reservoir Alternative Study Area
	Southern Mixed Chaparral (37120)	IIIA	173.75	3.4
	Chamise Chaparral (37200)	IIIA	42.32	0.8
	Scrub Oak Chaparral (37900)	I	1.37	<0.1
	Coastal Sage—Chaparral Transition (37G00)	II	23.82	0.5
Scrub and Chaparral Total[2]			*995.04~~995.07~~*	*19.4*
Grasslands, Vernal Pools, Meadows, and Other Herb Communities (40000)	Native Grassland (42100)	I	7.95	0.2
	Non-native Grassland (42200)	IIIB	183.35	3.6
	Vernal Pool (44000)	Wetland	3.10	0.1
Grasslands, Vernal Pools, Meadows, and Other Herb Communities Total[2]			*194.40*	*3.8*
Bog and Marsh (50000)	Cismontane Alkali Marsh (52310)	Wetland	2.32	0.1
	Coastal and Valley Freshwater Marsh (52410)	Wetland	4.01	<0.1
	Coastal and Valley Freshwater Marsh (disturbed) (52410)	Wetland	0.01	0.1
	Herbaceous Wetland (52510)	Wetland	0.76	<0.1
Bog and Marsh Total[2]			*7.10*	*0.1*
Riparian and Bottomland Habitat (60000)	Southern Riparian Forest (61300)	Wetland	6.57	0.1
	Southern Riparian Forest (disturbed) (61300)	Wetland	0.02	<0.1
	Southern Coast Live Oak Riparian Forest (61310)	Wetland	6.18	0.1
	Southern Arroyo Willow Riparian Forest (61320)	Wetland	28.96	0.6

Table 5.4-29
Vegetation Communities and Land Cover Types in San Vicente Reservoir Alternative Study Area

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier/ Wetlands[1]	Total Acres in Study Area	% of San Vicente Reservoir Alternative Study Area
	Southern Cottonwood—Willow Riparian Forest (61330)	Wetland	25.63	0.5
	Southern Sycamore Riparian Woodland (62400)	Wetland	7.70	0.1
	Mulefat Scrub (63310)	Wetland	6.37	0.1
	Mulefat Scrub (disturbed) (63310)	Wetland	1.89	<0.1
	Southern Willow Scrub (63320)	Wetland	52.12	1.0
	Southern Willow Scrub (disturbed) (63320)	Wetland	4.08	0.1
	Open Water – Freshwater (64140)	Wetland	222.27	4.3
	Non-vegetated Channel or Floodway (64200)	Wetland	4.85	0.1
	Arundo-Dominated Riparian (65100)	Wetland	6.98	0.1
		Riparian and Bottomland Habitat Total[2]	*373.62*	*7.3*
Woodland (70000)	Coast Live Oak Woodland (71160)	I	38.13	0.7
	Coast Live Oak Woodland (disturbed) (71160)	I	1.22	<0.1
	Non-native Woodland (79000)	IV	17.24	0.3
	Eucalyptus Woodland (79100)	IV	66.40	1.3
		Woodland Total[2]	*122.99*	*2.4*
		Total[2]	**5,134.35** ~~**5,134.24**~~	**100.0**

Notes:
1 City Subarea Plan tiers and wetland identification are from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012).
2 Totals may not sum due to rounding.

Floral Diversity

A total of 469 species of vascular plants, 312 native species (67%), and 157 non-native species (33%), were recorded during the biological surveys for the San Vicente Reservoir Alternative. A cumulative list of all common and sensitive plant species observed in the study area are provided in Appendix J, Plant Compendium, of Appendix C.

Wildlife Diversity

The San Vicente Reservoir Alternative study area supports habitat for upland and riparian wildlife species. Chaparral, coastal scrub, woodland, riparian, and non-native habitats (e.g., eucalyptus and non-native grassland) within the study area provide foraging and nesting habitat for migratory and resident bird species and other wildlife species. Rock outcroppings, chaparral, coastal scrub, and woodlands within the San Vicente Reservoir Alternative study area provide cover and foraging opportunities for wildlife species, including reptiles and mammals.

As previously mentioned, wildlife species detected during the field survey by sight, calls, tracks, scat, or other signs were recorded directly onto a field notebook. Binoculars were used to aid in the identification of wildlife. In addition to species actually detected during the surveys, expected wildlife use of the site was determined by known habitat preferences of local species and knowledge of their relative distributions in the area. There were 134 wildlife species observed throughout the San Vicente Reservoir study area. A list of wildlife species observed in the Project Alternatives study area is presented in Appendix K, Wildlife Compendium, of Appendix C.

Of the total species observed, 14 (10.4%) of these are considered special status (8 of which are MSCP Covered Species). The study area does contain native habitat types surrounding the developed roads as well as proposed impacts within native habitats. All sensitive species occur within these native habitat areas. Species richness is generally increased with the amount of native habitat and the presence of more habitat types and ecotones. Species richness in the study area is low due to the limited extent of native habitats, the isolated and fragmented context of the natural vegetation communities and the majority of the proposed impacts occurring within existing development.

Sensitive Plant Species

Plant species are considered sensitive if they have been listed or proposed for listing by the federal or state government as rare, endangered, or threatened ("listed species"); have a CRPR of 1–4; are listed as an MSCP Covered Species; and/or have been adopted by the City as narrow endemic.

Sensitive plant surveys were conducted within the proposed San Vicente Reservoir Alternative survey area. Prior to sensitive plant species surveys, an evaluation of known records in the La Jolla, Del Mar, La Mesa, El Cajon and San Vicente quadrangles and the surrounding 12 quadrangles, including Poway, Encinitas, Rancho Santa Fe, Escondido, San Pasqual, National City, Point Loma, Jamul Mountain, Dulzura, Alpine, El Cajon Mountain, and Ramona (CDFW 2016; CNPS 2017~~6~~; USFWS 2016a) was conducted. In addition, Dudek's knowledge of biological resources in the area and regional distribution of each species, as well as range, elevation, habitat, and soils present within the survey area, were evaluated to determine the potential for various sensitive species to occur. Sensitive plant species directly observed in the study area during focused surveys, or known to occur in the surrounding region, are described in Appendix M, Sensitive Plant Species Potential to Occur within the San Vicente Reservoir Alternative, of Appendix C.

The following sensitive plant species were directly observed within the San Vicente Reservoir Alternative survey area: San Diego sagewort, Orcutt's brodiaea, wart-stemmed ceanothus, long-spined spineflower, delicate clarkia, San Diego barrel cactus, graceful tarplant, San Diego marsh-elder, Southern California black walnut, southwestern spiny rush, Robinson's pepper-grass, small-flowered microseris, golden-rayed pentachaeta, white rabbit-tobacco, Nuttall's scrub oak, Coulter's matilija poppy, ashy spike-moss, and San Diego County viguiera. Sensitive plant species observed are described in Appendix C and are shown on Figures 5.4-1A through 5.4-1AD, Biological Resources– Miramar Reservoir and San Vicente Reservoir Alternatives.

Sensitive Wildlife Species

Sensitive wildlife species are those listed as federal/state endangered or threatened, proposed for listing, fully protected by CDFW, California SSC, or MSCP Covered Species. Protocol-level surveys were conducted in the San Vicente Reservoir Alternative study area for the following sensitive wildlife species: coastal California gnatcatcher, southwestern willow flycatcher, least Bell's vireo, Quino checkerspot butterfly, and San Diego and Riverside fairy shrimp. Habitat assessments and focused surveys for other sensitive species included: burrowing owl, western pond turtle, and Hermes copper butterfly.

Sensitive wildlife species directly observed in the study area during focused surveys, or those known to occur in the surrounding region, are described in Appendix O, Sensitive Wildlife Species Potential to Occur within the San Vicente Reservoir Alternative, of Appendix C. Appendix O described the potential for each species to occur based on their general biology (primary habitat associations, range, and known elevation range) and known occurrences within the La Jolla, Del Mar, La Mesa, El Cajon and San Vicente quadrangles and the surrounding 12 quadrangles, including Poway, Encinitas, Rancho Santa Fe, Escondido, San Pasqual, National City, Point Loma, Jamul Mountain, Dulzura, Alpine, El Cajon Mountain, and Ramona (CDFW 2016; USFWS 2016a), as well Dudek's knowledge of biological resources in the area and regional distribution of each species.

Sensitive wildlife species observed within the 500-foot buffer of the San Vicente Reservoir Alternative study areas include Cooper's hawk, coastal California gnatcatcher, white-tailed kite, yellow warbler, orangethroat whiptail, San Diegan tiger whiptail, western pond turtle, two-striped gartersnake, San Diego fairy shrimp, least Bell's vireo, willow flycatcher, yellow-breasted chat, southern California rufous-crowed sparrow, western bluebird, and mule deer.

All sensitive wildlife species that were observed or for which focused surveys were conducted in the San Vicente Reservoir Alternative study area are described in Appendix C and sightings are shown in Figures 5.4-1A through 5.4-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives.

Wildlife Corridors and Habitat Linkages

As discussed fully in Section 5.4.2.3, wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the immigration and emigration of animals. The MSCP defines core and linkage areas as those maintaining ecosystem function and processes, including large animal movement (Figure 2-2, Generalized Core Biological Resource Areas and Linkages, in City of San Diego 1997). The wildlife corridors for the San Vicente Reservoir Alternative are similar to the those discussed for the Miramar Reservoir Alternative with the exception of the San Vicente Pipeline and the impacts associated with the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line. The San Vicente

Pipeline runs through a habitat linkage surrounding the San Diego River and core areas associated with Mission Trails Regional Park (Biological Core Area 10) and the San Diego River (Habitat Linkage C), and open space surrounding the San Vicente Reservoir (Biological Core Area 11). The San Vicente Pipeline - Repurposed 36-inch Recycled Water Line runs through both Rose Canyon and San Clemente Canyon, and if the San Vincente Reservoir Alternative is implemented, there would be impacts associated with work to air and blow-off valves along its length (Figure 5.4-2, Core Areas and Habitat Linkages).

Jurisdictional Aquatic Resources

The total wetlands and non-wetland waters in the San Vicente Reservoir Alternative study area under the jurisdiction of ACOE/RWQCB, streambeds/open water and associated riparian areas under CDFW jurisdiction, and/or wetlands regulated by the CCC and City of San Diego is 32.31 acres. Jurisdictional aquatic resources, including both wetlands/riparian areas and non-wetland waters/streambeds, mapped in the study area are shown on Figures 5.4-1A through 5.4-1Z, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives. Table 5.4-30 provides a summary of these resources under the jurisdiction of the ACOE, RWQCB, CDFW, and/or City of San Diego.

Table 5.4-30
Jurisdictional Aquatic Resources in the
San Vicente Reservoir Alternative Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
Wetland or Riparian Areas			
Arundo-Dominated Riparian	0.33	0.39	0.39
Cismontane Alkali Marsh	0.02	0.02	0.02
Coast Live Oak Woodland	—	0.09	0.09
Coastal and Valley Freshwater Marsh	0.29	0.29	0.29
Disturbed Coast Live Oak Woodland	—	0.06	0.06
Disturbed Mulefat Scrub	—	0.17	0.17
Disturbed Southern Riparian Forest	—	0.02	0.02
Mulefat Scrub	0.04	0.23	0.23
Southern Arroyo Willow Riparian Forest	1.12	1.56	1.56
Southern Cottonwood–Willow Riparian Forest	—	0.08	0.08
Southern Sycamore–Alder Riparian Woodland	—	0.58	0.58

Table 5.4-30
Jurisdictional Aquatic Resources in the
San Vicente Reservoir Alternative Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
Southern Willow Scrub	0.80	1.88	1.88
Vernal Pool	1.33	—	1.73[2]
Total Riparian/Wetlands	*3.93*	*5.37*	*7.10*
Non-wetland Waters/Streambed			
Ephemeral Stream Channel (Developed – Concrete Channel)	0.03	0.03	—
Ephemeral Stream Channel (Disturbed Wetland)	0.11	0.11	0.11
Ephemeral Stream Channel (Non-vegetated Channel)	1.69	0.95	0.94
Intermittent Stream Channel	0.06	0.06	0.06
Perennial Stream Channel/Open Water	24.10	24.10	24.10
Total Non-wetland Waters/Streambed	*25.99*	*25.26*	*25.24*
Total jurisdictional area[3]	**29.92**	**30.63**	**32.31**

Notes:
1 The acreages listed in the ACOE/RWQCB, CDFW, and City of San Diego Wetlands columns overlap and should not be summed together.
2 This 1.73 acres of vernal pool is also potentially regulated by the RWQCB.
3 Acreage may not total due to rounding.

ACOE- and RWQCB-jurisdictional areas within the San Vicente Reservoir Alternative study area total 29.92 acres, including 3.93 acres of jurisdictional wetlands and 25.99 acres of non-wetland stream channels/open water. Vernal pools within MCAS Miramar are considered ACOE- and RWQCB-jurisdictional and total 1.33 acres. This total includes the vernal pools within the LFG Pipeline (0.45 acre), and the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line (0.87 acre) study areas.

CDFW jurisdiction extends over all areas under ACOE and RWQCB jurisdiction discussed above and includes areas that meet ACOE wetland (i.e., hydrophytic) vegetation criteria but lack wetlands hydrology and/or hydric soils indicators. CDFW-jurisdictional areas on site total 30.63 acres, including 5.37 acres of riparian habitat and 25.26 acres of streambed/open water.

The majority of the jurisdictional aquatic resources are considered wetlands by the City of San Diego, with the exception of 0.75 acre of ephemeral stream channels (i.e. developed – concrete channel and non-vegetated channel) that do not meet the City's criteria for a wetland. Also included only under City jurisdiction, and potentially under RWQCB jurisdiction, are vernal pools, totaling 1.73 acres. Vernal pools occur within the study area of the following four components: LFG Pipeline (0.45 acre), MBC (0.03 acre), NCPWF (0.38 acre), and the along the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line (0.87 acre). The vernal pools at the NCPWF and the one vernal pool at the MBC are small, isolated, and do not support listed species (Appendices B, C, G, and H of Appendix C). However, RWQCB may assert jurisdiction over the vernal pools as wetland waters of the state under the Porter-Cologne Act.

The portion of the San Vicente Reservoir Alternative study area that extends into the Coastal Overlay Zone includes 0.03 acre of City-regulated wetlands.

5.4.2.5 Miramar Reservoir Limnology

Using limnological data obtained from the City for 2014 and 2015 dissolved oxygen (DO) within the reservoir ranges seasonally from approximately 7 to 10 milligrams per Liter (mg/L) at the surface and from 0.0 to 10 mg/L at the bottom of the reservoir. Total nitrogen and total phosphorus (TP), two key biological nutrients in aquatic systems, had recorded medians from surface samples collected monthly between 2005 and 2014 of 0.24 mg/L and <0.078 mg/L, respectively (> 90% of the TP samples had concentrations below the method detection limit of 0.078 mg/L). TP levels in Miramar Reservoir from 2013 through 2014 ranged from 0 to 0.4 mg/L. Many of the samples collected from the hypolimnion (water layer below the thermocline) are above this detection limit, so the in-reservoir data provides a good representation of the conditions in the reservoir. However, 22 of the 23 samples collected at the surface from 2013 through 2014 (calibration period) were below the detection limit. Based on the TP levels recorded at the inflow to the reservoir and the uptake of TP in the reservoir, which generally occurs from February to October, TP levels in the epilimnion (water layer above the thermocline) are expected to be generally an order of magnitude lower than the existing laboratory detection limit of 0.078 mg/L. As a result, the model results from CAEDYM are likely the best available tool to estimate the historical (existing) TP concentration in the reservoir's epilimnion. Based on the existing conditions model run for Miramar Reservoir, chlorophyll-*a*, a proxy measurement of primary productivity (i.e., presence of algae), ranged from spring highs of 2.72 micrograms per liter (µg/L) to a winter low of 0.21 µg/L, with a median value of 0.26 µg/L (Appendix G of this EIR/EIS). Water column clarity is generally good, with visibility ranging from 3.9 to 14.3 meters (12.8 to 46.9 feet) with a mean value of 9.5 meters (31 feet) (City of San Diego 2012–2014). As discussed in Section 4.6.5 of Appendix C, based on Carlson's (1977) Trophic Status Index, Miramar Reservoir is currently classified as oligotrophic (i.e., low dissolved nutrient concentrations and low plant growth that is usually accompanied by an abundance of dissolved oxygen), although some key characteristics are more typical of mesotrophic lakes (i.e., moderate amount of dissolved nutrients). In general, chlorophyll-*a* concentrations are very low in Miramar Reservoir, but tend to peak in the spring for brief periods, since the reservoir is replenished with nutrients released from sediments during turnover in late December, and when temperatures and increased sunlight become sufficient to initiate algal growth. During short periods in the spring when phytoplankton blooms seasonally occur, the reservoir is closer to the low-mesotrophic end of the scale (Carlson 1977; Barnes and Mann 1991).

Miramar Reservoir is thermally stratified for the majority of the year. Water temperatures range from a minimum of approximately 57 degrees Fahrenheit (°F) at the reservoir bottom in winter to a summer high of almost 82°F at the reservoir surface (Appendix G of this EIR/EIS).

Miramar Reservoir Aquatic Resources

Emergent and submerged aquatic vegetation occur within a band at the water's edge of the reservoir. The dominant emergent species consists of dense stands of California bulrush (*Schoenoplectus californicus*) and cattails (*Typha* spp.) along the banks and submerged aquatic vegetation and algae. In addition to emergent and submerged aquatic vegetation, plankton is also present within the reservoir and constitutes a key component of the aquatic food chain.

Miramar Reservoir currently supports a warm water fishery, specifically various non-native centrarchid species (including largemouth bass [*Micropterus salmoides*], bluegill [*Lepomis macrochirus*], redear sunfish [*L. microlophus*], green sunfish [*L. cyanellus*], and black crappie [*Pomoxis nigromaculatus*]), as well as channel catfish (*Ictalurus punctatus*), brown bullhead (*Ameiurus nebulosus*), and common carp (*Cyprinus carpio*) that are common to recreational fisheries in California. Additional fish species that were not intentionally introduced (including threadfin shad (*Dorosoma petenense*), golden shiner (*Notemigonus crysoleucas*), and prickly sculpin (*Cottus asper*), have become established as well, either through imported water deliveries from both the Colorado River and the Central Valley Delta (via the California Aqueduct) or through anthropogenic means such as fishing or release of domestic species such as goldfish (*Carassius auratus*) and mosquito fish (*Gambusia affinis*). It is also likely possible that the species composition is augmented to some degree by eggs and larvae that enter the reservoir from raw imported water. Only one cold water fish species, rainbow trout (*Oncorhynchus mykiss*), was introduced into the reservoir for a recreational put-and-take fishery. The CDFW-provided stocking records indicating that they have seasonally stocked approximately 9,900 pounds/19,000+ fish from January 2013 to Nov 29, 2016. As such, populations of coldwater species are maintained by stocking, and warm water species are generally maintained by reproduction as well as re-introduction from imported water. Based on a fishery study conducted by CDFW in spring and fall of 2014 (CDFW 2014), three species were captured: bluegill, largemouth bass, and black crappie. Largemouth bass made up the highest percentage of the total fish captured and were generally all 250 millimeters to 400 millimeters, with 75% falling in the "stock" or 18% in the "quality" stock size categories. In general, the stock size and length/weight relationships indicate that reproduction is successful; however, food foraging opportunities may be limited. In addition,

With the exception of the rainbow trout population that is seasonally stocked, the fishery is self-sustaining and has a fishery composition that allows a complete and self-cycling aquatic food chain to exist across multiple trophic levels (e.g., plankton, primary, secondary and tertiary consumers and detritivores). Effects to piscivorous fish, especially largemouth bass, is not expected to be substantial as the population appears to be supported primarily by forage fish (likely rainbow trout and other small/juvenile fish).

The reservoir also supports the non-native and invasive quagga mussel (*Dreissena rostriformis bugensis).* This species is capable of filtering out substantial amounts of phytoplankton as well as particulate organic matter that provides food for the zooplankton community, which then supports other trophic levels in the reservoir. This species also concentrates organic pollutants within their tissues (up to 300,000 times greater than concentrations in the environment), and these pollutants are found in their pseudofeces, which can be passed up the food chain and increase wildlife exposure to organic pollutants (Snyder et al. 1997). Their presence in the reservoir is relatively new and growing. The extent of their effect is yet to be determined, but is expected to eventually have long-term trophic effects. In addition to quagga mussels, several other non-native species occur in the reservoir including American bullfrog (*Rana catesbeiana*) and red-eared sliders (*Trachemys scripta elegans*).

5.4.3 REGULATORY FRAMEWORK

5.4.3.1 Federal

National Environmental Policy Act

The National Environmental Policy Act (NEPA) established a national policy for protection of the environment. The objectives of NEPA are: "To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality" (42 U.S.C. 4321). To assist federal agencies in fulfilling the goals and effectively implementing the requirements of NEPA, in 1978 the Council on Environmental Quality issued regulations for implementing the procedural aspects of NEPA (40 CFR Part 1500–1508).

Pursuant to NEPA regulations (40 CFR 1500–1508), project impacts are evaluated based on the criteria of context and intensity. Context means the affected environment in which a proposed project occurs. Intensity refers to the severity of the impact, which is examined in terms of the type, quality, and sensitivity of the resource involved; location and extent of the effect; duration of the effect (short or long term), and other consideration of context. Impacts are described in terms of beneficial, not adverse, or adverse. Sections 5, 6 and 7 of this report describes the project's short-term, long-term, and cumulative effects, both direct and indirect, in accordance with the requirements of NEPA.

The Bureau of Reclamation (Reclamation) is the lead agency under NEPA and therefore responsible for review of the environmental impacts of the North City Project and to assure that the North City Project is in accordance with the goals, objectives, or other requirements of the Natural Communities Conservation Planning program. In that capacity, the City and Reclamation must assess the potential for adverse direct, indirect, and cumulative impacts on the environment that may result from approval and implementation of the North City Project. The Reclamation's NEPA Handbook (Reclamation 2012) outlines guidance for implementing NEPA, the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions (40 CFR Parts 1500–1508), the U.S. Department of the Interior's NEPA Regulations (43 CFR Part 46), and the Departmental Manual Chapter 516. The Reclamation NEPA

Handbook draws these requirements together and provides guidance on how to apply them to Reclamation programs and activities.

Federal Endangered Species Act

The federal Endangered Species Act (FESA) of 1973 (16 U.S.C. 1531 et seq.), as amended, is administered by the U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration, and National Marine Fisheries Service. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and provide programs for the conservation of those species, thus preventing extinction of plants and wildlife. Under provisions of Section 9(a)(1)(B) of FESA, it is unlawful to "take" any listed species. "Take" is defined in Section 3(19) of FESA as, "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Additionally, Section 7(a)(2) of the FESA directs federal agencies to consult with the USFWS for any actions that "may affect" listed species.

FESA provides for designation of Critical Habitat, defined in Section 3(5)(A) as specific areas within the geographical range occupied by a species where physical or biological features "essential to the conservation of the species" are found and "which may require special management considerations or protection." Critical Habitat may also include areas outside the current geographical area occupied by the species that are nonetheless "essential for the conservation of the species." However, Congress amended Section 4(a)(3)(B)(i) of FESA to limit the designation of land controlled by the Department of Defense (National Defense Authorization Act, P.L. No. 108–136):

> The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.

Therefore, there are areas within MCAS Miramar that are exempt from the Critical Habitat designations due to MCAS Miramar having a legally operative integrated natural resource management plan.

Integrated Natural Resources Management Plan

MCAS Miramar is comprised of large swaths of open space that contain vernal pools, wetland areas, upland habitat and the federally listed plant and wildlife species occurring in these areas. Additionally, these lands function as wildlife corridors for the movement and dispersal of wildlife. The *Integrated Natural Resource Management Plan* (INRMP 2011–2015; MCAS Miramar INRMP 2011) guides land use activities, natural resource management, and conservation, and ensures compliance with environmental laws and regulations on MCAS Miramar. USFWS identifies Essential Habitat as areas eligible for designation as Critical Habitat, and the INRMP incorporates Essential Habitat into high priority management areas to benefit the conservation to species. Management Areas (MAs) Level I through Level V have been developed to support the conservation and management of regulated resources occurring within MCAS Miramar. Level I MAs mainly support vernal pool habitat and their associated watersheds; Level II MAs focus on non-vernal pool, federally listed species; Level III MAs support riparian vegetation and wildlife corridors/linkages; Level IV MAs support some sensitive and protected resources; and Level V MAs are associated with developed land uses and are the first considered for new development. Because the North City Project crosses through MCAS Miramar lands, it will be subject to the regulations of the INRMP. See Appendix A of Appendix C for details regarding the INRMP analysis.

~~Migratory Bird Treaty Act~~

~~The Migratory Bird Treaty Act (MBTA) prohibits the take of any migratory bird or any part, nest, or eggs of any such bird. Under the MBTA, "take" is defined as pursue, hunt, shoot, wound, kill trap, capture, or collect, or any attempt to carry out these activities (16 U.S.C. 703 et seq.). Additionally, Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds," requires that any project with federal involvement address impacts of federal actions on migratory birds with the purpose of promoting conservation of migratory bird populations (66 FR 3853–3856). The Executive Order requires federal agencies to work with USFWS to develop a memorandum of understanding. USFWS reviews actions that might affect these species.~~

~~Currently, birds are considered to be nesting under the MBTA only when there are eggs or chicks which are dependent on the nest.~~

U.S. Army Corps of Engineers

Pursuant to Section 404 of the Clean Water Act, the ACOE regulates the discharge of dredged and/or fill material into "waters of the United States." The term "wetlands" (a subset of waters) is defined in 33 CFR 328.3(b) 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. Wetlands generally include swamps, marshes, bogs, and similar areas." In the absence of wetlands, the limits of ACOE jurisdiction in non-tidal waters, such as intermittent streams, extend to the "ordinary high water mark," which is defined in 33 CFR 328.3(e).

Section 320.4(b)(2) of the ACOE General Regulatory Policies (33 CFR 320–330) list criteria for consideration when evaluating wetland functions and values. These include wildlife habitat (spawning, nesting, rearing, and resting), food chain productivity, water quality, ground water recharge, and areas for the protection from storm and floodwaters.

5.4.3.2 State

California Endangered Species Act

The CDFW administers the California Endangered Species Act (CESA; California Fish and Game Code, Section 2050 et seq.), which prohibits the "take" of plant and animal species designated by the Fish and Game Commission as endangered or threatened in the State of California. Under CESA Section 86, take is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA Section 2053 stipulates that state agencies may not approve projects that will "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy."

CESA Sections 2080 through 2085 address the taking of threatened, endangered, or candidate species by stating, "No person shall import into this state, 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 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 (Fish and Game Code, Sections 1900–1913), or the California Desert Native Plants Act (Food and Agricultural Code, Section 80001).”

California Fish and Game Code

According to Sections 3511 and 4700 of the Fish and Game Code, which regulate birds and mammals, respectively, a “fully protected” species may not be taken or possessed without a permit from the Fish and Game Commission, and “incidental takes” of these species are not authorized.

According to Section 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 states that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey) or to take, possess or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto. ~~Finally, Section 3513 states that is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.~~

For the purposes of these state regulations, CDFW currently defines an active nest as one that is under construction or in use and includes existing nests that are being modified. For example, if a hawk is adding to or maintaining an existing stick nest in a transmission tower, then it would be considered to be active and covered under these Fish and Game Code Sections.

CDFW Streambed and Riparian Habitat

Pursuant to Section 1602 of the Fish and Game Code, the CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. A Streambed Alteration Agreement is required for impacts to jurisdictional wetlands in accordance with Section 1602 of the California Fish and Game Code.

State and Regional Water Quality Control Board

The intent of the Porter–Cologne Water Quality Control Act is to protect water quality and the beneficial uses of water, and it applies to both surface water and groundwater. Under this law, the State Water Resources Control Board develops statewide water quality plans, and the RWQCBs develop basin plans that identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions of both statewide and basin plans. Waters regulated under the Porter–Cologne Water Quality Control Act include isolated waters that are no longer regulated by the ACOE. Developments with impact to jurisdictional waters must demonstrate compliance with the goals of the act by developing Stormwater Pollution Prevention Plans, Standard Urban Storm Water Mitigation Plans, and other measures to obtain a Clean Water Act Section 401 certification.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires identification of a project's potentially significant impacts on biological resources and feasible mitigation measures and alternatives that could avoid or reduce significant impacts. CEQA Guidelines Section 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 CCR 15000 et seq.). A rare animal or plant is defined in CEQA Guidelines Section 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guidelines Section 15380(c). CEQA also requires identification of a project's potentially significant impacts on riparian habitats (such as wetlands, bays, estuaries, and marshes) and other sensitive natural communities, including habitats occupied by endangered, rare, and threatened species.

California Coastal Act

The California Coastal Commission (CCC) was established by voter initiative in 1972 and was made permanent by the California Legislature through the adoption of the California Coastal Act of 1976 (Public Resources Code Section 30000 et seq.). The CCC, in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone. Under the California Coastal Act (CCA), cities and counties are responsible for preparing Local Coastal Programs (LCPs) in order to obtain authority to issue coastal development permits (CDPs) for projects within their jurisdiction. LCPs consist of land use plans, zoning ordinances, zoning maps, and other implementing actions that conform to the policies of the CCA. Until an agency has a fully certified LCP, the CCC is responsible for issuing CDPs.

Under the CCA, Section 30107.5, environmentally sensitive habitat areas are areas within the coastal zone that are "designated based on the presence of rare habitats or areas that support populations of rare, sensitive, or especially valuable species or habitats." In addition, the CCC regulates impacts to coastal wetlands defined in Section 30121 of the CCA as, "lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens." The CCA requires that most development avoid and buffer coastal wetland resources in accordance with Sections 301231 and 30233, including limiting the filling of wetlands to certain allowable uses.

The North City Project is entirely outside the coastal zone, with the exception of one overflow pipe from the Morena Pump Station that is approximately 200 feet within the boundary. The overflow pipe is located along Friars Road. The general Mission Bay Park area, including portions of Friars Road and the railroad right-of-way, comprise a unique segment of the City of San Diego coastal zone, which is mostly located in what is called a deferred certification area, an area within the coastal zone that is not part of the City of San Diego's LCP. In the deferred certification areas, the CCC retains coastal development permit authority. Chapter 3 of the CCA is the legal standard of review for CDPs. If parts of the overflow pipe are located within the coastal zone, then any proposed development in that area would require a CDP from the CCC San Diego district office. However, based on communication with Alexander Llerandi of the CCC staff, the City has received concurrence that the overflow pipe is within the City's jurisdiction (and the CCC's CDP appealable jurisdiction) and can be processed locally (Llerandi, pers. comm. 2017).

5.4.3.3 Regional

Multiple Species Conservation Program

The City of San Diego is a participant in the San Diego MSCP, a comprehensive, regional long-term habitat conservation program designed to provide permit issuance authority for take of covered species to the local regulatory agencies. The MSCP addresses habitat and species conservation within approximately 900 square miles in the southwestern portion of San Diego County (County of San Diego 1998). It serves as an approved habitat conservation plan pursuant to an approved Natural Communities Conservation Plan in accordance with the state Natural Communities Conservation Planning Act (County of San Diego 1998).

The MSCP establishes a preserve system designed to conserve large blocks of interconnected habitat having high biological value that are delineated in MHPAs. The City MHPA is a "hard line" preserve developed by the City in cooperation with the wildlife agencies, property owners, developers, and environmental groups. The MHPA identifies biological core resource areas and corridors targeted for conservation, in which only limited development may occur (City of San Diego 1997).

The MSCP identifies 85 plants and animals to be "covered" under the plan ("Covered Species"). Many of these Covered Species are subject to one or more protective designations under state and/or federal law and some are endemic to San Diego. The MSCP seeks to provide adequate habitat in the preserve to maintain ecosystem functions and persistence of extant populations of the 85 Covered Species while also allowing participating landowners "take" of Covered Species on lands located outside of the preserve. The purpose of the MSCP is to address species conservation on a regional level and thereby avoid project-by-project biological mitigation which tends to fragment habitat.

Within the City of San Diego, the MSCP is implemented through the City of San Diego MSCP Subarea Plan (Subarea Plan) (City of San Diego 1997), which applies within 6,501 acres. Portions of the North City Project are located within and adjacent to MHPAs (City of San Diego, 1997).

5.4.3.4 Local

City of San Diego MSCP Subarea Plan

The Subarea Plan (1997) encompasses 206,124 acres within the MSCP Subregional Plan area. The North City Project study area is located within the Northern (Miramar Reservoir Alternative only), Urban, and Eastern areas (San Vicente Reservoir Alternative only) of the Subarea Plan. In addition, the project crosses through MCAS Miramar lands which are excluded from the MSCP Subarea Plan. The Northern area includes the majority of the Los Penasquitos Lagoon/Canyon del Mar Mesa core, and developed and undeveloped land from Black Mountain Ranch to Lopez Canyon and the North City Future Urbanizing Area. Urban habitat areas within the MHPA include existing designated open space such as Mission Bay, Tecolote Canyon, Marian Bear Memorial Park, Rose Canyon, San Diego River, the southern slopes along Mission Valley, Carroll and Rattlesnake Canyons, Florida Canyon, Chollas Creek, and a variety of smaller canyon systems. The Eastern area includes East Elliott and Mission Trails Regional Park. The land surrounding, and encompassing, the San Vicente Dam is identified as Cornerstone Lands. However, areas that are excluded from the MHPA (and Cornerstone Land designation) in order to provide for current and future requirements of the Public Utilities Department include the existing San Vicente Reservoir and dam, and all lands within 300 feet horizontally from the ultimate high water level (~~MSCP Subarea Plan~~City of San Diego 1997)

The City of San Diego Public Utilities Department – Water Fund owns four large areas of land within the City of San Diego MSCP preserve system: (1) lands surrounding portions of Upper and Lower Otay Reservoir; (2) lands surrounding the San Vicente Reservoir; (3) lands owned by the City of San Diego in Marron Valley; and (4) watershed management lands around Hodges Reservoir, including the portion of San Pasqual Valley from Hodges Reservoir east to the area referred to as the "narrows." These lands contain valuable biological resources and have each been identified as a core biological resource area. These lands total 10,400 acres and are commonly referred to as the Cornerstone Lands because they are considered essential building blocks for creating a viable habitat preserve system.

The San Diego City Charter restricts the use and disposition of Water Utility assets and thus the Water Fund must be compensated for any title restrictions placed on the Cornerstone Lands. To meet the policy objectives of the MSCP and comply with the City Charter, the City of San Diego entered into a Conservation Land Bank Agreement with the wildlife agencies for the Cornerstone Lands.

The Subarea Plan is characterized by urban land uses with approximately three-quarters either built out or retained as open space/park system. The City MHPA is a "hard line" preserve developed by the City in cooperation with the wildlife agencies, property owners, developers, and environmental groups. The MHPA identifies biological core resource areas and corridors targeted for conservation, in which only limited development may occur (City of San Diego 1997). The MHPA is considered an urban preserve that is constrained by existing or approved development, and is comprised of habitat linkages connecting several large core areas of habitat (Figure 5.4-3, Multi-Habitat Planning Area). The criteria used to define core and linkage areas involves maintaining ecosystem function and processes, including large animal movement. Each core area is connected to other core areas or to habitat areas outside of the MSCP either through common boundaries or through linkages. Core areas have multiple connections to help ensure that the balance in the ecosystem would be maintained (City of San Diego 1997). Critical habitat linkages between core areas are conserved in a functional manner with a minimum of 75% of the habitat within identified linkages conserved (City of San Diego 1997).

Placement of utility lines within the City of San Diego's MHPA must be in compliance with the policies identified in Section 1.4.2 of the City of San Diego's Subarea Plan. These policies are listed below.

1. All proposed utility lines (e.g., sewer, water, etc.) should be designed to avoid or minimize intrusion into the MHPA. These facilities should be routed through developed or developing areas rather than the MHPA, where possible. If no other routing is feasible, then the lines should follow previously existing roads, easements, rights-of-way and disturbed areas, minimizing habitat fragmentation.
2. All new development for utilities and facilities within or crossing the MHPA shall be planned, designed, located and constructed to minimize environmental impacts. All such activities must avoid disturbing the habitat of MSCP covered species, and wetlands. If avoidance is infeasible, mitigation would be required.
3. Temporary construction areas and roads, staging areas, or permanent access roads must not disturb existing habitat unless determined to be unavoidable. All such activities must occur on existing agricultural lands or in other disturbed areas rather than in habitat. If temporary habitat disturbance is unavoidable, then restoration of, and/or mitigation for, the disturbed area after project completion would be required.
4. Construction and maintenance activities in wildlife corridors must avoid significant disruption of corridor usage. Environmental documents and mitigation monitoring and reporting programs covering such development must clearly specify how this would be achieved, and construction plans must contain all the pertinent information and be readily available to crews in the field. Training of construction crews and field workers must be conducted to ensure that all conditions are met. A responsible party must be specified.
5. Roads in the MHPA would be limited to those identified in Community Plan Circulation Elements, collector streets essential for area circulation, and

necessary maintenance/ emergency access roads. Local streets should not cross the MHPA except where needed to access isolated development areas.

6. Development of roads in canyon bottoms should be avoided whenever feasible. If an alternative location outside the MHPA is not feasible, then the road must be designed to cross the shortest length possible of the MHPA in order to minimize impacts and fragmentation of sensitive species and habitat. If roads cross the MHPA, they should provide for fully-functional wildlife movement capability. Bridges are the preferred method of providing for movement, although culverts in selected locations may be acceptable. Fencing, grading and plant cover should be provided where needed to protect and shield animals, and guide them away from roads to appropriate crossings.
7. Where possible, roads within the MHPA should be narrowed from existing design standards to minimize habitat fragmentation and disruption of wildlife movement and breeding areas. Roads must be located in lower quality habitat or disturbed areas to the extent possible.
8. For the most part, existing roads and utility lines are considered a compatible use within the MHPA and therefore would be maintained. Exceptions may occur where underutilized or duplicative road systems are determined not to be necessary as identified in the Framework Management Section 1.5.

City of San Diego Biology Guidelines

The City of San Diego Development Services Department developed the Biology Guidelines within the Land Development Manual "to aid in the implementation and interpretation of the Environmentally Sensitive Lands Regulations (ESL), San Diego Land Development Code (LDC), Chapter 14, Division 1, Section 143.0101 et seq., and the Open Space Residential (OR-1-2) Zone, Chapter 13, Division 2, Section 131.0201 et seq." (City of San Diego 2012). The guidelines also provide standards for the determination of impact and mitigation under CEQA and the Coastal Act. Sensitive biological resources, as defined by the Environmentally Sensitive Lands Regulations, include lands within the MHPA, as discussed in Section 1.3.3 of Appendix C, as well as other lands outside of the MHPA that contain wetlands; vegetation communities classifiable as Tier I, II, IIIA or IIIB; habitat for rare, endangered or threatened species; or narrow endemic species.

The City's definition of wetlands is broader than the definition applied by the ACOE. The City uses the criteria listed in Section 320.4(b)(2) of the ACOE General Regulatory Policies (33 CFR 320–330) to apply an appropriate buffer around wetlands that serves to protect the function and value of the wetland. Guidelines that supplement the development regulation requirements described in this section are provided in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012). The jurisdictional delineation study area surveyed included a 50-foot buffer from the proposed impact area, and there are resources in the San Diego River floodplain within this buffer that would be considered wetlands within the Coastal Overlay Zone, and therefore would require adherence to the Coastal Overlay Zone wetland buffer regulations (City of San Diego 2012). According to the City's Bio Guidelines, a wetland buffer is an area surrounding a wetland that helps protect the function and value of the adjacent wetland by reducing physical disturbance, provides a transition zone where one habitat phases into another, acts to slow flood waters for flood and erosion control, sediment filtration, water purification, ground water recharge (City of San Diego 2012). Within the Coastal Overlay Zone, wetland buffers should be a minimum of 100 feet wide (as determined on a case-by-case basis in consultation with CDFW, USFWS, and the ACOE) adjacent to a wetland. The width of the buffer is determined by factors such as: type and size of development, sensitivity of the wetland resource to edge effects, topography, and the need for upland transition (City of San Diego 2012).

The San Diego Municipal Code also ranks upland habitat values by rarity and sensitivity. The most sensitive habitats are Tier I, and the least sensitive are Tier IV. The varying mitigation ratios and requirements that mitigation be either in-tier or in-kind are based on the sensitivity of the habitat being affected.

The North City Project would be considered an Essential Public Project in that it would service the community at large and not just a single development project or property. Examples of Essential Public Projects include identified circulation element roads, major water and sewer lines, publicly owned schools, parks, libraries, and police and fire facilities.

The North City Project meets the definition of an Essential Public Project as identified in Section IV of the City's Biology Guidelines, in that it is a utility project which will service the community at large and not just a single development project or property. The North City Project is a covered project under the VPHCP, which was adopted in January 2018. In association with the adoption of the VPHCP, an ordinance amending the City of San Diego's Land Development Code, Environmentally Sensitive Lands (ESL) regulation was approved. The amended ESL regulation states: "Outside the Coastal Overlay Zone, encroachment into a vernal pool is allowed outside of the MHPA where the development is consistent with the Biology Guidelines of the Land Development Manual and VPHCP." Such development does not require a deviation to the wetland regulations. Since the vernal pools on the NCPWF are outside the MHPA and will be mitigated in accordance with the City's Biology Guidelines and VPHCP requirements, the North City Project meets the requirements for impacts and mitigation to vernal pools under the VPHCP. ~~Since the proposed project is an Essential Public Project, deviations from the wetland requirements in the Environmentally Sensitive Lands Regulations will be considered only if all of the criteria listed within Section III (page 22) of the City's Biology Guidelines are met.~~

This report identifies two potential alternatives to the North City Project which will be included within the CEQA document, along with a No Project Alternative. ~~The other criteria for the deviation is a wetlands avoidance alternative. This has been accomplished, to the extent possible, within the Miramar Reservoir Alternative. Impacts to wetlands are minimal under this alternative and only occur in one place: vernal pools at NCPWF.~~ The NCPWF site was chosen for the following reasons: greater efficiency is achieved by locating the facility adjacent to the NCWRP (for example, less energy is required to pump recycled water to the facility); the site contains less sensitive resources than all other adjacent parcels (there are two other City-owned parcels—Pueblo Central and Pueblo South—that are less disturbed and contain more sensitive resources); and all other adjacent parcels are either currently developed, privately owned, or within MCAS Miramar. As discussed in Section 4 of Appendix C, the North City Project has been designed to occur primarily within developed or previously disturbed areas with each component location given careful consideration. Each pipeline alignment has undergone an extensive alternatives analysis to determine the best possible route, with special considerations given to avoiding environmentally sensitive resources. In order to avoid and/or minimize impacts to sensitive biological resources, particularly wetlands, to the furthest extent possible, facility footprints were refined to avoid overlapping those resources. In areas where pipeline alignments cross sensitive resources, the pipeline will be constructed using trenchless construction methods such as auger boring/auger jack and bore, micro-tunneling, or horizontal directional drilling. Any remaining impacts will be mitigated in accordance with Table 2A of the City's Biology Guidelines and as such, the Project shall not have a significant adverse impact to the MSCP.

City of San Diego Vernal Pool Habitat Conservation Plan

The ~~Draft~~ Final City of San Diego ~~Vernal Pool Habitat Conservation Plan (~~VPHCP~~;~~ (City of San Diego ~~2016~~2017) encompasses 206,124 acres within the MSCP Subregional Plan area in the southwestern portion of San Diego County. However, the ~~Draft~~ Final VPHCP is a separate conservation plan for vernal pools and species not covered under the MSCP. Five plant and two crustacean species covered by the ~~Draft~~ Final VPHCP include:

- Otay Mesa mint (*Pogogyne nudiuscula*)
- San Diego mesa mint (*Pogogyne abramsii*)
- Spreading navarretia (*Navarretia fossalis*)
- San Diego button-celery (*Eryngium aristulatum* var. *parishii*)
- California Orcutt grass (*Orcuttia californica*)
- Riverside fairy shrimp (*Streptocephalus woottoni*)
- San Diego fairy shrimp (*Branchinecta sandiegonensis*)

The North City Project study area is covered under the ~~Draft~~ Final VPHCP. The covered projects under the ~~Draft~~ Final VPHCP are identified in the MHPA with a hard line preserve boundary that distinguishes between take-authorized development area and the associated conservation area.

The purpose of the ~~Draft~~ Final VPHCP is to: (1) preserve a network of vernal pool habitat in a matrix of open space; (2) protect the biodiversity of these unique wetlands; and (3) define a formal strategy for their long-term conservation, management, and monitoring (City of San Diego ~~2016~~2017). The ~~Draft~~ Final VPHCP considers a seasonally flooded depression to be a vernal pool if it includes one or more indicator species (ACOE 1997; Bauder and McMillan 1998) listed in Appendix A of the ~~Draft~~ Final VPHCP (City of San Diego ~~2016~~2017). Projects covered under the ~~Draft~~ Final VPHCP have areas delineated for both development and preservation and/or mitigation. The MHPA hard line preserve boundaries for covered projects are established after evaluation of habitat and species surveys conducted, evaluation by wildlife agencies, and consideration of how the proposed vernal pool conservation best contributes to the overall ~~Draft~~ Final VPHCP planning effort (City of San Diego ~~2016~~2017). ~~Currently, the Draft VPHCP is preliminary and has not been finalized.~~

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1A

Biological Resources - Miramar Reservoir and San Vicente Reservoir Alternatives

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SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1B

Biological Resources - Miramar Reservoir and San Vicente Reservoir Alternatives

Pure Water San Diego Program North City Project EIR/EIS

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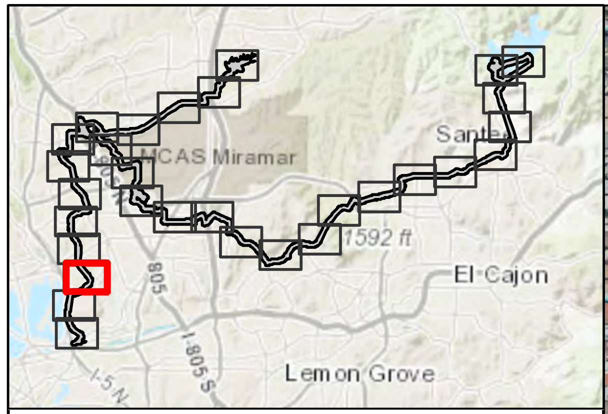

LEGEND

- Project Study Area
- Coastal Zone Boundary

Project Pipeline Alternatives

- Morena Wastewater Forcemain and Brine/Centrate Line

Vegetation Communities/Land Covers

- CSS, Diegan Coastal Sage Scrub
- DEV, Urban/Developed
- DH, Disturbed Habitat
- EUC, Eucalyptus Woodland
- NNV, Non-native Vegetation
- Multi-Habitat Planning Area

0 500 1,000 Feet

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1C

Biological Resources - Miramar Reservoir and San Vicente Reservoir Alternatives

Pure Water San Diego Program North City Project EIR/EIS

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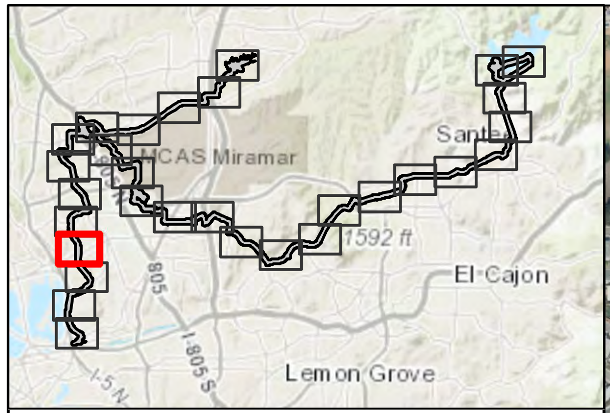

LEGEND

- Project Study Area
- Coastal Zone Boundary

Project Pipeline Alternatives

- Morena Wastewater Forcemain and Brine/Centrate Line

Vegetation Communities/Land Covers

- CLOW, Coast Live Oak Woodland
- CSS, Diegan Coastal Sage Scrub
- DEV, Urban/Developed
- DH, Disturbed Habitat
- EUC, Eucalyptus Woodland
- NNV, Non-native Vegetation
- SWS, Southern Willow Scrub
- dCSS, disturbed Diegan Coastal Sage Scrub
- Multi-Habitat Planning Area

0 500 1,000 Feet

DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1D

Biological Resources - Miramar Reservoir and San Vicente Reservoir Alternatives

Pure Water San Diego Program North City Project EIR/EIS

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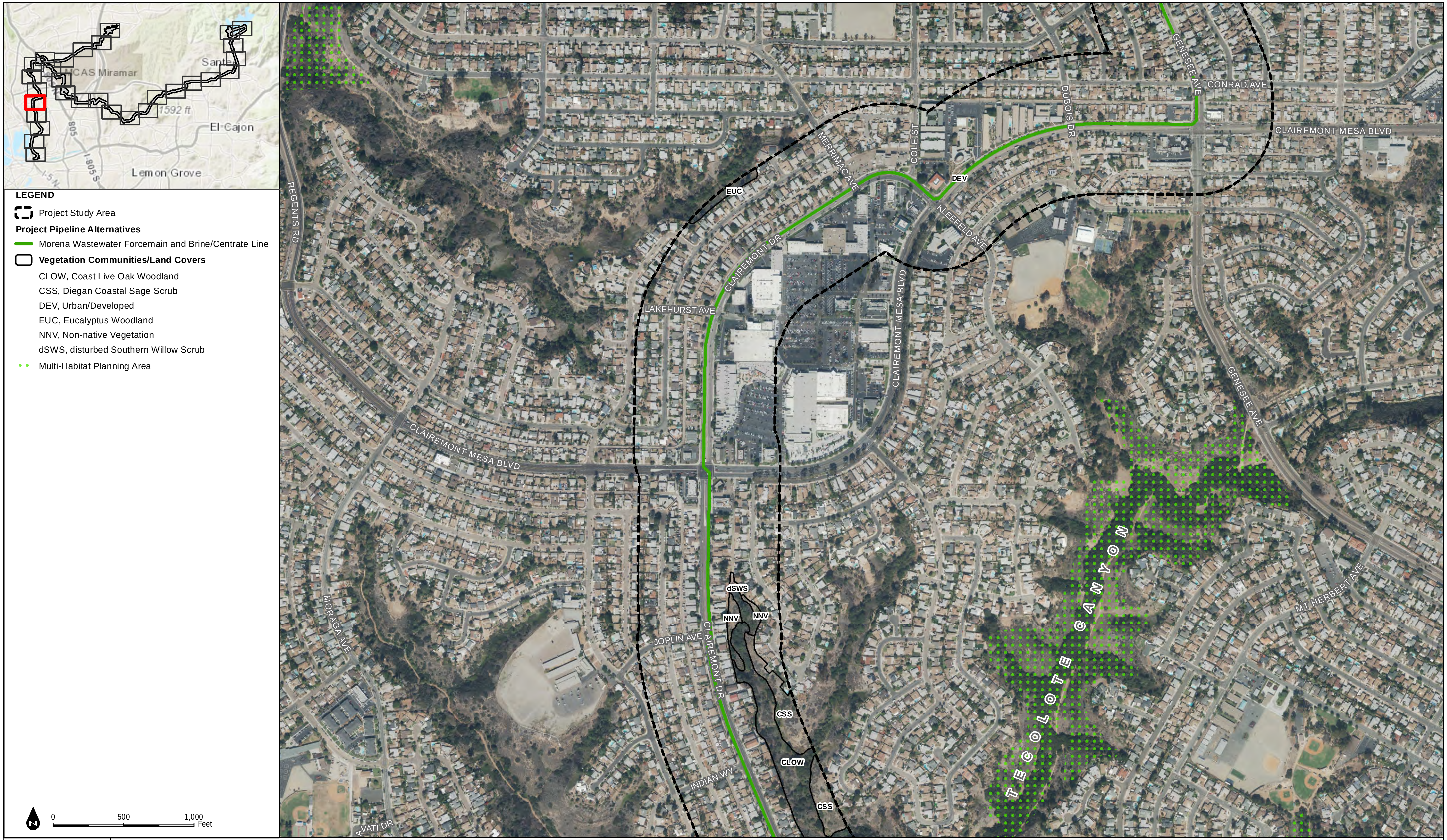

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1E

Biological Resources - Miramar Reservoir and San Vicente Reservoir Alternatives

Pure Water San Diego Program North City Project EIR/EIS

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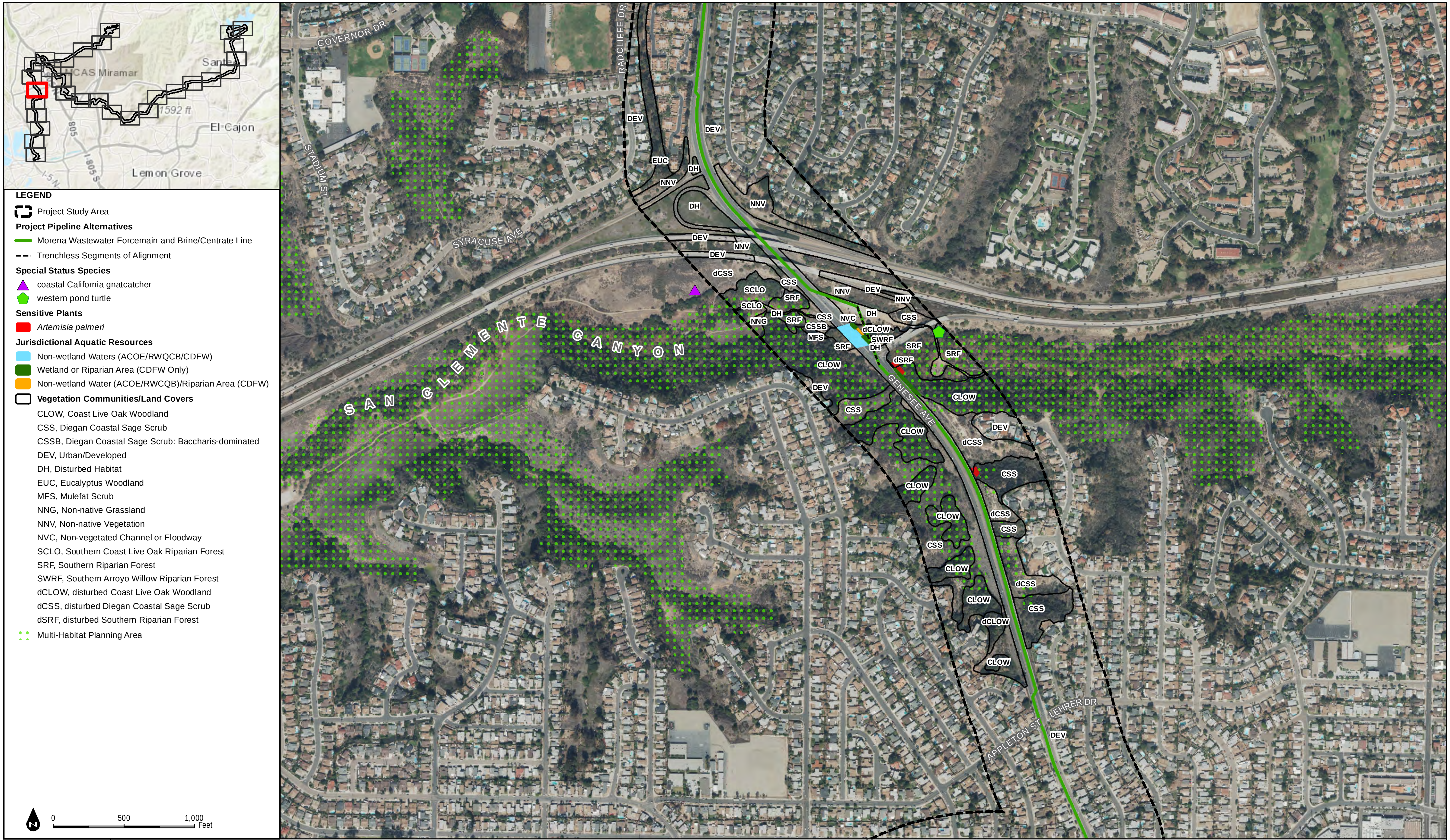

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1F

Biological Resources - Miramar Reservoir and San Vicente Reservoir Alternatives

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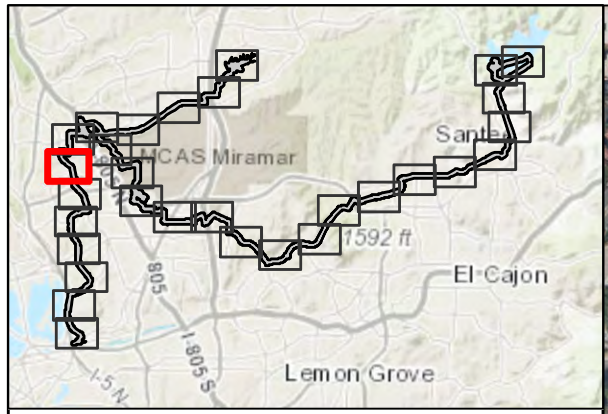

LEGEND

Project Study Area

Project Pipeline Alternatives

Morena Wastewater Forcemain and Brine/Centrate Line

Trenchless Segments of Alignment

Special Status Species

Cooper's hawk

yellow warbler

Sensitive Plants

Ceanothus verrucosus

Iva hayesiana

Romneya coulteri

Vegetation Communities/Land Covers

CSS, Diegan Coastal Sage Scrub

DEV, Urban/Developed

DH, Disturbed Habitat

EUC, Eucalyptus Woodland

FWM, Coastal and Valley Freshwater Marsh

NNV, Non-native Vegetation

SCLO, Southern Coast Live Oak Riparian Forest

SWRF, Southern Arroyo Willow Riparian Forest

SWS, Southern Willow Scrub

dCSS, disturbed Diegan Coastal Sage Scrub

Multi-Habitat Planning Area

0 500 1,000 Feet

DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1G

Biological Resources - Miramar Reservoir and San Vicente Reservoir Alternatives

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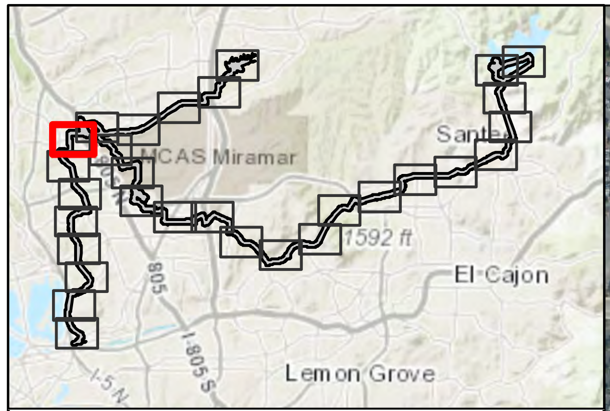

LEGEND

Project Study Area

Project Pipeline Alternatives

North City Pure Water Pipeline
Morena Wastewater Forcemain and Brine/Centrate Line
San Vicente Pure Water Pipeline
Landfill Gas Pipeline
Trenchless Segments of Alignment
Air Valve and Blow-Off Valve Work Areas (10'x10') - For San Vicente Reservoir Alternative

Project Facilities

North City Pure Water Facilty
North City Water Reclamation Plant Expansion
North City Pure Water Renewable Energy Facility
North City Pure Water Facility Influent Pump Station

Special Status Species

Cooper's hawk
coastal California gnatcatcher

Sensitive Plants

Holocarpha virgata ssp. elongata
Iva hayesiana
Quercus dumosa
Selaginella cinerascens
Viguiera laciniata

Basin Data

Vernal pool
Basin (SDFS present)
Basin
MCAS Mapped Watershed

Jurisdictional Aquatic Resources

Wetland or Riparian Area (CDFW Only)

Vegetation Communities/Land Covers

CSS, Diegan Coastal Sage Scrub
DEV, Urban/Developed
DH, Disturbed Habitat
EUC, Eucalyptus Woodland
FWM, Coastal and Valley Freshwater Marsh
MFS, Mulefat Scrub
NNG, Non-native Grassland
NNV, Non-native Vegetation
SCLO, Southern Coast Live Oak Riparian Forest
VP, Vernal Pool
dCSS, disturbed Diegan Coastal Sage Scrub

Multi-Habitat Planning Area

0 500 1,000 Feet

DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1H

Biological Resources - Miramar Reservoir and San Vicente Reservoir Alternatives

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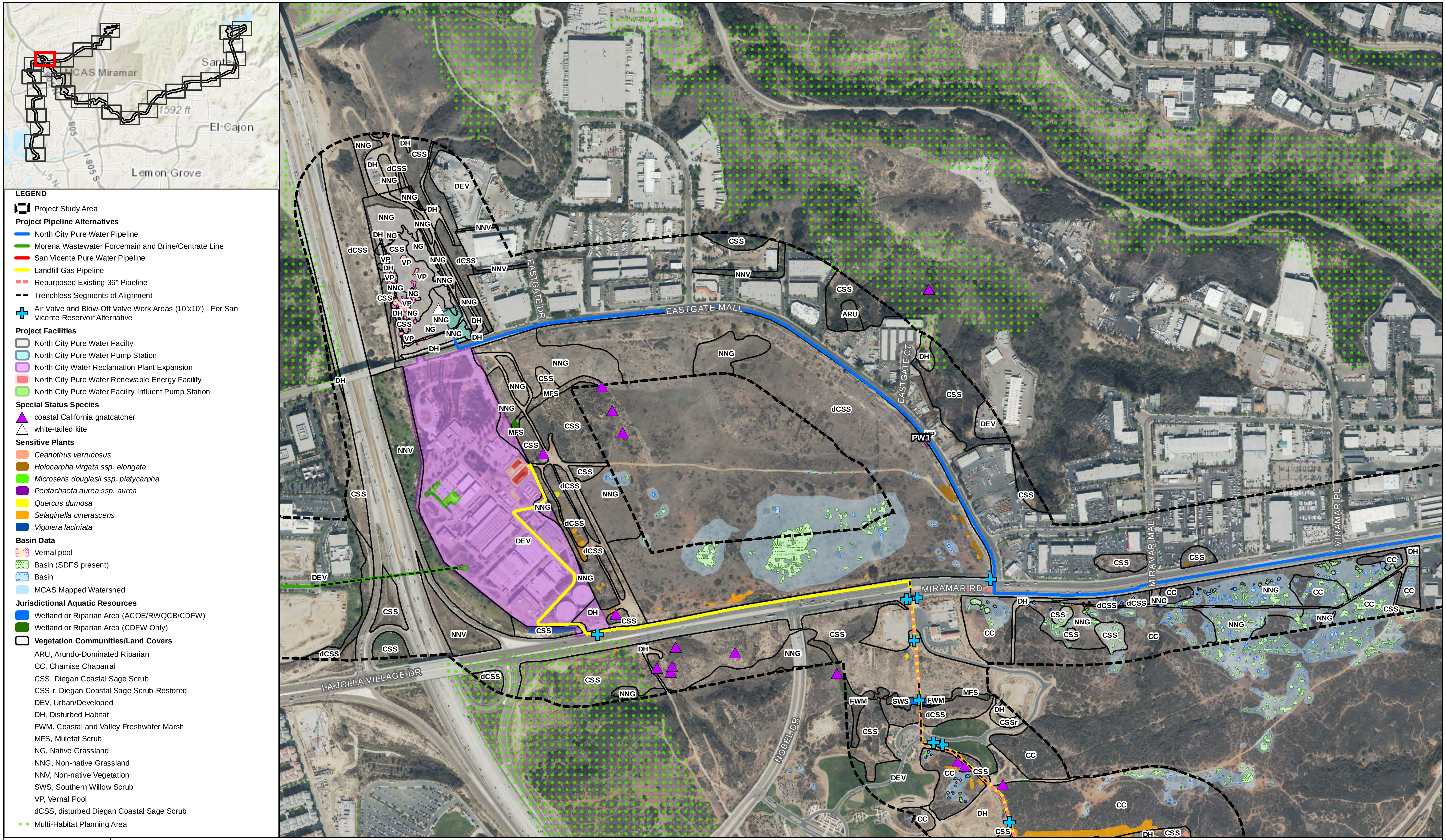

DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1I

Biological Resources - Miramar Reservoir and San Vicente Reservoir Alternatives

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MCAS Miramar
Santee
El Cajon
Lemon Grove
1592 ft
805
LEGEND
Project Study Area
Project Pipeline Alternatives
North City Pure Water Pipeline
Trenchless Segments of Alignment
Special Status Species
coastal California gnatcatcher
Sensitive Plants
Iva hayesiana
Basin Data
Basin (SDFS present)
Basin
MCAS Mapped Watershed
Vegetation Communities/Land Covers
CC, Chamise Chaparral
CSS, Diegan Coastal Sage Scrub
DEV, Urban/Developed
DH, Disturbed Habitat
EUC, Eucalyptus Woodland
NNG, Non-native Grassland
NNV, Non-native Vegetation
SMX, Southern Mixed Chaparral
dCSS, disturbed Diegan Coastal Sage Scrub
Multi-Habitat Planning Area
0
500
1,000
Feet
CAMINO SANTA FE
COMMERCE AVE
MIRAMAR RD
CARROLL RD
SMX
DEV
DH
NNV
EUC
NNG
dCSS
CC
CSS

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LEGEND

Project Study Area

Project Pipeline Alternatives

North City Pure Water Pipeline

Vegetation Communities/Land Covers

CSSB, Diegan Coastal Sage Scrub: Baccharis-dominated

DEV, Urban/Developed

DH, Disturbed Habitat

EUC, Eucalyptus Woodland

NNG, Non-native Grassland

SWS, Southern Willow Scrub

0 500 1,000 Feet

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1K

Biological Resources - Miramar Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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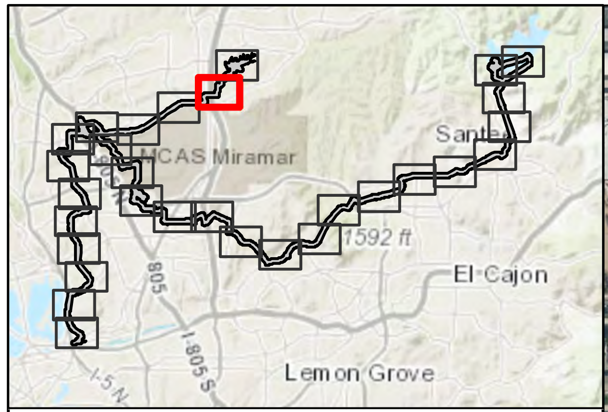


LEGEND

Project Study Area

Project Pipeline Alternatives

North City Pure Water Pipeline

Trenchless Segments of Alignment

Jurisdictional Aquatic Resources

Non-wetland Waters (ACOE/RWQCB/CDFW)

Vegetation Communities/Land Covers

CSS, Diegan Coastal Sage Scrub

DEV, Urban/Developed

DEV-CC, Developed - Concrete Channel

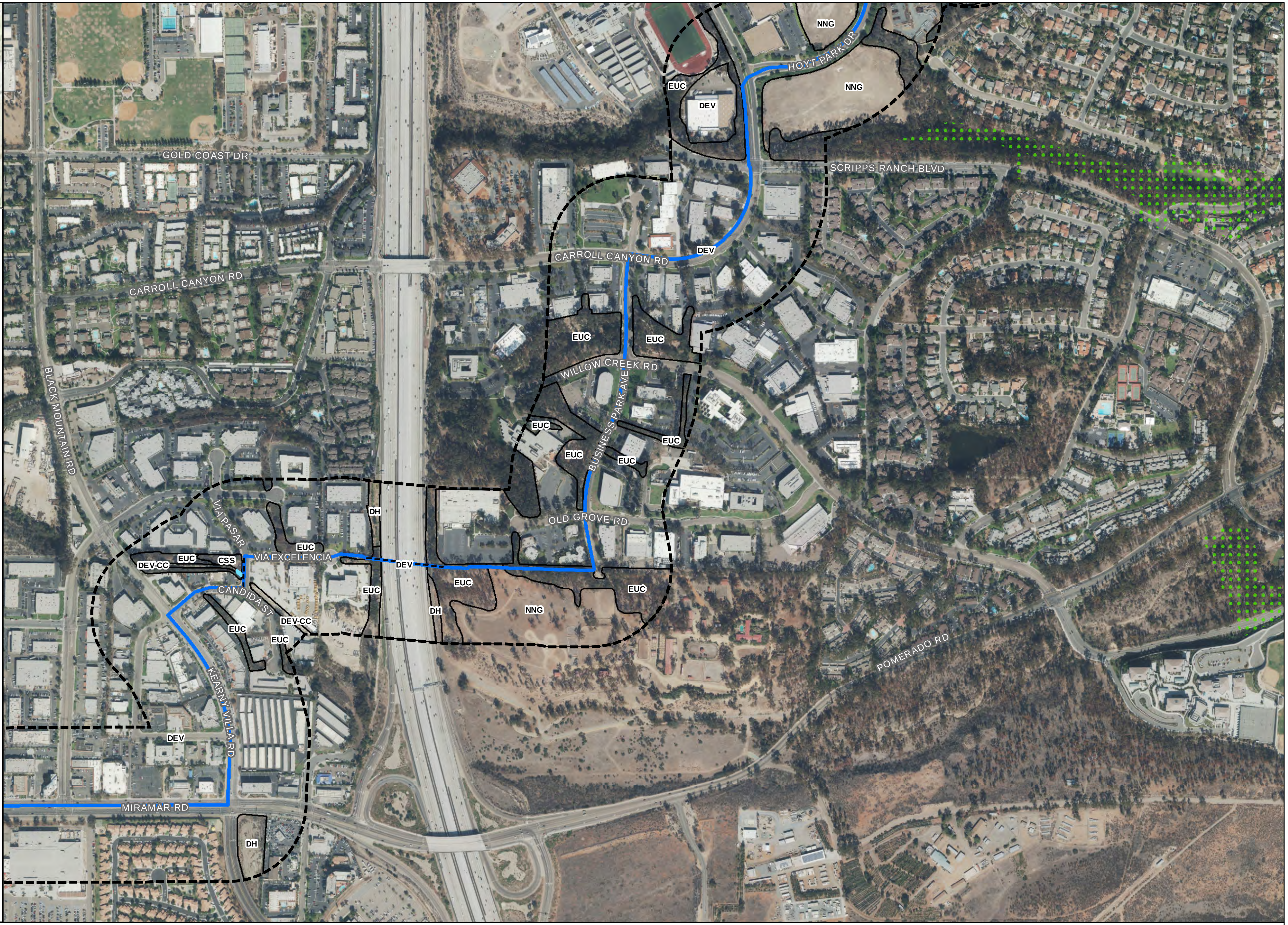
DH, Disturbed Habitat

EUC, Eucalyptus Woodland

NNG, Non-native Grassland

Multi-Habitat Planning Area

0 500 1,000 Feet



SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1L

Biological Resources - Miramar Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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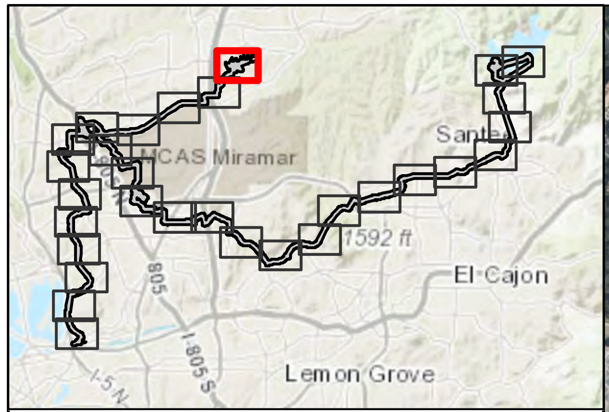


LEGEND

Project Study Area

Project Pipeline Alternatives

- North City Pure Water Pipeline
- North City Pure Water Pipeline - Subaqueous Pipeline
- Trenchless Segments of Alignment

Project Facilities

- Pure Water Dechlorination Facility
- Miramar Water Treatment Plant Improvements and Pump Station

Special Status Species

- western pond turtle

Sensitive Plants

- *Adolphia californica*
- *Ferocactus viridescens*
- *Pentachaeta aurea ssp. aurea*
- *Quercus dumosa*
- *Selaginella cinerascens*

Jurisdictional Aquatic Resources

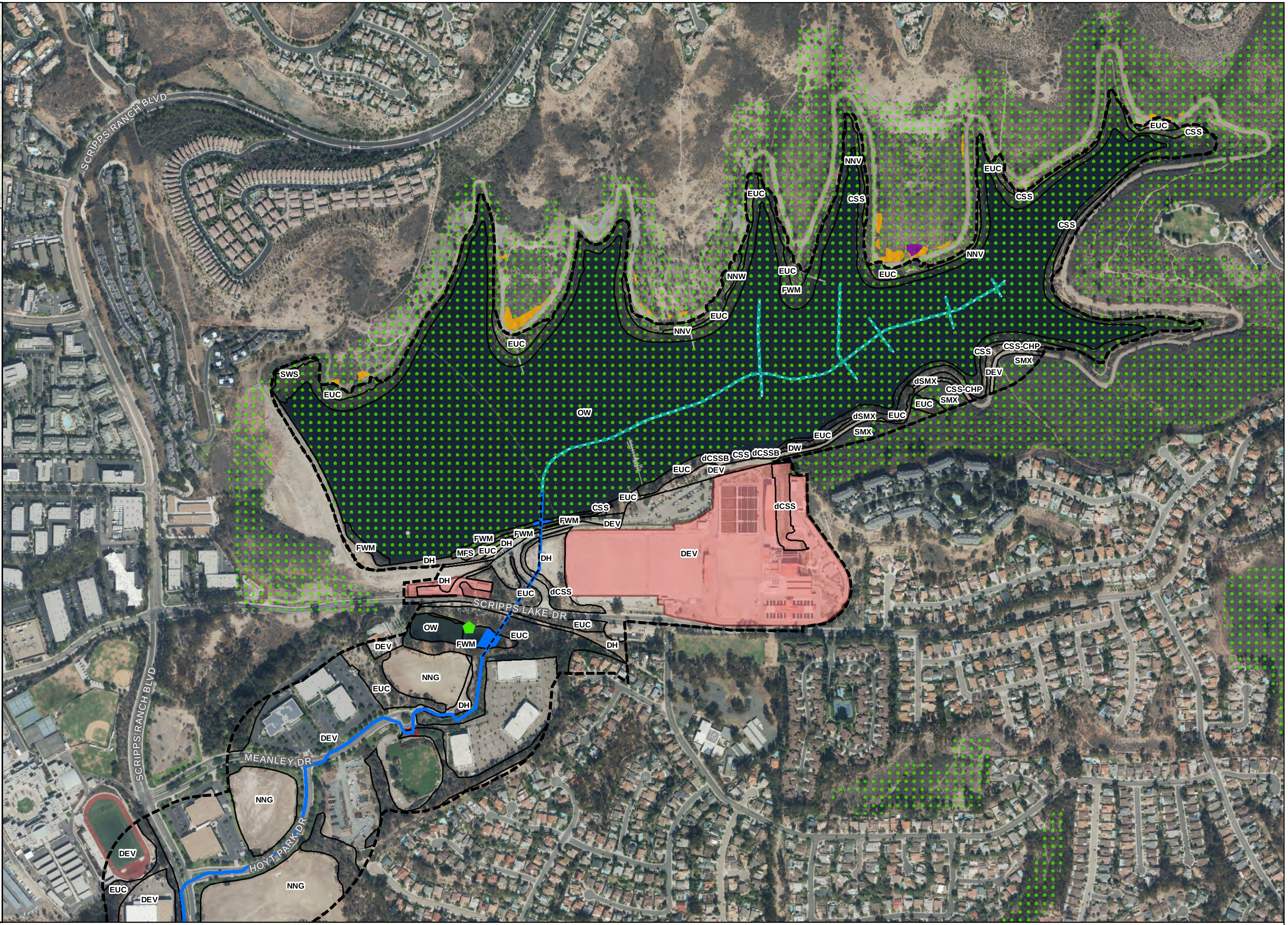
- Non-wetland Waters (ACOE/RWQCB/CDFW)
- Wetland or Riparian Area (ACOE/RWQCB/CDFW)

Vegetation Communities/Land Covers

- CSS, Diegan Coastal Sage Scrub
- CSS-CHP, Coastal Sage-Chaparral Transition
- DEV, Urban/Developed
- DH, Disturbed Habitat
- DW, Disturbed Wetland
- EUC, Eucalyptus Woodland
- FWM, Coastal and Valley Freshwater Marsh
- MFS, Mulefat Scrub
- NNG, Non-native Grassland
- NNV, Non-native Vegetation
- NNW, Non-native Woodland
- OW, Open Water
- SMX, Southern Mixed Chaparral
- SWS, Southern Willow Scrub
- dCSS, disturbed Diegan Coastal Sage Scrub
- dCSSB, disturbed Diegan Coastal Sage Scrub: Baccharis-dominated
- dSMX, disturbed Southern Mixed Chaparral
- Multi-Habitat Planning Area

N

0 500 1,000 Feet



DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1M

Biological Resources - Miramar Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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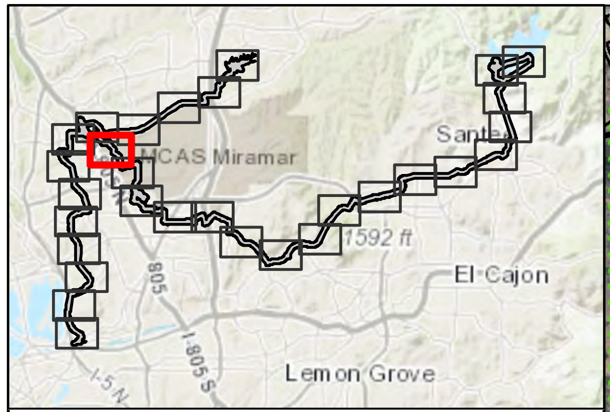


LEGEND

Project Study Area

Project Pipeline Alternatives

- Landfill Gas Pipeline
- Repurposed Existing 36" Pipeline
- Trenchless Segments of Alignment
- Air Valve and Blow-Off Valve Work Areas (10'x10') - For San Vicente Reservoir Alternative

Special Status Species

- coastal California gnatcatcher

Sensitive Plants

- *Brodiaea orcuttii*
- *Ceanothus verrucosus*
- *Chorizanthe polygonoides var. longispina*
- *Holocarpha virgata ssp. elongata*
- *Microseris douglasii ssp. platycarpha*
- *Pentachaeta aurea ssp. aurea*
- *Quercus dumosa*
- *Selaginella cinerascens*
- *Viguiera laciniata*

Basin Data

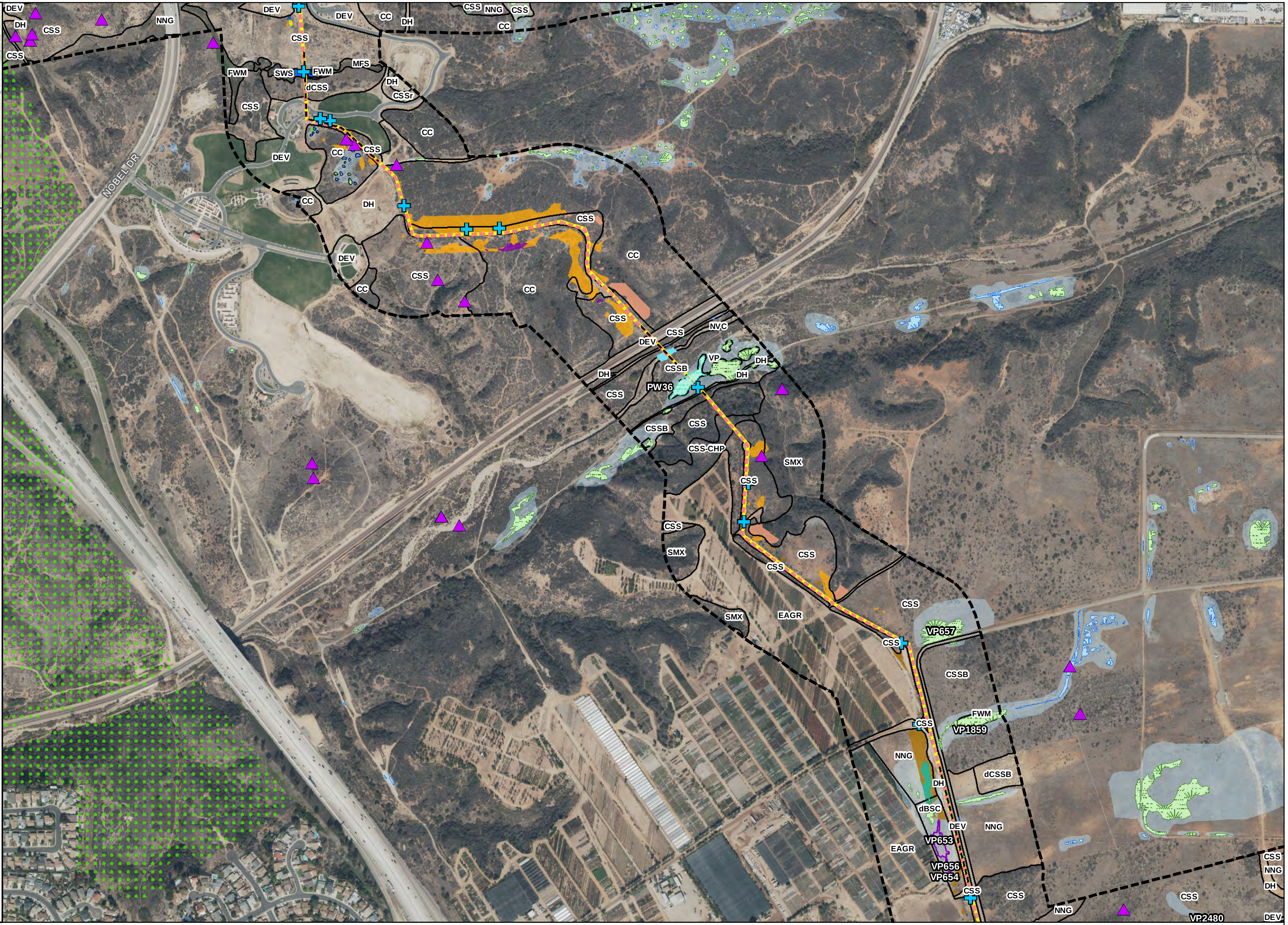
- Vernal pool (SDFS present)
- Basin (SDFS present)
- Basin
- Other SPFs
- MCAS Mapped Watershed

Jurisdictional Aquatic Resources

- Non-wetland Waters (ACOE/RWQCB/CDFW)
- Wetland or Riparian Area (ACOE/RWQCB/CDFW)

Vegetation Communities/Land Covers

- CC, Chamise Chaparral
- CSS, Diegan Coastal Sage Scrub
- CSS-CHP, Coastal Sage-Chaparral Transition
- CSS-r, Diegan Coastal Sage Scrub-Restored
- CSSB, Diegan Coastal Sage Scrub: Baccharis-dominated
- DEV, Urban/Developed
- DH, Disturbed Habitat
- FWM, Coastal and Valley Freshwater Marsh
- MFS, Mulefat Scrub
- NNG, Non-native Grassland
- NVC, Non-vegetated Channel or Floodway
- SMX, Southern Mixed Chaparral
- SWS, Southern Willow Scrub
- VP, Vernal Pool
- dBSC, disturbed Flat-topped Buckwheat
- dCSS, disturbed Diegan Coastal Sage Scrub
- dCSSB, disturbed Diegan Coastal Sage Scrub: Baccharis-dominated
- EAGR, Extensive Agriculture - Field/Pasture, Row Crops
- Multi-Habitat Planning Area



DUDEK

0 500 1,000 Feet

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1N

Biological Resources - Miramar Reservoir and San Vicente Reservoir Alternatives

Pure Water San Diego Program North City Project EIR/EIS

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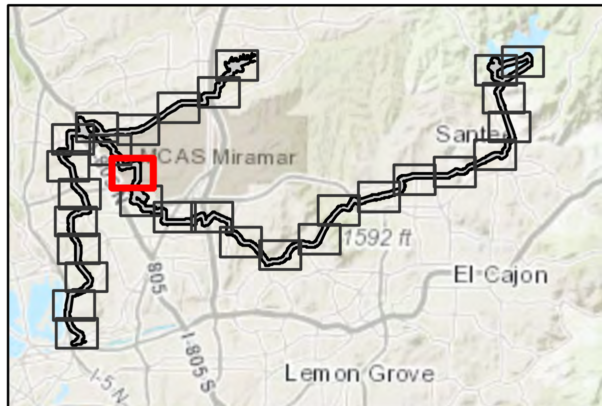

LEGEND

- Project Study Area

Project Pipeline Alternatives

- Landfill Gas Pipeline
- Repurposed Existing 36" Pipeline
- Trenchless Segments of Alignment
- Air Valve and Blow-Off Valve Work Areas (10'x10') - For San Vicente Reservoir Alternative

Project Facilities

- Landfill Gas Pipeline Compressor Station

Special Status Species

- coastal California gnatcatcher
- yellow warbler
- yellow-breasted chat

Sensitive Plants

- *Brodiaea orcuttii*
- *Holocarpha virgata ssp. elongata*
- *Selaginella cinerascens*

Basin Data

- Basin (SDFS present)
- Basin
- Other SPFs
- MCAS Mapped Watershed

Jurisdictional Aquatic Resources

- Non-wetland Waters (ACOE/RWQCB/CDFW)
- Wetland or Riparian Area (CDFW Only)

Vegetation Communities/Land Covers

- BSC, Flat-topped Buckwheat
- CSS, Diegan Coastal Sage Scrub
- CSSB, Diegan Coastal Sage Scrub: Baccharis-dominated
- DEV, Urban/Developed
- DH, Disturbed Habitat
- FWM, Coastal and Valley Freshwater Marsh
- NNG, Non-native Grassland
- NNV, Non-native Vegetation
- NVC, Non-vegetated Channel or Floodway
- SARW, Southern Sycamore-Alder Riparian Woodland
- SMX, Southern Mixed Chaparral
- SWS, Southern Willow Scrub
- dBSC, disturbed Flat-topped Buckwheat
- dCSS, disturbed Diegan Coastal Sage Scrub
- dCSSB, disturbed Diegan Coastal Sage Scrub: Baccharis-dominated
- EAGR, Extensive Agriculture - Field/Pasture, Row Crops

N

0 500 1,000 Feet

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1O

Biological Resources - Miramar Reservoir and San Vicente Reservoir Alternatives

DUDEK

Pure Water San Diego Program North City Project EIR/EIS

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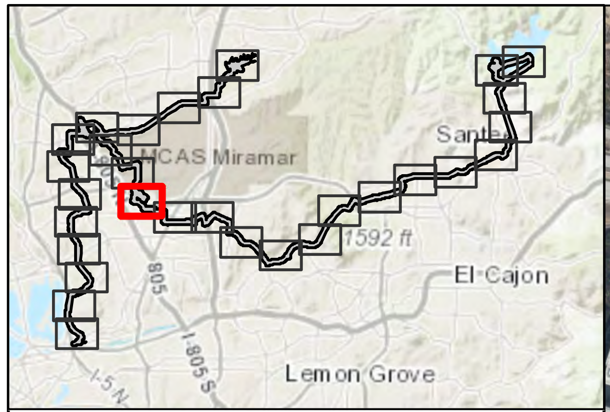


LEGEND

Project Study Area

Project Pipeline Alternatives

- San Vicente Pure Water Pipeline
- Repurposed Existing 36" Pipeline
- Air Valve and Blow-Off Valve Work Areas (10'x10') - For San Vicente Reservoir Alternative

Project Facilities

- Metro Biosolids Center Improvements

Special Status Species

- coastal California gnatcatcher
- willow flycatcher
- yellow warbler
- yellow-breasted chat

Sensitive Plants

- *Ceanothus verrucosus*
- *Chorizanthe polygonoides var. longispina*
- *Holocarpha virgata ssp. elongata*
- *Isocoma menziesii var. decumbens*
- *Quercus dumosa*
- *Selaginella cinerascens*

Basin Data

- Vernal pool (SDFS present)
- Basin (SDFS present)
- Basin

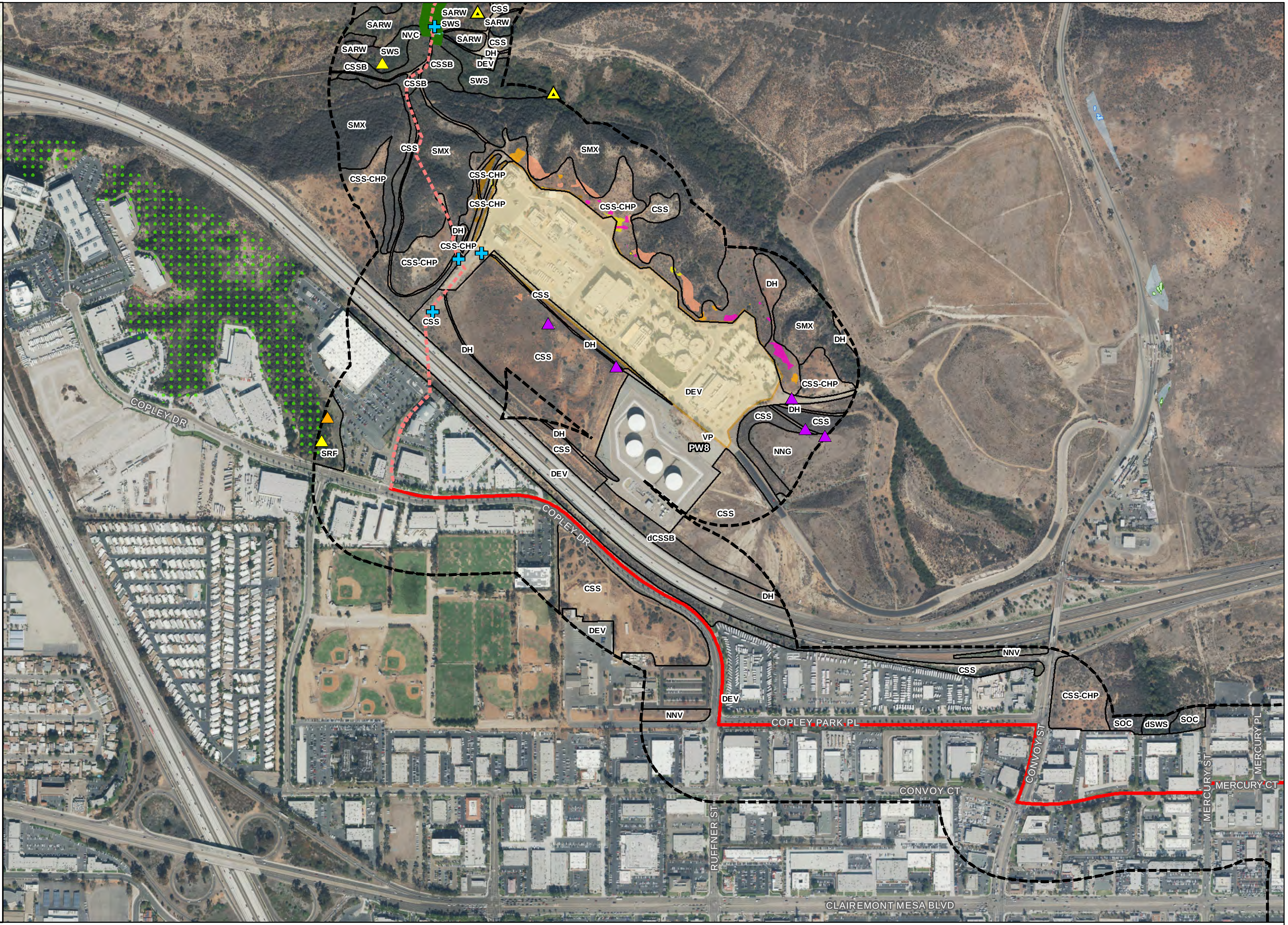
Jurisdictional Aquatic Resources

- Non-wetland Waters (ACOE/RWQCB/CDFW)
- Wetland or Riparian Area (CDFW Only)

Vegetation Communities/Land Covers

- CSS, Diegan Coastal Sage Scrub
- CSS-CHP, Coastal Sage-Chaparral Transition
- CSSB, Diegan Coastal Sage Scrub: Baccharis-dominated
- DEV, Urban/Developed
- DH, Disturbed Habitat
- NNG, Non-native Grassland
- NNV, Non-native Vegetation
- NVC, Non-vegetated Channel or Floodway
- SARW, Southern Sycamore-Alder Riparian Woodland
- SMX, Southern Mixed Chaparral
- SOC, Scrub Oak Chaparral
- SRF, Southern Riparian Forest
- SWS, Southern Willow Scrub
- VP, Vernal Pool
- dCSSB, disturbed Diegan Coastal Sage Scrub: Baccharis-dominated
- dSWS, disturbed Southern Willow Scrub

Multi-Habitat Planning Area



0 500 1,000 Feet

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1P

Biological Resources - Miramar Reservoir and San Vicente Reservoir Alternatives

Pure Water San Diego Program North City Project EIR/EIS

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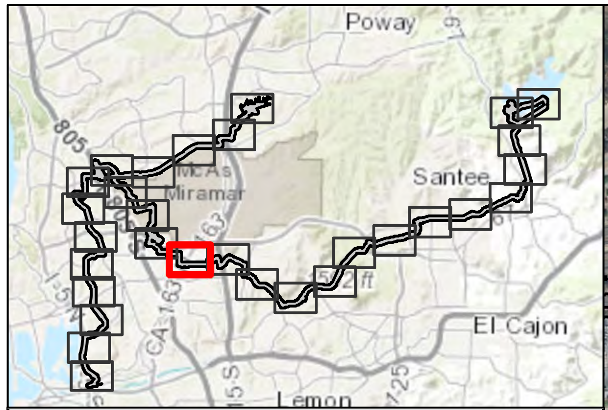

LEGEND

Project Study Area

Project Pipeline Alternatives

San Vicente Pure Water Pipeline

Trenchless Segments of Alignment

Vegetation Communities/Land Covers

CSS, Diegan Coastal Sage Scrub

CSS-CHP, Coastal Sage-Chaparral Transition

DEV, Urban/Developed

EUC, Eucalyptus Woodland

FWM, Coastal and Valley Freshwater Marsh

NNV, Non-native Vegetation

SOC, Scrub Oak Chaparral

dSWS, disturbed Southern Willow Scrub

Multi-Habitat Planning Area

0 500 1,000 Feet

DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1Q

Biological Resources - San Vicente Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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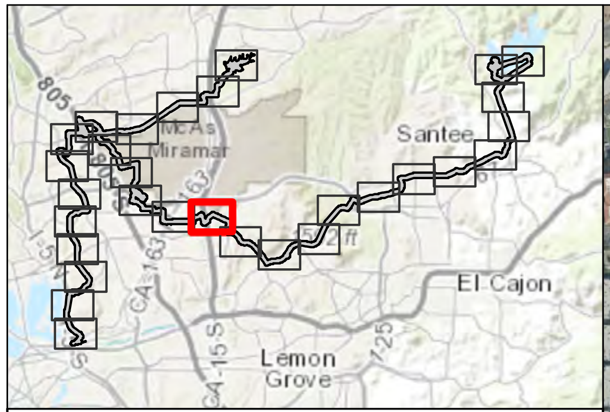

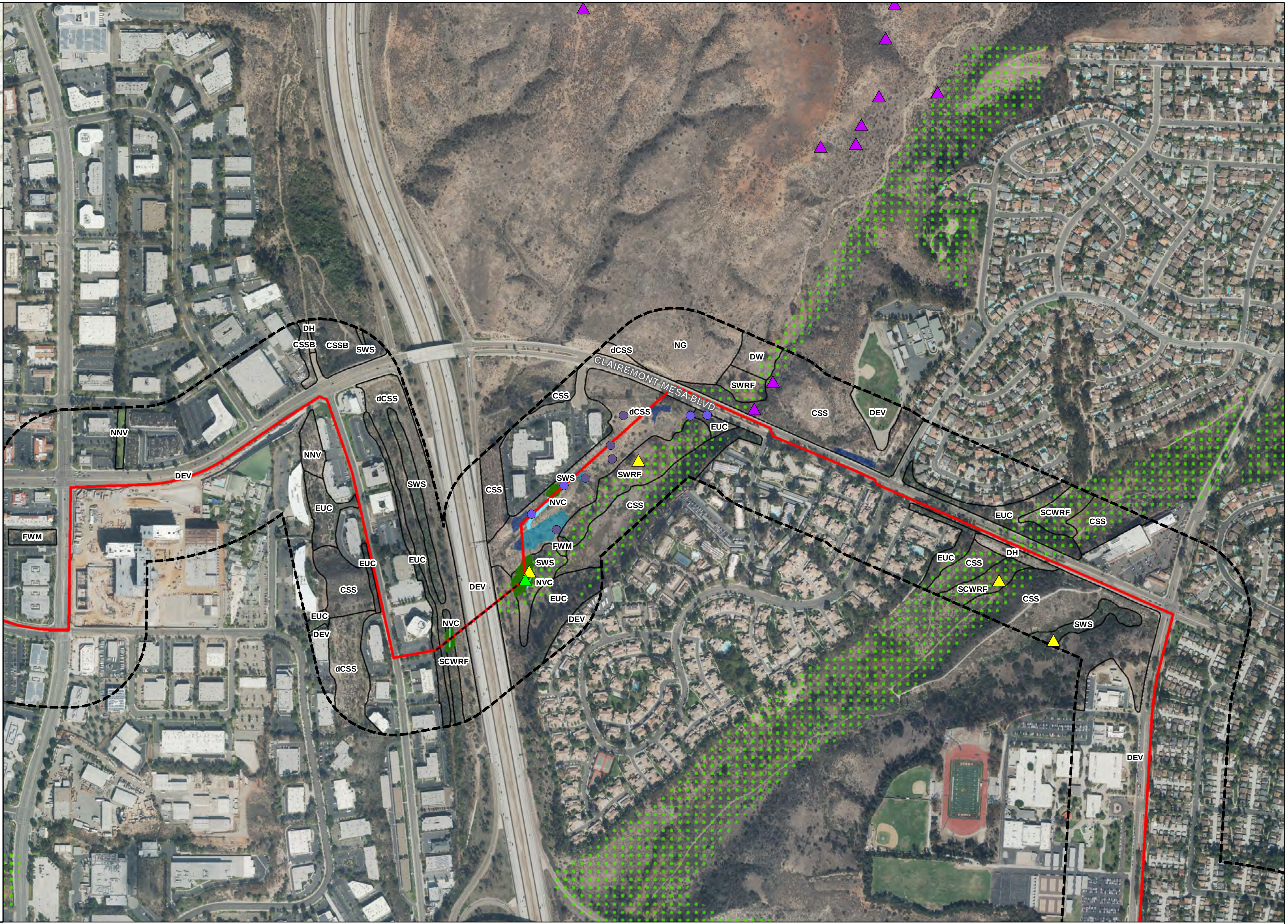

LEGEND

Project Study Area

Project Pipeline Alternatives

San Vicente Pure Water Pipeline

Trenchless Segments of Alignment

Special Status Species

coastal California gnatcatcher

least Bell's vireo

yellow warbler

Sensitive Plants

Ferocactus viridescens

Viguiera laciniata

Lepidium virginicum var. robinsonii

Viguiera laciniata

Jurisdictional Aquatic Resources

Non-wetland Waters (ACOE/RWQCB/CDFW)

Wetland or Riparian Area (CDFW Only)

Vegetation Communities/Land Covers

CSS, Diegan Coastal Sage Scrub

CSSB, Diegan Coastal Sage Scrub: Baccharis-dominated

DEV, Urban/Developed

DH, Disturbed Habitat

DW, Disturbed Wetland

EUC, Eucalyptus Woodland

FWM, Coastal and Valley Freshwater Marsh

NG, Native Grassland

NNV, Non-native Vegetation

NVC, Non-vegetated Channel or Floodway

SCWRF, Southern Cottonwood-Willow Riparian Forest

SWRF, Southern Arroyo Willow Riparian Forest

SWS, Southern Willow Scrub

dCSS, disturbed Diegan Coastal Sage Scrub

Multi-Habitat Planning Area

0 500 1,000 Feet

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1R

Biological Resources - San Vicente Reservoir Alternative

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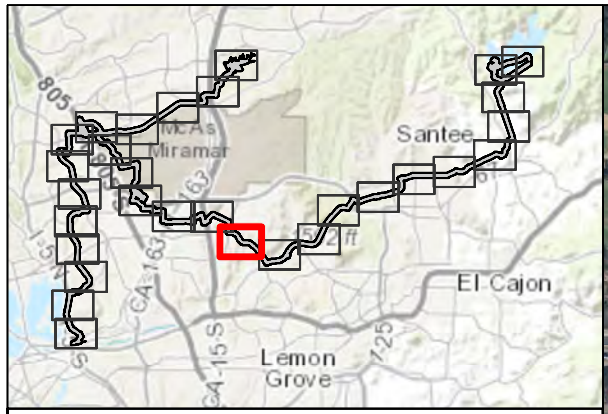

LEGEND

Project Study Area

Project Pipeline Alternatives

San Vicente Pure Water Pipeline

Special Status Species

Cooper's hawk

yellow warbler

Sensitive Plants

Viguiera laciniata

Vegetation Communities/Land Covers

CLOW, Coast Live Oak Woodland

CSS, Diegan Coastal Sage Scrub

DEV, Urban/Developed

DH, Disturbed Habitat

EUC, Eucalyptus Woodland

NNV, Non-native Vegetation

SWS, Southern Willow Scrub

dCSS, disturbed Diegan Coastal Sage Scrub

Multi-Habitat Planning Area

0 500 1,000 Feet

DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1S

Biological Resources - San Vicente Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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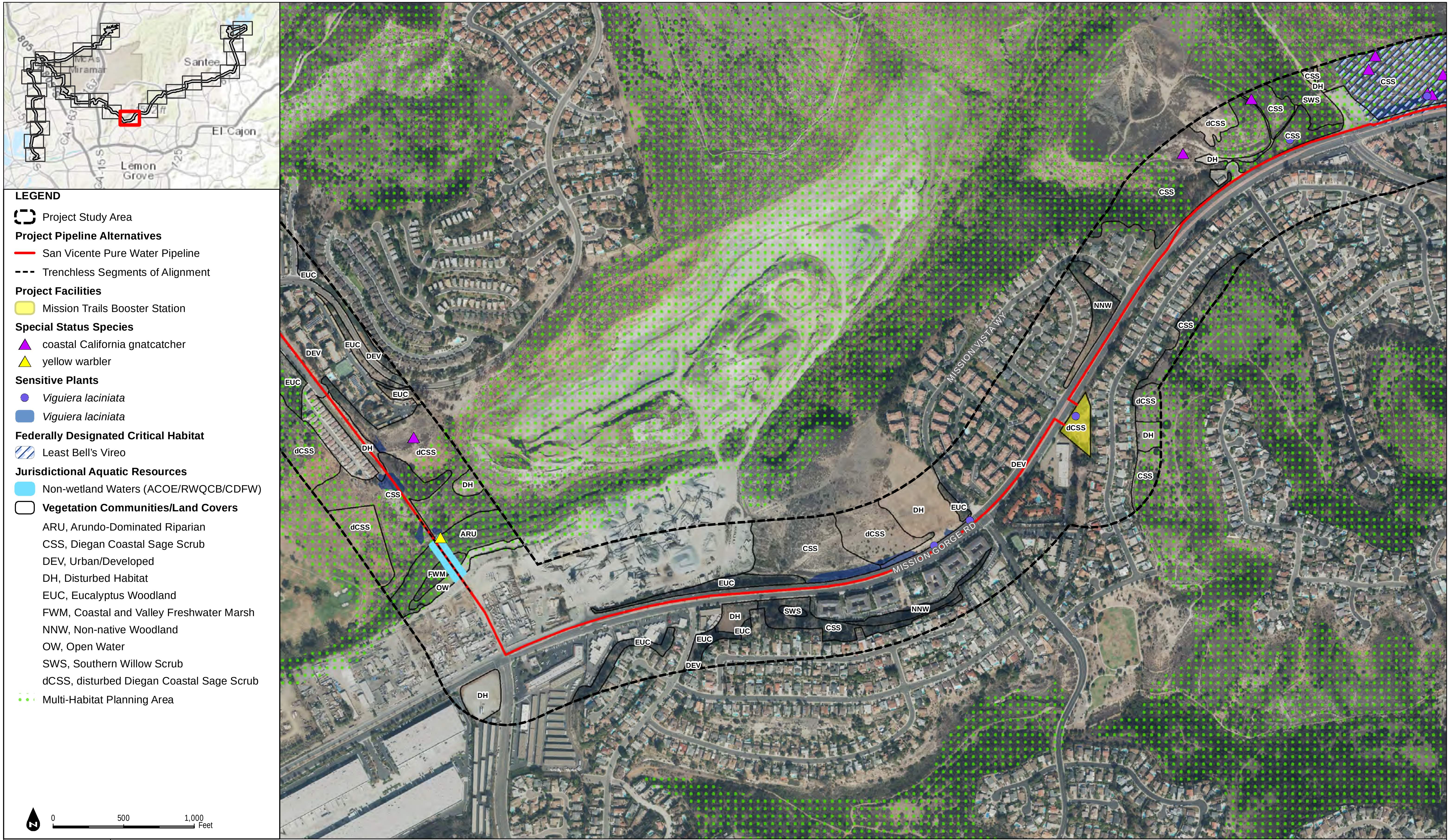

DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1T

Biological Resources - San Vicente Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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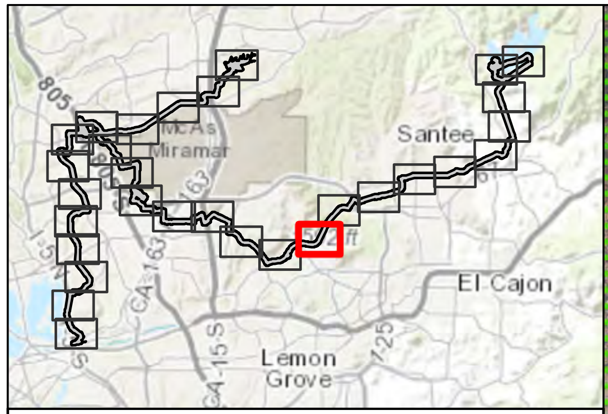


LEGEND

Project Study Area

Project Pipeline Alternatives

San Vicente Pure Water Pipeline

Special Status Species

- coastal California gnatcatcher
- mule deer
- orangethroat whiptail
- rosy boa
- southern California rufous-crowned sparrow
- two-striped gartersnake

Sensitive Plants

- *Lepidium virginicum var. robinsonii*
- *Viguiera laciniata*

Federally Designated Critical Habitat

Least Bell's Vireo

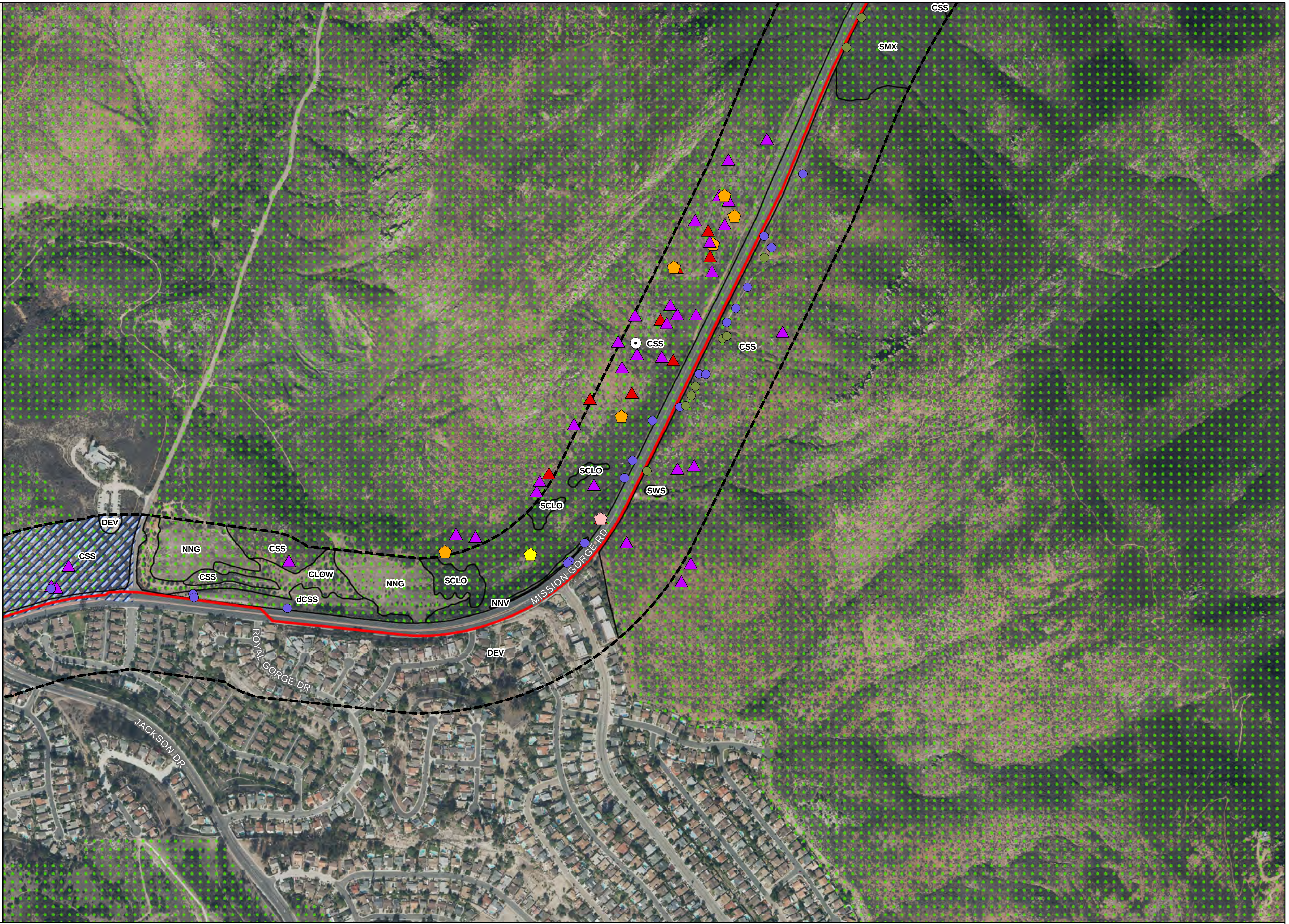
Vegetation Communities/Land Covers

CLOW, Coast Live Oak Woodland
CSS, Diegan Coastal Sage Scrub
DEV, Urban/Developed
NNG, Non-native Grassland
NNV, Non-native Vegetation
SCLO, Southern Coast Live Oak Riparian Forest
SMX, Southern Mixed Chaparral
SWS, Southern Willow Scrub
dCSS, disturbed Diegan Coastal Sage Scrub

Multi-Habitat Planning Area

N

0 500 1,000
Feet



DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1U

Biological Resources - San Vicente Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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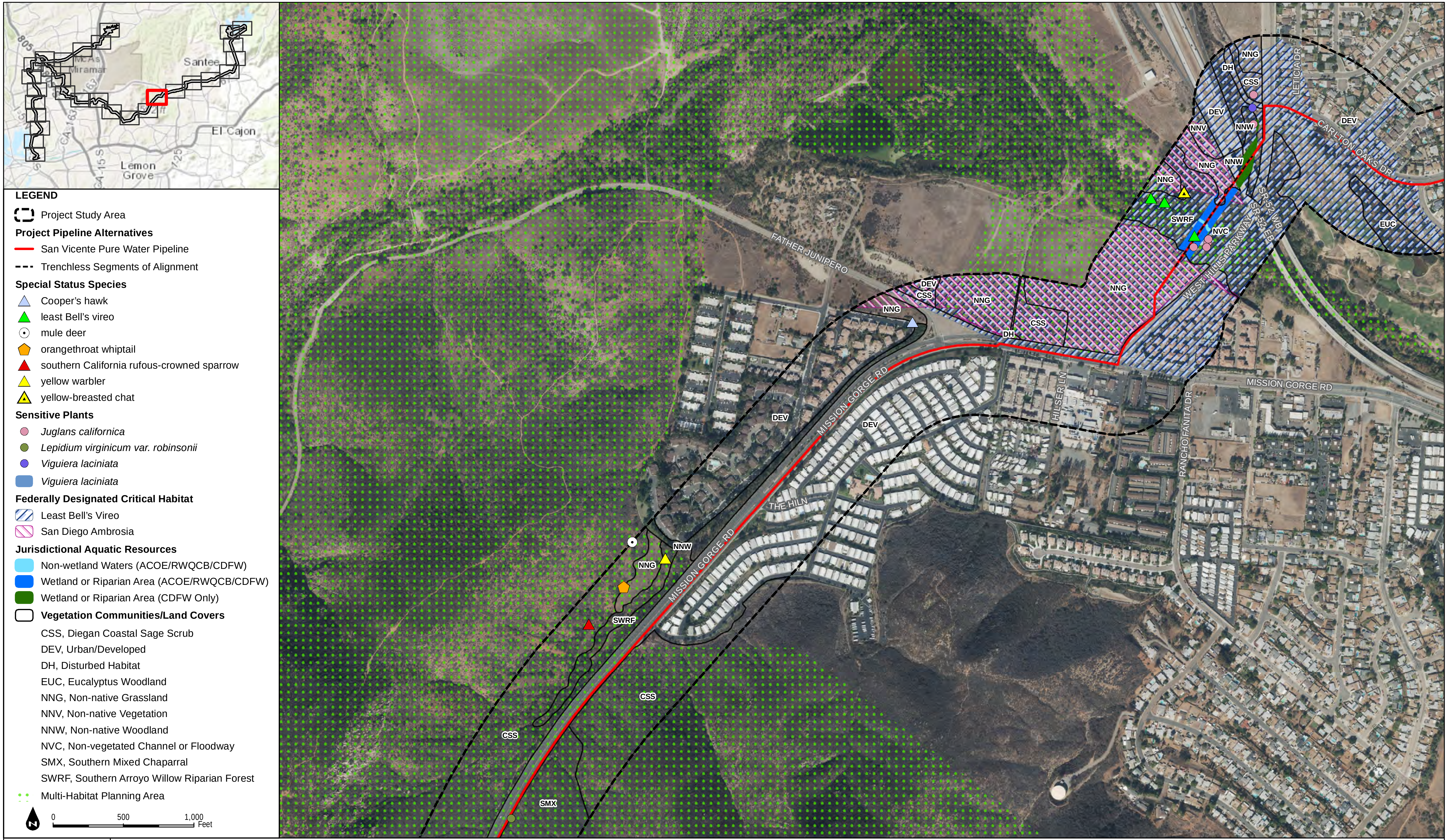

DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1V

Biological Resources - San Vicente Reservoir Alternative

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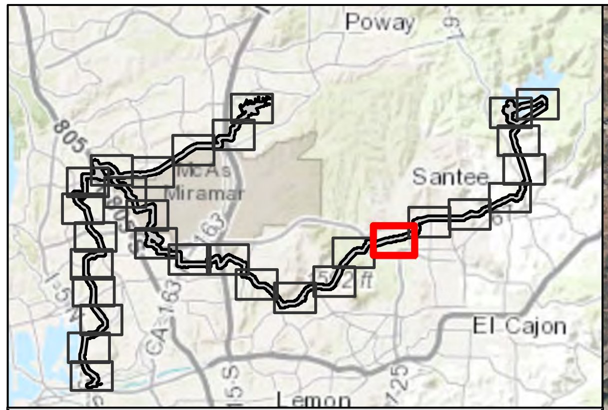


LEGEND

Project Study Area

Project Pipeline Alternatives

San Vicente Pure Water Pipeline

Trenchless Segments of Alignment

Special Status Species

Cooper's hawk

least Bell's vireo

yellow-breasted chat

Federally Designated Critical Habitat

Least Bell's Vireo

Jurisdictional Aquatic Resources

Wetland or Riparian Area (ACOE/RWQCB/CDFW)

Vegetation Communities/Land Covers

DEV, Urban/Developed

DH, Disturbed Habitat

EUC, Eucalyptus Woodland

NNG, Non-native Grassland

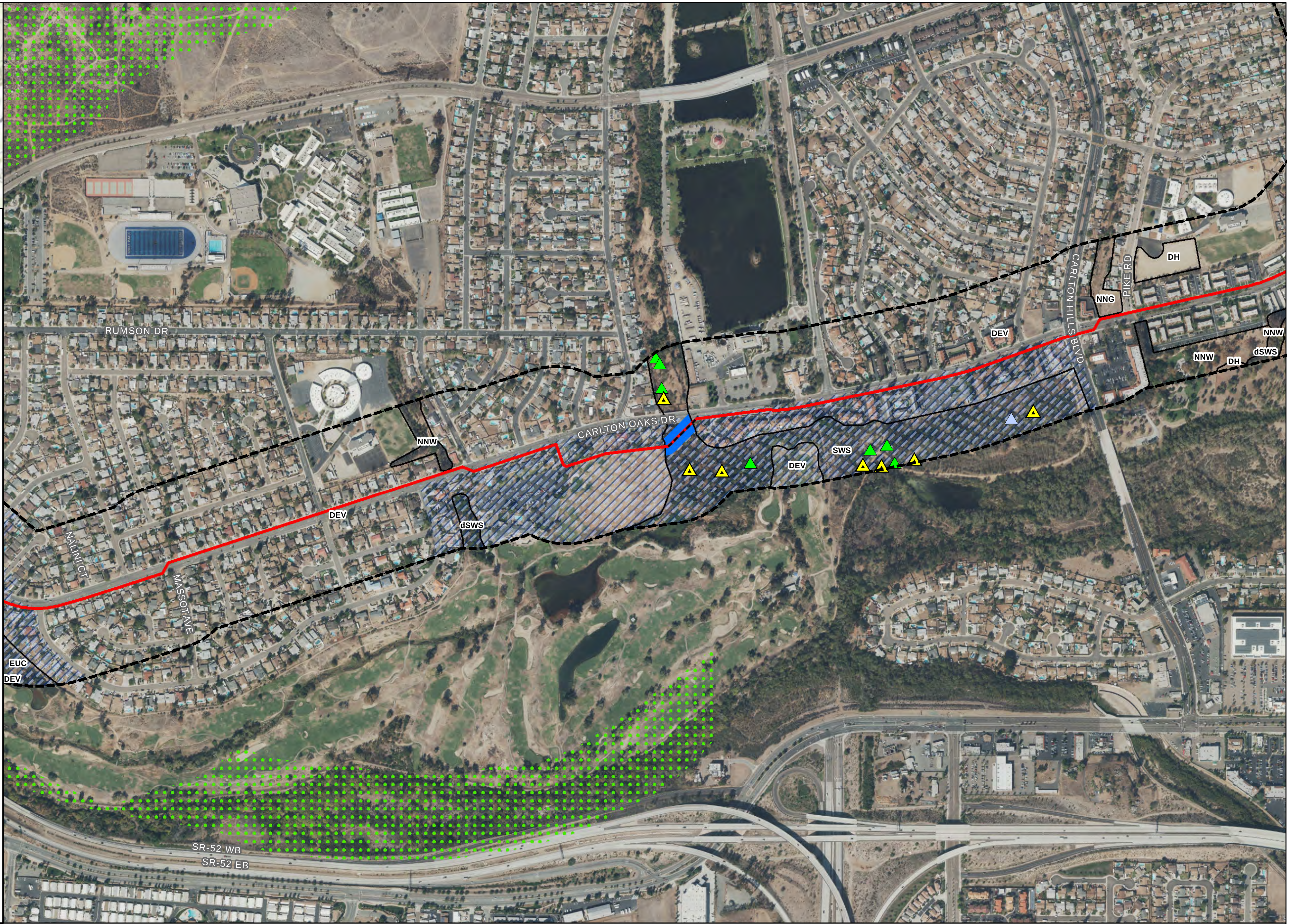
NNW, Non-native Woodland

SWS, Southern Willow Scrub

dSWS, disturbed Southern Willow Scrub

Multi-Habitat Planning Area

0 500 1,000 Feet



SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1W

Biological Resources - San Vicente Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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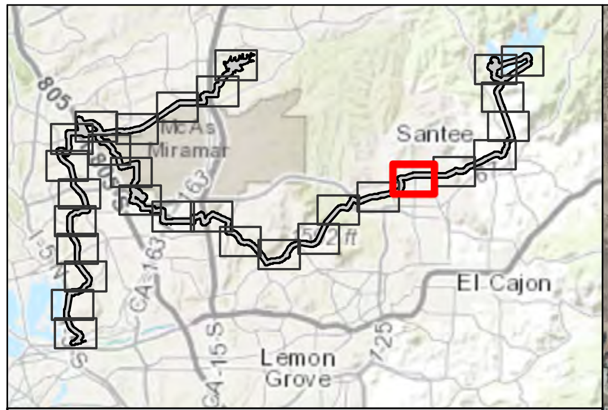


LEGEND

Project Study Area

Project Pipeline Alternatives

San Vicente Pure Water Pipeline

Special Status Species

least Bell's vireo

yellow warbler

Federally Designated Critical Habitat

Coastal California Gnatcatcher

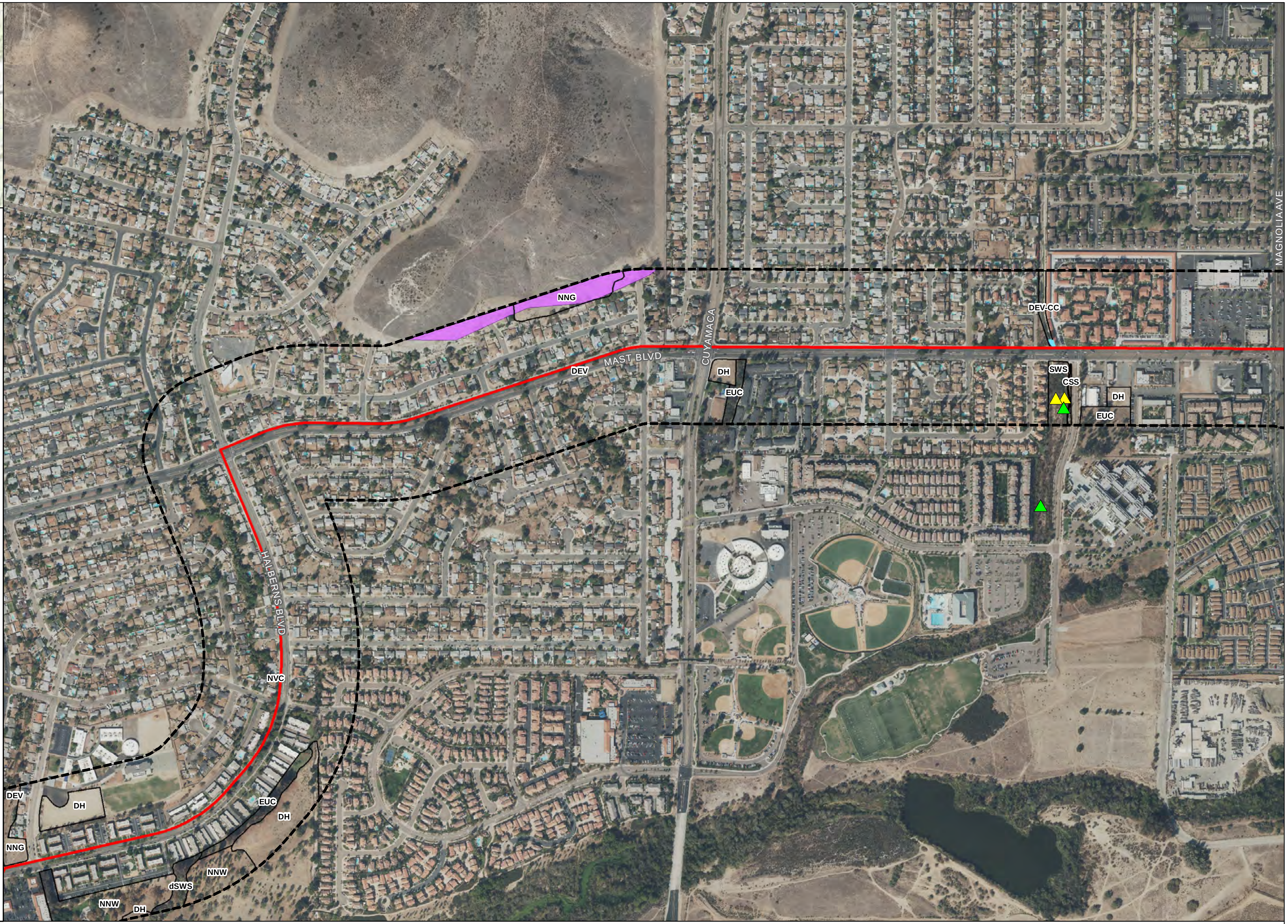
Jurisdictional Aquatic Resources

Non-wetland Waters (ACOE/RWQCB/CDFW)

Vegetation Communities/Land Covers

CSS, Diegan Coastal Sage Scrub
DEV, Urban/Developed
DEV-CC, Developed - Concrete Channel
DH, Disturbed Habitat
EUC, Eucalyptus Woodland
NNG, Non-native Grassland
NNW, Non-native Woodland
NVC, Non-vegetated Channel or Floodway
SWS, Southern Willow Scrub
dSWS, disturbed Southern Willow Scrub

0 500 1,000 Feet



DUDEK

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

FIGURE 5.4-1X

Biological Resources - San Vicente Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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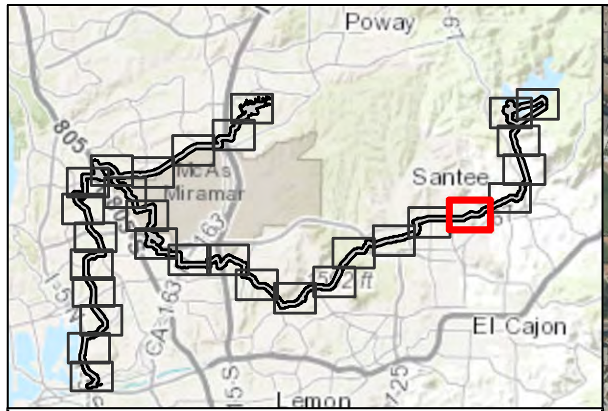

LEGEND

Project Study Area

Project Pipeline Alternatives

San Vicente Pure Water Pipeline

Special Status Species

coastal California gnatcatcher

Jurisdictional Aquatic Resources

Potential Wetland or Riparian Area (ACOE/RWQCB/CDFW)

Wetland or Riparian Area (RWQCB/CDFW)

Vegetation Communities/Land Covers

CSS, Diegan Coastal Sage Scrub

DEV, Urban/Developed

DH, Disturbed Habitat

NNG, Non-native Grassland

0 500 1,000 Feet

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1Y

Biological Resources - San Vicente Reservoir Alternative

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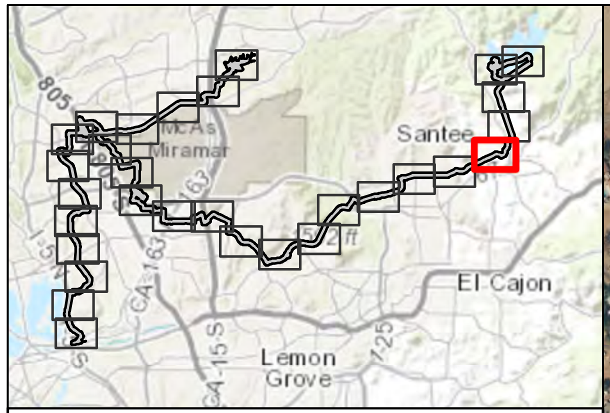

LEGEND

Project Study Area

Project Pipeline Alternatives

San Vicente Pure Water Pipeline

Special Status Species

- Cooper's hawk
- Western bluebird
- brown-headed cowbird
- coastal California gnatcatcher
- least Bell's vireo
- yellow warbler
- yellow-breasted chat

Sensitive Plants

- *Viguiera laciniata*
- *Viguiera laciniata*

Vegetation Communities/Land Covers

CSS, Diegan Coastal Sage Scrub
DEV, Urban/Developed
DH, Disturbed Habitat
NNG, Non-native Grassland
NVC, Non-vegetated Channel or Floodway
OW, Open Water
SCWRF, Southern Cottonwood-Willow Riparian Forest
SWRF, Southern Arroyo Willow Riparian Forest
SWS, Southern Willow Scrub

0 500 1,000 Feet

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1Z

Biological Resources - San Vicente Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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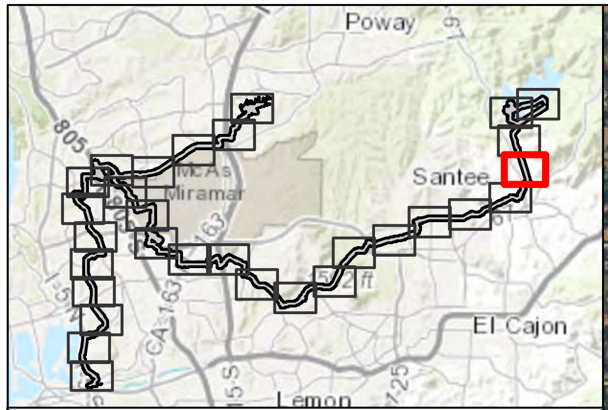

LEGEND

Project Study Area

Project Pipeline Alternatives

San Vicente Pure Water Pipeline

Special Status Species

brown-headed cowbird

yellow warbler

Jurisdictional Aquatic Resources

Non-wetland Water (ACOE/RWCQB)/Riparian Area (CDFW)

Vegetation Communities/Land Covers

DEV, Urban/Developed

DH, Disturbed Habitat

EUC, Eucalyptus Woodland

NNG, Non-native Grassland

NVC, Non-vegetated Channel or Floodway

SWS, Southern Willow Scrub

0 500 1,000
Feet

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1AA

Biological Resources - San Vicente Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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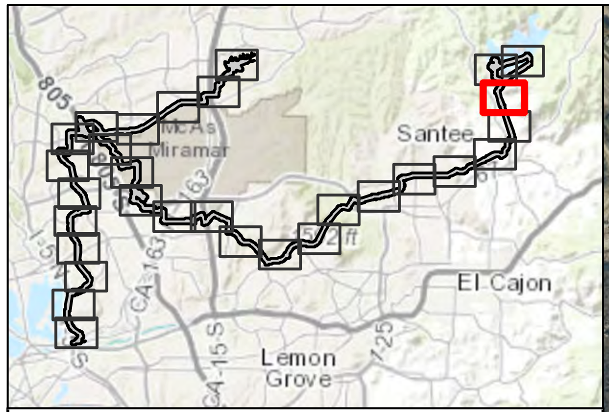

LEGEND

Project Study Area

Project Pipeline Alternatives

- San Vicente Pure Water Pipeline
- San Vicente Pure Water Pipeline - In-Reservoir Alternative
- San Vicente Pure Water Pipeline - Marina Alternative

Special Status Species

- southern California rufous-crowned sparrow
- yellow warbler

Sensitive Plants

- *Viguiera laciniata*

Jurisdictional Aquatic Resources

- Non-wetland Water (ACOE/RWCQB)/Riparian Area (CDFW)

Vegetation Communities/Land Covers

- AGR, General Agriculture
- ARU, Arundo-Dominated Riparian
- CLOW, Coast Live Oak Woodland
- CSS, Diegan Coastal Sage Scrub
- DEV, Urban/Developed
- DH, Disturbed Habitat
- MFS, Mulefat Scrub
- NNG, Non-native Grassland
- dMFS, disturbed Mulefat Scrub

Multi-Habitat Planning Area

0 500 1,000 Feet

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1AB

Biological Resources - San Vicente Reservoir Alternative

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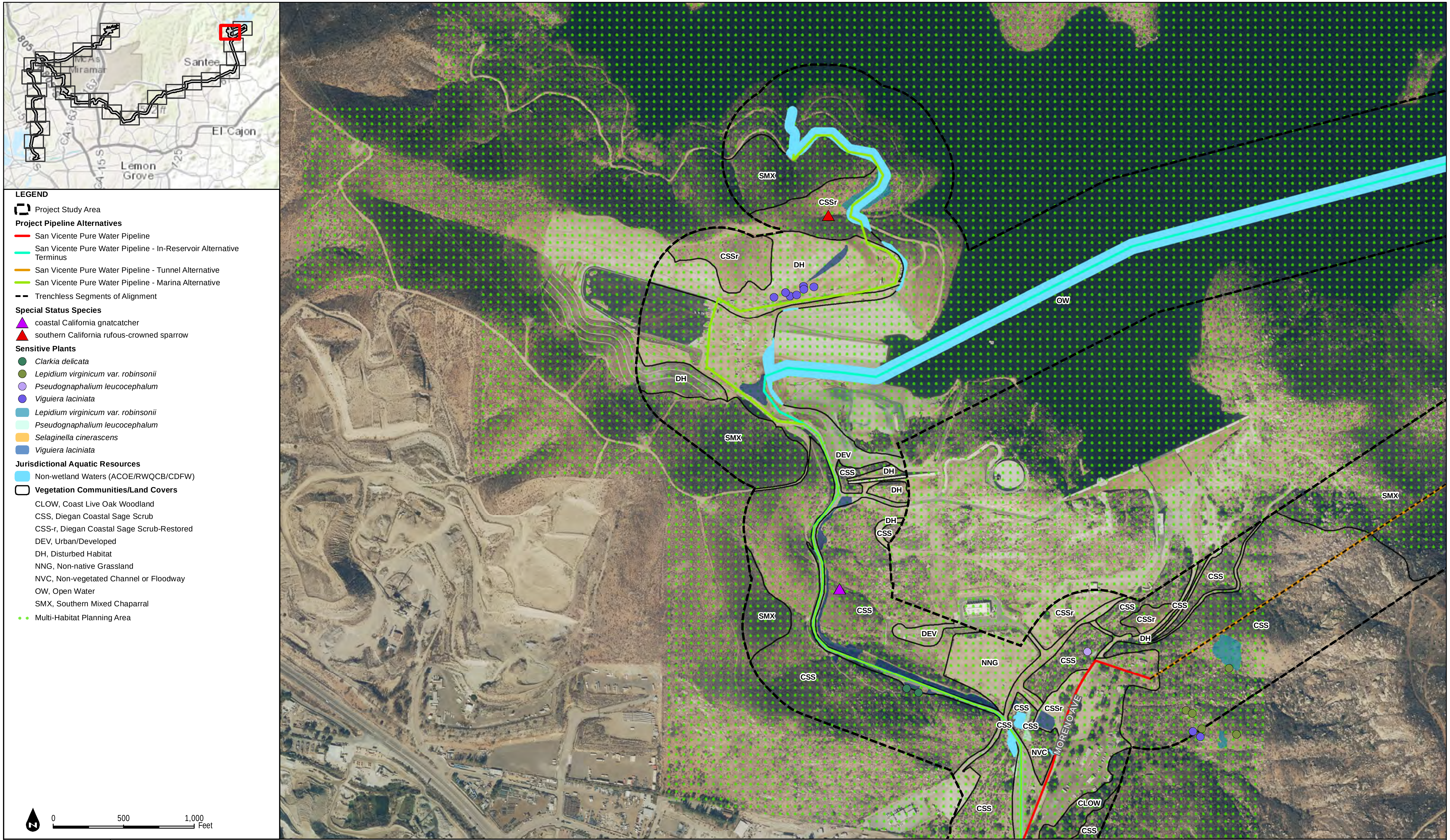

SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1AC

Biological Resources - San Vicente Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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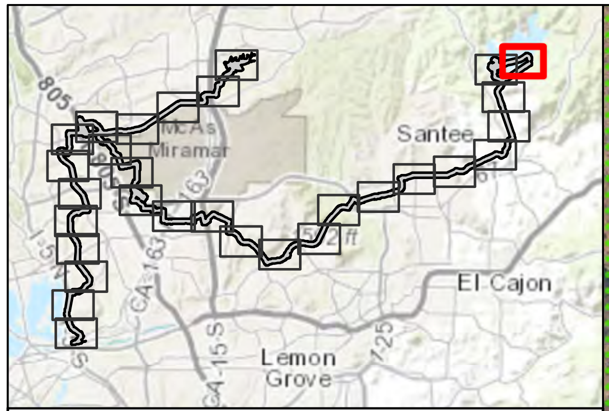


LEGEND

Project Study Area

Project Pipeline Alternatives

- San Vicente Pure Water Pipeline - In-Reservoir Alternative Terminus
- San Vicente Pure Water Pipeline - Tunnel Alternative
- Trenchless Segments of Alignment

Special Status Species

- Blainville's horned lizard
- Cooper's hawk
- San Diegan tiger whiptail
- orangethroat whiptail
- southern California rufous-crowned sparrow

Sensitive Plants

- *Artemisia palmeri*
- *Artemisia palmeri*
- *Selaginella cinerascens*

Jurisdictional Aquatic Resources

- Non-wetland Waters (ACOE/RWQCB/CDFW)

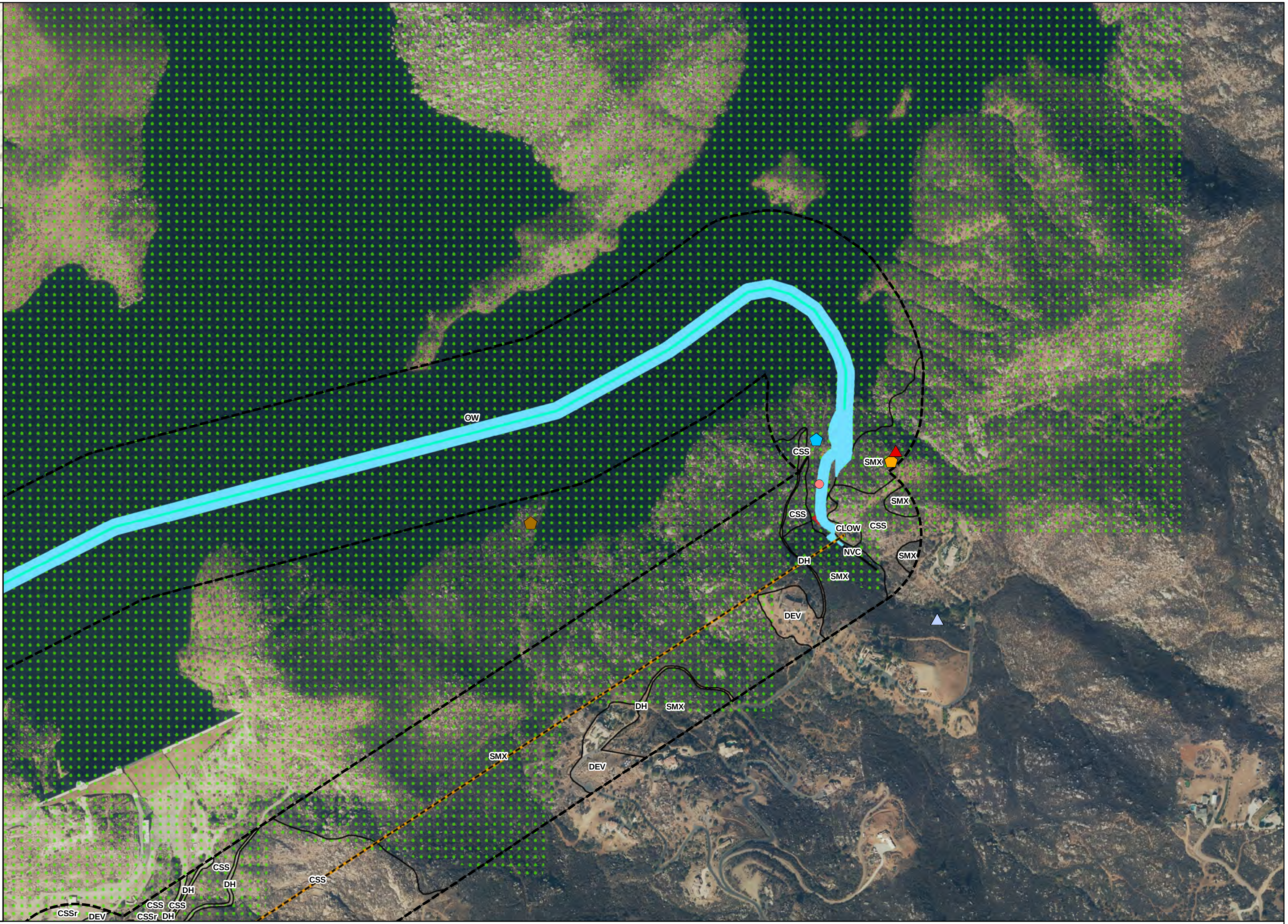
Vegetation Communities/Land Covers

- CLOW, Coast Live Oak Woodland
- CSS, Diegan Coastal Sage Scrub
- CSS-r, Diegan Coastal Sage Scrub-Restored
- DEV, Urban/Developed
- DH, Disturbed Habitat
- NVC, Non-vegetated Channel or Floodway
- OW, Open Water
- SMX, Southern Mixed Chaparral

Multi-Habitat Planning Area

N

0 500 1,000 Feet



SOURCE: City of San Diego 2016, 2017; SANDAG, 2016

DUDEK

FIGURE 5.4-1AD

Biological Resources - San Vicente Reservoir Alternative

Pure Water San Diego Program North City Project EIR/EIS

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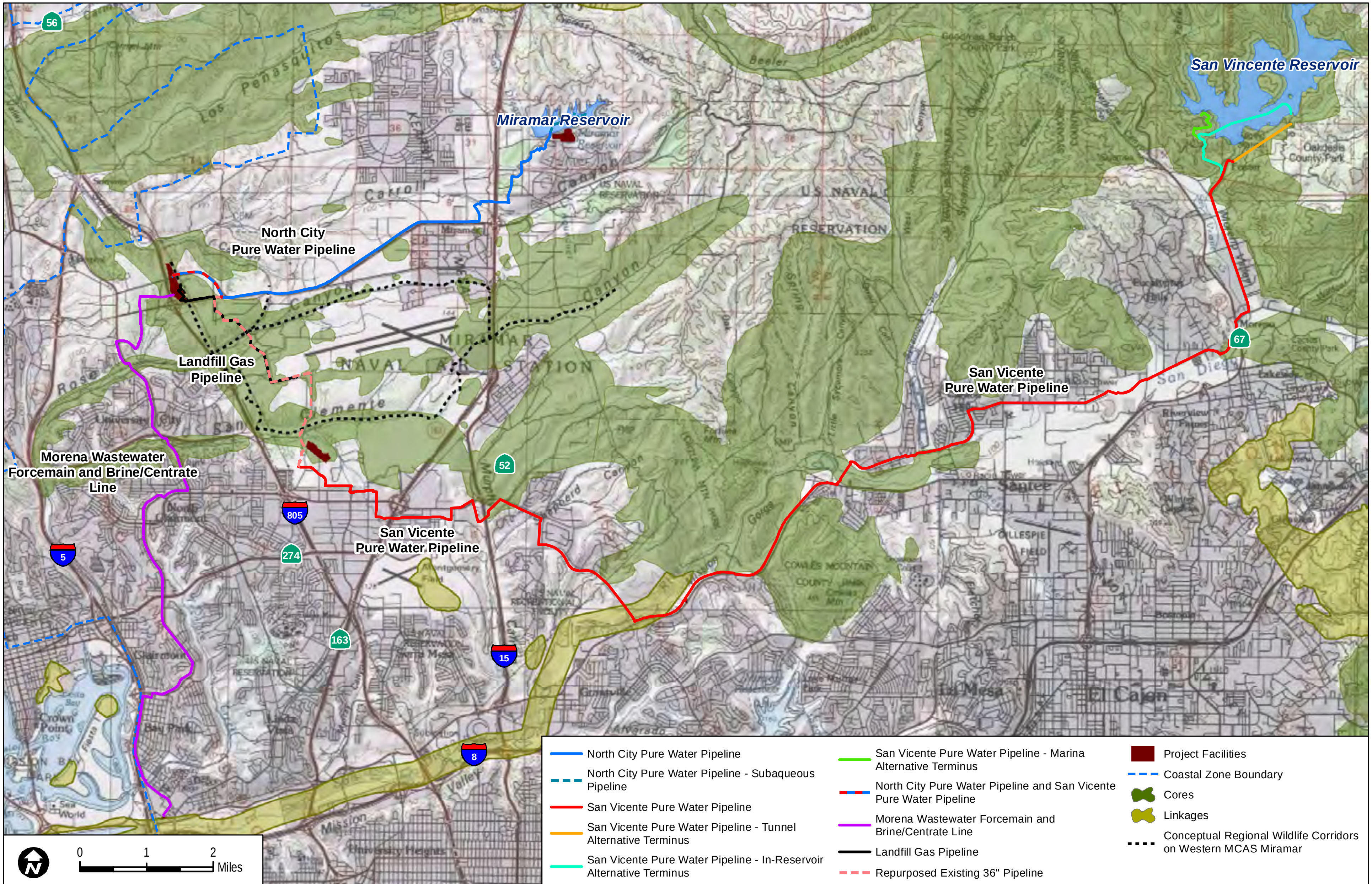

SOURCE: Miramar BRAC EIS, Ogden 1996, USGS 7.5-Minute Series Del Mar, Poway, San Vicente Reservoir, La Jolla, La Mesa, El Cajon Quadrangles; SANDAG 2016; CA Coastal Commission

FIGURE 5.4-2

Core Areas and Habitat Linkages

Pure Water San Diego Program North City Project EIR/EIS

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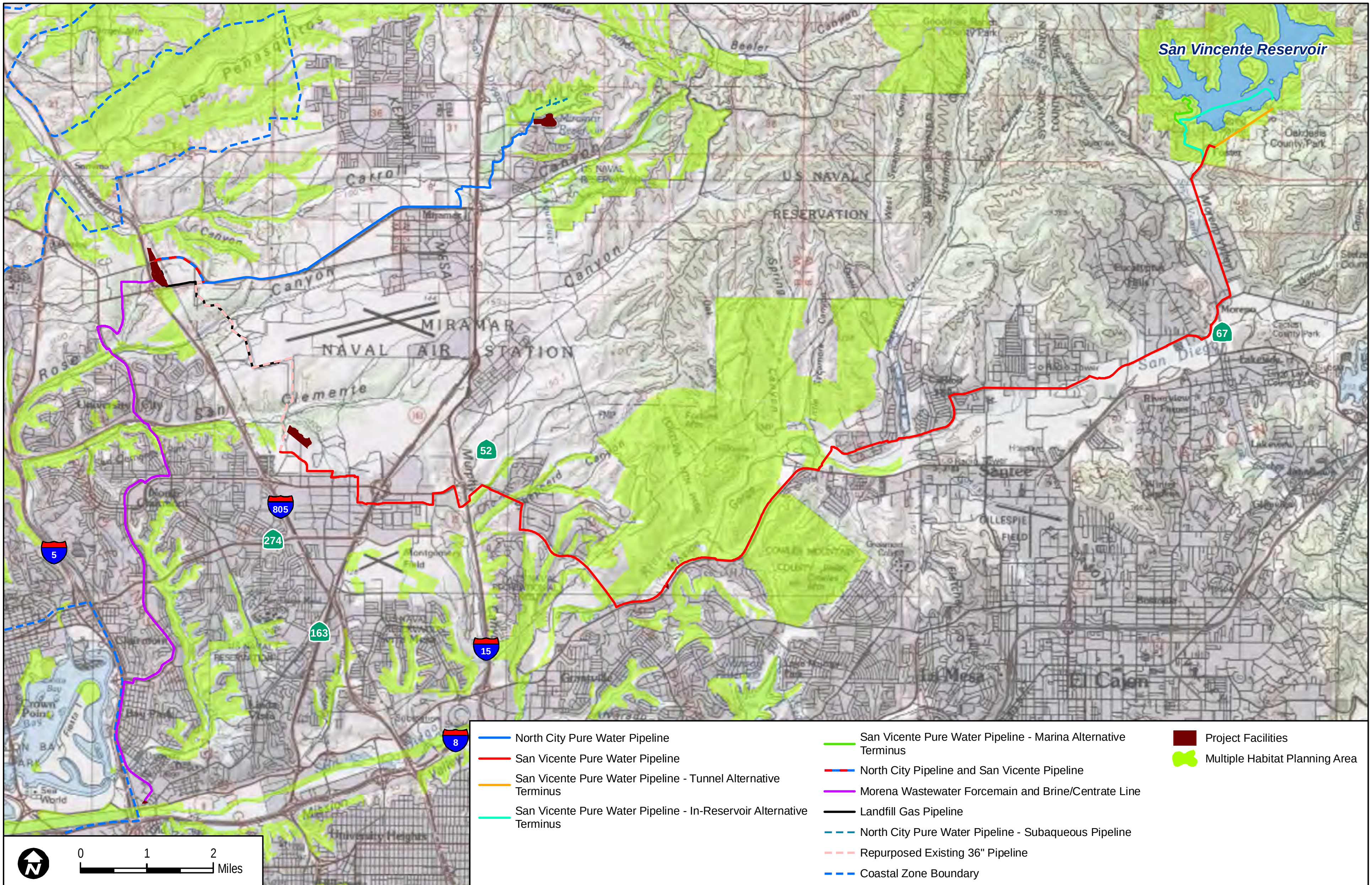

DUDEK

SOURCE: USGS 7.5-Minute Series Del Mar, Poway, San Vicente Reservoir, La Jolla, La Mesa, El Cajon Quadrangles; City of San Diego 2016; SANDAG, 2016; CA Coastal Commission

FIGURE 5.4-3

Multi-Habitat Planning Area

Pure Water San Diego Program North City Project EIR/EIS

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5.5 ENVIRONMENTAL JUSTICE

5.5.1 INTRODUCTION

This section describes the affected environment and regulatory setting for environmental justice. Executive Order 12898 requires federal agencies to address the potential disproportionately high adverse human health and environment impacts (i.e., environmental justice) of their programs, policies, and activities on minority or low-income populations. The section provides a demographic analysis of race, ethnicity, income, and other population characteristics for the environmental justice study area for the North City Project Alternatives (Project Alternatives). The socioeconomic data used in the analysis were derived from the San Diego Association of Governments (SANDAG) Data Surfer database, which is based on U.S. Census Bureau data from 2010.

5.5.2 ENVIRONMENTAL SETTING

5.5.2.1 Environmental Justice Study Area

Short-term construction impacts and long-term operational impacts would occur at existing and new facilities and pipeline or electrical transmission corridors. The environmental justice study area for these impacts encompasses the census tracts intersected by facilities or corridors that are part of the Project Alternatives.

The environmental justice study area for long-term operational impacts of the Project Alternatives was determined based on the service area of the water treatment plant (WTP) which is supplied by the augmented reservoir in each Project Alternative. The Miramar Reservoir Alternative would augment the Miramar Reservoir, which supplies the Miramar WTP. Therefore, the Miramar WTP service area is the environmental justice study area for the Miramar Reservoir Alternative. The Miramar WTP generally serves the geographical area north of the San Diego River (see Figure 2-1; City of San Diego 2016).

The San Vicente Reservoir Alternative would augment the San Vicente Reservoir, which supplies the Alvarado WTP. Therefore, the Alvarado WTP service area is the environmental justice study area for the San Vicente Reservoir Alternative. The Alvarado WTP serves the geographical area from National City to the San Diego River (see Figure 2-1; City of San Diego 2016).

However, the geographic areas served by the WTPs are flexible so that some areas of the City of San Diego can be supplied by more than one of the WTPs, as indicated in Figure 2-1 (City of San Diego 2016). The environmental justice study area for this analysis incorporates the entirety of the potential geographic region served by each WTP.

5.5.2.2 Population Characteristics

Population and demographic characteristics provide information about the region's social context. This section discusses population, race, ethnicity, and income characteristics to help identify potential communities that could experience environmental justice impacts.

Race and Ethnicity

The U.S. Census Bureau collects race data based on self-identification. The race categories included in the census questionnaire generally reflect a social definition of race recognized in the United States and are not an attempt to define race biologically, anthropologically, or genetically. The race categories include racial and national origin or sociocultural groups.

The following races are considered racial minorities: African American (Black), American Indian, Asian, Pacific Islander (including Native Hawaiian), and people who self-identify as some "other" race or "two or more" races.

Miramar Reservoir Alternative Project Area

The total population of the census tracts intersecting the Miramar Reservoir Alternative Project area is 106,236. As shown in Table 5.5-1, less than one-half of the population of the Miramar Reservoir Alternative Project area is of racial minority status, and there are fewer non-whites within the Project area than in the San Diego region as a whole (42% of the Miramar Reservoir Alternative Project area is non-white, as opposed to 52% of the San Diego region).

San Vicente Reservoir Alternative Project Area

The total population of the census tracts intersecting the San Vicente Reservoir Alternative Project area is 89,880. As shown in Table 5.5-1, less than one-half of the population of the San Vicente Reservoir Alternative Project area is of racial minority status, and there are fewer non-whites within the Project area than in the San Diego region as a whole (29% of the San Vicente Reservoir Alternative Project area is non-white, as opposed to 52% of the San Diego region).

Table 5.5-1
Population by Race and Ethnicity for Project Area

	Miramar Reservoir Alternative Project Area	San Vicente Reservoir Alternative Project Area	San Diego Region
Hispanic	16,285 (15%)	12,456 (14%)	991,348 (32%)
Black	2,665 (3%)	2,460 (3%)	146,600 (5%)
American Indian	261 (0%)	741 (1%)	14,098 (0%)
Asian	20,751 (20%)	6,939 (8%)	328,058 (11%)
Pacific Islander	344 (0%)	385 (0%)	13,504 (0%)
Other	314 (0%)	165 (0%)	6,715 (0%)
Two or More	3,804 (4%)	3,268 (4%)	94,943 (3%)
Subtotal Non-White	*44,424 (42%)*	*26,414 (29%)*	*1,595,266 (52%)*
White	61,812 (58%)	63,466 (71%)	1,500,047 (48%)
Total	**106,236**	**89,880**	**3,095,313**

Source: SANDAG Current Estimates (SANDAG 2016)

Miramar Water Treatment Plant Service Area

The population of the Miramar WTP service area is 740,397. As shown in Table 5.5-2, less than one-half of the population of the Miramar WTP service area is of racial minority status, and there are fewer non-whites within the service area than in the San Diego region as a whole (40% of the Miramar WTP service area is non-white, as opposed to 52% of the San Diego region).

Alvarado Water Treatment Plant Service Area

The population of the Alvarado WTP service area is 984,229. As shown on Table 5.5-2, slightly more than one-half of the population of the Alvarado WTP service area is of racial minority status, and there are more non-whites within the service area than in the San Diego region as a whole (54% of the Alvarado WTP service area is non-white, as opposed to 52% of the San Diego region).

Table 5.5-2
Population by Race and Ethnicity for Service Area

	Miramar Water Service Area	Alvarado Water Service Area	San Diego Region
Hispanic	99,487 (13%)	304,749 (31%)	991,348 (32%)
Black	19,729 (3%)	77,680 (8%)	146,600 (5%)
American Indian	1,929 (1%)	3,192 (0%)	14,098 (0%)
Asian	140,717 (19%)	107,925 (11%)	328,058 (11%)

Table 5.5-2
Population by Race and Ethnicity for Service Area

	Miramar Water Service Area	Alvarado Water Service Area	San Diego Region
Pacific Islander	2,286 (0%)	4,611 (0%)	13,504 (0%)
Other	2,025 (0%)	2,525 (0%)	6,715 (0%)
Two or More	27,768 (4%)	30,686 (3%)	94,943 (3%)
Subtotal Non-White	*293,941 (40%)*	*531,368 (54%)*	*1,595,266 (52%)*
White	446,456 (60%)	452,861 (46%)	1,500,047 (48%)
Total	**740,397**	**984,229**	**3,095,313**

Source: SANDAG Current Estimates (SANDAG 2016)

Income

Income levels are based on the Area Median Income, established by the California Department of Housing and Community Development. The Area Median Income for the San Diego region is $63,586 (SANDAG 2015). The “extremely low,” “very low,” and “low” income limits are 30%, 50% and 80% of the Area Median Income, respectively. Income limits are adjusted for household size, because larger households require higher incomes than smaller households to maintain the same standard of living. Each county in California has different income limit thresholds due to the variability in the cost of living and other factors (SANDAG 2008). For the purposes of this analysis, households making less than $45,000 annually are considered low-income status.

Miramar Reservoir Alternative Project Area

There are 42,150 households in the Miramar Reservoir Alternative Project area. As shown in Table 5.5-3, less than one-half of the households in the service area are of low-income minority status, and there are fewer low-income minority households than in the San Diego region as a whole (32% of the households are low-income minority households in the Miramar Reservoir Alternative Project area, as opposed to 36% in the San Diego region).

San Vicente Reservoir Alternative Project Area

There are 34,581 households in the San Vicente Reservoir Alternative Project area. As shown in Table 5.5-3, less than one-half of the households in the service area are of low-income minority status, and there are fewer low-income minority households than in the San Diego region as a whole (25% of the households are low-income minority households in the San Vicente Reservoir Alternative Project area, as opposed to 36% in the San Diego region).

Table 5.5-3
Income by Household for the Project Area

	Miramar Reservoir Alternative Project Area	San Vicente Reservoir Alternative Project Area	San Diego Region
Less than $15,000	4,301 (10%)	1,780 (5%)	102,150 (9%)
$15,000 to $29,999	4,809 (11%)	3,000 (9%)	140,080 (13%)
$30,000 to $44,999	4,667 (11%)	3,876 (11%)	146,916 (14%)
Subtotal (Low-Income)	*13,777 (32%)*	*8,656 (25%)*	*389,146 (36%)*
$45,000 to $59,999	4,253 (10%)	3,958 (11%)	128,298 (12%)
$60,000 to $74,999	4,222 (10%)	3,712 (11%)	108,695 (10%)
$75,000 to $99,999	6,018 (14%)	6,004 (17%)	149,921 (14%)
$100,000 to $124,999	4,252 (10%)	4,402 (13%)	102,074 (9%)
$125,000 to $149,000	3,208 (8%)	2,959 (9%)	67,914 (6%)
$150,000 to $199,999	3,655 (9%)	2,745 (8%)	72,704 (7%)
$200,000 or more	2,765 (7%)	2,145 (6%)	68,113 (6%)
Total	**42,150**	**34,581**	**1,086,865**

Source: SANDAG Current Estimates (SANDAG 2016)

Miramar Water Treatment Plant Service Area

There are 282,762 households in the Miramar WTP service area. As shown in Table 5.5-4, less than one-half of the households in the service area are of low-income minority status, and there are fewer low-income minority households than in the San Diego region as a whole (26% of the households are low-income minority households in the Miramar WTP service area, as opposed to 36% in the San Diego region).

Alvarado Water Treatment Plant Service Area

There are 376,990 households in the Alvarado WTP service area. As shown in Table 5.5-4, less than one-half of the households in the service area are of low-income minority status. There are more low-income minority households than in the San Diego region as a whole (41% of the households are low-income minority households in the Alvarado WTP service area, as opposed to 36% in the San Diego region); however, the percentage of households that are of low-income status is not 10 percentage points greater than that of the San Diego region.

Table 5.5-4
Income by Household for the Service Area

	Miramar Water Service Area	Alvarado Water Service Area	San Diego Region
Less than $15,000	20,061 (7%)	44,709 (12%)	102,150 (9%)
$15,000 to $29,999	24,307 (9%)	55,967 (15%)	140,080 (13%)
$30,000 to $44,999	28,702 (10%)	55,027 (15%)	146,916 (14%)
Subtotal (Low-Income)	*73,610 (26%)*	*155,703 (41%)*	*389,146 (36%)*
$45,000 to $59,999	27,480 (10%)	46,709 (12%)	128,298 (12%)
$60,000 to $74,999	26,297 (9%)	37,243 (10%)	108,695 (10%)
$75,000 to $99,999	41,002 (15%)	50,184 (13%)	149,921 (14%)
$100,000 to $124,999	32,214 (11%)	31,230 (8%)	102,074 (9%)
$125,000 to $149,000	23,238 (8%)	18,953 (5%)	67,914 (6%)
$150,000 to $199,999	28,237 (10%)	18,902 (5%)	72,704 (7%)
$200,000 or more	30,684 (11%)	18,066 (5%)	68,113 (6%)
Total	**282,762**	**376,990**	**1,086,865**

Source: SANDAG Current Estimates (SANDAG 2016)

5.5.3 REGULATORY FRAMEWORK

5.5.3.1 Federal Regulations

Executive Order 12898—Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order (EO) 12898—Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations—was issued by President William J. Clinton in 1994 (59 FR 7629). Its purpose is to focus federal attention on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities.

EO 12898 directs federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law. The order also directs each agency to develop a strategy for implementing environmental justice. The order is also intended to promote nondiscrimination in federal programs that affect human health and the environment, as well as provide minority and low-income communities access to public information and public participation.

The purpose of EO 12898 is to prevent federally funded projects from being disproportionately placed within low-income and/or minority communities. EO 12898 requires a consideration of "environmental justice" for communities that are primarily composed of minority and/or low-income residents or those geographies that contain a "meaningful greater" proportion of minority and/or low-income residents than the surrounding population (i.e., a regional concentration).

EO 13045—Protection of Children from Environmental Health Risks and Safety Risks

Federal agencies are directed, as appropriate and consistent with the agency's mission, to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. Agencies are encouraged to participate in the implementation of this order by ensuring that their policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks (62 FR 19885).

5.5.3.2 State Regulations and Standards

California Environmental Quality Act and Guidelines

The California Environmental Quality Act (CEQA) requires state and local agencies to identify the significant environmental effects of their actions, including potential significant effects on established communities, and to avoid or mitigate those effects when feasible (Public Resources Code 21000 et seq.). Pursuant to CEQA Guidelines Section 15131(b), economic and social effects of a project that are not related to physical changes in the environment are not treated as a significant impact on the environment but may be used to evaluate the significance of physical change that is caused by the project.

California Government Code Section 65040.12(e)

California Government Code Section 65040.12(e) defines environmental justice as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies."

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5.6 ENERGY

5.6.1 INTRODUCTION

The following discussion provides the environmental setting and regulatory framework related to energy use for the North City Project. In particular, energy use in the form of electricity, natural gas, and gasoline consumption are discussed.

5.6.2 ENVIRONMENTAL SETTING

In 2013, California's estimated annual energy use included:

- Approximately 280,561 gigawatt hours of electricity (CEC 2014);
- Approximately 12,767 million therms natural gas (approximately 3.5 billion cubic feet of natural gas per day); and
- Approximately 18 billion gallons of gasoline (CEC 2013).

Electricity

According to the California Energy Commission (CEC) California Energy Demand Updated Forecast 2015–2025, California used approximately 277,140 gigawatts per hour (2,800 trillion kilowatt-hours (kWh)) of electricity in 2013 (CEC 2014). Electricity usage in California for different land uses varies substantially by the types of uses in a building, type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building. Due to the state's energy efficiency standards and efficiency and conservation programs, California's per-capita use has remained stable for more than 30 years, while the national average has steadily increased.

San Diego Gas & Electric (SDG&E) provides electric services to 3.6 million customers through 1.4 million electric meters and 873,000 natural gas meters throughout a 4,100-square-mile service area in San Diego County and southern Orange County (SDG&E 2016). SDG&E is a subsidiary of Sempra Energy. According to the California Public Utilities Commission (CPUC), SDG&E consumed approximately 16.467 billion kWh of electricity in total in 2014 (CPUC 2016).

SDG&E receives electric power from a variety of sources. According to CPUC 2016 Biennial Renewables Portfolio Standard (RPS) Program Update, 36.4% of SDG&E's power came from eligible renewables, including biomass/waste, geothermal, small hydroelectric, solar, and wind sources (CPUC 2016). This is a large increase from the 15.7% that SDG&E maintained in 2011.

Based on recent energy supply and demand projections in California, statewide annual peak demand is projected to grow an average of 890 megawatts per year for the next decade, or 1.4% annually, while per capita consumption is expected to remain relatively constant at 7,200–7,800 kWh per person (CEC 2015). In the County of San Diego (County), the CEC reported an annual electrical consumption of approximately 19.9 billion kWh in total, with 13.1 billion kWh for non-residential use and 6.8 billion kWh for residential use in 2014 (CEC 2016).

Within the County, annual non-residential electricity use is approximately 13 billion kWh per year, as reported by the state's Energy Consumption Data Management System for 2015 (CEC 2016).

Natural Gas

The CPUC regulates natural gas utility service for approximately 10.8 million customers that receive natural gas from Pacific Gas and Electric (PG&E), Southern California Gas (SoCalGas), SDG&E, Southwest Gas, and several smaller natural gas utilities. The CPUC also regulates independent storage operators Lodi Gas Storage, Wild Goose Storage, Central Valley Storage, and Gill Ranch Storage (CPUC 2013).

The vast majority of California's natural gas customers are residential and small commercial customers, referred to as "core" customers, who accounted for approximately 32% of the natural gas delivered by California utilities in 2012. Large consumers, such as electric generators and industrial customers, referred to as "noncore" customers, accounted for approximately 68% of the natural gas delivered by California utilities in 2012 (CPUC 2013).

The CPUC regulates the California utilities' natural gas rates and natural gas services, including in-state transportation over the utilities' transmission and distribution pipeline systems, storage, procurement, metering, and billing. Most of the natural gas used in California comes from out-of-state natural gas basins. In 2012, California customers received 35% of their natural gas supply from basins located in the Southwest, 16% from Canada, 40% from the Rocky Mountains, and 9% from basins located within California (CPUC 2013).

California gas utilities may soon also begin receiving biogas into their pipeline systems. Natural gas from out-of-state production basins is delivered into California via the interstate natural gas pipeline system. The major interstate pipelines that deliver out-of-state natural gas to California consumers are the Gas Transmission Northwest Pipeline, Kern River Pipeline, Transwestern Pipeline, El Paso Pipeline, the Ruby Pipeline, Questar Southern Trails, and Mojave Pipeline. Another pipeline, the North Baja–Baja Norte Pipeline, takes gas off the El Paso Pipeline at the California/Arizona border, and delivers that gas through California into Mexico. While the Federal Energy Regulatory Commission regulates the transportation of natural gas on the interstate pipelines, the CPUC often participates in Federal Energy Regulatory Commission regulatory proceedings to represent the interests of California natural gas consumers (CPUC 2013).

Most of the natural gas transported via the interstate pipelines, as well as some of the California-produced natural gas, is delivered into the PG&E and SoCalGas intrastate natural gas transmission pipeline systems (commonly referred to as California's "backbone" natural gas pipeline system). Natural gas on the utilities' backbone pipeline systems is then delivered into the local transmission and distribution pipeline systems, or to natural gas storage fields. Some large noncore customers take natural gas directly off the high pressure backbone pipeline systems, while core customers and other noncore customers take natural gas off the utilities' distribution pipeline systems. The CPUC has regulatory jurisdiction over 150,000 miles of utility-owned natural gas pipelines, which transported 82% of the total amount of natural gas delivered to California's gas consumers in 2012 (CPUC 2013).

SDG&E and Southwest Gas' southern division are wholesale customers of SoCalGas and currently receive all of their natural gas from the SoCalGas system (Southwest Gas also provides natural gas distribution service in the Lake Tahoe area). Some other municipal wholesale customers are the cities of Palo Alto, Long Beach, and Vernon, which are not regulated by the CPUC (CPUC 2013).

Some of the natural gas delivered to California customers may be delivered directly to them without being transported over the regulated utility systems. For example, the Kern River/Mojave pipeline system can deliver natural gas directly to some large customers, "bypassing" the utilities' systems. Much of California-produced natural gas is also delivered directly to large consumers (CPUC 2013).

PG&E and SoCalGas own and operate several natural gas storage fields that are located in Northern and Southern California. These storage fields, and four independently owned storage utilities – Lodi Gas Storage, Wild Goose Storage, Central Valley Storage, and Gill Ranch Storage – help meet peak seasonal natural gas demand and allow

California natural gas customers to secure natural gas supplies more efficiently (CPUC 2013). (A portion of the Gill Ranch facility is owned by PG&E.)

California's regulated utilities do not own any natural gas production facilities. All of the natural gas sold by these utilities must be purchased from suppliers and/or marketers. The price of natural gas sold by suppliers and marketers was deregulated by the Federal Energy Regulatory Commission in the mid-1980s and is determined by "market forces." However, the CPUC decides whether California's utilities have taken reasonable steps in order to minimize the cost of natural gas purchased on behalf of their core customers (CPUC 2013).

As indicated in the preceding discussion, natural gas is available from a variety of in-state and out-of-state sources and is provided throughout the state in response to market supply and demand. Complementing available natural gas resources, biogas may soon be available via existing delivery systems, thereby increasing the availability and reliability of resources in total. The CPUC oversees utility purchases and transmission of natural gas to ensure reliable and affordable natural gas deliveries to existing and new consumers throughout the state (CPUC 2013).

Petroleum

There are more than 27 million registered vehicles in California, and those vehicles consume an estimated 18 billion gallons of fuel each year (CEC 2013). Gasoline (and other vehicle fuels) are commercially provided commodities, and would be available to the North City Project via commercial outlets.

Petroleum accounts for approximately 92% of California's transportation energy sources. Technology advances, market trends, consumer behavior, and government policies could result in significant changes in fuel consumption by type and in total by 2020. At the federal and state levels, various policies, rules, and regulations have been enacted to improve vehicle fuel efficiency, promote the development and use of alternative fuels, reduce transportation-source air pollutants and greenhouse gas (GHG) emissions, and reduce vehicle miles traveled. Market forces have driven the price of petroleum products steadily upward, and technological advances have made use of other energy resources or alternative transportation modes increasingly feasible.

Largely as a result of, and in response to these multiple factors, gasoline consumption within the state has declined in recent years, while availability of other alternative fuels/energy sources has increased. In total, the quantity and availability and reliability of transportation energy resources have increased in recent years, and this trend may likely continue and accelerate (CEC 2013). Increasingly available and diversified transportation energy resources act to promote continuing reliable and affordable means to support vehicular transportation within the state.

Water and Energy

Energy is required for the supply, purification, distribution, and treatment of water and wastewater. In particular, California uses about 5% of its electricity consumption for water supply and treatment, which is substantially higher than the national average (CEC 2005). Table 5.6-1 shows the wide range of energy required for supply and treatment of water in California (CEC 2005).

Table 5.6-1
Energy Requirements for Water Supply and Treatment in California

kWh/Million gallons		
Water Cycle Segments	*Low*	*High*
Supply and Conveyance	0	16,000
Treatment	100	1,500
Distribution	700	1,200
Wastewater Collection and Treatment	1,100	4,600
Wastewater Discharge	0	400
Total	**1,900**	**23,700**
Recycled Water Treatment and Distribution for Non-potable Uses	400	1,200

Source: CEC 2005

Water conveyed from Northern California up to 400 miles via the State Water Project to Southern California is highly energy intensive, as indicated by the upper range for conveyance in Table 5.6-1. The State Water Project is the largest single user of energy in California; it consumes an average of 5 billion kWh/year, accounting for about 2% to 3% of all electricity consumed in California (EPA 2016).

Energy consumption associated with using water is generally greater than energy consumption for supply and treatment. Activities such as water heating, clothes washing, and clothes drying require 14% of California's electricity consumption and 31% of its natural gas consumption.

5.6.3 REGULATORY FRAMEWORK

Federal, state, and local agencies regulate energy use and consumption through various means and programs. On the federal level, the U.S. Department of

Transportation, the U.S. Department of Energy, and the U.S. Environmental Protection Agency (EPA) are three federal agencies with substantial influence over energy policies and programs. On the state level, the CPUC and the CEC are two agencies with authority over different aspects of energy. Relevant federal, state, and local energy-related regulations are summarized below.

Federal

Federal Energy Policy and Conservation Act

In 1975, Congress enacted the Federal Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the Act, the National Highway Traffic Safety Administration is responsible for establishing additional vehicle standards. In 2012, new fuel economy standards were approved for model year 2017 passenger cars and light trucks at 54.5 miles per gallon (77 FR 62623–63200). Fuel economy is determined based on each manufacturer's average fuel economy for the fleet of vehicles available for sale in the United States.

Intermodal Surface Transportation Efficiency Act of 1991

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) promoted the development of intermodal transportation systems to maximize mobility, as well as address national and local interests in air quality and energy. ISTEA contained factors that metropolitan planning organizations were to address in developing transportation plans and programs, including some energy-related factors. To meet the new ISTEA requirements, metropolitan planning organizations adopted explicit policies defining the social, economic, energy, and environmental values guiding transportation decisions.

The Transportation Equity Act for the 21st Century

The Transportation Equity Act for the 21st Century (TEA-21) was signed into law in 1998 and builds upon the initiatives established in the ISTEA legislation, discussed earlier. TEA-21 authorizes highway, highway safety, transit, and other efficient surface transportation programs. TEA-21 continues the program structure established for highways and transit under ISTEA, such as flexibility in the use of funds, emphasis on measures to improve the environment, and focus on a strong planning process as the foundation of good transportation decisions. TEA-21 also provides for investment in research and its application to maximize the performance of the transportation system through, for example, deployment of Intelligent Transportation Systems, to help improve operations and management of transportation systems and vehicle safety.

Energy Independence and Security Act of 2007

On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law. In addition to setting increased Corporate Average Fuel Economy standards for motor vehicles, the EISA includes other provisions related to energy efficiency:

- Renewable Fuel Standard (RFS) (Section 202)
- Appliance and Lighting Efficiency Standards (Sections 301–325)
- Building Energy Efficiency (Sections 411–441)

This federal legislation requires ever-increasing levels of renewable fuels—the RFS—to replace petroleum. The EPA is responsible for developing and implementing regulations to ensure that transportation fuel sold in the United States contains a minimum volume of renewable fuel. The RFS program regulations were developed in collaboration with refiners, renewable fuel producers, and many other stakeholders.

- The RFS program was created under the Energy Policy Act of 2005 and established the first renewable fuel volume mandate in the United States. As required under the Act, the original RFS program (RFS1) required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. Under the EISA, the RFS program was expanded in several key ways that lay the foundation for achieving significant reductions of GHG 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 updated program is referred to as RFS2 and includes the following:
    - 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 the EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

State

California Code Title 24, Part 6, Energy Efficiency Standards

Title 24 of the California Code of Regulations was established in 1978, and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically establishes energy efficiency standards for residential and nonresidential buildings constructed in the State of California in order to reduce energy demand and consumption. Part 6 is updated periodically to incorporate and consider new energy efficiency technologies and methodologies. The most recent amendments, referred to as the 2013 standards, became effective on July 1, 2014. Buildings constructed in accordance with the 2013 standards are required to use 25% less energy for lighting, heating, cooling, ventilation, and water heating than the 2008 standards. Additionally, the standards would save 200 million gallons of water per year and avoid 170,500 tons of GHG emissions per year (CEC 2012).

Title 24 also includes Part 11, known as California's Green Building Standards (CALGreen). The CALGreen standards took effect in January 2011, and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential and state-owned buildings, as well as schools and hospitals. The mandatory standards require:

- 20% mandatory reduction in indoor water use.
- 50% of construction and demolition waste must be diverted from landfills.
- Mandatory inspections of energy systems to ensure optimal working efficiency.
- Low-pollutant-emitting exterior and interior finish materials, such as paints, carpets, vinyl flooring, and particle boards.

The CALGreen standards also include voluntary efficiency measures that are provided at two separate tiers and implemented per the discretion of local agencies and applicants. CALGreen's Tier 1 standards call for a 15% improvement in energy requirements, more strict water conservation, 65% diversion of construction and demolition waste, 10% recycled content in building materials, 20% permeable paving, 20% cement reduction, and cool/solar reflective roofs. CALGreen's more rigorous Tier 2 standards call for a 30% improvement in energy requirements, more strict water conservation, 75% diversion of construction and demolition waste, 15% recycled content in building materials, 30% permeable paving, 30% cement reduction, and cool/solar reflective roofs.

State of California Energy Action Plan

The CEC is responsible for preparing the State of California Energy Action Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The Energy Action Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the Plan identifies a number of strategies, including assistance to public agencies and fleet operators and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

Senate Bill 1368

In September 2006, Governor Schwarzenegger signed Senate Bill 1368 (Perata), which requires the CEC to develop and adopt regulations for GHG emissions performance standards for the long-term procurement of electricity by local publicly owned utilities. These standards must be consistent with the standards adopted by the CPUC. This effort was intended to help protect energy customers from financial risks associated with investments in carbon-intensive generation by allowing new capital investments in power plants whose GHG emissions are as low or lower than new combined-cycle natural gas plants, by requiring imported electricity to meet GHG performance standards in California, and by requiring that the standards be developed and adopted in a public process.

Senate Bill 1389

Senate Bill 1389 (Bowen and Sher) requires that every 2 years, the CEC adopt and transmit to the governor and legislature a report of findings called the Integrated

Energy Policy Report. The Integrated Energy Policy Report Committee provides oversight and policy direction related to collecting and analyzing data needed to complete the Integrated Energy Policy Report on trends and issues concerning electricity and natural gas, transportation, energy efficiency, renewables, and public interest energy research.

Assembly Bill 1493

In a response to the transportation sector accounting for more than half of California's carbon dioxide (CO_2) emissions, Assembly Bill 1493 (Pavley) was enacted on July 22, 2002. Assembly Bill 1493 required the California Air Resources Board (CARB) to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. When fully phased in, the near-term (2009–2012) standards would result in a reduction of about 22% in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term (2013–2016) standards would result in a reduction of about 30%.

Before these regulations could go into effect, the EPA had to grant California a waiver under the federal Clean Air Act, which ordinarily preempts state regulation of motor vehicle emission standards. The waiver was granted by Lisa Jackson, the EPA Administrator, on June 30, 2009. On March 29, 2010, the CARB Executive Officer approved revisions to the motor vehicle GHG standards to harmonize the state program with the national program for 2012–2016 model years (see the earlier discussion under Federal Energy Policy and Conservation Act). The revised regulations became effective on April 1, 2010.

In 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards called Advanced Clean Cars. By 2025, when the rules would be fully implemented, new automobiles would emit 34% fewer global warming gases and 75% fewer smog-forming emissions (CARB 2015).

Local

City of San Diego General Plan

The Conservation Element of the City of San Diego's General Plan (City of San Diego 2008) includes the following energy-related policies that are applicable to the North City Project.

Policy CE-A.5: Employ sustainable or "green" building techniques for the construction and operation of buildings.

a. Develop and implement sustainable building standards for new and significant remodels of residential and commercial buildings to maximize energy efficiency, and to achieve overall net zero energy consumption by 2020 for new residential buildings and 2030 for new commercial buildings. This can be accomplished through factors including, but not limited to:
   - Designing mechanical and electrical systems that achieve greater energy efficiency with currently available technology
   - Minimizing energy use through innovative site design and building orientation that addresses factors such as sun-shade patterns, prevailing winds, landscape, and sun-screens
   - Employing self-generation of energy using renewable technologies
   - Combining energy efficient measures that have longer payback periods with measures that have shorter payback periods
   - Reducing levels of non-essential lighting, heating and cooling
   - Using energy efficient appliances and lighting.

b. Provide technical services for "green" buildings in partnership with other agencies and organizations.

Policy CE-I.3: Pursue state and federal funding opportunities for research and development of alternative and renewable energy sources.

Policy CE-I.4: Maintain and promote water conservation and waste diversion programs to conserve energy.

Policy CE-I.5: Support the installation of photovoltaic panels, and other forms of renewable energy production.

a. Seek funding to incorporate renewable energy alternatives in public buildings.
b. Promote the use and installation of renewable energy alternatives in new and existing development.

Policy CE-I.7: Pursue investments in energy efficiency and direct sustained efforts towards eliminating inefficient energy use.

Policy CE-I.10: Use renewable energy sources to generate energy to the extent feasible.

Policy CE-I.12: Use small, decentralized, aesthetically-designed, and appropriately-sited energy efficient power generation facilities to the extent feasible.

City of San Diego Energy Strategy for a Sustainable Future

The City of San Diego Environmental Services Department has taken a leadership role to advance policies and practices that support a more sustainable future. In June 2009, the Department published its Energy Strategy for a Sustainable Future, which outlines six objectives to achieve more sustainable generation and use of energy, as follows (City of San Diego 2009):

- Energy Conservation – All City employees will be aware of and implement energy conservation measures by 2010.
- Energy Efficiency – Reduce energy use 10% by 2012, using 2000 as a baseline.
- Renewable Energy – Increase megawatts of renewable energy used at City facilities to 17 by 2012, and to 25 by 2020.
- Management of SDG&E Energy Bills – Continue the use of the Electronic Data Interchange.
- Policy Development and Implementation – Guide City efforts by institutionalizing policies and programs that increase energy conservation, efficiency, and the use of renewable energy.
- Leverage Resources – Ensure that state and federal funds are leveraged to the extent possible with existing programs such as CEC loans and the CPUC Partnership funds.

5.7 GEOLOGY AND SOILS

5.7.1 INTRODUCTION

The purpose of this section is to identify existing geologic conditions of the North City Project Alternatives (Project Alternatives) and describe applicable regulations. The information used in this analysis is based on the following technical studies:

- Geotechnical Report Pump Station and Cut & Cover Sections, Morena Pump Station, WW Force Main, and Brine Conveyance Predesign; prepared in ~~May~~September 2017 by AECOM (Appendix D1)
- ~~Addenda No. 1 and No. 2 to the Geotechnical Report Pump Station and Cut & Cover Sections, Morena Pump Station, WW Force Main, and Brine Conveyance Predesign; prepared in June and July 2017 by AECOM, respectively (Appendix D1)~~
- Fault Investigation Morena Pump Station, WW Force Main, and Brine Conveyance Predesign; prepared in ~~August~~ September 2017 by AECOM (Appendix D1)
- Geotechnical Investigation, Morena Pipeline Tunnels, WW Force Main and Brine/Centrate Conveyance Predesign; prepared in September 2017 by AECOM (Appendix D1)
- Report of Geotechnical Investigation North City Water Reclamation Plan Expansion; prepared in August 2017 by Allied Geotechnical Engineers Inc. (Appendix D2)
- Evaluation of Geotechnical Impacts Due To BMP Partial Infiltration for the NCWRP Expansion and NCPWF Influent Conveyance Project; prepared in ~~August~~ November 2017 by CH2M (Appendix D2)
- Geotechnical Investigation NCCS Miramar Pipeline Project; prepared in May 2017 by TerraCosta Consulting Group Inc. (Appendix D3)
- Geotechnical Desktop Study, North City to San Vicente Reservoir Pipeline Project; prepared in September 2014 by Allied Geotechnical Engineers Inc. (Appendix D4)
- Preliminary Geotechnical Investigation, Predesign – North City Plant Upgrades, Proposed North City Advanced Water Purification Facility; prepared in June 2016 by K2 Engineering Inc. (Appendix D5)

- Addendum/Response to Comments - North City Plant Upgrades, Proposed North City Advanced Water Purification Facility; prepared in May 2017 by K2 Engineering Inc. (Appendix D5).

These technical studies are herein collectively referred to as "geotechnical studies," and each specific appendix will be cited as applicable.

5.7.2 ENVIRONMENTAL SETTING

5.7.2.1 Geologic Formations and Soils

Because geologic soils and formations are site specific, the following discussion of the existing geologic environment is broken down by the primary components of each Project Alternative based on individual geotechnical studies. Underlying geologic formations are shown on Figures 5.7-1A through 5.7-1D, Geologic Maps.

5.7.2.1.1 Components Common to Project Alternatives

Morena Pump Station and Morena Wastewater Forcemain and Brine/ Centrate Line

The subsurface materials along the pipeline alignment and under the Morena Pump Station and Morena Wastewater Forcemain and Brine/Centrate Line (Morena Pipelines) can be categorized into geologic units, which consist of (in order of increasing age) fill materials, alluvium, Old Paralic Deposits, Very Old Paralic Deposits, Stadium Conglomerate, Friars Formation, Scripps Formation, and Ardath Shale (Appendix D1).

Fill Materials. Fill materials associated with roadway construction and land developments exist at various locations along the pipeline alignment. The fill has been placed in conjunction with land-filling along former low-lying areas, road grading, and underground utility construction. Fill soils tend to be erratic mixtures of sand, clay, gravel and sometimes construction debris. The fill contains a wide range of particle sizes, up to boulder sized. The fill along the alignment is considered undocumented, i.e., compaction records are not available. The fill may have been hydraulically placed at the southern end of the alignment and in the vicinity of the Morena Pump Station (Appendix D1).

Alluvium (Young Alluvial Deposits). Alluvial deposits, predominantly loose to dense silty sands, clean sands, and sandy gravels underlie the former floodplain areas and the inland canyon-creek crossings. The Morena/West Morena Boulevard portion of the Morena Pipeline is underlain by alluvium at greater depth than the pipeline. Between the Morena Pump Station and Ingulf Street, the composition of the alluvium varies considerably, with more fine-grained silts and some clays present within the alluvium near the pump station. In the vicinity of Tecolote Creek, the alluvium was characterized as loose to medium dense sand and stiff clay, although in nearby previous borings, young estuarine deposits (primarily silts and clays with some sands and organic deposits) were logged above the alluvium. Toward the northern portion of the Morena Boulevard stretch, the material below the fill may be more colluvial in nature due to its proximity to the hills to the east. The inland natural canyons at San Clemente Creek and Rose Creek are mapped as underlain by alluvium. Recent borings suggest alluvium is relatively thin, less than about 15 feet thick (Appendix D1).

Old Paralic Deposits (also referred to as Bay Point Formation). This unit consists of late to middle Pleistocene aged, marine and non-marine poorly consolidated sandstone (medium dense to very dense sand, silty sand and clayey sand, some localized zones of gravel and cobbles) (Appendix D1).

Very Old Paralic Deposits (also referred to as Lindavista Formation). This unit consists of middle to early Pleistocene, interfingered strandline, beach, estuarine and colluvial deposits (siltstone, sandstone, conglomerate), can have strong cementation, cobbles (Appendix D1).

Stadium Conglomerate. This unit consists of Eocene-aged, cobble conglomerate in silty sand matrix with some sandstone, strongly cemented (Appendix D1).

Friars Formation. This unit consists of middle to late Eocene aged, marine and non-marine sandstone, siltstone and claystone. Claystone portions can be highly expansive and prone to landslide hazards (Appendix D1).

Scripps Formation. This unit consists of Eocene aged, weakly to moderately cemented silty sandstone and sandy siltstone with occasional cobble conglomerate beds, and zones with strong cementation/ concretions (Appendix D1).

Ardath Shale. This unit consists of lower to middle Eocene aged, sandy siltstone and claystone with local concreted zones; claystone portions are potentially expansive and prone to landslide hazards (Appendix D1).

Subsurface Conditions

Morena Pump Station. According to the site-specific preliminary borings, the Morena Pump Station site is underlain by a thin fill layer over alluvium. The fill ranges from about 3 to 5 feet in depth and consists primarily of silty sand. The underlying alluvium varies significantly and is highly interlayered in some locations (Appendix D1).

Within the upper portion of the alluvium to depths ranging from about 19 to 29 feet, the soil is mostly poorly graded sand to silty sand that is primarily loose with some zones of very loose and medium dense material. At some exploration locations, significant interbeds of low-plasticity silt were present within this upper zone of the alluvium (Appendix D1).

The upper sandy zone is generally underlain by a fine-grained zone that extends to a depth of about 50 feet below ground surface. It consists primarily of silt, with interbeds of clay, as well as silty sand. The consistency ranges from soft to stiff (Appendix D1).

A deeper granular zone of sand to silty sand is present below a depth of about 50 feet. It is generally medium dense to dense, with some looser zones. There are some zones of fine-grained soil within the deeper granular layer, and in many locations, there is a bed approximately 5 feet thick of stiff silt at depths that range from 55 to 65 feet below ground surface. Gravel was encountered at a depth of 76 feet below ground surface (Appendix D1).

Morena Pipelines. Along most of the southerly Morena Pipeline alignment (Morena/West Morena Boulevard between Friars Road and Ingulf Street), planned trench depths are expected to be within fill over alluvium and/or estuarine deposits, except for short reaches within the Bay Point Formation (Appendix D1). In general, fill thicknesses range from about 5 to 10 feet and are generally silty and clayey sands with some gravel. Alluvium (and colluvium, within the northern portion of this portion) is generally very loose to dense sands with some silts and clays, and potentially some cobbles and boulders (Appendix D1). Estuarine-type deposits consisting mostly of sands, clays, and some very soft organic soil are present below the fill along West Morena/Morena Boulevard between Dorcas Street on the south and Savannah Street on the north (Appendix D1). Bay Point Formation has been logged in previous borings and as shallow as about 12 feet below ground surface along the northern portion of the Morena Boulevard alignment, and as shallow as about 3 feet below ground surface along Ingulf Street as ground elevations rise (Appendix D1).

From where the Morena Pipeline alignment ascends up to the coastal mesa at Clairemont Drive to the North City Water Reclamation Plant (NCWRP), the route is mostly within dense sedimentary formations including the Lindavista Formation and the Scripps Formation (Appendix D1).

North City Water Reclamation Plant Expansion

The NCWRP Expansion site is underlain by sandstone, claystone, siltstone, and conglomerates belonging to both the Scripps and Lindavista formations of the Eocene and Pleistocene ages, respectively, as well as artificial fill (Appendix D2). The Scripps Formation is described above. The Lindavista Formation that underlies the NCWRP Expansion site consists of the same geologic formation known as Very Old Paralic Deposits. This formation is generally described as poorly sorted, moderately permeable, reddish brown, interfingered strandline, beach, estuarine, and colluvial deposits comprised of siltstone, sandstone, and conglomerate (Appendix D2). Additionally, the Very Old Paralic Deposits can be characterized as moderately to well cemented sandstone and conglomerate (Appendix D2).

Artificial fill was placed throughout the entire existing NCWRP Expansion site to create the current graded configuration. Fills were placed up to approximately 40 feet during grading of the NCWRP Expansion site. Additional structural and general site fill can be found throughout the NCWRP Expansion site at varying depths.

North City Pure Water Facility Influent Pump Station

The North City Pure Water Facility (NCPWF) Influent Pump Station is located within the NCWRP site and is underlain by the same geologic formations described previously for this site.

North City Pure Water Pump Station

The North City Pure Water Pump Station would be located within the NCPWF site, which is described in Section 5.7.2.1.2, Miramar Reservoir Alternative.

North City Renewable Energy Facility

The North City Renewable Energy Facility would be located within the existing NCWRP property and is underlain by the same geologic formations as previously described for NCWRP.

Landfill Gas Pipeline

The Landfill Gas Pipeline would generally be located along an existing underground utility corridor that has been previously excavated and filled.

Metro Biosolids Center Improvements

The improvements to the Metro Biosolids Center would be located within the previously developed footprint of the existing facility. The site has been heavily graded and underlying fill at varying depths would likely be present.

5.7.2.1.2 Miramar Reservoir Alternative

North City Pure Water Facility-Miramar Reservoir

The NCPWF–Miramar Reservoir (MR) site is underlain by silty sandstone, siltstone, and claystone that been mapped as belonging to the Eocene age Scripps Formation (Appendix D5). The Scripps Formation is described in Section 5.7.2.1.1, Components Common to Project Alternatives. The Pleistocene age Lindavista Formation was noted as occurring within the central and southwestern sections of the site (Appendix D5). The Pleistocene age Lindavista Formation, also known as Very Old Paralic Deposits, is described in Section 5.7.2.1.1.

Colluvium. The term colluvium is used to describe topsoil and soils deposited by erosion. On the NCPWF-MR site, colluvium is up to 2 feet thick and consists of soft silt and clay with gravel (Appendix D5).

North City Pipeline, Dechlorination Facility, and Miramar Water Treatment Plant Improvements

The subsurface materials along the North City Pure Water Pipeline (North City Pipeline) alignment and under the Pure Water Dechlorination Facility (Dechlorination Facility) can be categorized into six geologic units, which consist of (in order of increasing age) fill materials, young alluvial deposits, Very Old Paralic Deposits, Stadium Conglomerate, Scripps Formation, and undivided metasedimentary and metavolcanic rocks. The first five previously listed geologic units are described in Section 5.7.2.1.1. The improvements at Miramar Water Treatment Plant are likely immediately underlain by fill materials at varying depths associated with the construction of the existing facility.

Natural Surficial Soils. Localized areas along the pipeline alignment contain remnants of natural surficial soils. These remnant soils typically range from 1 to 3 feet in thickness, and consist of hard, sandy clays characteristic of a residual clay horizon (Appendix D3).

Terrace Deposits. Also referred to as Lindavista Formation, these deposits consist of mostly poorly sorted, moderately permeable, reddish-brown, interfingered strandline beach estuarine and colluvial deposits composed of siltstone, sandstone, and conglomerate (Appendix D3). Terrace deposits are also known to be moderately to strongly cemented, causing localized excavation difficulties that may require the use of specialized equipment for trench excavation. In addition, lenses of gravels, cobbles, and boulders are anticipated to be encountered.

Mesozoic-age Metasedimentary and Metavolcanic Rocks. Mesozoic-age metasedimentary and metavolcanic rocks generally underlie the Tertiary-aged Stadium Conglomerate. These rocks, locally known as the Santiago Peak Volcanics, are described as consisting of low grade metamorphosed sedimentary rocks (conglomerate, siltstone, and sandstone) interlayered and mixed with metavolcanic rocks consisting of flows, tuffs, and volcaniclastic breccia. While not encountered or exposed along the alignment, undifferentiated sedimentary and granitic rock exist at depth (Appendix D3).

Mesozoic-age metasedimentary and metavolcanic rocks have been mapped near Miramar Dam and Reservoir (Appendix D3). In general the Mesozoic-age metasedimentary and metavolcanic rocks are not anticipated to be encountered to the west of Interstate 15 (I-15) except near the proposed tunnel location near the intersection of Candida Street and Via Pasar (Appendix D3). However east of I-15, the Mesozoic-age metasedimentary and metavolcanic rocks is generally shallower and may be encountered where the invert of the pipeline is near the regional contact between the Stadium Conglomerate and the Mesozoic-age metasedimentary and metavolcanic rocks (Appendix D3).

5.7.2.1.3 San Vicente Reservoir Alternative

North City Pure Water Facility-San Vicente Reservoir

The NCPWF–San Vicente Reservoir (SVR) would be located within the same site as the NCPWF-MR and is underlain by the same geologic formations as described in Section 5.7.2.1.2.

San Vicente Pipeline and Mission Trails Booster Station

The subsurface materials along the project alignment and under the Mission Trails Booster Station can be categorized into 10 geologic units, which include (in order of increasing age) fill materials, young alluvial deposits, old alluvial deposits, Very Old Paralic Deposits, Mission Valley Formation, Stadium Conglomerate, Friars Formation, Scripps Formation, granitic rocks, and undivided metasedimentary and metavolcanic rocks. All geologic units but the Mission Valley Formation and granitic rocks have been described previously.

Mission Valley Formation. The Mission Valley Formation overlies the Stadium conglomerate in portions of Kearny Mesa. This formation consists of marine, lagoonal, and non-marine sandstone. The sandstone member is typically light gray and fine to medium grained, and can easily crumble. Cobble-conglomerate tongues similar to the underlying Stadium Conglomerate may also be encountered in the formation. There are no surface outcrops of this unit along the San Vicente Pure Water Pipeline (San Vicente Pipeline) alignment.

Granitic Rocks. Granitic rocks have been mapped in the northeast portion of the San Vicente Pipeline alignment and within Mission Trails Regional Park. Mapped units include tonalite, granodiorite, quartz diorite, monzonite, monzogranite, and minor gabbro. The granitic rocks are generally described as light to dark gray, medium to coarse grained, and locally deeply weathered.

5.7.2.2 Geologic Hazards

The following is a general discussion of potential geologic hazards in the North City Project Area. Specific components of the Project Alternatives that would be subject to the following potential hazards are discussed in Section 6.7 of this Environmental Impact Report/Environmental Impact Statement (EIR/EIS).

5.7.2.2.1 Faulting and Seismicity

The Project Alternatives would be located in the San Diego region of seismically active Southern California. Known active faults in the area tend to travel in a northwest–southwest direction. Major active regional faults of tectonic significance include the Coronado Bank, San Diego Trough, San Clemente, and Newport–Inglewood/Rose Canyon fault zones (the Rose Canyon fault zone is located onshore between La Jolla Shores and the Silver Strand); the faults in Baja California, including the San Miguel–Vallecitos and Agua Blanca fault zones; and the faults located farther to the east in Imperial Valley, which include the Elsinore, San Jacinto, and San Andreas fault zones (Appendices D1–D5). Due to the region-spanning location of the Project Alternatives, components are at varying distances to active faults; refer to Appendices D1–D5 for information regarding distance to active faults and earthquake magnitude data specific to each component.

5.7.2.2.2 Landslides

Old landslides and landslide-prone formations are the principal non-seismic geologic hazards with the City of San Diego (City). Conditions that should be considered in regard to slope instability include inclination, characteristics of the soil and rock orientation of the bedding, and the presence of groundwater. The causes of classic landslides start with the preexisting condition inherent within the rock body itself that can lead to failure. The actuators of landslides can be both natural events, such as earthquakes, rainfall, and erosion, and human activities, such as grading and filling. Some areas in the City where landslides have occurred are Otay Mesa; the east side of Point Loma; the vicinities of Mount Soledad, Rose Canyon, Sorrento Valley, and Torrey Pines; portions of Rancho Bernardo and Los Peñasquitos Canyon Preserve; and along Mission Gorge in the vicinity of the second San Diego Aqueduct (City of San Diego 2008).

Previously mapped landslides are located in and near some Project components and are detailed in Section 6.7 of this EIR/EIS.

5.7.2.2.3 Liquefaction, Subsidence, and Other Ground Failure

Seismic-induced soil liquefaction is a phenomenon during which loose, saturated granular materials undergo matrix rearrangement, develop high pore water pressure, and lose shear strength due to cyclic ground vibrations induced by earthquakes. Manifestations of soil liquefaction can include loss of bearing capacity below foundations, surface settlements and tilting in level ground, and instabilities in areas of sloping ground. Soil liquefaction can also result in increased lateral and uplift pressures on buried structures.

Settlement of the ground may come from fault movement, slope instability, and liquefaction and compaction of the soil at the site. Settlement is not necessarily destructive. It is usually differential settlement that damages structures. Differential or uneven settlement occurs when the subsoil at a site is of non-uniform depth, density, or character, and when the severity of shaking varies from one place to another.

Soils that underlie the majority of the Project components have low potential for various forms of ground failure. However, as detailed in Section 6.7 of this EIR/EIS, some soils exhibit higher potential to become geologically unstable.

5.7.3 REGULATORY FRAMEWORK

Federal

International Building Code

The International Code Council developed the International Building Code (IBC), a model building code that provides the basis for the California Building Code (CBC). The IBC provides minimum standards for building construction to ensure public safety, health, and welfare. Prior to the creation of the IBC, several different building codes were used; by 2000, the IBC had replaced these previous codes. The IBC is updated every 3 years.

State

California Building Code

The 2016 CBC, which is a model building code that sets rules specifying the minimum acceptable level of safety for constructed objects in the United States. The CBC contains amendments based on the American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures 7-10, which establish requirements for general structural design and a means for determining earthquake and other types of loads (flood, snow, wind, etc.) for inclusion in building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures in California.

Alquist–Priolo Earthquake Fault Zoning Act

The Alquist–Priolo Earthquake Fault Zoning Act (California Public Resources Code, Section 2621 et seq.) was passed into law following the destructive February 9, 1970, San Fernando Earthquake, which measured 6.6 on the Richter Scale. The act provides a mechanism for reducing losses from surface fault rupture. The intent of the act is to ensure public safety by prohibiting the siting of most structures for human occupancy across traces of active faults that constitute a potential hazard to structures from surface faulting or fault creep. The law requires the state geologist to establish regulatory earthquake fault zones and distribute maps to all affected cities, counties, and state agencies. Local agencies must regulate most development projects within the zones. Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that the proposed buildings will not be constructed on an active fault.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act (California Public Resources Code, Section 2690 et seq.) addresses earthquake hazards from non-surface-fault rupture, including liquefaction, landslides, strong ground shaking, and other earthquake and geologic hazards. The act also specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

Local

City of San Diego Seismic Safety Study

The City of San Diego Seismic Safety Study is a series of maps that indicate the likely geologic hazards throughout the City. These maps may be used to evaluate the relative risk within a region or to determine if a geotechnical report is required for development or building permits (City of San Diego 2008).

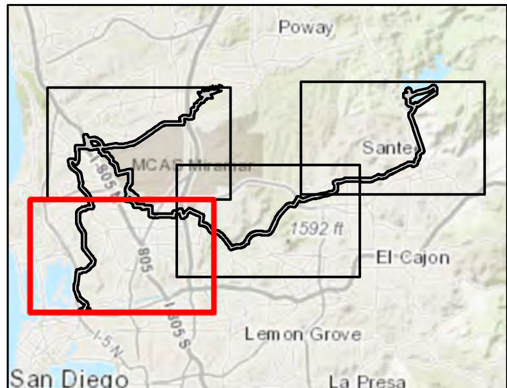
City of San Diego Municipal Code

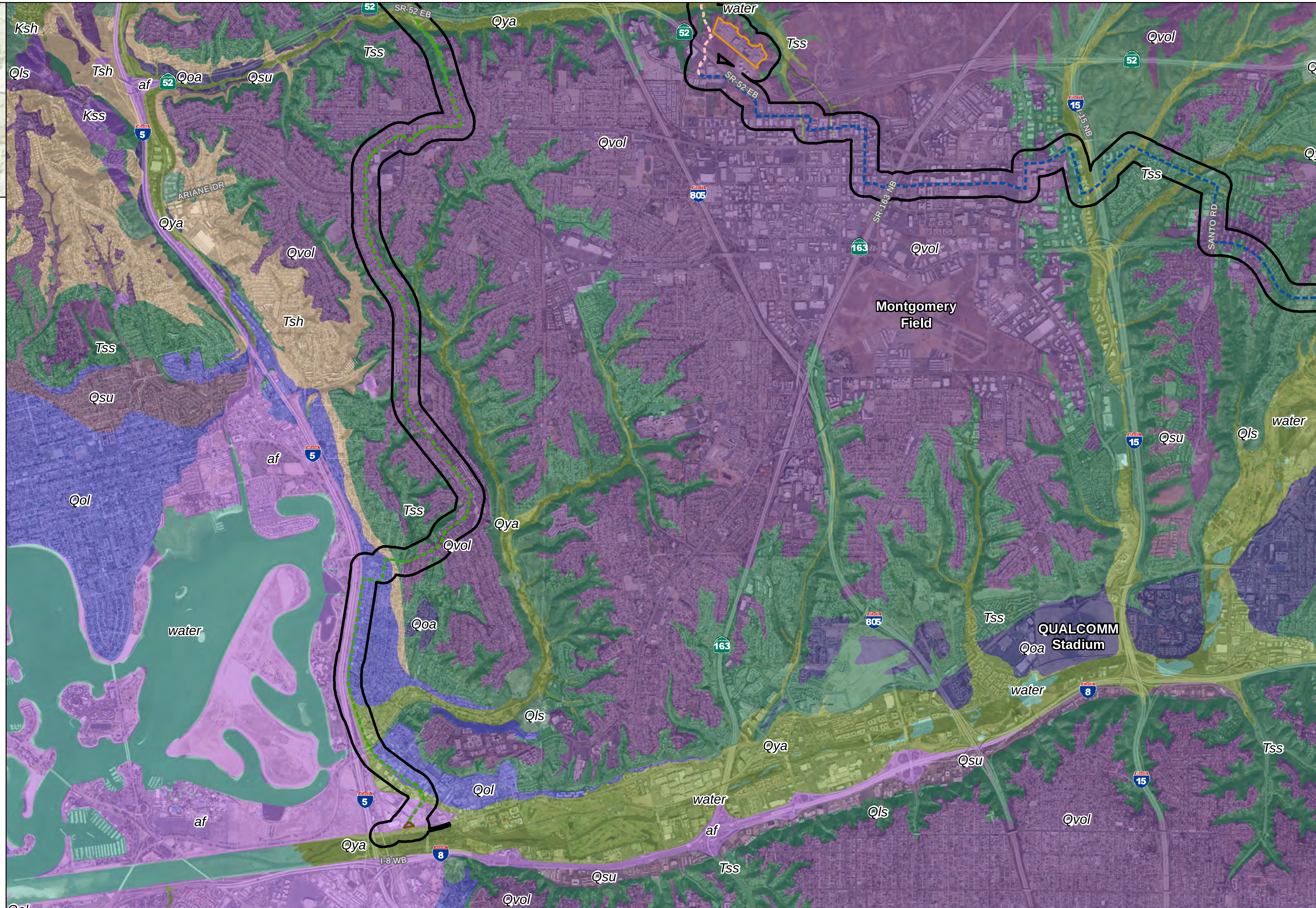
As amended in April 2016, the City of San Diego Municipal Code, Chapter 14, Article 5, Division 1: Adoption and Applicability of the Building Regulations are created to “establish minimum standards to safeguard health and safety, property and public welfare and to satisfy the purpose of the 2013 California Building Code” (City of San

Diego 2016). The remainder of Chapter 14, Article 5, of the City's Municipal Code contains additions and modifications to the 2013 CBC.

City of San Diego General Plan

The City of San Diego General Plan contains the Public Facilities, Services, and Safety Element, which addresses seismic safety. The fundamental objective of the seismic safety policies included in the General Plan is to reduce the risk of seismic- and geologic-related hazards. Seismic hazards that can occur in the San Diego region include ground shaking, ground displacement, tsunami, and landslides.





Project Study Area

Project Pipelines

- San Vicente Pure Water Pipeline
- Morena Wastewater Forcemain and Brine/Centrate Line
- Repurposed Existing 36" Pipeline

Project Facilities

- Metro Biosolids Center Improvements
- Morena Pump Station

Geology

- Ksh:Fine-grained Cretaceous age formations of sedimentary origin
- Kss:Coarse-grained Cretaceous age formations of sedimentary origin
- Qls:Landslide Deposits; may include debris flows and older landslides
- Qoa:Old Alluvial Valley Deposits
- Qol:Old Lacustrine, Playa and Estuarine (Paralic) Deposits
- Qsu:Undifferentiated Surficial Deposits; includes colluvium, slope wash, talus deposits, and other surface deposits of all ages
- Qvol:Very Old Lacustrine, Playa and Estuarine (Paralic) Deposits
- Qya:Young Alluvial Valley Deposits
- Tsh:Fine-grained Tertiary age formations of sedimentary origin
- Tss:Coarse-grained Tertiary age formations of sedimentary origin
- af:Artificial Fill
- Water

N

0 0.5 1 Miles

DUDEK

SOURCE: SANDAG, 2016; California Geological Survey

FIGURE 5.7-1A

Geologic Maps

Pure Water San Diego Program North City Project EIR/EIS

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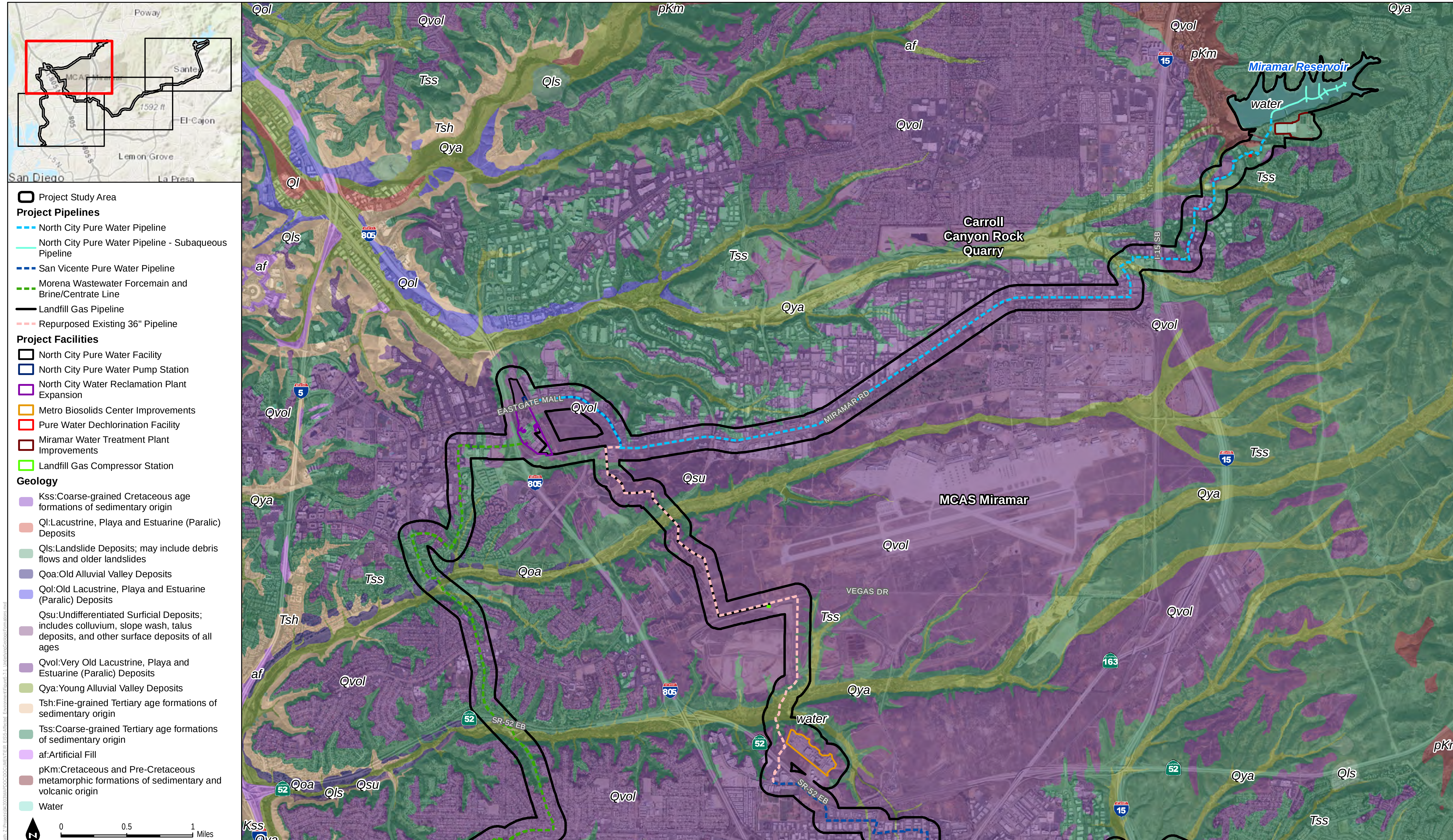

SOURCE: SANDAG, 2016; California Geological Survey

DUDEK

FIGURE 5.7-1B

Geologic Maps

Pure Water San Diego Program North City Project EIR/EIS

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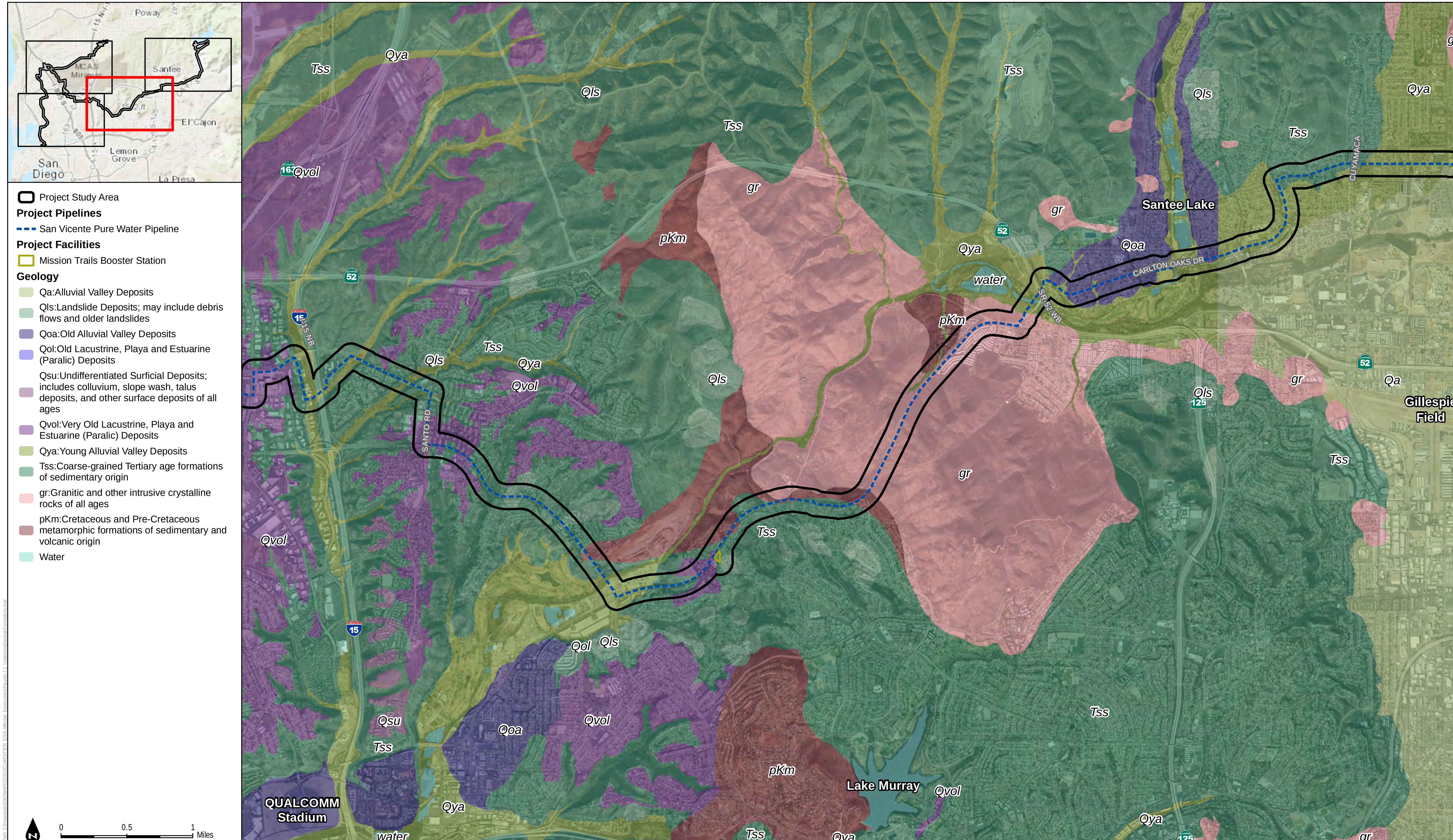

SOURCE: SANDAG, 2016; California Geological Survey

DUDEK

FIGURE 5.7-1C
Geologic Maps

Pure Water San Diego Program North City Project EIR/EIS

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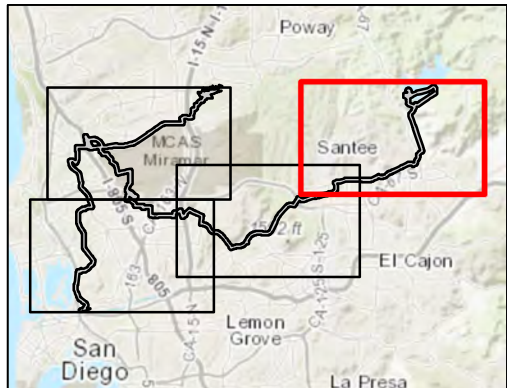


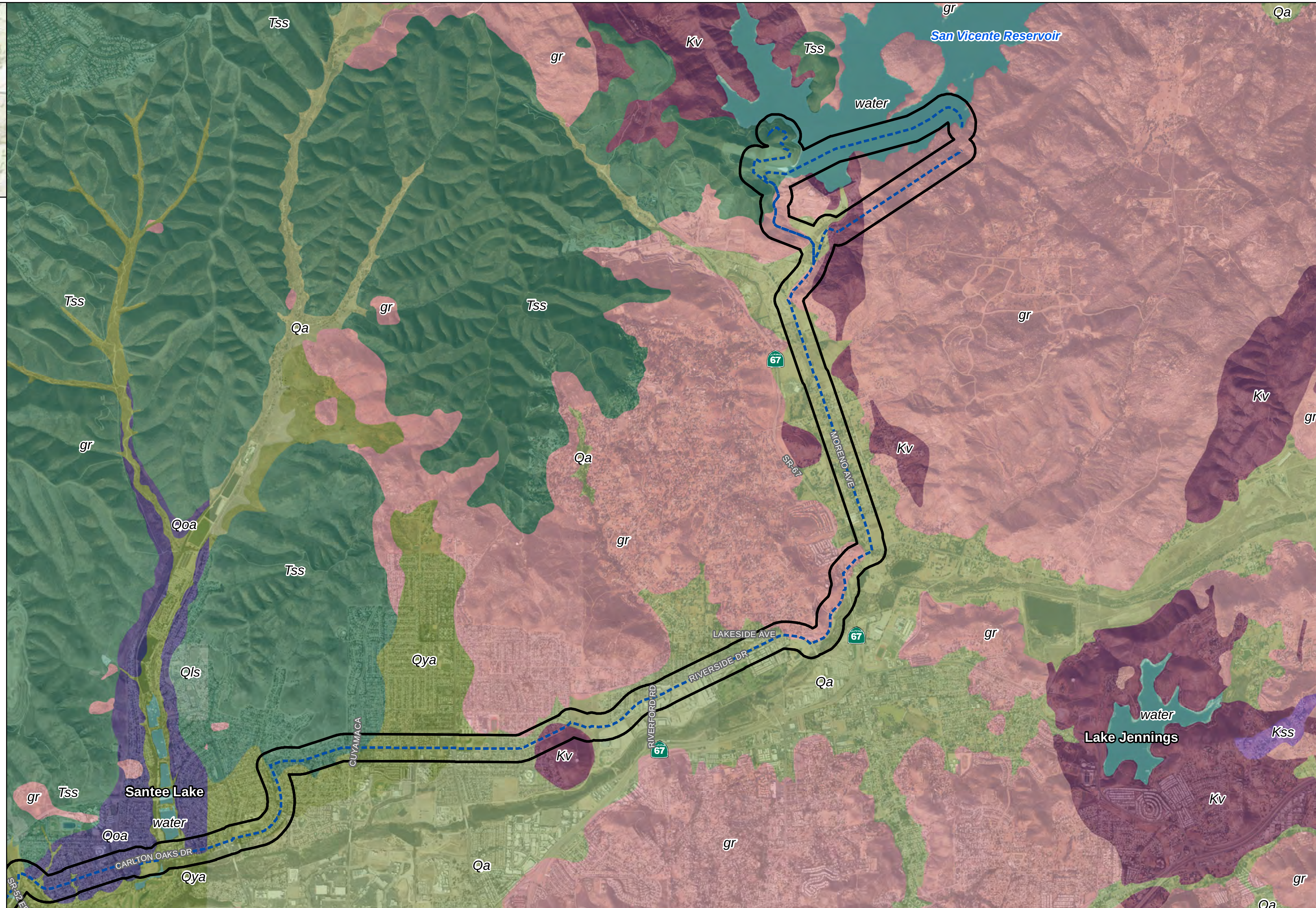
Project Study Area

Project Pipelines

San Vicente Pure Water Pipeline

Geology

- Kss:Coarse-grained Cretaceous age formations of sedimentary origin
- Kv:Cretaceous age formations of volcanic origin
- Qa:Alluvial Valley Deposits
- Qls:Landslide Deposits; may include debris flows and older landslides
- Qoa:Old Alluvial Valley Deposits
- Qya:Young Alluvial Valley Deposits
- Tss:Coarse-grained Tertiary age formations of sedimentary origin
- gr:Granitic and other intrusive crystalline rocks of all ages
- Water



0 0.5 1 Miles

SOURCE: SANDAG, 2016; California Geological Survey

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FIGURE 5.7-1D

Geologic Maps

Pure Water San Diego Program North City Project EIR/EIS

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5.8 GREENHOUSE GAS EMISSIONS

5.8.1 INTRODUCTION

The purpose of this section is to identify existing conditions related to greenhouse gas (GHG) emissions for the North City Project and describe applicable regulations. The information provided in this section is based on the Greenhouse Gas Emissions Technical Report prepared by Dudek, dated ~~September 2017~~February 2018 (provided as Appendix E).

5.8.2 ENVIRONMENTAL SETTING

The Greenhouse Effect

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind, lasting for an extended period (decades or longer). The greenhouse effect traps heat in the troposphere through a threefold process: short-wave radiation emitted by the Sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long-wave radiation; and GHGs in the upper atmosphere absorb this long-wave radiation and emit it into space and back toward the Earth. This “trapping” of the long-wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect.

The greenhouse effect is a natural process that contributes to regulating the Earth’s temperature. Without it, the temperature of the Earth would be about 0° Fahrenheit (°F) (−18° Celsius (°C)) instead of its current 59°F (15°C) (Qiancheng 1998). Global climate change concerns are focused on whether human activities are leading to an enhancement of the greenhouse effect.

Greenhouse Gases

Gases that trap heat in the atmosphere are called GHGs. GHGs include, but are not limited to, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), fluorinated gases (hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6) and nitrogen trifluoride (NF_3)), chlorofluorocarbons (CFCs), and hydrochlorofluorocarbons (HCFCs), in addition to water vapor. Some GHGs, such as CO_2, CH_4, and N_2O, occur naturally and are emitted to the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Manufactured GHGs, which have a much greater heat-absorption potential than

CO_2, include fluorinated gases, such as HFCs, PFCs, and SF_6, which are associated with certain industrial products and processes. A summary of the most common GHGs and their sources is included in the following text.[1]

Carbon Dioxide. CO_2 is a naturally occurring gas and a by-product of human activities and is the principal anthropogenic GHG that affects the Earth's radiative balance. Natural sources of CO_2 include respiration of bacteria, plants, animals, and fungus; evaporation from oceans, volcanic out-gassing; and decomposition of dead organic matter. Human activities that generate CO_2 are from the combustion of coal, oil, natural gas, and wood.

Methane. CH_4 is a flammable gas and is the main component of natural gas. Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, flooded rice fields, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

Nitrous Oxide. Sources of N_2O include soil cultivation practices (microbial processes in soil and water), especially the use of commercial and organic fertilizers, manure management, industrial processes (such as in nitric acid production, nylon production, and fossil-fuel-fired power plants), vehicle emissions, and the use of N_2O as a propellant (such as in rockets, racecars, aerosol sprays).

Fluorinated Gases. Fluorinated gases (also referred to as F-gases) are synthetic, powerful GHGs that are emitted from a variety of industrial processes. Fluorinated gases are commonly used as substitutes for stratospheric ozone-depleting substances (e.g., CFCs, HCFCs, and halons). The most prevalent fluorinated gases include the following:

- ***Hydrofluorocarbons:*** HFCs are compounds containing only hydrogen, fluorine, and carbon atoms. HFCs are synthetic chemicals that are used as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are used in manufacturing.

[1] The descriptions of GHGs are summarized from the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report (1995), IPCC Fourth Assessment Report (2007), the California Air Resources Board's (CARB's) "Glossary of Terms Used in Greenhouse Gas Inventories" (2015), and U.S. Environmental Protection Agency's (EPA's) "Glossary of Climate Change Terms" (2016a).

- ***Perfluorocarbons:*** PFCs are a group of human-made chemicals composed of carbon and fluorine only. These chemicals were introduced as alternatives, along with HFCs, to the ozone depleting substances. The two main sources of PFCs are primarily aluminum production and semiconductor manufacturing. Since PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere, these chemicals have long lifetimes, ranging between 10,000 and 50,000 years.
- ***Sulfur Hexafluoride:*** SF_6 is a colorless gas that is soluble in alcohol and ether and slightly soluble in water. SF_6 is used for insulation in electric power transmission and distribution equipment, semiconductor manufacturing, the magnesium industry, and as a tracer gas for leak detection.
- ***Nitrogen trifluoride:*** NF_3 is used in the manufacture of a variety of electronics, including semiconductors and flat panel displays.

Chlorofluorocarbons. CFCs are synthetic chemicals that have been used as cleaning solvents, refrigerants, and aerosol propellants. CFCs are chemically unreactive in the lower atmosphere (troposphere) and the production of CFCs was prohibited in 1987 due to the chemical destruction of stratospheric O_3.

Hydrochlorofluorocarbons. HCFCs are a large group of compounds, whose structure is very close to that of CFCs—containing hydrogen, fluorine, chlorine, and carbon atoms—but including one or more hydrogen atoms. Like HFCs, HCFCs are used in refrigerants and propellants. HCFCs were also used in place of CFCs for some applications; however, their use in general is being phased out.

Black Carbon. Black carbon is a component of fine particulate matter, which has been identified as a leading environmental risk factor for premature death. It is produced from the incomplete combustion of fossil fuels and biomass burning, particularly from older diesel engines and forest fires. Black carbon warms the atmosphere by absorbing solar radiation, influences cloud formation, and darkens the surface of snow and ice, which accelerates heat absorption and melting. Black carbon is a short-lived species that varies spatially, which makes it difficult to quantify the global warming potential. Diesel particulate matter emissions are a major source of black carbon and are also toxic air contaminants (TACs) that have been regulated and controlled in California for several decades to protect public health. In relation to declining diesel particulate matter from the California Air Resources Board's (CARB's) regulations pertaining to diesel engines, diesel fuels, and burning activities, CARB estimates that annual black carbon emissions in California have reduced by 70% between 1990 and 2010, with 95% control expected by 2020 (CARB 2014).

Water Vapor. The primary source of water vapor is evaporation from the ocean, with additional vapor generated by sublimation (change from solid to gas) from ice and snow, evaporation from other water bodies, and transpiration from plant leaves. Water vapor is the most important, abundant, and variable GHG in the atmosphere and maintains a climate necessary for life.

Ozone. Tropospheric O_3, which is created by photochemical reactions involving gases from both from natural sources and from human activities, acts as a GHG. Stratospheric O_3, which is created by the interaction between solar ultraviolet radiation and molecular oxygen (O_2), plays a decisive role in the stratospheric radiative balance. Depletion of stratospheric O_3, due to chemical reactions that may be enhanced by climate change, results in an increased ground-level flux of ultraviolet-B radiation.

Aerosols. Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.

Global Warming Potential

Gases in the atmosphere can contribute to climate change both directly and indirectly. Direct effects occur when the gas itself absorbs radiation. Indirect radiative forcing occurs when chemical transformations of the substance produce other GHGs, when a gas influences the atmospheric lifetimes of other gases, and/or when a gas affects atmospheric processes that alter the radiative balance of the Earth (e.g., affect cloud formation or albedo) (EPA 2016b).

The Intergovernmental Panel on Climate Change (IPCC) developed the global warming potential (GWP) concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram of a trace substance relative to that of 1 kilogram of a reference gas (IPCC 2014). The reference gas used is CO_2; therefore, GWP-weighted emissions are measured in metric tons of CO_2 equivalent (MT CO_2E).

The current version of the California Emissions Estimator Model (CalEEMod) (version 2016.3.1) assumes that the GWP for CH_4 is 25 (which means that emissions of 1 MT of CH_4 are equivalent to emissions of 25 MT of CO_2), and the GWP for N_2O is 298, based on the IPCC Fourth Assessment Report (IPCC 2007).

Contributions to Greenhouse Gas Emissions

Per the EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2014 (EPA 2016b), total U.S. GHG emissions were approximately 6,870.5 million metric tons (MMT) CO_2E in 2014. The primary GHG emitted by human activities in the United States was CO_2, which represented approximately 80.9% of total GHG emissions (5,556.0 MMT CO_2E). The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 93.7% of CO_2 emissions in 2014 (5,208.2 MMT CO_2E). Total U.S. GHG emissions have increased by 7.4% from 1990 to 2014, and emissions increased from 2013 to 2014 by 1.0% (70.5 MMT CO_2E). Since 1990, U.S. GHG emissions have increased at an average annual rate of 0.3%; however, overall, net emissions in 2014 were 8.6% below 2005 levels (EPA 2016b). According to California's 2000–2014 GHG emissions inventory (2016 edition), California emitted 441.5 MMT CO_2E in 2014, including emissions resulting from out-of-state electrical generation (CARB 2016). The sources of GHG emissions in California include transportation, industry, electric power production from both in-state and out-of-state sources, residential and commercial activities, agriculture, high GWP substances, and recycling and waste. The California GHG emission source categories and their relative contributions in 2014 are presented in Table 5.8-1.

Table 5.8-1
GHG Sources in California

Source Category	Annual GHG Emissions (MMT CO_2E)	Percent of Total[a]
Transportation	159.53	36%
Industrial uses	93.32	21%
Electricity generation[b]	88.24	20%
Residential and commercial uses	38.34	9%
Agriculture	36.11	8%
High GWP substances	17.15	4%
Recycling and waste	8.85	2%
Totals	**441.54**	**100%**

Source: CARB 2016.
Notes: Emissions reflect the 2014 California GHG inventory.
MMT CO_2E = million metric tons of carbon dioxide equivalent per year
[a] Percentage of total has been rounded, and total may not sum due to rounding.
[b] Includes emissions associated with imported electricity, which account for 36.51 MMT CO_2E annually.

During the 2000 to 2014 period, per-capita GHG emissions in California continued to drop from a peak in 2001 of 13.9 MT per person to 11.4 MT per person in 2014, representing an 18% decrease. In addition, total GHG emissions in 2014 were 2.8 MMT CO_2E less than 2013 emissions. The declining trend in GHG emissions, coupled with programs that will continue to provide additional GHG reductions going forward, demonstrates that California is on track to meet the 2020 target of 431 MMT CO_2E (CARB 2016).

Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The 2014 IPCC Synthesis Report indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. Signs that global climate change has occurred include warming of the atmosphere and ocean, diminished amounts of snow and ice, rising sea levels, and ocean acidification (IPCC 2014).

In California, climate change impacts have the potential to affect sea level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, and electricity demand and supply. The primary effect of global climate change has been a 0.2°C rise in average global tropospheric temperature per decade, determined from meteorological measurements worldwide between 1990 and 2005. Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the twentieth century. A warming of about 0.2°C (0.36°F) per decade is projected, and there are identifiable signs that global warming could be taking place.

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The average temperatures in California have increased, leading to more extreme hot days and fewer cold nights; shifts in the water cycle have been observed, with less winter precipitation falling as snow, and both snowmelt and rainwater running off earlier in the year; sea levels have risen; and wildland fires are becoming more frequent and intense due to dry seasons that start earlier and end later (CAT 2010).

An increase in annual average temperature is a reasonably foreseeable effect of climate change. Observed changes over the last several decades across the western United States reveal clear signals of climate change. Statewide average temperatures increased by about 1.7°F from 1895 to 2011, and warming has been greatest in the Sierra Nevada. By 2050, California is projected to warm by approximately 2.7°F above 2000 averages, a threefold increase in the rate of warming over the last century. By 2100, average temperatures could increase by 4.1°F to 8.6°F, depending on emissions levels. Springtime warming—a critical influence on snowmelt—will be particularly pronounced. Summer temperatures will rise more than winter temperatures, and the increases will be greater in inland California, compared to the coast. Heat waves will be more frequent, hotter, and longer. There will be fewer extremely cold nights. A decline of Sierra snowpack, which accounts for approximately half of the surface water storage in California and much of the state's water supply, by 30% to as much as 90% is predicted over the next 100 years (CAT 2010a).

Model projections for precipitation over California continue to show the Mediterranean pattern of wet winters and dry summers with seasonal, year-to-year, and decade-to-decade variability. For the first time, however, several of the improved climate models shift toward drier conditions by the mid-to-late 21st century in central and, most notably, Southern California. By late-century, all projections show drying, and half of them suggest 30-year average precipitation will decline by more than 10% below the historical average (CAT 2010a).

A summary of current and future climate change impacts to resource areas in California, as discussed in the Safeguarding California: Reducing Climate Risk (CNRA 2014), is provided in the following text.

Agriculture. The impacts of climate change on the agricultural sector are far more severe than the typical variability in weather and precipitation patterns that occur year to year. Some of the specific challenges faced by the agricultural sector and farmers include more drastic and unpredictable precipitation and weather patterns; extreme weather events that range from severe flooding to extreme drought, to destructive storm events; significant shifts in water availably and water quality; changes in pollinator lifecycles; temperature fluctuations, including extreme heat stress and decreased chill hours; increased risks from invasive species and weeds, agricultural pests and plant diseases; and disruptions to the transportation and energy infrastructure supporting agricultural production. These challenges and associated short-term and long-term impacts can have both positive and negative effects on agricultural production. Nonetheless, it is predicted that current crop and livestock production will suffer long-term negative effects resulting in a substantial decrease in the agricultural sector if not managed or mitigated (CNRA 2014).

Biodiversity and Habitat. The state's extensive biodiversity stems from its varied climate and assorted landscapes, which have resulted in numerous habitats where species have evolved and adapted over time. Specific climate change challenges to biodiversity and habitat include species migration in response to climatic changes, range shift, and novel combinations of species; pathogens, parasites, and disease; invasive species; extinction risks; changes in the timing of seasonal life-cycle events; food web disruptions; and threshold effects (i.e., a change in the ecosystem that results in a "tipping point" beyond which irreversible damage or loss has occurs). Habitat restoration, conservation, and resource management across California and through collaborative efforts amongst public, private, and nonprofit agencies has assisted in the effort to fight climate change impacts on biodiversity and habitat. One of the key measures in these efforts is ensuring species' ability to relocate as temperature and water availability fluctuate as a result of climate change, based on geographic region.

Energy. The energy sector provides California residents with a supply of reliable and affordable energy through a complex integrated system. Specific climate change challenges for the energy sector include temperature, fluctuating precipitation patterns, increasing extreme weather events and sea level rise. Increasing temperatures and reduced snowpack negatively impact the availability of a steady flow of snowmelt to hydroelectric reservoirs. Higher temperatures also reduce the capacity of thermal power plants since power plant cooling is less efficient at higher ambient temperatures. Natural gas infrastructure in coastal California is threatened by sea level rise and extreme storm events (CNRA 2014).

Forestry. Forests occupy approximately 33% of California's 100 million acres and provide key benefits such as wildlife habitat, absorption of CO_2, renewable energy, and building materials. The most significant climate change related risk to forests is accelerated risk of wildfire and more frequent and severe droughts. Droughts have resulted in more large-scale mortalities and combined with increasing temperatures have led to an overall increase in wildfire risks. Increased wildfire intensity subsequently increases public safety risks, property damage, fire suppression and emergency response costs, watershed and water quality impacts, and vegetation conversions. These factors contribute to decreased forest growth, geographic shifts in tree distribution, loss of fish and wildlife habitat, and decreased carbon absorption. Climate change may result in increased establishment of non-native species, particularly in rangelands where invasive species are already a problem. Invasive species may be able to exploit temperature or precipitation changes, or quickly occupy areas denuded by fire, insect mortality, or other climate change effects on vegetation (CNRA 2014).

Ocean and Coastal Ecosystems and Resources. Sea level rise, changing ocean conditions and other climate change stressors are likely to exacerbate long-standing challenges related to ocean and coastal ecosystems in addition to threatening people and infrastructure located along the California coastline and in coastal communities. Sea level rise in addition to more frequent and severe coastal storms and erosion are threatening vital infrastructure such as roads, bridges, power plants, ports and airports, gasoline pipes, and emergency facilities, as well as negatively impacting the coastal recreational assets such as beaches and tidal wetlands. Water quality and ocean acidification threaten the abundance of seafood and other plant and wildlife habitats throughout California and globally (CNRA 2014).

Public Health. Climate change can impact public health through various environmental changes and is the largest threat to human health in the twenty-first century. Changes in precipitation patterns affect public health primarily through potential for altered water supplies, and extreme events such as heat, floods, droughts, and wildfires. Increased frequency, intensity, and duration of extreme heat and heat waves is likely to increase the risk of mortality due to heat-related illness as well as exacerbate existing chronic health conditions. Other extreme weather events are likely to negatively impact air quality and increase or intensify respiratory illness such as asthma and allergies. Additional health impacts that may be impacted by climate change include cardiovascular disease, vector-borne diseases, mental health impacts, and malnutrition injuries. Increased frequency of these ailments is likely to subsequently increase the direct risk of injury and/or mortality (CNRA 2014).

Transportation. Residents of California rely on airports, seaports, public transportation and an extensive roadway network to gain access to destinations, goods, and services. While the transportation industry is a source of GHG emissions, it is also vulnerable to climate change risks. Particularly, sea level rise and erosion threaten many coastal California roadways, airports, seaports, transit systems, bridge supports, and energy and fueling infrastructure. Increasing temperatures and extended periods of extreme heat threaten the integrity of the roadways and rail lines. High temperatures cause the road surfaces to expand which leads to increased pressure and pavement buckling. High temperatures can also cause rail breakages, which could lead to train derailment. Other forms of extreme weather events, such as extreme storm events, can negatively impact infrastructure, which can impair movement of people and goods, or potentially block evacuation routes and emergency access roads. Increased wildfires, flooding, erosion risks, landslides, mudslides, and rockslides can all profoundly impact the transportation system and pose a serious risk to public safety (CNRA 2014).

Water. Water resources in California support residences, plants, wildlife, farmland, landscapes, and ecosystems and bring trillions of dollars in economic activity. Climate change could seriously impact the timing, form, amount of precipitation, runoff patterns, and frequency and severity of precipitation events. Higher temperatures reduce the amount of snowpack and lead to earlier snowmelt, which can impact water supply availability, natural ecosystems, and winter recreation. Water supply availability during the intense dry summer months is heavily dependent on the snowpack accumulated during the wintertime. Increased risk of flooding presents a variety of public health concerns including water quality, public safety, property damage, displacement, and post-disaster mental health problems. Prolonged and intensified droughts can also negatively affect groundwater reserves and result in increased overdraft and subsidence. Droughts can also negatively impact agriculture and farmland throughout the state. The higher risk of wildfires can lead to increased erosion, which can negatively impact watersheds and result in poor water quality. Water temperatures are also prone to increase, which can negatively impact wildlife that rely on a specific range of temperatures for suitable habitat (CNRA 2014).

5.8.3 REGULATORY FRAMEWORK

Federal

Massachusetts vs. EPA. On April 2, 2007, in *Massachusetts v. EPA*, the Supreme Court directed the U.S. Environmental Protection Agency (EPA) Administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA Administrator is required to follow the language of Section 202(a) of the Clean Air Act (CAA). On December 7, 2009, the Administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the CAA:

- The Administrator found that elevated concentrations of GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the "endangerment finding."

- The Administrator further found the combined emissions of GHGs—CO_2, CH_4, N_2O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the CAA.

Energy Independence and Security Act. On December 19, 2007, President Bush signed the Energy Independence and Security Act of 2007. Among other key measures, the Act would do the following, which would aid in the reduction of national GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
2. Set a target of 35 miles per gallon (mpg) for the combined fleet of cars and light trucks by model year 2020 and direct the National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy standard for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
3. Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

Federal Vehicle Standards. In response to the U.S. Supreme Court ruling discussed above, the Bush Administration issued Executive Order 13432 in 2007 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016.

In 2010, President Obama issued a memorandum directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams/mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 mpg if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021, and NHTSA intends to set standards for model years 2022–2025 in a future rulemaking.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6%–23% over the 2010 baselines.

In August 2016, the EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans and all types and sizes of buses and work trucks. The final standards are expected to lower CO_2 emissions by approximately 1.1 billion MT and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (EPA and NHTSA 2016).

~~**Climate Action Plan.** In June 2013, President Obama issued a national Climate Action Plan (CAP) that consisted of a wide variety of executive actions and had three pillars: (1) cut carbon in America, (2) prepare the United States for impacts of climate change, and (3) lead international efforts to combat global climate change and prepare for its impacts (EOP 2013). The CAP outlines 75 goals within the three main pillars.~~

~~The Center for Climate and Energy Solutions 1-year review of progress in implementation of the Plan (C2ES 2014) found that the administration made at least some progress on most of the CAP's 75 goals and that many of the specific tasks outlined had been completed. Notable areas of progress included steps to limit carbon pollution from power plants, improve energy efficiency, reduce CH_4 and HFC emissions, help communities and industry become more resilient to climate change impacts, and end U.S. lending for coal-fired power plants overseas.~~

~~United Nations Framework Convention on Climate Change Pledge~~

~~On March 31, 2015, the State Department submitted the U.S. target to cut net GHG emissions to the United Nations Framework Convention on Climate Change. The submission, referred to as an Intended Nationally Determined Contribution, is a formal statement of the U.S. target, announced in China, to reduce our emissions by 26%–28% below 2005 levels by 2025, and to make best efforts to reduce by 28% (C2ES 2016). The target reflects a planning process that examined opportunities under existing regulatory authorities to reduce emissions in 2025 of all GHGs from all sources in every economic sector. Several U.S. laws, as well as existing and proposed regulations thereunder, are relevant to the implementation of the U.S. target, including the CAA (42 U.S.C. 7401 et seq.), the Energy Policy Act (42 U.S.C. 13201 et seq.), and the Energy Independence and Security Act (42 U.S.C. 17001 et seq.).~~

Clean Power Plan and New Source Performance Standards for Electric Generating Units

On October 23, 2015, the EPA published a final rule (effective December 22, 2015) establishing the Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units (80 FR 64510–64660), also known as the Clean Power Plan. These guidelines prescribe how states must develop plans to reduce GHG emissions from existing fossil-fuel-fired electric generating units. The guidelines establish CO_2 emission performance rates representing the best system of emission reduction for two subcategories of existing fossil-fuel-fired electric generating units: (1) fossil-fuel-fired electric utility steam-generating units and (2) stationary combustion turbines. Concurrently, the EPA published a final rule (effective October 23, 2015) establishing Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units (80 FR 64661–65120). The rule prescribes CO_2 emission standards for newly constructed, modified, and reconstructed affected fossil-fuel-fired electric utility generating units. Implementation of the Clean Power Plan has been stayed by the U.S. Supreme Court pending resolution of several lawsuits.

~~Mandatory Greenhouse Gas Reporting Rule~~

~~On September 22, 2009, the EPA published the Final Mandatory Greenhouse Gas Reporting Rule (Reporting Rule) in the Federal Register (74 FR 56260–56373). The Reporting Rule requires reporting of GHG data and other relevant information from fossil fuel and industrial GHG suppliers, vehicle and engine manufacturers, and all~~

~~facilities that would emit 25,000 MT CO_2E or more per year. Facility owners are required to submit an annual report with detailed calculations of facility GHG emissions on March 31 for emissions from the previous calendar year. The Reporting Rule also mandates recordkeeping and administrative requirements to enable EPA to verify the annual GHG emissions reports.~~

Council on Environmental Quality Guidance

National Environmental Policy Act Guidelines on GHG. The Council on Environmental Quality (CEQ) issued Final GHG guidance on August 1, 2016, to assist federal lead agencies with GHG significance determinations under the National Environmental Policy Act associated with federal actions. This guidance supersedes the draft GHG and climate change guidance released by CEQ in 2010 and 2014. The guidance states that CEQ "does not establish any particular quantity of GHG emission as 'significantly' affecting the quality of the human environment or give greater consideration to the effects of GHG emissions and climate change over other effects on the human environment" (CEQ 2016). As such, the adopted 2016 CEQ guidance does not specify a numeric threshold under which a proposed project as quantitatively analyzed under the National Environmental Policy Act would be considered not adverse. Nonetheless, the guidance recommends direct and indirect GHG emissions be quantified and disclosed (if quantification of emissions is feasible) and supplemented with a qualitative analysis of the project's contribution to and effect on global climate change. The guidance also calls for agencies to consider how climate change could affect proposed actions and asserts that agencies should identify opportunities for adaptation to enable the selection of more resilient actions. This guidance was withdrawn by the CEQ on April 5, 2017, as published in the Federal Register Volume 82, Number 64, Section 16576 (82 FR 16576–16577) as directed by Executive Order 13783.

State

The statewide GHG emissions regulatory framework is summarized below by category: state climate change targets, building energy, renewable energy and energy procurement, mobile sources, solid waste, water, and other state regulations and goals. The following text describes Executive Orders (EO), Assembly Bills (AB), Senate Bills (SB), and other regulations and plans that would directly or indirectly reduce GHG emissions.

State Climate Change Targets

Executive Order S-3-05. EO S-3-05 (June 2005) established California's GHG emissions reduction targets and assigned responsibilities among the state agencies for implementing the EO and for reporting on progress toward the targets. EO S-3-05 established the following targets:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80% below 1990 levels.

EO S-3-05 directed the California Environmental Protection Agency to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The Climate Action Team was formed, which subsequently issued reports from 2006 to 2010.

Assembly Bill 32 and CARB Scoping Plan. In furtherance of the goals established in EO S-3-05, the legislature enacted AB 32 (Núñez and Pavley), the California Global Warming Solutions Act of 2006 (September 27, 2006). AB 32 requires California to reduce its GHG emissions to 1990 levels by 2020, representing a reduction of approximately 15% below emissions expected under a "Business-As-Usual" (BAU) scenario.

CARB has been assigned responsibility for carrying out and developing the programs and requirements necessary to achieve the goals of AB 32. Under AB 32, CARB must adopt regulations requiring the reporting and verification of statewide GHG emissions. This program will be used to monitor and enforce compliance with the established standards. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 also authorized CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted.

In 2007, CARB approved a statewide limit on the GHG emissions level for year 2020 consistent with the determined 1990 baseline (427 MMT CO_2E). CARB's adoption of this limit is in accordance with Health and Safety Code Section 38550. In addition to the 1990 emissions inventory, CARB also adopted regulations requiring mandatory reporting of GHGs for the large facilities that account for 94% of GHG emissions from industrial and commercial stationary sources in California.

Further, in 2008, CARB adopted the Climate Change Scoping Plan: A Framework for Change (Scoping Plan) in accordance with Health and Safety Code, Section 38561. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions for various emission sources/sectors to 1990 levels by 2020. The 2020 emissions limit was set at 427 MMT of CO_2E. The Scoping Plan establishes an overall framework for a suite of measures that will be adopted to sharply reduce California's GHG emissions. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction features by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program. The key elements of the Scoping Plan include the following (CARB 2008):

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards.
2. Achieving a statewide renewable energy mix of 33%.
3. Developing a California Cap-and-Trade Program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions.
4. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets.
5. Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard.
6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.

In the Scoping Plan, CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of approximately 28.5% from the otherwise projected 2020 emissions level, i.e., those emissions that would occur in 2020, absent GHG-reducing laws and regulations (referred to as "Business-As-Usual" (BAU)).

In the 2011 Final Supplement to the Scoping Plan's Functional Equivalent Document, CARB revised its estimates of the projected 2020 emissions level in light of the economic recession and the availability of updated information about GHG reduction regulations (CARB 2011a). Based on the new economic data, CARB determined that achieving the 1990 emissions level by 2020 would require a reduction in GHG emissions of 21.7% (down from 28.5%) from the BAU conditions. When the 2020 emissions level projection also was updated to account for newly implemented regulatory measures, including Pavley I (model years 2009–2016) and the Renewable Portfolio Standard (12% to 20%), CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of 16% (down from 28.5%) from the BAU conditions.

In 2014, CARB adopted the First Update to the Climate Change Scoping Plan: Building on the Framework (First Update; CARB 2014). The stated purpose of the First Update is to "highlight California's success to date in reducing its GHG emissions and lay the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80% below 1990 levels by 2050." The First Update found that California is on track to meet the 2020 emissions reduction mandate established by AB 32, and noted that California could reduce emissions further by 2030 to levels squarely in line with those needed to stay on track to reduce emissions to 80% below 1990 levels by 2050 if the state realizes the expected benefits of existing policy goals.

In conjunction with the First Update, CARB identified "six key focus areas comprising major components of the state's economy to evaluate and describe the larger transformative actions that will be needed to meet the state's more expansive emission reduction needs by 2050" (CARB 2014). Those six areas are: (1) energy, (2) transportation (vehicles/equipment, sustainable communities, housing, fuels, and infrastructure), (3) agriculture, (4) water, (5) waste management, and (6) natural and working lands. The First Update identifies key recommended actions for each sector that will facilitate achievement of Executive Order S-3-05's 2050 reduction goal.

Based on CARB's research efforts presented in the First Update, CARB has a "strong sense of the mix of technologies needed to reduce emissions through 2050" (CARB 2014). Those technologies include energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and, the rapid market penetration of efficient and clean energy technologies.

As part of the First Update, CARB recalculated the state's 1990 emissions level using more recent GWPs identified by the IPCC. Using the recalculated 1990 emissions level (431 MMT CO_2E) and the revised 2020 emissions level projection identified in the 2011 Final Supplement, CARB determined that achieving the 1990 emissions level by 2020 would require a reduction in GHG emissions of approximately 15% (instead of 28.5% or 16%) from the BAU conditions. The update also recommends that a statewide mid-term target and mid-term and long-term sector targets be established toward meeting the 2050 goal established by EO S-3-05 (i.e., reduce California's GHG emissions to 80% below 1990 levels), although no specific recommendations are made.

On January 20, 2017, CARB released The 2017 Climate Change Scoping Plan Update (Second Update) for public review and comment (CARB 2017). This update to the scoping plan proposes CARB's strategy for achieving the state's 2030 GHG target, including continuing the Cap-and-Trade Program through 2030, and includes a new approach to reduce GHGs from refineries by 20%. The Second Update incorporates approaches to cutting super pollutants from the Short-Lived Climate Pollutants Strategy, and acknowledges the need for reducing emissions in agriculture and highlights the work underway to ensure that California's natural and working lands increasingly sequester carbon. During development of the Second Update, CARB held a number of public workshops in the natural and working lands, agriculture, energy, and transportation sectors to inform development of the 2030 Scoping Plan Update. When discussing project-level GHG emissions reduction actions and thresholds, the Second Update states "achieving no net increase in GHG emissions is the correct overall objective, but it may not be appropriate or feasible for every development project. And the inability to mitigate a project's GHG emissions to zero does not necessarily imply a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA" (CARB 2017). The deadline to submit comments on the Second Update was March 6, 2017. It is expected that the Second Update will be heard by the CARB at the April 27 and 28, 2017, CARB meeting.

EO B-18-12. EO B-18-12 (April 2012) directs state agencies, departments, and other entities under the governor's executive authority to take action to reduce entity-wide GHG emissions by at least 10% by 2015 and 20% by 2020, as measured against a 2010 baseline. EO B-18-12 also established goals for existing state buildings for reducing grid-based energy purchases and water use.

EO B-30-15. EO B-30-15 (April 2015) identified an interim GHG reduction target in support of targets previously identified under S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. To facilitate achievement of this goal, EO B-30-15 calls for an update to CARB's Scoping Plan to express the 2030 target in terms of MMT CO_2E. The EO also calls for state agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets. Sector-specific agencies in transportation, energy, water, and forestry were required to prepare GHG reduction plans by September 2015, followed by a report on action taken in relation to these plans in June 2016. EO B-30-15 does not require local agencies to take any action to meet the new interim GHG reduction threshold.

SB 32 and AB 197. SB 32 and AB 197 (enacted in 2016) are companion bills that set a new statewide GHG reduction targets, make changes to CARB's membership, increase legislative oversight of CARB's climate change-based activities, and expand dissemination of GHG and other air quality-related emissions data to enhance transparency and accountability. SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40% below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, in order to provide ongoing oversight over implementation of the state's climate policies. AB 197 also added two members of the legislature to CARB as nonvoting members; requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and TACs from reporting facilities; and, requires CARB to identify specific information for GHG emissions reduction measures when updating the scoping plan.

Short-Lived Climate Pollutant Reduction Strategy — SB 605 and SB 1383. SB 605 (September 2014) requires CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants in the state no later than January 1, 2016. As defined in the statute, short-lived climate pollutant means "an agent that has a relatively short lifetime in the atmosphere, from a few days to a few decades, and a warming influence on the climate that is more potent than that of carbon dioxide"

(SB 605). SB 605, however, does not prescribe specific compounds as short-lived climate pollutants or add to the list of GHGs regulated under AB 32. In developing the strategy, CARB must complete an inventory of sources and emissions of short-lived climate pollutants in the state based on available data, identify research needs to address any data gaps, identify existing and potential new control measures to reduce emissions, and prioritize the development of new measures for short-lived climate pollutants that offer co-benefits by improving water quality or reducing other criteria air pollutants that impact community health and benefit disadvantaged communities. The Proposed Short-Lived Climate Pollution Reduction Strategy released by CARB in April 2016 focuses on methane, black carbon, and fluorinated gases, particularly HFCs, as important short-lived climate pollutants. The strategy recognizes emission reduction efforts implemented under AB 32 (e.g., refrigerant management programs) and other regulatory programs (e.g., in-use diesel engines, solid waste diversion) along with additional measures to be developed.

SB 1383 (Lara) codifies emission reduction targets for short-lived climate pollutants and require CARB to approve and implement a strategy to decrease emissions of these pollutants to achieve a reduction in methane by 40%, hydrofluorocarbon by 40%, and anthropogenic black carbon by 50% below 2013 levels by 2030.

Building Energy

Title 24, Part 6. Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically establishes Building Energy Efficiency Standards that are designed to ensure new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. The California Energy Commission (CEC) is required by law to adopt standards every 3 years that are cost effective for homeowners over the 30-year lifespan of a building. These standards are updated to consider and incorporate new energy efficient technologies and construction methods. As a result, these standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment.

The current Title 24 standards are the 2013 standards, which became effective on July 1, 2014. Buildings constructed in accordance with the 2013 standards will use 25% less energy for lighting, heating, cooling, ventilation, and water heating than the 2008 standards (CEC 2014).

The 2016 Title 24 building energy efficiency standards, which will be effective January 1, 2017, will further reduce energy used and associated GHG emissions. In general, single-family homes built to the 2016 standards are anticipated to use about 28% less energy for lighting, heating, cooling, ventilation, and water heating than those built to the 2013 standards, and nonresidential buildings built to the 2016 standards will use an estimated 5% less energy than those built to the 2013 standards (CEC 2015). Although the North City Project would be required to comply with 2016 Title 24 standards because its building construction phase would commence after January 1, 2017, this analysis conservatively does not quantify the increase energy efficiency associated with the more stringent 2016 Title 24 standards.

Title 24, Part 11. In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as CALGreen, and establishes minimum mandatory standards as well as voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential and state-owned buildings and schools and hospitals. The CALGreen 2016 standards will become effective January 1, 2017. The mandatory standards require the following (24 CCR Part 11):

- Mandatory reduction in indoor water use through compliance with specified flow rates for plumbing fixtures and fittings.
- Mandatory reduction in outdoor water use through compliance with a local water efficient landscaping ordinance or the California Department of Water Resources' Model Water Efficient Landscape Ordinance.
- 65% of construction and demolition waste must be diverted from landfills.
- Mandatory inspections of energy systems to ensure optimal working efficiency.
- Inclusion of electric vehicle charging stations or designated spaces capable of supporting future charging stations.
- Low-pollutant emitting exterior and interior finish materials, such as paints, carpets, vinyl flooring, and particle boards.

The CALGreen standards also include voluntary efficiency measures that are provided at two separate tiers and that are implemented at the discretion of local agencies and applicants. CALGreen's Tier 1 standards call for a 15% improvement in energy requirements, stricter water conservation, 65% diversion of construction and demolition waste, 10% recycled content in building materials, 20% permeable paving, 20% cement reduction, and cool/solar-reflective roofs. CALGreen's more rigorous Tier 2 standards call for a 30% improvement in energy requirements, stricter water conservation, 75% diversion of construction and demolition waste, 15% recycled content in building materials, 30% permeable paving, 25% cement reduction, and cool/solar-reflective roofs.

The California Public Utilities Commission (CPUC), CEC, and CARB also have a shared, established goal of achieving zero net energy for new construction in California. The key policy timelines include (1) all new residential construction in California will be zero net energy by 2020, and (2) all new commercial construction in California will be zero net energy by 2030.[2]

Title 20. Title 20 of the California Code of Regulations requires manufacturers of appliances to meet state and federal standards for energy and water efficiency. Performance of appliances must be certified through the CEC to demonstrate compliance with standards. New appliances regulated under Title 20 include refrigerators, refrigerator-freezers, and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing for each type of appliance covered under the regulations, and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains the following three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

2 See CPUC 2013, California's Zero Net Energy Policies and Initiatives. It is expected that achievement of the zero net energy goal will occur via revisions to the Title 24 standards.

Renewable Energy and Energy Procurement

SB 1078. SB 1078 (Sher; September 2002) established the Renewable Portfolio Standard (RPS) program, which requires an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107, EO S-14-08, and EO S-21-09.)

SB 1368. In September 2006, Governor Schwarzenegger signed SB 1368, which requires the CEC to develop and adopt regulations for GHG emission performance standards for the long-term procurement of electricity by local publicly owned utilities. These standards must be consistent with the standards adopted by the CPUC.

EO S-14-08. EO S-14-08 (November 2008) focuses on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. This EO requires that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the EO directs state agencies to take appropriate actions to facilitate reaching this target. The California Natural Resources Agency (CNRA), through collaboration with the CEC and California Department of Fish and Wildlife (formerly the California Department of Fish and Game), is directed to lead this effort.

EO S-21-09. EO S-21-09 (September 2009) directed CARB to adopt a regulation consistent with the goal of EO S-14-08 by July 31, 2010. CARB is further directed to work with the CPUC and CEC to ensure that the regulation builds upon the RPS program and is applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB is to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health and that can be developed the most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB adopted regulations to implement a Renewable Electricity Standard, which would achieve the goal of the EO with the following intermediate and final goals: 20% for 2012–2014, 24% for 2015–2017, 28% for 2018–2019, and 33% for 2020 and beyond. Under the regulation, wind; solar; geothermal; small hydroelectric; biomass; ocean wave, thermal, and tidal; landfill and digester gas; and biodiesel would be considered sources of renewable energy. The regulation would apply to investor-owned utilities and public (municipal) utilities.

SB X1 2. SB X1 2 (April 2011) expanded the RPS by establishing a goal of 20% of the total electricity sold to retail customers in California per year by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location.

SB 350. SB 350 (October 2015) expands the RPS by establishing a goal of 50% of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 includes the goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses on which an energy-efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires the CPUC, in consultation with the CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal.

Mobile Sources

AB 1493. In a response to the transportation sector accounting for more than half of California's CO_2 emissions, AB 1493 (Pavley) was enacted in July 2002. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles that are primarily used for noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. When fully phased in, the near-term (2009–2012) standards will result in a reduction of about 22% in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term (2013–2016) standards will result in a reduction of about 30%.

EO S-1-07. Issued on January 18, 2007, EO S-1-07 sets a declining Low Carbon Fuel Standard for GHG emissions measured in CO_2E grams per unit of fuel energy sold in California. The target of the Low Carbon Fuel Standard is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020. The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered.

SB 375. SB 375 (Steinberg) (September 2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans, was enacted into law. SB 375 required CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035. Regional metropolitan planning organizations are then responsible for preparing a Sustainable Communities Strategy within their Regional Transportation Plan. The goal of the Sustainable Communities Strategy is to establish a forecasted development pattern for the region that, after considering transportation measures and policies, will achieve, if feasible, the GHG reduction targets. If a Sustainable Communities Strategy is unable to achieve the GHG reduction target, a metropolitan planning organization must prepare an Alternative Planning Strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

Pursuant to Government Code Section 65080(b)(2)(K), a sustainable communities strategy does not: (i) regulate the use of land; (ii) supersede the land use authority of cities and counties; or (iii) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it. Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process.

In 2010, CARB adopted the SB 375 targets for the regional metropolitan planning organizations. The targets for the San Diego Association of Governments (SANDAG) are a 7% reduction in emissions per capita by 2020 and a 13% reduction by 2035.

SANDAG completed and adopted its 2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) in October 2011. In November 2011, CARB, by resolution, accepted SANDAG's GHG emissions quantification analysis and determination that, if implemented, the SCS would achieve CARB's 2020 and 2035 GHG emissions reduction targets for the region.

After SANDAG's 2050 RTP/SCS was adopted, a lawsuit was filed by the Cleveland National Forest Foundation and others. In November 2014, Division One of the Fourth District Court of Appeal issued its decision in *Cleveland National Forest Foundation v. SANDAG*, Case No. D063288. In its decision, the Fourth District held that SANDAG abused its discretion when it certified the environmental impact report (EIR) for the 2050 RTP/SCS because it did not adequately analyze and mitigate GHG emission levels after year 2020. The 2050 RTP/SCS EIR complied with CARB's AB 32-related GHG reduction target through 2020, but the EIR found that plan-related emissions would substantially increase after 2020 and through 2050. The majority of the Fourth District in the *Cleveland National* decision found SANDAG's EIR deficient because, although the EIR used three significance thresholds authorized by California Environmental Quality Act (CEQA) Guidelines, Section 15064.4(b), it did not assess the 2050 RTP/SCS's consistency with the 2050 GHG emissions goal identified in EO S-03-05, which the majority construed as "state climate policy." The Fourth District did not require the set aside of SANDAG's 2050 RTP/SCS itself. In March 2015, the California Supreme Court granted SANDAG's petition for review of the Fourth District's decision (Case No. S223603), and the matter currently is pending before the state's highest court.

Although the EIR for SANDAG's 2050 RTP/SCS is still pending before the California Supreme Court, SANDAG recently adopted the next iteration of its RTP/SCS in accordance with statutorily mandated timelines. More specifically, in October 2015, SANDAG adopted San Diego Forward: The Regional Plan. Like the 2050 RTP/SCS, this planning document meets CARB's 2020 and 2035 reduction targets for the region (SANDAG 2015).

Advanced Clean Cars Program and Zero-Emissions Vehicle Program. In January 2012, CARB approved the Advanced Clean Cars program, a new emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars (CARB 2011b). To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that in 2025, cars will emit 75% less smog-forming pollution than the average new car sold today. To reduce GHG emissions, CARB, in conjunction with the EPA and the NHTSA, has adopted new GHG standards for model year 2017 to 2025 vehicles; the new standards are estimated to reduce GHG emissions by 34% in 2025. The zero-emission vehicle program will act as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of zero-emission vehicles and plug-in hybrid electric vehicles in the 2018 to 2025 model years. The Clean Fuels Outlet regulation will ensure that fuels such as electricity and hydrogen are available to meet the fueling needs of the new advanced technology vehicles as they come to the market.

EO B-16-12. EO B-16-12 (March 2012) requires that state entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emissions vehicles. It orders CARB, the CEC, the CPUC, and other relevant agencies work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve benchmark goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 establishes a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050. This directive does not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare.

Water

EO B-29-15. In response to the ongoing drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25% relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives have become permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the state. In response to EO B-29-15, the California Department of Water Resources has modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency and broadens its applicability to include new development projects with smaller landscape areas.

Solid Waste

AB 939 and AB 341. In 1989, AB 939, known as the Integrated Waste Management Act (California Public Resources Code Section 40000 et seq.), was passed because of the increase in waste stream and the decrease in landfill capacity. The statute established the California Integrated Waste Management Board, which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25% by 1995 and 50% by the year 2000.

AB 341 (Chapter 476, Statutes of 2011 (Chesbro)) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75% of solid waste generated be source-reduced, recycled, or composted by the year 2020, and annually thereafter. In addition, AB 341 required the California Department of Resources Recycling and Recovery (CalRecycle) to develop strategies to achieve the state's policy goal. CalRecycle conducted several general stakeholder workshops and several focused workshops and in August 2015 published a discussion document titled AB 341 Report to the legislature, which identifies five priority strategies that CalRecycle believes would assist the state in reaching the 75% goal by 2020, legislative and regulatory recommendations, and an evaluation of program effectiveness.

Other State Regulations and Goals

SB 97. SB 97 (Dutton) (August 2007) directs the Governor's Office of Planning and Research (OPR) to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, OPR issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents, which indicated that a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities, should be identified and estimated (OPR 2008). The advisory further recommended that the Lead Agency determine significance of the impacts and impose all mitigation measures necessary to reduce GHG emissions to a level that is less than significant. The CNRA adopted the CEQA Guidelines amendments in December 2009, which became effective in March 2010.

Under the amended CEQA Guidelines, a Lead Agency has the discretion to determine whether to use a quantitative or qualitative analysis or apply performance standards to determine the significance of GHG emissions resulting from a particular project (Section 15064.4(a)). The CEQA Guidelines require that a Lead Agency to consider 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 (Section 15064.4(b)). The CEQA Guidelines also allow lead agencies to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures. The adopted amendments do not establish a GHG emission threshold, instead allowing a Lead Agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts. The CNRA also acknowledges that a Lead

Agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions (CNRA 2009).

EO S-13-08. EO Order S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. It directs state agencies to take specified actions to assess and plan for such impacts. It directs the CNRA, in cooperation with the California Department of Water Resources, CEC, California's coastal management agencies, and the Ocean Protection Council, to request that the National Academy of Sciences prepare a Sea Level Rise Assessment Report by December 1, 2010. The Ocean Protection Council, California Department of Water Resources, and CEC, in cooperation with other state agencies, are required to conduct a public workshop to gather information relevant to the Sea Level Rise Assessment Report. The Business, Transportation, and Housing Agency was ordered to assess within 90 days of issuance of the EO the vulnerability of the state's transportation systems to sea-level rise. The OPR and the CNRA are required to provide land use planning guidance related to sea-level rise and other climate change impacts. The EO also required the other state agencies to develop adaptation strategies by June 9, 2009, to respond to the impacts of global climate change that are predicted to occur over the next 50 to 100 years. A discussion draft adaptation strategies report was released in August 2009, and the final 2009 California Climate Adaptation Strategy report was issued in December 2009 (CNRA 2009). An update to the 2009 report, Safeguarding California: Reducing Climate Risk, was issued in July 2014 (CNRA 2014). To assess the state's vulnerability, the report summarizes key climate change impacts to the state for the following areas: agriculture, biodiversity and habitat, emergency management, energy, forestry, ocean and coastal ecosystems and resources, public health, transportation, and water.

2015 State of the State Address. In January 2015, Governor Brown in his inaugural address and annual report to the legislature established supplementary goals, which would further reduce GHG emissions over the next 15 years. These goals include an increase in California's renewable energy portfolio from 33% to 50%, a reduction in vehicle petroleum use for cars and trucks by up to 50%, measures to double the efficiency of existing buildings, and decreasing emissions associated with heating fuels.

2016 State of the State Address. In his January 2016 address, Governor Brown established a statewide goal to bring per-capita GHG emissions down to 2 tons per person, which reflects the goal of the Global Climate Leadership

Memorandum of Understanding (Under 2 MOU; OPR 2016) to limit global warming to less than 2°C by 2050. The Under 2 MOU agreement pursues emission reductions of 80% to 95% below 1990 levels by 2050 and/or reach a per-capita annual emissions goal of less than 2 MT by 2050. A total of 135 jurisdictions representing 32 countries and 6 continents, including California, have signed or endorsed the Under 2 MOU (OPR 2016).

Local

San Diego Air Pollution Control District

In San Diego County, the San Diego Air Pollution Control District is the agency responsible for protecting public health and welfare through the administration of federal and state air quality laws and policies. SDAPCD currently has no regulations relative to GHG emissions. However, some rules and regulations that address criteria air pollutants may also have a co-benefit for GHG emissions.

City of San Diego General Plan

The State of California requires cities and counties to prepare and adopt a general plan to set out a long-range vision and comprehensive policy framework for its future. The state also mandates that the plan be updated periodically to ensure relevance and utility. The City of San Diego General Plan (General Plan) was unanimously adopted by the City Council on March 10, 2008, with additional amendments approved in December 2010, January 2012, and June 2015. The General Plan builds upon many of the goals and strategies of the former 1979 General Plan, in addition to offering new policy direction in the areas of urban form, neighborhood character, historic preservation, public facilities, recreation, conservation, mobility, housing affordability, economic prosperity, and equitable development. It recognizes and explains the critical role of the community planning project as the vehicle to tailor the City of Villages strategy for each neighborhood. It also outlines the plan amendment process, and other implementation strategies, and considers the continued growth of the City beyond the year 2020 (City of San Diego 2008).

Conservation Element. The Conservation Element contains policies to guide the conservation of resources that are fundamental components of San Diego's environment, that help define the City's identity, and that are relied upon for continued economic prosperity. The purpose of this element is to help the City become an international model of sustainable development and conservation and to provide for the long-term conservation and sustainable management of the rich natural resources that help define the City's identity, contribute to its economy, and improve its quality of life.

The City has also adopted the following General Plan Conservation Element policies related to climate change:

- ***CE-A.2.*** Reduce the City's carbon footprint. Develop and adopt new or amended regulations, programs, and incentives as appropriate to implement the goals and policies set forth in the General Plan to:
  - Create sustainable and efficient land use patterns to reduce vehicular trips and preserve open space;
  - Reduce fuel emission levels by encouraging alternative modes of transportation and increasing fuel efficiency;
  - Improve energy efficiency, especially in the transportation sector and buildings and appliances;
  - Reduce the Urban Heat Island effect through sustainable design and building practices, as well as planting trees (consistent with habitat and water conservation policies) for their many environmental benefits, including natural carbon sequestration;
  - Reduce waste by improving management and recycling programs;
  - Plan for water supply and emergency reserves.
- ***CE-A.8.*** Reduce construction and demolition waste in accordance with Public Facilities Element, Policy PF-1.2, or by renovating or adding on to existing buildings, rather than constructing new buildings.
- ***CE-A.9.*** Reuse building materials, use materials that have recycled content, or use materials that are derived from sustainable or rapidly renewable sources to the extent possible, through factors including:
  - Scheduling time for deconstruction and recycling activities to take place during project demolition and construction phases;
  - Using life cycle costing in decision-making for materials and construction techniques. Life cycle costing analyzes the costs and benefits over the life of a particular product, technology, or system.

- ***CE-F.3.*** Continue to use methane as an energy source from inactive and closed landfills.
- ***CE-I.4.*** Maintain and promote water conservation and waste diversion programs to conserve energy.
- ***CE-I.5.*** Support the installation of photovoltaic panels, and other forms of renewable energy production.
  - Seek funding to incorporate renewable energy alternatives in public buildings.
  - Promote the use and installation of renewable energy alternatives in new and existing development.
- ***CE-I.10.*** Use renewable energy sources to generate energy to the extent feasible.

City of San Diego Sustainable Community Program

On January 29, 2002, the San Diego City Council unanimously approved the San Diego Sustainable Community Program (City of San Diego 2005). Actions identified include:

1. Participation in the Cities for Climate Protection program coordinated through the International Council of Local Environmental Initiatives;
2. Establishment of a 15% GHG reduction goal set for 2010, using 1990 as a baseline; and
3. Direction to use the recommendations of a scientific Ad Hoc Advisory Committee as a means to improve the GHG Emission Reduction Action Plan within the City organization and to identify additional community actions.

City of San Diego Climate Protection Action Plan

In 2005, the City of San Diego released a Climate Protection Action Plan (City of San Diego 2005). This report includes many of the recommendations provided by the Ad Hoc Advisory Committee and City staff. By implementing these recommendations, the City could directly address the challenges relating to mitigation for state and federal ozone standards nonattainment (with associated health benefits) and enhanced economic prosperity, specifically related to the tourism and agricultural sectors.

The Climate Protection Action Plan evaluated citywide GHG emissions, particularly three contentions: (1) the GHG projection in 2010 resulting from no action taken to curb emissions, (2) the GHG emission reductions due to City of San Diego actions implemented between 1990 and 2003, and (3) the GHG reductions needed by 2010 to achieve 15% reduction. The Climate Protection Action Plan does not recommend or require specific strategies or measures for projects within the City to reduce emissions (City of San Diego 2005).

City of San Diego Climate Action Plan

In December 2015, the City adopted its final Climate Action Plan (CAP) (City of San Diego 2015). A Program EIR was prepared for the City's CAP, which was certified in December 2015. The CAP quantifies existing GHG emissions as well as projected emissions for the years 2020, 2030, and 2035 resulting from activities within the City's jurisdiction. The CAP and the accompanying certified Final Program EIR also identify and analyze the GHG emissions that would result from the BAU scenario for the years 2020, 2030, and 2035. In addition, the CAP identifies City target emissions levels, below which the citywide GHG impacts would be less than significant.

The CAP was developed in response to state legislation and policies that are aimed at reducing California's GHG emissions. Consistent with AB 32 and the CARB Scoping Plan, the CAP sets a GHG target for 2020 equivalent to 15% below the City's 2010 baseline emissions to ensure that it meets its proportional share of the 2020 AB 32 reductions. For 2035, the CAP sets a GHG target equivalent to a 50% reduction from baseline emissions to ensure it is on the trajectory toward achieving its proportional share of the 2050 state target identified in EO S-3-05. The 2035 target also ensures that the City would be consistent with the 2030 state target identified in EO B-30-15. Since CARB has not provided guidance on a specific reduction target for local governments to use for 2030 and 2050, it was determined that a 50% reduction from baseline emissions by 2035 would ensure that the City achieved a proportional share of the statewide GHG reductions. In terms of consistency with EOs S-3-05 and B-30-15, the CAP's 2035 target provides a conservative target toward achieving the statewide reductions. If CARB provides new guidance on how cities should address the 2030 targets, the City will adjust the CAP accordingly.

With implementation of the CAP, the City aims to reduce emissions 15% below the baseline to approximately 11.1 MMT CO_2E by 2020, 40% below the baseline to approximately 7.8 MMT CO_2E by 2030, and 50% below the baseline to approximately 6.5 MMT CO_2E by 2035. It is anticipated that the City would exceed its reduction target by 1.3 MMT CO_2E in 2020, 176,528 MT CO_2E in 2030, and 127,135 MT CO_2E in 2035 with implementation of the CAP. The CAP relies on significant City and regional actions, continued implementation of federal and state mandates, and five local strategies with associated action steps for target attainment. The City has identified the following five strategies to reduce GHG emissions to achieve the 2020 and 2035 targets:

1. Energy- and water-efficient buildings
2. Clean and renewable energy
3. Bicycling, walking, transit, and land use
4. Zero waste (gas and waste management)
5. Climate resiliency

Implementation of the CAP is divided into three actions:

- Early Actions (Adoption of the CAP-December 31, 2017)
- Mid-Term Actions (January 1, 2018-December 31, 2020)
- Longer-Term Actions (2021-2035)

The CAP contains five chapters: Background, Reducing Emissions, Implementation and Monitoring, Social Equity and Job Creation, and Adaptation. The 2015 CAP demonstrates to San Diego businesses and residents that the City acknowledges the existing and potential impacts of a changing climate and is committed to keeping it in the forefront of decision-making. Successful implementation of the CAP will (1) prepare for anticipated climate change impacts in the coming decades, (2) help the State of California achieve its reduction target by contributing the City's fair share of GHG reductions, and (3) have a positive impact on the regional economy.

The CAP includes a monitoring and reporting program to ensure its progress toward achieving the specified GHG emissions reductions, and specifies 17 actions that, if implemented, would achieve the specified GHG emissions reductions targets. The CAP was adopted in a public process following certification of the Final Program EIR. Subsequent to the adoption of the CAP, the City has also established additional specific measures that if implemented on a project-by-project basis, would further ensure that the City as a whole achieves the specified GHG emissions reduction targets in the CAP.

On July 12, 2016, The City amended the CAP to include a Consistency Review Checklist, which is intended to provide a streamlined review process for the GHG emissions analysis of proposed new development projects that are subject to discretionary review and trigger environmental review pursuant to CEQA. The CAP Consistency Checklist provides a streamlined review process for the GHG emissions analysis of proposed new development projects that are subject to discretionary review and trigger environmental review pursuant to CEQA. This checklist is part of the CAP and contains measures that are required to be implemented on a project-by-project basis to ensure that the specified emissions targets identified in the CAP are achieved. Implementation of these measures would ensure that new development is consistent with the CAP's assumptions for relevant CAP strategies toward achieving the identified GHG reduction targets. Projects that are consistent with the CAP as determined through the use of this checklist may rely on the CAP for the cumulative impacts analysis of GHG emissions. Projects that are not consistent with the CAP must prepare a comprehensive project-specific analysis of GHG emissions, including quantification of existing and projected GHG emissions and incorporation of the measures in this checklist to the extent feasible. Cumulative GHG impacts would be significant for any project that is not consistent with the CAP.

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5.9 HEALTH AND SAFETY/HAZARDS

5.9.1 INTRODUCTION

This section addresses the environmental setting and applicable regulations with regards to hazardous materials, wildland fire, emergency response, and airport hazards associated with the North City Project Alternatives (Project Alternatives). The section includes the existing conditions for the locations where the Project Alternatives components would occur and identifies the locations of potentially hazardous materials sites. The information contained in this section was obtained from various sources, including the City of San Diego General Plan (City of San Diego 2008), the Marine Corps Air Station (MCAS) Miramar Airport Land Use Compatibility Plan (ALUC 2011), the San Diego International Airport Land Use Compatibility Plan (ALUC 2014), the Montgomery Field Airport Land Use Compatibility Plan (ALUC 2010a), and the Phase I Environmental Site Assessments (ESAs) prepared for the Morena Pump Station, WW Force Main and Brine Conveyance (Allied Geotechnical Engineers Inc. 2015a); Miramar Pipeline/Pump Station (Allied Geotechnical Engineers Inc. 2016); and the North City to San Vicente Reservoir Pipeline Project (Allied Geotechnical Engineers Inc. 2015b).

5.9.2 ENVIRONMENTAL SETTING

The study area for the Project Alternatives includes primarily commercial, industrial, and residential areas in the northern and central portions of the City of San Diego (City). Other land uses adjacent to and intersecting the proposed facilities and corridors include MCAS Miramar, the Miramar National Cemetery, and various public works facilities.

5.9.2.1 Wildfire Hazards

Due to climate, topography, and native vegetation, the City is subject to both wildland and urban fires. In October 2003, over 28,000 acres of the City (12% of City acreage) between the communities of Scripps Ranch and Tierrasanta burned in what was known as the Cedar Fire. Approximately 335 structures, mostly single-family homes, were destroyed, and another 71 structures were damaged. In June 1985, a wildfire started and raced up the canyon hillsides of the dense neighborhood of Normal Heights, destroying 76 homes and damaging dozens more. These fires revealed the severity of the risk of wildland fires and the devastation that can result.

The extended droughts characteristic of the region's Mediterranean climate result in large areas of dry vegetation that provide fuel for wildland fires. The most critical times of year for wildland fires are late summer and fall when Santa Ana winds bring hot, dry desert air into the region. The air temperature quickly dries vegetation, thereby increasing the amount of natural fuel. Development pressures increase the threat of wildland fire on human populations and property as development is located adjacent to areas of natural vegetation.

Figure 5.9-1, Miramar and San Vicente Reservoir Project Alternatives – Fire Hazard Areas, depicts the areas of the City which are within a High Fire Hazard Area. For residents in these areas, wildfire is a potential hazard. The urbanized portions of the City are also subject to structural fires. The San Diego Fire-Rescue Department is responsible for the preparation, maintenance, and execution of fire preparedness and management plans. In the event of a large wildfire within or threatening City limits, they could be assisted by the California Department of Forestry and Fire Protection, Federal Fire Department, or other local fire department jurisdictions.

5.9.2.2 Hazardous Materials Transport, Use, and Disposal

The term "hazardous material" is defined in different ways by various regulatory programs. This Environmental Impact Report/Environmental Impact Statement (EIR/EIS) uses the definition from the California Health and Safety Code, Section 25501(p), which defines a hazardous material as:

> Any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous wastes, and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Existing Uses

Existing facilities that would be improved or expanded as part of the North City Project that currently use hazardous materials include the North City Water Reclamation Plant (NCWRP), the Metro Biosolids Center, and the Miramar Water Treatment Plant (WTP).

North City Water Reclamation Plant

Various chemicals are used throughout NCWRP for odor control, flocculation, settling, disinfection, and water softening. The chemical storage area, located east of the aeration basins, houses the following 10 chemical storage tanks, each with 7,500 gallons of capacity:

- Four SHC tanks
- Two ferrous chloride tanks
- One anionic/nonionic polymer tank
- One cationic polymer tank
- One caustic soda tank
- One alum tank

The chemical storage facility also houses chemical metering and transfer pumps for each chemical system, batch tanks, containment areas, and sump pumps. Various chemical pipelines run through utility trenches from the chemical storage facilities to multiple delivery points within the NCWRP (City of San Diego 2016).

Metro Biosolids Center

This discussion of chemical addition systems is confined to only those chemicals that have a direct impact on the solids processing operations at the Metro Biosolids Center. Sodium hypochlorite (SHC) and sodium hydroxide are stored and handled on site, and use supports the operation of odor control systems.

The two chemicals of interest for the thickening, dewatering and anaerobic digestion facilities are ferrous chloride ($FeCl_2$)[1] and anionic polymer (PEA)[2]. The former is used to control sulfide production in the digesters; the latter is used in conjunction with thickening and dewatering centrifuges to enhance solids removal.

In general, bulk chemicals are stored and diluted at the central Chemical Handling Facility (Area 60). From the central facility, chemicals are pumped to remote day tanks

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1 Ferrous Chloride ($FeCl_2$) is supplied as a liquid solution that is between 28% and 32% active ingredient by weight. The brown liquid has a specific gravity of 1.4 and is supplied by Kemira Inc. A value of 30% active ingredient by weight was used in calculations.

2 Polydyne supplies the anionic polymer Clarifloc 331, which is used for both thickening and dewatering centrifuges. Clarifloc 331 is a Mannich polymer.

and day tanks located in the areas where the chemicals are used. In the case of PEA, the dilute polymer solution is transferred to two separate sets of day tanks: one set serves the dewatering centrifuges and the other serves the thickening centrifuges. In the case of $FeCl_2$, 28% 32% $FeCl_2$ is transferred to either one of two day tanks located in a chemical room adjacent to the pipe galley in Area 80 at the digesters.

Miramar Water Treatment Plant

Ferric chloride and polymer are used as coagulants at the Miramar WTP. Potassium permanganate is used to oxidize iron and manganese, reduce color and turbidity, and improve taste and odors. Sodium hydroxide (caustic) is used to adjust the effluent water pH. Chlorine and ammonia are used for disinfection. Aqua ammonia is added to react with the chlorine, forming chloramine. Chloramines are used for a disinfection residual in the distribution system (City of San Diego 2007).

The City typically maintains a 30-day supply of all critical chemicals. More chemicals are ordered when no less than 10-day supply remains. Manufacturers from throughout the United States supply the chemicals.

Aerially Deposited Lead

Pipelines constructed as part of the North City Project would primarily be located within roadway rights-of-way. Until the mid-1980s, gasoline and other fuels contained lead as an additive. Tiny particles of lead were emitted from car exhaust and settled on the soils adjacent to freeways and roads, which has resulted in a buildup of lead alongside roads. During construction in roadways (primarily within 30 feet of the edge of pavement and within the top 6 inches of soil), the California Department of Transportation has found levels of lead higher than Department of Toxic Substances Control's (DTSC's) specifications.

In 1996, DTSC granted a variance allowing road construction projects to reuse soils containing lead from motor vehicle exhaust on the project site for specific purposes. As of July 1, 2016, DTSC and the California Department of Transportation entered into a Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils that supersedes the prior aerially deposited lead variance.

Transportation of Hazardous Materials

Hazardous materials pass through the City via the freeway, rail, and surface street system. Interstate 5 (I-5), I-805, I-8, and I-15, and State Route 56 (SR-56), SR-52, SR-

94, SR-163, and SR-905 pass through the City. The BNSF Railway runs generally parallel to I-5. While train derailment can occur at any time, it is during an earthquake that a derailment and hazardous materials release would pose the greatest risk. The major automotive transportation routes through the City include the freeways previously listed, as well as dozens of major arterial roads dispersed across the City.

The City has no direct authority to regulate the transport of hazardous materials on state highways or rail lines. Transportation of hazardous materials by truck and rail is regulated by the U.S. Department of Transportation. The department's regulations establish criteria for safe handling procedures. Federal safety standards are also included in the California Administrative Code. The California Health Services Department regulates the haulers of hazardous waste.

Emergency Preparedness

Local emergency operations plans are intended to help local jurisdictions respond to emergency situations with a coordinated system of emergency service providers and facilities. San Diego recently updated its 1995 Multi-Hazard Functional Plan and modernized its Emergency Operations Center. The City would continue to make regular modifications to these in the future as hazards, threats, population and land use, or other factors change. The plan identifies resources available for emergency response and establishes coordinated action plans for specific emergency situations including earthquake, fire, major rail and roadway accidents, flooding, hazardous materials incidents, terrorism, and civil disturbances.

San Diego places a high priority on public disaster education. Citizens are provided a range of emergency management training, including Federal Emergency Management Agency Community Emergency Response Team training, emergency preparedness workshops, disaster presentations at schools, CPR, first aid training, and terrorism awareness training. The Community Emergency Response Team, organized through the San Diego Fire-Rescue Department, is comprised of volunteers who are trained to assist during times of emergency.

The response phase includes increased readiness, initial response, and extended response activities. During an emergency response, the City would generally coordinate activities through its Emergency Operations Center. County, state, and federal emergency response resources are located in San Diego and are available to assist the Emergency Operations Center if a situation demanded additional support.

The Emergency Operations Center is manned 24 hours a day by both public safety and other City personnel to coordinate emergency response activities. Recovery activities involve restoration of services and returning the affected area to pre-emergency conditions as soon as practical. Recovery activities range from restoring water and power to providing information to the public regarding state and federal disaster assistance programs. Mitigation efforts occur both before and after emergencies or disasters. Mitigation includes eliminating or reducing the likelihood of future emergencies.

5.9.2.3 Existing Hazardous Materials Sites

Phase I ESAs have been prepared by Allied Geotechnical Engineers Inc. for each of the following components of the Project Alternatives: Morena Pump Station and Pipelines; North City Pure Water Pipeline and Pump Station; and the San Vicente Reservoir Pure Water Pipeline. Although Phase I ESAs were not completed for other North City Project components, the study areas of the components for which Phase I ESAs were completed cover all of the North City Project components. The following discussion identifies reported hazardous materials sites that exist within the Project Alternatives study area. These areas were identified through a records search of federal, state, and local hazardous materials sites databases; historical records review; site reconnaissance; and interviews. A summary of the environmental records reviewed and the results of the Phase I ESA for each component are provided below.

Records Review

The records review for each component included a review of public records maintained by various federal, state, and local environmental regulatory agencies and was performed by Environmental Data Resources Inc. (EDR). Available database records were reviewed for a 2,000-foot-wide corridor along each Project Alternatives alignment for registered underground storage tanks (USTs) and Resource Conservation and Recovery Act generators; leaking USTs; landfill sites; Comprehensive Environmental Response, Compensation and Liability Information System sites; for Resource Conservation and Recovery Act treatment, storage, and disposal facilities; and for state and federal superfund sites. EDR also provided historical topographic maps, aerial photographs, and Sanborn Fire Insurance Maps for review, which were used to evaluate historical development and land usage along the Project Alternatives alignments.

Morena Pump Station and Pipelines

The EDR report listed a total of 896 sites/cases of Historic Recognized Environmental Condition (HREC) and Controlled REC (CREC) within the boundary of the Morena Pump Station and Pipelines study area. After review, the majority of sites were eliminated as they are not likely to pose a significant environmental hazard. A total of 109 REC sites/cases were identified which are considered to pose a minimal risk to the Morena Pump Station and Pipelines (see Table 1 in Allied Geotechnical Engineers Inc. 2015a for a list of site with minimal potential impact). All these sites/cases previously or currently have USTs and/or aboveground storage tanks ASTs), and documented Leaking UST (LUST) leaks/releases. Some of these sites/cases also have documented major spills, environmental site investigations, mitigations and cleanups. A total of 10 sites/cases were identified which may pose an environmental risk to the Morena Pump Station and Pipelines component. These sites/cases are listed and summarized in Table 5.9-1 below and shown on Figure 5.9-2, Miramar and San Vicente Reservoir Alternatives – Hazardous Materials Sites; additional detail regarding each site can be found in Allied Geotechnical Engineers Inc. 2015a.

Table 5.9-1
Listing of Sites within Morena Pump Station and Pipelines Study Area with High Potential Impact

EDR Map ID	Site ID	Site Name/Address	Primary Business Activity/Operation
7-31	1	University City Chevron 3860 Governor Drive San Diego, California 92122	Gasoline service station
7-31	2	Governor Drive Exxon 3918 Governor Drive San Diego, California 92122	Gasoline service station
7-31	3	Mobil 3861 Governor Drive San Diego, California 92122	Gasoline service station
10-57	4	MIC Gastation Inc. 4592 Clairemont Mesa Boulevard San Diego, California 92117	Former gasoline service station
10-60	5	Shell Oil 3901 Clairemont Drive San Diego, California 92117	Former gasoline service station

Table 5.9-1
Listing of Sites within Morena Pump Station and Pipelines Study Area with High Potential Impact

EDR Map ID	Site ID	Site Name/Address	Primary Business Activity/Operation
10-66	6	Tune Craft #2 3904 Clairemont Drive San Diego, California 92117	Former ARCO gasoline service station
13-87	10	Prestige Stations Inc., #9750 2505 Morena Boulevard San Diego, California 92110	Gasoline service station
16-110	11	Ultramar #3740 1083 Morena Boulevard San Diego, California 92110	Gasoline service station
16-120	12	Former Texaco Station 845 Morena Boulevard San Diego, California 92110	Former gasoline service station
16-120	13	Lloyd Pest Control 935 Sherman Street San Diego, California 92110	Pest control business

Source: Allied Geotechnical Engineers Inc. 2015a.
Note: Site IDs 7, 8 and 9 were removed from the analysis due to revisions to the Morena Pipelines alignment.

North City Pure Water Pipeline

The study boundary for the North City Pure Water Pipeline (North City Pipeline) Phase I ESA (Allied Geotechnical Engineers Inc. 2016) incorporates the sites of the following components in addition to the pipeline: the NCWRP, North City Pure Water Facility (NCPWF) Influent Pump Station, North City Renewable Energy Facility, NCPWF, North City Pump Station, Dechlorination Facility, Miramar WTP, and portions of the Landfill Gas Pipeline (LFG Pipeline). Therefore, the discussion below is also applicable to these components.

The EDR report listed a total of 1,134 sites/cases of HREC and CREC within the boundary of the North City Pipeline study area. After review, the majority of sites were eliminated as they are not likely to pose a significant environmental hazard. A total of 66 REC sites/cases were identified that are considered to pose a minimal risk to the alignment (see Table 1 in Allied Geotechnical Engineers Inc. 2016 for a list of sites with minimal potential impact). All these sites/cases previously or currently have UST and/or AST, and documented LUST leaks/releases. Some of these sites/cases also have documented major spills, environmental site investigations, mitigations, and cleanups. These sites/cases are generally considered to pose minimal risk to the alignment based on the following factors: age and status of the case, unauthorized release at the site generally impact soil only, distance of the site from the pipeline alignment, direction of groundwater at the site being away from the project alignment, depth to groundwater (deeper than proposed pipe invert depth) or lack of groundwater, or other factors.

Two sites/cases were identified which may pose an environmental risk to the North City Pipeline alignment. These sites/cases are listed and summarized in Table 5.9-2 below and shown on Figure 5.9-2; additional details regarding each site can be found in Allied Geotechnical Engineers Inc. 2015a.

Table 5.9-2
Listing of Sites within the North City Pipeline Study Area with High Potential Impact

EDR Map ID	Site ID	Site Name/Address	Primary Business Activity/Operation
12-57	15	Scripps/Miramar Car Wash Chevron 9650 Miramar Rd. San Diego, CA 92126	Car wash/gas station
12-71	16	MCAS Miramar, Site 1A-1D, 1F San Diego, CA 92145	Military installation

Source: Allied Geotechnical Engineers Inc. 2015a.

No sites/cases intersect with the sites of the following facilities: NCPWF, North City Pump Station, and the Dechlorination Facility.

North City Water Reclamation Plant, North City Pure Water Facility Influent Pump Station, and North City Renewable Energy Facility

The NCWRP was identified in Allied Geotechnical Engineers Inc. 2015b as a REC site/case that is considered to pose a minimal risk. A spill of up to 10,800 gallons of odor control make-up water occurred in November 2005 due to clogged drain line. The spill discharged to an on-site storm drain. The NCWRP has also had several minor sewage spills typically of several gallons or less, and a spill of 117 gallons of sodium hypochlorite on August 15, 2008. These spills were contained and cleaned by City personnel. On October 12, 2010, a recycled water spill of 1.4 million gallons occurred at the intersection of Black Mountain Road and Carmel Valley Road. An AST is maintained on the site; no documented leaks have occurred.

Miramar Water Treatment Plant

The Miramar WTP began operation in 1962 and was identified in Allied Geotechnical Engineers Inc. 2016 as a REC site/case that is considered to pose a minimal risk to the alignment. Four USTs were removed prior to 2002. Department of Environmental Health (DEH) case no. H21026-001 was closed in 2003. Impacts were to soil only. AGE (2014) performed a total of 14 soil borings and installed 7 groundwater monitoring wells in 2013 and 2014. No indications of contaminated soil and groundwater were observed during the investigation (Allied Geotechnical Engineers Inc. 2016).

San Vicente Pure Water Pipeline

The study boundary for the San Vicente Pure Water Pipeline (San Vicente Pipeline) Phase I ESA (Allied Geotechnical Engineers Inc. 2015b) overlaps the sites of the following components in addition to the pipeline: the NCWRP, NCPWF Influent Pump Station, North City Renewable Energy Facility, Metro Biosolids Center, and the LFG Pipeline. Therefore, the discussion below is also applicable to these components.

The EDR report listed a total of 323 sites/cases of HREC and CREC within the boundary of the San Vicente Pipeline study area. After review, the majority of sites were eliminated as they were either duplicate listings or are not likely to pose a significant environmental hazard. A total of 96 REC sites/cases were identified which are considered to pose a minimal risk to the alignment (see Table 1 in Allied Geotechnical Engineers Inc. 2015b for a list of sites with minimal potential impact). All these sites/cases previously or currently have UST and/or AST, and documented LUST leaks/releases. Some of these sites/cases also have documented major spills, environmental site investigations, mitigations, and cleanups. These sites/cases are generally considered to pose minimal risk to the alignment based on the following factors: age and status of the case, unauthorized release at the site generally impact soil only, distance of the site from the project alignment, direction of groundwater at the site being away from the project alignment, depth to groundwater (deeper than proposed pipe invert depth) or lack of groundwater, or other factors.

Thirteen sites/cases were identified which may pose an environmental risk to the San Vicente Pipeline alignment. These sites/cases are listed and summarized in Table 5.9-3 below and shown on Figure 5.9-2; additional details regarding each site can be found in Allied Geotechnical Engineers Inc. 2015b.

Table 5.9-3
Listing of Sites within the San Vicente Pipeline Study Area with High Potential Impact

EDR Map ID	Site ID	Site Name/Address	Primary Business Activity/Operation
10-18	17	MCAS Miramar	Military base
13-79	18	7-11 Store #20321866 9750 Cuyamaca Street Santee, CA 92071	Gasoline station and convenience store
7-37	19	Circle K Corp #2981 12320 Willow Road Lakeside, CA 92040	Gasoline station and convenience store
13-83	20	Circle K/Tosco 10219 Mast Boulevard Santee, CA 92071	Gasoline station and convenience store
13-87	21	Mobil 9750 Magnolia Avenue Santee, CA 92071	Gasoline station
14-60	22	7-Eleven Store #26651 10195 Riverford Road Lakeside, CA 92040	Gasoline station and convenience store
15-59	23	7-Eleven #13666 11610 Riverside Drive Lakeside, CA 92040	Gasoline station and conveyance store
18-141	24	South Miramar Landfill Kearny Mesa – sections 25/26 San Diego, CA 92111	Sanitary landfill
18-141	25	West Miramar Landfill 5180 Convoy Street San Diego, CA 92111	Sanitary landfill
23-113	26	7-Eleven Food Store #13661 9251 Carlton Hills Boulevard Santee, CA 92071	Convenience store and gasoline station
23-115	27	Padre Dam Municipal Water District 9120 Carlton Oaks Drive Santee, CA 92071	Water district
28-223	28	Mobil 10496 Clairemont Mesa Boulevard San Diego, CA 92124	Gasoline station
28-272	29	Camp Elliot – J09CA0067 Northern Portion of San Diego County San Diego, CA 92103	Former military base

Source: Allied Geotechnical Engineers Inc. 2015b.

Landfill Gas Pipeline

The North City Pipeline Phase I ESA study area and San Vicente Pipeline Phase I ESA study area both encompass MCAS Miramar. The LFG Pipeline alignment primarily extends through open space and the Miramar National Cemetery within the naval base and the compressor station is located along the northern boundary of Miramar Landfill. Allied Geotechnical Engineers Inc. 2016 identified eight REC sites/cases on MCAS Miramar. All eight sites are considered to pose a minimal risk to the alignment based on the following factors: age and status of the case, unauthorized release at the site generally impacts soil only, distance of the site from the project alignment, direction of groundwater at the site being away from the project alignment, depth to groundwater (deeper than proposed pipe invert depth) or lack of groundwater, or other factors (see Table 1 in Allied Geotechnical Engineers Inc. 2016 for more detail). One REC site/case on MCAS Miramar was identified as potentially posing an environmental risk, as detailed above in Table 5.9-2 (see Figure 5.9-2 – Figure ID 16). However, this site does not intersect with the LFG Pipeline alignment.

During the Phase I ESA for the San Vicente Pipeline, both the Geotracker website and other databases were reviewed, and no active or closed cases were identified within 1,000 feet of the LFG Pipeline alignment (Allied Geotechnical Engineers Inc. 2015b).

The LFG Pipeline alignment and associated compressor station would border the northern boundary of the West Miramar Landfill, which was identified as a hazardous materials site (see Table 5.9-2 and Figure 5.9-2 – Site ID 25).

MCAS Miramar Environmental Restoration Program

The MCAS Miramar Environmental Restoration Program is comprised of two components, the Installation Restoration (IR) Program and Munitions Response Program (MRP). The IR Program identifies, investigates, and cleans up or controls hazardous substances releases from past waste disposal operations and spills at Marine Corps installations. The MRP investigates and cleans up munitions and explosives of concern (MEC) and munitions constituents used or released on MCAS Miramar from past operations and activities. MEC includes unexploded ordnance (UXO), discarded military munitions, and munitions constituents that present an explosive hazard. MEC at MCAS Miramar was the result of munitions debris from training exercises by various military entities during their historical tenure on the installation.

As shown on Figure 5.9-3, MCAS Miramar Installation Restoration Program and Munitions Response Program Sites, an active IR site is located adjacent to the North City Pipeline near the intersection of Miramar Road and Dowdy Drive. A closed MRP site is also located just west of the IR site, adjacent to the North City Pipeline.

An active IR site is located a few hundred feet to the east of the LFG Pipeline alignment (see Figure 5.9-3), but does not intersect the alignment.

A closed IR site which covers the Miramar Landfill is located just north of the San Vicente Pipeline along Copley Park Place (Figure 5.9-3).

No other Project components are located within the vicinity of an active or closed IR or MRP site.

Formerly Used Defense Site – Camp Matthews

The University of California, San Diego (UCSD) (Camp Matthews) Formerly Used Defense Site is located in La Jolla, California, approximately 12 miles north of downtown San Diego.

From 1918 to 1964, Camp Matthews was used by the U. S. Marine Corps as a gunnery range. In 1918, the Marine Corps leased land in San Diego County to build a single, eight-target, 600-yard rifle range. By 1919, the Marine Corps was using the land for a campsite, parade ground, and field instruction. Between 1924 and 1949, Camp Matthews expanded to include 15 active gunnery ranges and various support buildings. Training activities included instruction in the firing and use of small arms, rifles, machine guns, mortars, rockets and hand grenades.

In 1945, a Navy ammunition truck from Fall Brook Naval Ammunition Depot caught fire outside the gates of Camp Matthews. As the fire increased in intensity, the ammunition began to explode, causing damage to housing at Camp Matthews, Camp Callan and La Jolla.

In 1962, Congress directed the Navy to convey the Camp Matthews property to UCSD. The last shots were fired at Camp Matthews in August 1964.

Today, the U.S. Army Corps of Engineers is investigating an area of the former camp, known as Range Complex No. 1 (see Figure 5.9-4, Formerly Used Defense Site – Camp Matthews, Range Complex No. 1). The former range consists 5,056 acres. UCSD currently owns a portion of the former range and has developed the area with educational and research facilities, residential housing, athletic fields, the UCSD School of Medicine and Medical Center, Science Research Park, Mesa Housing, Eleanor Roosevelt College, the Chancellor's Complex and parking. The remaining land has been developed for residential and commercial purposes.

The U.S. Army Corps of Engineers began investigating the former UCSD (Camp Matthews) in 1988 through the Formerly Used Defense Site Program. Subsequent investigations have identified MEC and munitions debris on Range Complex No. 1. Based on these findings and historical information, the U.S. Army Corps of Engineers is conducting a Remedial Investigation and Feasibility Study on Range Complex No. 1 (ACOE n.d.).

5.9.2.4 Aircraft Hazards

Hazards associated with airports can have serious human safety and quality of life impacts. Aviation facilities provide a variety of aviation services to local residents, including civil aviation, government use, business flights, charter flights, flight schools, and helicopter operations. Airport Land Use Compatibility Plans (ALUCPs) are plans that guide property owners and local jurisdictions in determining what types of proposed new land uses are appropriate around airports. Airport safety zones are established for all public airports as part of ALUCPs, and land-use restrictions within safety zones are established to protect people and property on the ground and in the air. Main areas of concern related to airport hazards include over-flight safety, airspace protection, flight patterns, and land-use compatibility.

Airports within the vicinity of the North City Project area include the MCAS Miramar, Montgomery Field Municipal Airport, San Diego International Airport (SDIA), and Gillespie Field Municipal Airport.

MCAS Miramar provides aviation and other facilities and services in support of various Marine Corps and Navy operating units. Established as a military base in 1917 and an airfield during World War II, the base has undergone several changes in command among the Army (briefly), then the Navy and Marine Corps. MCAS Miramar and its facilities have expanded over time as well. Today it encompasses a 36-square-mile area situated within the northern part of the City of San Diego. MCAS Miramar is located north of Kearny Mesa and south of Mira Mesa and straddles I-15. The freeway divides the base into two functionally distinct areas. The airfield and related aviation and industrial facilities occupy the western portion, while the eastern side is largely open land used for various training purposes. MCAS Miramar is designated as a master jet facility and serves both fixed and rotary-wing aircraft. It has three runways, one helicopter landing deck strip, and six helipads.

The maximum presently authorized mission of the airfield is 112,242 annual aircraft operations. The majority of fixed-wing aircraft operations are conducted on Runway 24R, the only runway with precision instrument approach capabilities. Helicopter operations are primarily conducted on either the 1,000-foot-long helicopter landing strip or one of the helipads. As noise abatement measures, fixed and rotary-wing flight routes have been designed to follow major rail lines and highways or to remain over base property. Military readiness requires constant training which includes touch and goes (takeoffs and landings with a close-in circuit around the airport), aircraft carrier simulated landings, practice instrument approaches, and normal departures to and arrivals from other installations or training areas (ALUC 2011).

Montgomery Field is located in the City of San Diego near the interchange of I-805 and SR-163. It is approximately 10 miles northeast of downtown San Diego. Montgomery Field is a major general aviation reliever airport for SDIA, the region's principal commercial airport. Consisting of approximately 549 acres of land, Montgomery Field is owned and operated by the City of San Diego.

Montgomery Field has three runways: two parallel, northwest/southeast, runways (10L-28R and 10R-28L) and a crosswind runway (Runway 5-23) oriented northeast–southwest. The longest runway, 10L-28R, is 4,577 feet in length and is the only runway lighted for nighttime use. It is served by precision instrument landing system as well as non-precision Global Positioning System (GPS) instrument approach capabilities at the southeast (28R) end. Runway 28R has a 1,176-foot displaced arrival threshold, limiting the available arrival length to 3,401 feet. The available departure length for Runway 10L is limited to 3,400 feet by Council Resolution R-280194, adopted by the San Diego City Council in 1992 to reduce noise impacts on residential uses located west of Montgomery Field. The full length of the runway (4,577 feet) is available for departures to the west. Runway 10R-28L is 3,401 feet long and 60 feet wide. Runway 5-23 is 3,400 feet long and 150 feet wide, with the arrival threshold displaced by 390 feet. None of these runway ends have published instrument approaches (ALUC 2010a).

SDIA is the commercial air carrier airport serving the region and is located adjacent to downtown San Diego. Primarily commercial aircraft with a limited number of cargo, general aviation corporate jet, and military aircraft use SDIA, totaling over 210,000 flights per year. SDIA has the busiest single-runway airport in the nation. In 2007, SDIA served 18.3 million passengers. The San Diego County Regional Airport Authority has forecasted that by 2030 there could be 28.2 million annual passengers using SDIA. However, SDIA is currently constrained by the capacity of its single runway. Although various industrial, commercial, and residential uses surround the airport, residential is the primary use and the most affected by the airport due to its location in the City's urban center (City of San Diego 2007).

Gillespie Field is primarily located within the City of El Cajon, with a small portion also within the City of Santee. Gillespie Field encompasses approximately 757 acres and is owned and operated by the County of San Diego. There are three runways at the airport: two parallel runways oriented in an east/west alignment and a crosswind runway oriented in a north/south alignment (ALUC 2010b).

5.9.3 REGULATORY FRAMEWORK

5.9.3.1 Federal

Hazardous Materials Use

Hazardous materials and wastes are identified and defined by federal and state regulations for the purpose of protecting public health and the environment. Hazardous materials contain certain chemical, physical, or infectious properties that cause them to be considered hazardous. Hazardous wastes are defined in the Code of Federal Regulations (CFR) Title 40, Volume 25, Parts 260–265, and in the California Code of Regulations (CCR), Title 22 Division 4.5, Chapter 11, Article 1, Section 66261. Over the years, the laws and regulations have evolved to deal with different aspects of the handling, treatment, storage, and disposal of hazardous substances.

Federal agencies that regulate hazardous materials include the U.S. Environmental Protection Agency (EPA) and the U.S. Occupational Safety and Health Administration.

Federal Toxic Substances Control Act of 1976 and Resource Conservation and Recovery Act of 1976

The federal Toxic Substances Control Act of 1976 (15 U.S.C. 2601 et seq.) and the Resource Conservation and Recovery Act of 1976 (42 U.S.C. 6901 et seq.) established a program administered by the EPA for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. The Resource Conservation and

Recovery Act was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the "cradle-to-grave" system of regulating hazardous wastes. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Act (EPA 2013).

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as "Superfund," was enacted by Congress on December 11, 1980. This law provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. CERCLA also enabled the revision of the National Contingency Plan. The National Contingency Plan provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The National Contingency Plan also established the National Priorities List, which is a list of contaminated sites warranting further investigation by the EPA. CERCLA was amended by the Superfund Amendments and Reauthorization Act on October 17, 1986 (EPA 2011).

National Fire Protection Association 820

The National Fire Protection Association 820 provides the standard for fire protection in wastewater treatment and collection facilities. National Fire Protection Association 820 provides requirements for ventilation, construction materials and electrical equipment, as well as fire protection measures and administrative controls designed to protect wastewater treatment facilities and associated collection systems against fire and explosion hazards (NFPA 2016).

Aircraft Hazards

Federal Aviation Administration Part 77

Title 14 of the CFR Part 77, Objects Affecting Navigable Airspace, establishes imaginary surfaces for airports and runways as a means to identify objects that are obstructions to air navigation. The Federal Aviation Administration (FAA) uses Part 77 and Terminal Instrument Procedures obstruction standards as elevations above which structures may constitute a safety problem. Part 77 regulations require that anyone proposing to construct an object, which could affect the navigable airspace around an airport that meets Part 77 notification criteria, submit information about the proposed construction to the FAA. Notification criteria includes projects that exceed an imaginary 100:1 surface within 20,000 feet of a civilian or military airport or have a height exceeding 200 feet above ground level.

When notified, the FAA then conducts an aeronautical study, the outcome of which is a determination as to whether the object would be a potential hazard to air navigation. The FAA examines the Terminal Instrument Procedures surfaces for obstructions and safety issues as part of the obstruction evaluation for a proposed project. If the proposed object is concluded to pose a hazard, the FAA may object to its construction and issue a determination of a hazard to air navigation, examine possible revisions of the proposal to eliminate the problem, require that the project be appropriately marked and lighted as an airspace obstruction, and/or initiate changes to the aircraft flight procedures for the airport so as to account for the object. In addition to structures that pose an airspace obstruction, land uses that create wildlife hazards, particularly related to birds, and land use characteristics that create visual or electronic interference with air navigation can create particular hazards to air navigation.

U.S. Department of Defense Air Installations Compatible Use Zone Program

Safety compatibility criteria for military air bases are established through the Air Installations Compatible Use Zone (AICUZ) Program administered by the U.S. Department of Defense. This program applies to military air installations located within the United States, its territories, trusts, and possessions. The AICUZ Program has the following four purposes: (1) to set forth Department of Defense policy on achieving compatible use of public and private lands in the vicinity of military airfields, (2) to define height and land use compatibility restrictions, (3) to define procedures by which AICUZ may be defined, and (4) to provide policy on the extent of government interest in real property within these zones that may be retained or acquired to protect the operational capability of active military airfields.

5.9.3.2 State

Hazardous Materials Use

At the state level, agencies such as the DTSC, California Occupational Safety and Health Administration (Cal/OSHA), and the Office of Emergency Services regulate the use of hazardous materials.

Senate Bill 1802 Certified Unified Program

The California Environmental Protection Agency implements and enforces a statewide hazardous materials program known as the Certified Unified Program established by Senate Bill 1802 to consolidate, coordinate, and make consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental and emergency management programs for hazardous materials:

- Hazardous Materials Release Response Plans and Inventories (Business Plans)
- California Accidental Release Prevention Program
- Underground Storage Tank Program
- Aboveground Petroleum Storage Act Requirements for Spill Prevention, Control, and Countermeasure Plans
- Hazardous Waste Generator and On-Site Hazardous Waste Treatment Programs
- California Uniform Fire Code, Hazardous Materials Management Plans, and Hazardous Material Inventory Statements

California Hazardous Waste Control Law

The California Hazardous Waste Control Law is administered by the California Environmental Protection Agency to regulate hazardous wastes. While the Hazardous Waste Control Law is generally more stringent than the Resource Conservation and Recovery Act, until the federal EPA approves the California hazardous waste control program (which is charged with regulating the generation, treatment, storage, and disposal of hazardous waste), both the state and federal laws apply in California. The California Hazardous Waste Control Law lists 791 chemicals and approximately 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

22 CCR Section 66261.10 provides the following definition for hazardous waste:

> [a] (1) a waste that exhibits the characteristics may: (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or

environment when improperly treated, stored, transported, or disposed or otherwise managed.

According to 22 CCR, substances having a characteristic of toxicity, ignitability, corrosivity, or reactivity are considered hazardous waste. Hazardous wastes are hazardous substances that no longer have a practical use, such as material that has been abandoned, discarded, spilled, contaminated, or that is being stored prior to proper disposal.

Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability or death. For example, toxic substances can cause eye or skin irritation, disorientation, headache, nausea, allergic reactions, acute poisoning, chronic illness, or other adverse health effects if human exposure exceeds certain levels (the level depends on the substance involved). Carcinogens (substances known to cause cancer) are a special class of toxic substances. Examples of toxic substances include most heavy metals, pesticides, and benzene (a carcinogenic component of gasoline). Ignitable substances (e.g., gasoline, hexane, and natural gas) are hazardous because of their flammable properties. Corrosive substances (e.g., strong acids and bases such as sulfuric (battery) acid or lye) are chemically active and can damage other materials or cause severe burns upon contact. Reactive substances (e.g., explosives, pressurized canisters, and pure sodium metal, which react violently with water) may cause explosions or generate gases or fumes.

Other types of hazardous materials include radioactive and biohazardous materials. Radioactive materials and wastes contain radioisotopes, which are atoms with unstable nuclei that emit ionizing radiation to increase their stability. Radioactive waste mixed with chemical hazardous waste is referred to as “mixed wastes.” Biohazardous materials and wastes include anything derived from living organisms. They may be contaminated with disease-causing agents, such as bacteria or viruses (22 CCR 66251.1 et seq.).

California Accidental Release Prevention Program

The California Accidental Release Prevention (CalARP) program was implemented on January 1, 1997, and replaced the California Risk Management and Prevention Program. The objectives of the CalARP program are to present accidental releases of substances that can cause serious harm to the public and the environment, to minimize the damage if releases do occur, and to satisfy community right-to-know laws. This is accomplished by requiring businesses that handle more than a threshold quantity of a regulated substance listed in the regulations to develop a risk management plan. A risk management plan is a detailed engineering analysis of the potential accident factors present at a business and the Mitigation Framework measures that can be implemented to reduce this accident potential. The CalARP program is implemented at the local government level by Certified Unified Program Agencies, also known as administering agencies. The CalARP program is designed so these agencies work directly with the regulated businesses. Certified Unified Program Agencies determine the level of detail in the risk management plans, review the risk management plans, and conduct facility inspections (CalOES 2011).

California DTSC and California Highway Patrol Hazard Transportation Program

The California DTSC administers the transportation of hazardous materials throughout the state. Regulations applicable to the transportation of hazardous waste include 22 CCR, Division 4.5, Chapters 13 and 29, and California Health and Safety Code, Division 20, Chapter 6.5, Articles 6.5, 6.6, and 13. The DTSC requires that drivers transporting hazardous wastes obtain a certificate of driver training that shows the driver has met the minimum requirements concerning the transport of hazardous materials, including proper labeling and marking procedures, loading/handling processes, incident reporting and emergency procedures, and appropriate driving and parking rules. The California Highway Patrol also requires shippers and carriers to complete hazardous materials employee training before transporting hazardous materials.

California Health and Safety Code

The handling and storage of hazardous materials is regulated by Division 20, Chapter 6.95 of the California Health and Safety Code. Under Sections 25500–25543.3, facilities handling hazardous materials are required to prepare a hazardous materials business plan, which provide basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the state.

Chapter 6.95 of the Health and Safety Code establishes minimum statewide standards for hazardous materials business plans. Each business shall prepare a hazardous materials business plan if that business uses, handles, or stores a hazardous material (including hazardous waste) or an extremely hazardous material in disclosable quantities greater than or equal to the following:

- 500 pounds of a solid substance
- 55 gallons of a liquid

- 200 cubic feet of compressed gas
- A hazardous compressed gas in any amount (highly toxic with a Threshold Limit Value of 10 parts per million or less)
- Extremely hazardous substances in threshold planning quantities

Cal/OSHA Hazard Handling Procedures

Cal/OSHA is the primary agency responsible for worker safety in the handling and use of chemicals in the work place. Cal/OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR 337–340). The regulations specify requirements for employee training, availability of safety equipment, accident prevention programs, and hazardous substance exposure warnings.

Emergency Services Act

Under the Emergency Services Act, the State of California developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an integral part of the plan, which is administered by the Governor's Office of Emergency Services. The Office of Emergency Services coordinates the responses of other agencies, including the EPA, California Highway Patrol, regional water quality control boards, air quality management districts, and county disaster response offices (Governor's Office of Emergency Services 2006).

The Emergency Planning Community Right-to-Know Act

The Emergency Planning Community Right-to-Know Act requires facilities to disclose to the State and Local Emergency Planning Committee the quantities and type of toxic chemicals stored. In order to avoid multiple reports to various agencies, the California Health and Safety Code requires notification of chemical inventory to the Administering Agency (DTSC). Notification of chemical inventory shall be accomplished through completion of the Hazardous Materials Business Plan and inventory (EPA 2015).

5.9.3.3 Local

Wildfire Hazards

Section 142.0412 of the San Diego Municipal Code, Brush Management

Section 142.0412 of the San Diego Municipal Code requires brush management in all base zones on publicly or privately owned premises that are within 100 feet of a structure and contain native or naturalized vegetation.

Hazardous Materials Use

At the local level, the County of San Diego regulates establishments that use hazardous materials, dispose of hazardous wastes, have USTs, and/or generate medical waste. The County of San Diego is also the designated Certified Unified Program Agency pursuant to California Health and Safety Code section 25404, et seq.

San Diego County Area Plan

The County of San Diego DEH, Hazardous Materials Division established the San Diego County Area Plan (Area Plan) based on requirements of Chapter 6.95 of the California Health and Safety Code, Title 19 of the CCR, and the EPA Superfund Amendments and Reauthorization Act Title III for emergency response to a release or threatened release of a hazardous material within the County. The Hazardous Materials Program and Response Plan contained in the Area Plan serves the majority of the cities in San Diego County, including the City of San Diego.

As part of the Area Plan, the Federal Risk Management Plan, as incorporated and modified by the CalARP program, is designed to prevent harm to people and the surrounding environment by the use of various organized systems to identify and manage hazards. The goal of the CalARP program is to make all facilities that handle regulated substances free of catastrophic incidents.

If a hazardous materials emergency occurred within the City of San Diego, the first response would be from the San Diego Fire-Rescue Department and the County of San Diego Hazardous Incident Response Team.

The Whitebook: Standard Specifications for Public Works Construction

The City of San Diego has created the Whitebook (City of San Diego 2015), a supplement which takes precedence over the specification language contained in *The "Greenbook": Standard Specifications for Public Works Construction* (Public Works

Standards Inc. 2015), and addresses the unique conditions in the City that are not addressed in the Greenbook. Part 1 – General Provisions (A), Section 7-22 addresses the potential release of a Hazardous Substance or petroleum product. Specifically, Part 1, Section 7-22.7 requires that a Hazardous Substances Management Plan be submitted prior to the start of work; the plan should provide a "description of how you shall store, manage, and inspect all Hazardous Materials brought to the Site including the management of all containers, drums, and tanks." Section 7-22.10 provides standards for the storage and management of hazardous materials and wastes, and Section 7-22.13 provides requirements for transportation of hazardous waste.

Existing Hazardous Materials Sites

The Whitebook: Standard Specifications for Public Works Construction

The City of San Diego Whitebook (City of San Diego 2015), Part 1 – General Provisions (A), Section 7-22 also addresses the requirements for when a hazardous substance or petroleum product is encountered. Specifically, Section 7-8.6.6 discusses dewatering procedures, including steps to be taken when contaminated groundwater is encountered. Sections 7-22.16 through 7-22.19 specify the steps that must be undertaken when contaminated soil is encountered, including monitoring, stockpiling and disposal.

Hazardous Materials Release

Sewer System Management Plan

The goal of the Sewer System Management Plan is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system to reduce, prevent, and mitigate any sanitary sewer overflow or spills (City of San Diego 2014). The Sewer System Management Plan contains the Sewer Overflow Response and Tracking Plan, which documents the processes and procedures that ensure that all sanitary sewer overflows/spill are identified, responded to, investigated, and reported in an effective and timely manner (City of San Diego 2014). This plan identifies receipt of notification; dispatch of appropriate crews and responsibilities; containment, correction, and clean up; public notification; reporting requirements; and overflow/spill tracking database.

Aircraft Hazards

Airport Land Use Compatibility Plans

The San Diego Regional Airport Authority acts as the Airport Land Use Commission (ALUC) for the San Diego region as provided in Section 21670.3 of the California Public Utilities Code and is charged with developing ALUCPs for each airport in the County, including military air installations. ALUCPs provide guidance on appropriate land uses surrounding airports to protect the health and safety of people and property within the vicinity of an airport, as well as the public in general. An ALUCP focuses on a defined area around each airport known as the Airport Influence Area (AIA). The AIA is comprised of noise (Section 5.12, Noise of this EIR/EIS addresses aircraft noise), safety, airspace protection and overflight factors. ALUCPs have been adopted for 16 airports countywide, including rural airports, military installations, and urban airports, such as San Diego International Airport.

MCAS Miramar ALUCP

The MCAS Miramar ALUCP was adopted in October 2008 and last amended November 2011. The ALUCP is based upon the AICUZ document prepared by the Department of Defense for MCAS Miramar (Public Utilities Code S21675(b),) dated December 2004, and revised in March 2005. The ALCUP is consistent with the safety and noise standards in the AICUZ study.

The MCAS Miramar ALUCP divides the AIA into Review Area 1 and Review Area 2. The boundaries of Review Area 1 and Review Area 2 are shown on Figure 5.9-5, Miramar and San Vicente Reservoir Alternatives – Airport Compatibility Map. The composition of each area is determined as follows:

- Review Area 1 consists of locations where noise and/or safety concerns may necessitate limitations on the types of land uses. Specifically, Review Area 1 encompasses locations exposed to noise levels of Community Noise Level Equivalent (CNEL) 60 decibels (dB) or greater together with all of the safety zones depicted on the associated maps in this chapter. Within Review Area 1, all types of land use actions are to be submitted to the ALUC for review to the extent review is required by law. (See Policy 2.6.1.)
- Review Area 2 consists of locations beyond Review Area 1 but within the airspace protection and/or overflight areas depicted on the associated maps in this chapter. Limits on the heights of structures, particularly in areas of

high terrain, are the only restrictions on land uses within Review Area 2. The additional function of this area is to define where various mechanisms to alert prospective property owners about the nearby airport are appropriate. Within Review Area 2, only land use actions for which the height of objects is an issue are subject to ALUC review. (See Policy 2.6.2(a)(2).)

Applicable policies of the MCAS Miramar ALUCP (ALUC 2011) are provided below. Policies related to noise compatibility can be found in Section 5.12, Noise.

Safety Compatibility Policies

***3.4.1 Evaluating Safety Compatibility for New Development**:* The safety compatibility of proposed land uses within the *AIA* of MCAS Miramar shall be evaluated in accordance with the policies set forth in this section, including Table MIR-2 [see Table 5.9-4] and the safety zones depicted on Map MIR-2 [see Figure 5.9-5]. Table MIR-2 [see Table 5.9-4] shows each listed land use type as being either “incompatible,” “conditional,” or “compatible” within each safety zone. The meaning of these terms is as follows:

(a) Incompatible: The use is not acceptable under any circumstances.

(b) Conditional: The use is acceptable if the *floor area ratio* (*FAR*) criteria indicated, maximum intensity limits (people/acre) provided at the top of the table, and conditions listed in the column on the right and further described in the policies in this section are satisfied. If these conditions are not met, the use is incompatible.

(c) Compatible: The use is acceptable without safety-related conditions. Noise, airspace protection, and/or overflight limitations may apply.

3.4.2 Safety Zones: For safety compatibility planning purposes around MCAS Miramar, the *ALUC* uses the safety zones defined in the *AICUZ*, with an additional zone created using low-altitude fixed-wing aircraft flight track location data, as further described below. Specifically:

(a) The *CZ*, and *APZ I* and *II* are identical in location and dimensions to the *CZ*, *APZ I*, and *APZ II*, respectively, as depicted in Figure 4-1 of the *AICUZ*.

(b) The *TZ* was created using low-altitude fixed-wing aircraft flight track location data presented in Figures 2-2 and 2-3 of the

AICUZ. Additional data from the military was used to identify locations where these aircraft fly at an altitude of less than 2,000 feet above MSL. Helicopter flight tracks are not considered in delineation of the *TZ*. The most critical areas of helicopter flight tracks from a safety standpoint are either over base property or overlap the fixed-wing aircraft tracks.

3.4.3 Measures of Safety Compatibility: To minimize risks to people and property on the ground and to people on board aircraft, the safety compatibility criteria set limits on:

(a) The density of residential development, which is measured in terms of dwelling units per acre on the project site. The residential density limitations cannot be equated to the maximum intensity limits for nonresidential uses. Consistent with the *Handbook* guidelines, a greater degree of protection is warranted for residential uses. (*See Handbook*, page 9-3.)

(b) The intensity of nonresidential development measured in terms of the number of people located in areas most susceptible to aircraft accidents (*i.e.*, *CZ*, *APZ I*, *APZ II* and *TZ*).

(c) Development or expansion of certain risk-*sensitive land uses* that represent special safety concerns regardless of the number of people present.

3.4.4 Factors Considered in Setting Safety Compatibility Criteria: The principal factors considered in setting criteria applicable within each safety zone are:

(a) Safety compatibility recommendations set forth in Appendix Table 3 of the *AICUZ*.

(b) The California state law (Pub. Util. Code, §21675(b)) requirement that compatibility plans for military airports "shall be consistent with the safety and noise standards in the Air Installation Compatible Use Zone prepared for that military airport."

(c) The airport proximity within which aircraft accidents near military airports typically occur. The most stringent land use controls apply to the areas with the greatest potential risks.

(d) Characteristics of the fleet mix of the aircraft used at the *Airport* and aircraft operations at the *Airport*.

(1) The low-altitude, high-performance, and tactical maneuvering nature of many operations at MCAS Miramar represents a heightened risk to land uses beneath the primary flight routes of the base.

(2) Helicopter operations pose a smaller risk in that the size of the site that might be affected by an accident is relatively small. Helicopters, however, fly routes different from those of fixed-wing aircraft.

3.4.6 Nonresidential Development Criteria: The criteria in Paragraphs (a), (b) and (c), below apply to most proposed nonresidential uses. Additional or different criteria apply to the uses described in Paragraphs (d) through (i) and Policy 3.4.7.

…

(i) Agricultural and Other Uses*:* This category includes agricultural uses, recreational uses and wastewater treatment and related facilities.

…

(3) Mining and extraction, golf courses, tennis courts, parks, camp grounds, wastewater treatment and disposal facilities, solid waste transfer facilities and recycle centers are:

= Not compatible in the *CZ* and should not be permitted by the *local agency*.

= Conditionally compatible in APZ I and APZ II, provided the use complies with the conditions and maximum intensity limits as provided in Table MIR-2.

= Compatible in the TZ.

3.4.8 Parcels Lying within Two or More Safety Zones: For the purposes of evaluating consistency with the compatibility criteria set forth in Table MIR-2 [see Table 5.9-4], any parcel that is split by safety zone boundaries shall be considered as if it were multiple parcels divided at the safety zone boundary line.

(a) Where no part of the building(s) proposed on the parcel/site fall within the more restrictive safety zone, the criteria for the safety zone where the proposed building(s) are located shall apply for the purposes of evaluating the compatibility of the proposed uses and determining other conditions to be placed upon the proposed project.

(b) Where the building(s) proposed on the parcel/site fall within multiple safety zones, the criteria for the most restrictive safety zone where the building(s) proposed are located shall apply for purposes of evaluating the compatibility of the proposed use and for determining other conditions to be placed upon the proposed project.

Table 5.9-4
Safety Compatibility Criteria - MCAS Miramar (Excerpt from Table MIR-2)

Land Use Types / Typical Uses Multiple land use categories and compatibility criteria may apply to a project (see Policy 3.4.7) See Policy 3.4.7(c) for limits on ancillary uses [1]	**CBC Group***	*CZ*	*APZ I*	*APZ II*	*TZ*	Criteria for Conditional (yellow) Uses Maximum intensity limits apply to all Conditional uses Abbreviations below refer to zones in which condition specified is applicable
Agricultural and Other Uses						
Wastewater Treatment and Disposal Facilities	**CBC Group***					APZ I, APZ II: No processing or utilization of hazardous materials; fuel storage must be underground; facilities must be designed and operated to avoid attracting birds [1]

INSERT RED = Incompatible: Use should not be permitted under any circumstances
INSERT YELLOW = Conditional: Use is acceptable if indicated Floor Area Ratio (FAR), Lot Coverage, and other listed conditions are met
INSERT GREEN = Compatible: Use is acceptable without safety-related conditions (noise, airspace protection, and/or overflight limitations may apply)
* **CBC Group**: Refers to building occupancy types established by California Building Code (see Appendix D of this document for listing)
** **Safety Zone:**
CZ (Clear Zone)
APZ I (Accident Potential Zone I)
APZ II (Accident Potential Zone II)
TZ (Transition Zone)

Notes:
[1] For clarity as well as consistency with AICUZ criteria, the evaluation of land uses herein includes factors that the military considers germane to safe operation of their facilities including, but not limited to, airspace obstructions, bird attractants, and other hazards to flight (land uses that generate smoke, heat, or visibility hazards that can cause an accident) and factors that put more people at risk should an accident occur.
Source: ALUC 2011

Airspace Protection Compatibility Policies

3.5.1 Evaluating Airspace Protection Compatibility for New Development: The airspace protection compatibility of proposed land uses within the *AIA* of MCAS Miramar shall be evaluated in accordance with the policies in this section, including the *airspace protection surfaces* depicted on Map MIR-3 [see Figure 5.9-5], Compatibility Policy Map: Airspace Protection. The policies apply to all of the *airport influence area* (Review Area 1 and Review Area 2).

3.5.2 Airspace Protection Surfaces: For airspace protection compatibility planning purposes around MCAS Miramar, the *ALUC* shall use the *airspace protection surfaces* defined in accordance with the standards for military airports set forth in *Federal Aviation Regulations Part 77* (*FAR Part 77*). Specifically, the airspace protection compatibility area shall geographically consist of locations within the *FAR Part 77* primary surface and beneath the approach (to where it intersects the outer horizontal surface), transitional, horizontal, and conical surfaces together with locations within the Federal Aviation Administration notification area as described below, excluding the federally owned lands that comprise MCAS Miramar. This area and the surfaces that delineate it are depicted on Map MIR-4 [see Figure 5.9-5].

(a) The *airspace protection surfaces* shown on Map MIR-3 [see Figure 5.9-5] are the same as the surfaces shown in Figure 5-1 of the *AICUZ*. These surfaces, as defined by Subpart C of *FAR Part 77*, establish the elevations above which any taller object or terrain is deemed to be an airspace obstruction. (*See* Policy 3.5.5 below and Section 77.28 in Appendix B of this *Compatibility Plan* for the text of the *FAR Part 77* standards for military airport *airspace protection surfaces*.)

(b) In addition to the primary, approach, transitional, horizontal, and conical surfaces, the *FAR Part 77* standards for military airports define an outer horizontal surface. This surface extends 30,000 feet beyond the limits of the conical surface and a total of 44,500 feet (8.4 miles) from the runway and lies at an elevation of 500 feet above the *Airport* elevation. Because the elevation of this surface is more than 200 feet above the ground level in most locations and also extends beyond the limits of the FAA notification area, locations beneath the outer horizontal surface that are outside the FAA notification area are excluded from the MCAS Miramar airspace protection compatibility area established for this *Compatibility Plan*.

(c) The FAA notification area is an area within which project proponents must notify the Federal Aviation Administration regarding proposed construction. (*See* Policy 3.5.4 below and *FAR Part 77*, Subpart B, in Appendix B herein). For MCAS Miramar, this area uses a 100:1 surface that extends 20,000 feet from the runways. For the purposes of this *Compatibility Plan*, the area lying within the FAA notification area is considered part of the airspace protection compatibility area.

3.5.3 Measures of Airspace Protection Compatibility: In establishing airspace protection policies, the *ALUC* relies upon regulations enacted by the Federal Aviation Administration and the state of California. The *ALUC* policies are intended to help implement the federal and state regulations. Specific regulations are referenced in subsequent policies of this section.

(a) With *FAR Part 77*, the FAA has well-defined standards by which potential hazards to flight can be assessed. However, the agency has no authority to prevent creation of such hazards. That authority rests with state and local government.

(b) State airspace protection standards for the most part mirror those of the FAA. A key difference is that state law gives the California Department of Transportation, *Division of Aeronautics* and local agencies the authority to enforce the standards.

3.5.4 Requirements for FAA Notification of Proposed Construction: Proponents of a project containing structures or other objects that may meet the notification criteria or exceed the height standards defined in *FAR Part 77*, Subpart C, as applied to MCAS Miramar must submit notification of the proposal to the Federal Aviation Administration where required by the provisions of *FAR Part 77*, Subpart B, and by the California Public Utilities Code, sections 21658 and 21659. (Notification to the FAA under *FAR Part 77*, Subpart B, is required even for certain proposed construction that does not exceed the height limits allowed by Subpart C of the regulations. See Appendix B of this *Compatibility Plan* for the complete text of *FAR Part 77*. The boundaries of the FAA notification area for MCAS Miramar are shown on Map MIR-3 [see Figure 5.9-5].) The FAA will conduct an "aeronautical study" of the object(s) and determine whether the object(s) would be of a height that would constitute a hazard to air navigation. These requirements apply to all objects including structures, antennas, trees, mobile objects, and temporary objects such as construction cranes.

(a) Local agencies shall inform project proponents of the FAA notification requirements.

(b) Any proposed development project that includes construction of a structure or other object and that is required to be submitted to the *ALUC* for a consistency review in accordance with Policy 2.6 of Chapter 2 shall include a copy of the completed *FAR Part 77* notification form to the FAA, if applicable, and of the resulting FAA findings from its aeronautical study (*i.e.,* notice of determination letter).

(c) The requirements for notification to the FAA shall not trigger an airport compatibility review of an individual project by the *ALUC* unless the general plan of the local agency in which the project is to be located has not been determined by the ALUC to be consistent with this *Compatibility Plan*.

3.5.5 ALUC Airspace Obstruction Criteria: The *ALUC* criteria for determining the acceptability of a project with respect to height shall be based upon: the standards set forth in *FAR Part 77*, Subpart C; the *United States Standard for Terminal Instrument Procedures* (*TERPS*); and applicable airport design standards published by the Federal Aviation Administration. Additionally, the *ALUC* shall, where an FAA aeronautical study of a proposed object has been required, take into account the results of that study.

(a) Except as provided in Paragraphs (b) and (c) of this policy, no object, including mobile object such as a vehicle or temporary object such as construction crane, shall have a height that would result in penetration of the airspace protection surface depicted for MCAS Miramar in Map MIR-3 [see Figure 5.9-5], Compatibility Policy Map: Airspace Protection. By FAA definition, any object that penetrates one of these surfaces is deemed an *obstruction*.

(b) Within the primary surface and beneath the approach or transitional surface, objects shall be limited in height consistent with the airspace protection surfaces defined by *FAR Part 77* and *TERPs* criteria. Elsewhere within the airspace protection area, no object would penetrate *FAR Part 77* or *TERPs* and thus constitute an obstruction. *TERPs* is evaluated in the *AICUZ* through the *FAR Part 77* process.

(c) A proposed object having a height that exceeds the *Airport's* airspace protection surface is compatible with the airspace protection only if *all* of the following apply:

(1) As the result of an aeronautical study, the FAA determines that the object would not be a hazard to air navigation; and

(2) FAA or other expert analysis conducted under the auspices of the ALUC or the airport operator concludes that, despite being an airspace obstruction (not necessarily a hazard), the object that would not cause any of the following:

= An increase in the ceiling or visibility minimums of the airport for an existing or planned instrument procedure (a planned procedure is one that is formally on file with the FAA);

= A diminution of the established operational efficiency and capacity of the airport, such as by causing the usable length of the runway to be reduced; or

= Conflict with the visual flight rules (VFR) airspace used for the airport traffic pattern or en route navigation to and from the airport; and

(3) Marking and lighting of the object will be installed as directed by the FAA aeronautical study or the Division of Aeronautics, and in a manner consistent with FAA

standards in effect at the time the construction is proposed (Advisory Circular 70/7460-1J, Obstruction Marking and Lighting, or any later guidance); and

(4) The land use project/plan complies with all policies of this Compatibility Plan.

3.5.6 Other Flight Hazards: Land uses that may cause visual, electronic, or wildlife hazards, particularly bird strike hazards, to aircraft in flight or taking off or landing at the airport shall be allowed within the *airport influence area* only if the uses are consistent with FAA rules and regulations.

(a) Specific characteristics to be avoided include:

(1) Sources of glare (such as from mirrored or other highly reflective buildings or building features) or bright lights (including search lights and laser light displays);

(2) Distracting lights that could be mistaken for airport lights;

(3) Certain colors of neon lights—especially red and white—that can interfere with night vision goggles used by military pilots;

(4) Sources of dust, steam, or smoke that may impair pilot visibility;

(5) Sources of electrical interference with aircraft communications or navigation; and

(6) Any proposed use that creates an increased attraction for wildlife and that is inconsistent with FAA rules and regulations including, but not limited to, FAA Order 5200.5A, Waste Disposal Sites on or Near Airports, and Advisory Circular 150/5200-33, Hazardous Wildlife Attractants On or Near Airports. Of particular concern are landfills and certain recreational or agricultural uses that attract large flocks of birds which pose bird strike hazards to aircraft in flight.

(b) To resolve any uncertainties with regard to the significance of the above types of flight hazards, local agencies should consult with FAA and MCAS Miramar.

Montgomery Field ALUCP

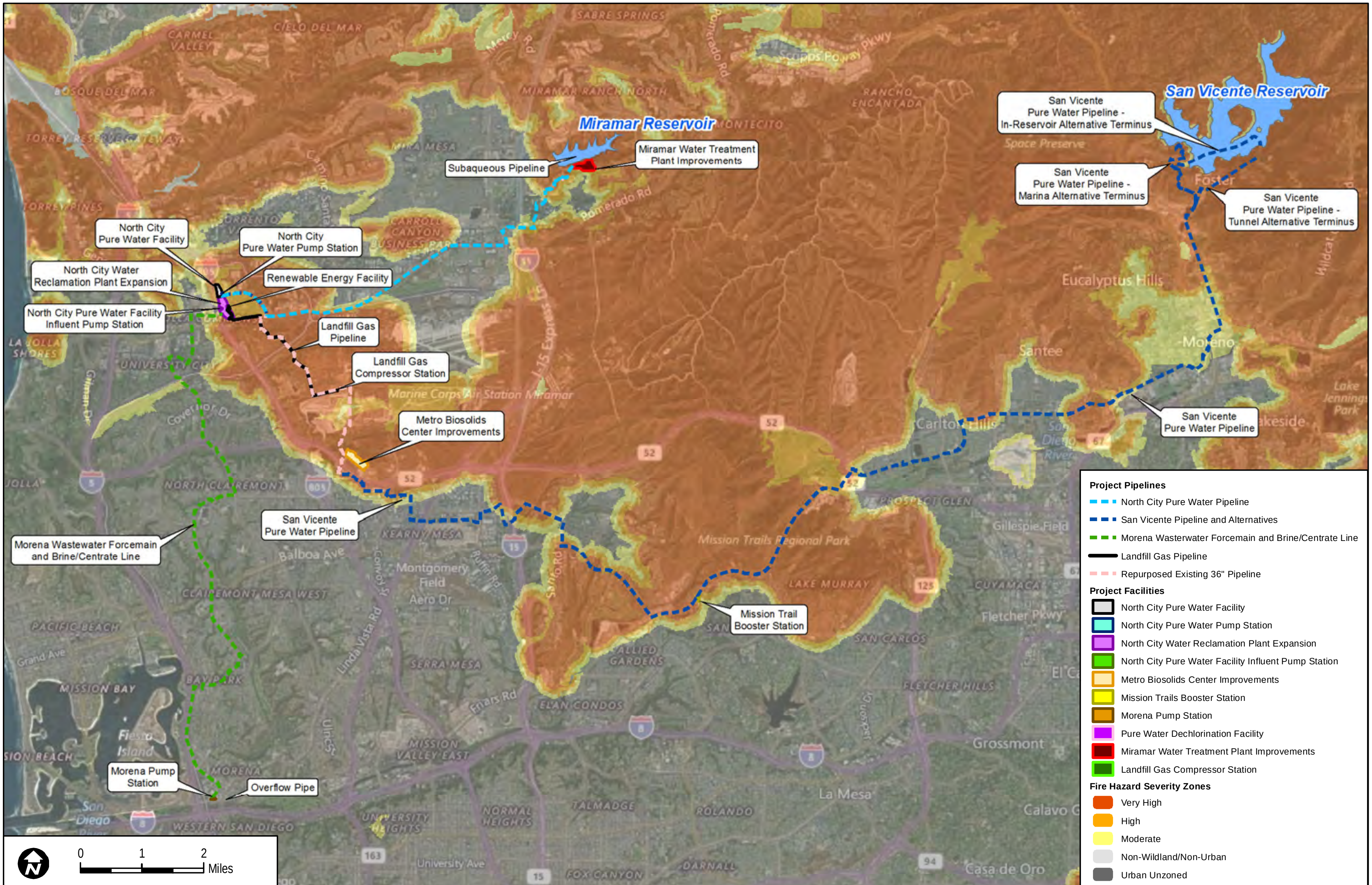
The Montgomery Field ALUCP was adopted January 25, 2010, and last amended December 20, 2010. The Montgomery Field ALUCP is the fundamental tool used by the San Diego County Regional Airport Authority to determine compatibility of future land uses with the airport. The Montgomery Field ALUCP contains policies and criteria applicable to the four major factors considered in airport land use compatibility: noise, safety, airspace protection and overflight compatibility. The Montgomery Field's AIA and Safety Zones are shown on Figure 5.9-5.

San Diego International ALUCP

The SDIA ALUCP was adopted April 3, 2014, and last amended May 1, 2014. The SDIA ALUCP is the fundamental tool used by the San Diego County Regional Airport Authority to determine compatibility of future land uses with the airport. The SDIA ALUCP contains policies and criteria applicable to the four major factors considered in airport land use compatibility: noise, safety, airspace protection, and overflight compatibility. The SDIA's AIA is shown on Figure 5.9-5.

Gillespie Field ALUCP

The Gillespie Field ALUCP was adopted January 25, 2010, and last amended December 20, 2010. The Gillespie Field ALUCP is the fundamental tool used by the San Diego County Regional Airport Authority to determine compatibility of future land uses with the airport. The Gillespie Field ALUCP contains policies and criteria applicable to the four major factors considered in airport land use compatibility: noise, safety, airspace protection, and overflight compatibility. Gillespie Field's AIA and Safety Zones are shown on Figure 5.9-5.



DUDEK

SOURCE: City of San Diego, 2015, 2016; SanGIS 2016; Bing Maps 2016

FIGURE 5.9-1

Miramar and San Vicente Reservoir Alternatives - Fire Hazard Areas

Pure Water San Diego Program North City Project EIR/EIS

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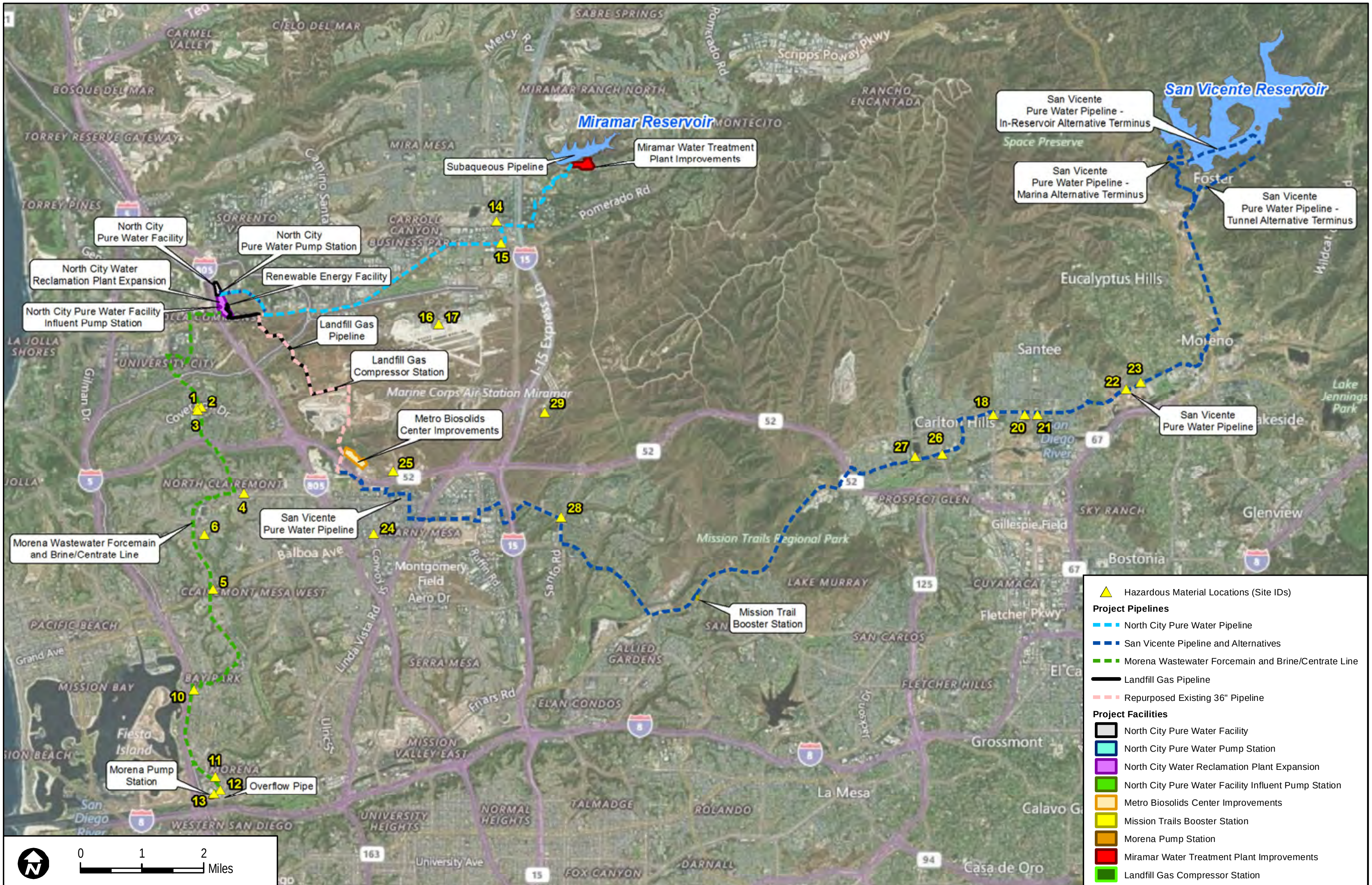

DUDEK

SOURCE: City of San Diego, 2015, 2016; SanGIS 2016; Bing Maps 2016

FIGURE 5.9-2

Miramar and San Vicente Reservoir Alternatives - Hazardous Materials Sites

Pure Water San Diego Program North City Project EIR/EIS

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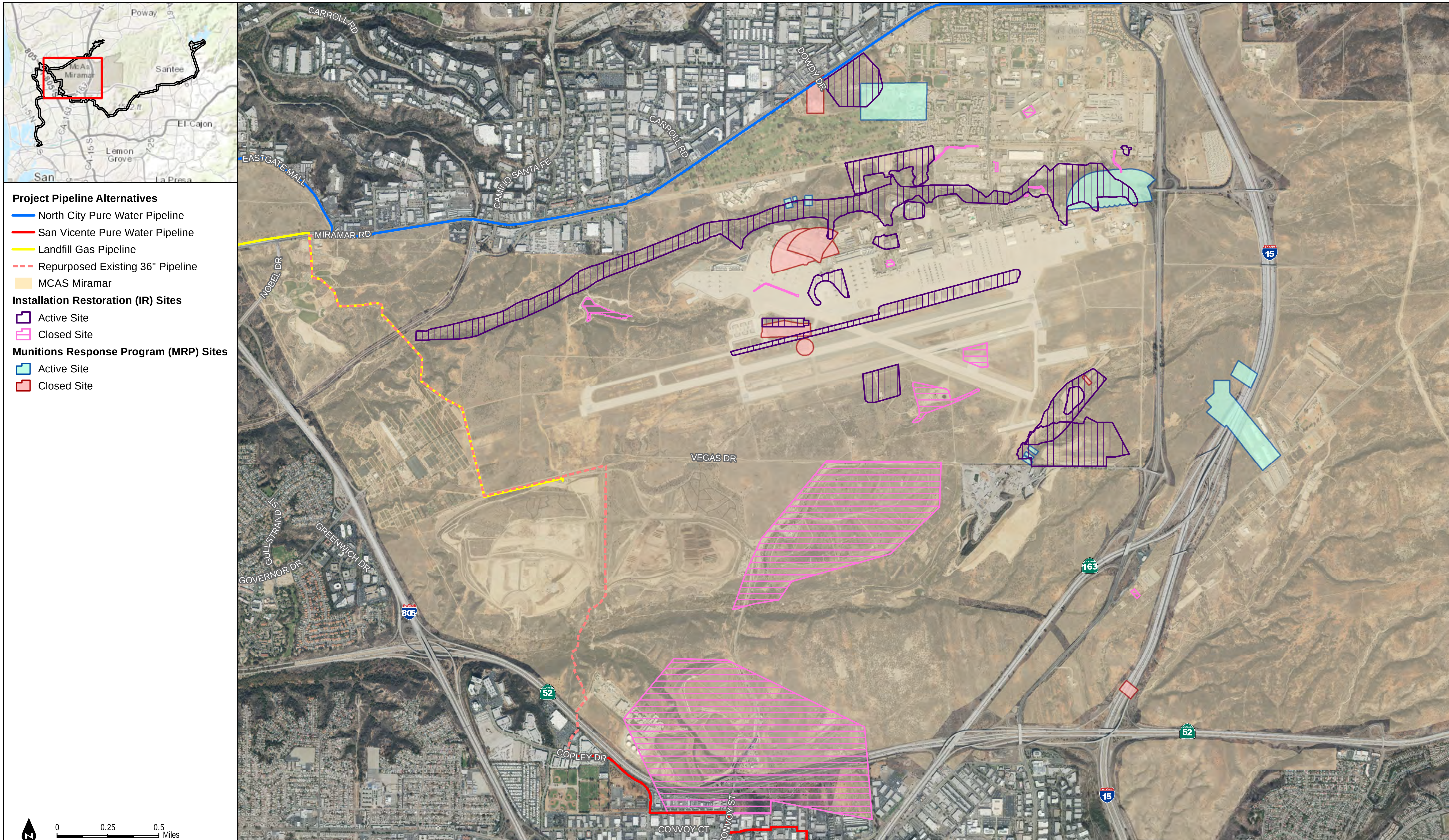

SOURCE: MCAS Miramar Environmental Mangement Department, 2017; SanGIS 2017; SANDAG 2014

FIGURE 5.9-3

MCAS Miramar Installation Restoration Program and Munitions Response Program Sites

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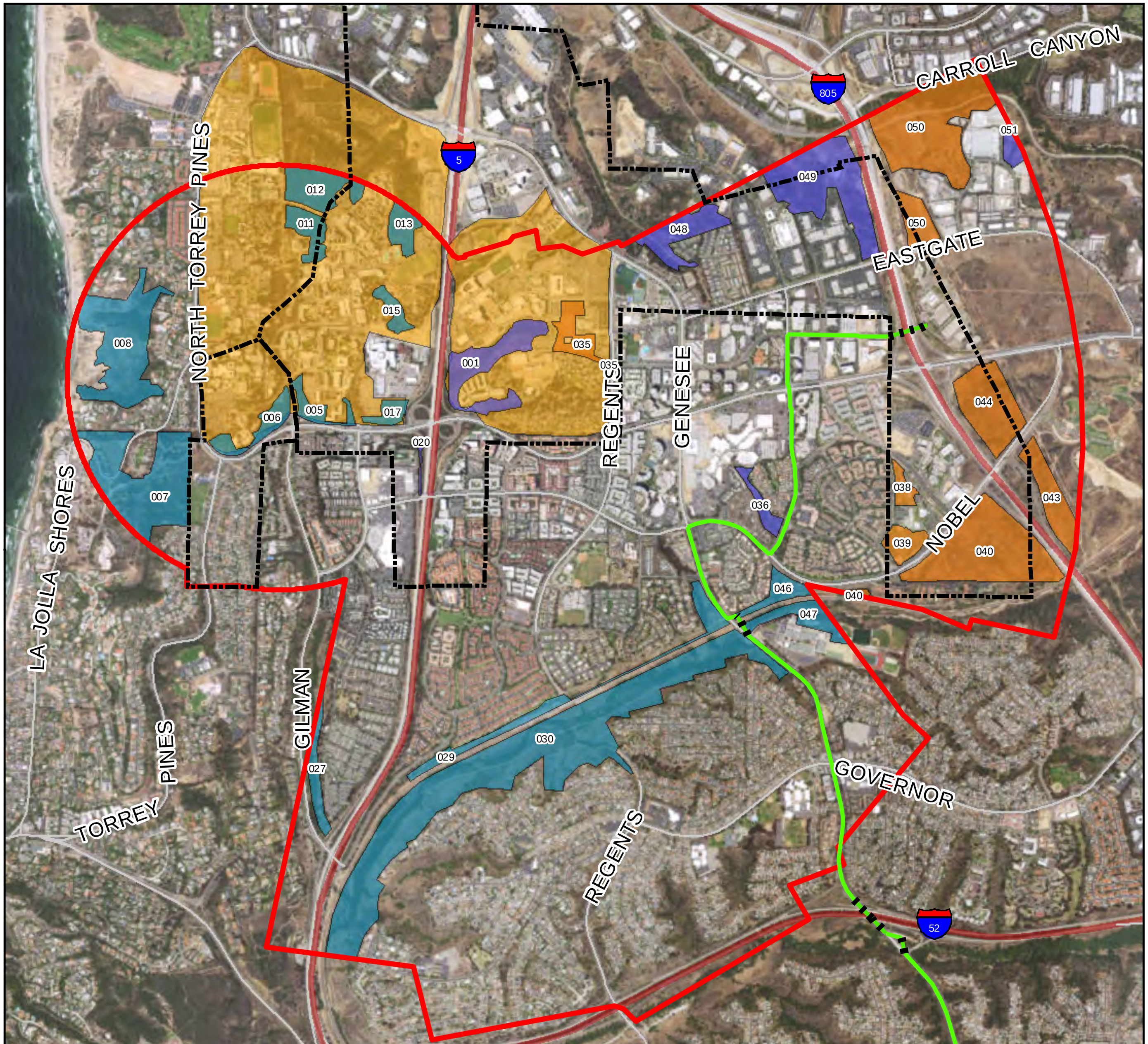

Legend

- Morena Wastewater Forcemain and Brine/Central Line
- Trenchless Segments of Morena Wastewater Forcemian and Brine/Centrate Line
- Major Roads
- Interstates
- Formerly Used Defense Site Boundary
- MRS Range Complex No. 1 Boundary (5,056 Ac)
- UCSD Campus Boundary

Survey Type[1]

- Analog Geophysical Survey
- Digital Geophysical Mapping
- Instrument-Aided Visual Survey

SOURCE: USACE, 2013; 2016; Bristol, 2016

DUDEK

FIGURE 5.9-4

Formerly Used Defense Site – Camp Matthews, Range Complex No. 1

Pure Water San Diego Program North City Project EIR/EIS

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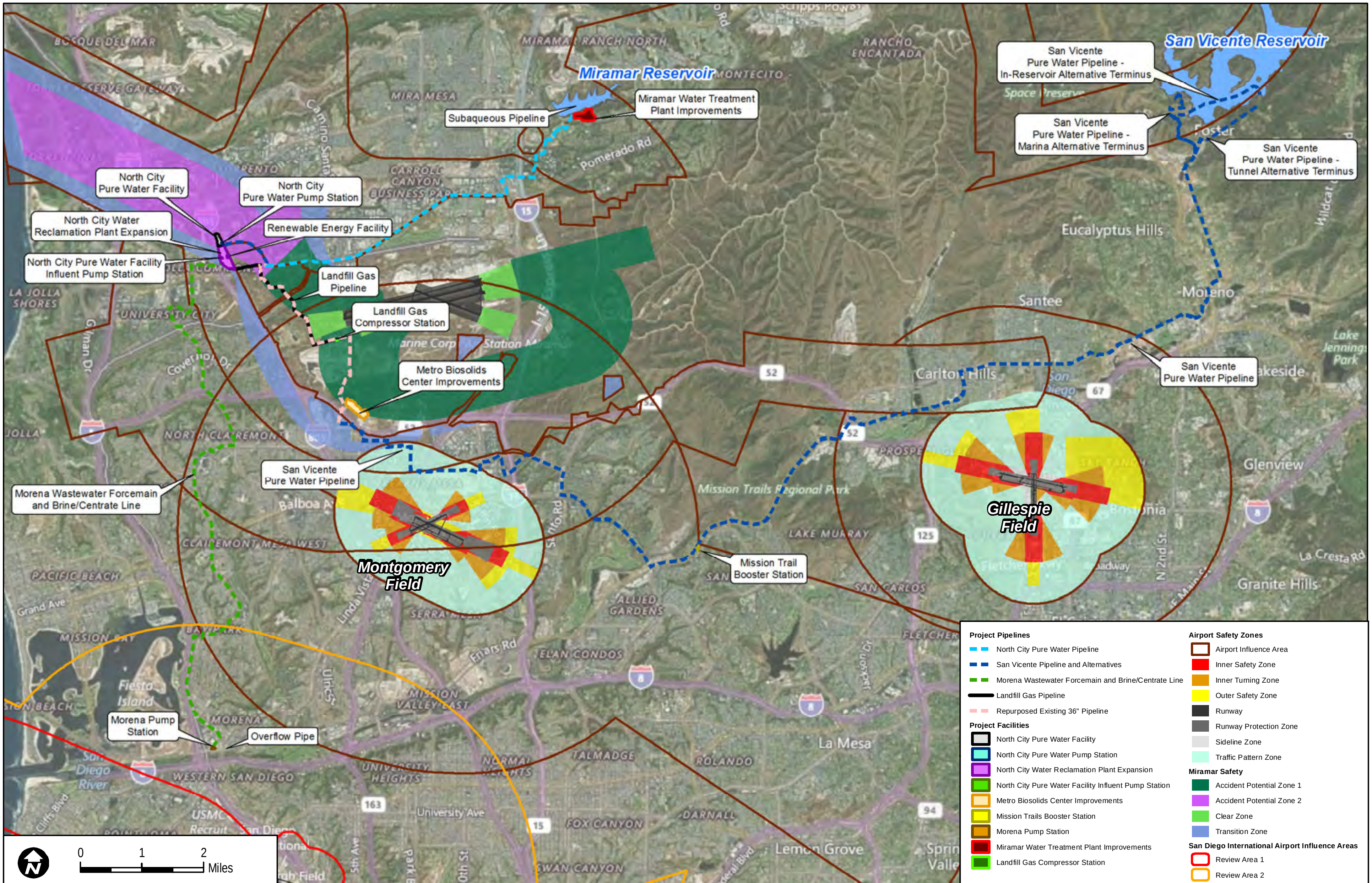

DUDEK

SOURCE: City of San Diego, 2015, 2016; SanGIS 2016; Bing Maps 2016

FIGURE 5.9-5

Miramar and San Vicente Reservoir Alternative - Airport Compatibility Map

Pure Water San Diego Program North City Project EIR/EIS

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5.10 HISTORICAL RESOURCES

5.10.1 INTRODUCTION

The following section describes the existing environmental and regulatory setting of the North City Project area of potential effect (APE) as it relates to Historical Resources and Cultural Resources. Historical resources are the physical features that reflect past human existence and are of historical, archaeological, scientific, educational, cultural, architectural, aesthetic, or traditional significance. These resources may be natural or constructed and can include archaeological sites and artifacts, buildings, groups of buildings, structures, districts, street furniture, signs, and landscapes. Traditional cultural properties, tribal cultural resources, and distinguishing architectural characteristics are also considered historical resources. The North City Project involves the construction of new water and sewer facilities and upgrades to existing facilities which, depending on their location and related construction methods, could potentially result in impacts to historical resources.

The historical resources information provided in this section is based on the Historical Resources Technical Report for the North City Project, San Diego County, California prepared by Dudek in ~~September 2017~~February 2018 (Dotter, Murray, and DeCarlo; see Appendix F1). The Historical Resources Technical Report was based on a records search of the California Historical Resources Information System cultural resources database for relevant previously recorded historic resources or properties. Also reviewed were the properties listed on/as the California Points of Historical Interest, California Historical Landmarks, California Historical Resources Inventory, local registries of historic properties, California Register of Historical Resources (CRHR), and National Register of Historic Places (NRHP). In addition, an architectural history survey of the North City Project's APE was conducted and potentially historic resources were recorded for evaluation on appropriate Department of Parks and Recreation forms according to instructions by the California Office of Historic Preservation.

The cultural resources information provided in this section is based on the Cultural Resources Inventory Report for the North City Project, City of San Diego, San Diego County, California, prepared by Dudek in September 2017 (DeCarlo, Comeau, Dotter, and Hale; see Appendix F2). The Cultural Resources Inventory Report was based on records search information provided by the South Coastal Information Center, surveys of the North City Project APE and site evaluation and excavation (i.e., Phase I Inventory and Phase II Evaluation), laboratory and cataloguing, and curation. A review of the cultural resources records housed at Marine Corps Air Station (MCAS) Miramar was conducted and assured that all resources located within the boundary of MCAS Miramar were represented in the South Coastal Information Center records search.

5.10.2 ENVIRONMENTAL SETTING

Cultural and Historical Resources

Natural Setting

The North City Project area (Project area) extends from its southwestern boundary at the Morena Pump Station near the outlet of the San Diego River to its northeastern boundary at the San Vicente Reservoir. The elevation of the Project area ranges from approximately 14 feet above mean sea level at the Morena Pump Station to 1,080 feet above mean sea level at the San Vicente Reservoir (see Appendix C, Biological Resources Report). The topography of the Project area varies greatly, ranging from the generally flat mesa terraces that support the North City Water Reclamation Plant to the steep canyons and mountainous terrain surrounding San Vicente Reservoir. Large segments of the North City Project are planned within existing developed areas and paved roads, but some segments traverse undeveloped habitats with native habitat communities (see Appendix C, Biological Resources Report).

Cultural Setting

Evidence for continuous human occupation in the San Diego region spans the last 10,000 years. Various attempts to parse out variability in archaeological assemblages over this broad time frame have led to the development of several cultural chronologies; some of these are based on geologic time, most are based on temporal trends in archaeological assemblages, and others are interpretive reconstructions. Each of these reconstructions describes essentially similar trends in assemblage composition in more or less detail. This research employs a common set of generalized terms used to describe chronological trends in assemblage composition: Paleoindian (pre-5500 BC), Archaic (8000 BC.–AD 500), Late Prehistoric (AD 500–1769), and Ethnohistoric (post-AD 1769). Additional information concerning the historic period is presented later in this section.

Paleoindian (pre-550 BC)

Evidence for Paleoindian occupation in coastal Southern California is tenuous, especially considering the fact that the oldest dated archaeological assemblages look nothing like the Paleoindian artifacts from the Great Basin. One of the earliest dated archaeological assemblages in coastal Southern California (excluding the Channel Islands) derives from SDI-4669/W-12, in La Jolla. A human burial from SDI-4669 was radiocarbon dated to 9,590–9,920 years before present (95.4% probability) (~~Hector 2007~~Hale 2010). The burial is part of a larger site complex that contained more than 29 human burials associated with an assemblage that fits the Archaic profile (i.e., large amounts of groundstone, battered cobbles, and expedient flake tools). In contrast, typical Paleoindian assemblages include large stemmed projectile points, high proportions of formal lithic tools, bifacial lithic reduction strategies, and relatively small proportions of groundstone tools. Prime examples of this pattern are sites that were studied by Davis (1978) on China Lake Naval Air Weapons Station near Ridgecrest, California. These sites contained fluted and unfluted stemmed points and large numbers of formal flake tools (e.g., shaped scrapers, blades). Other typical Paleoindian sites include the Komodo site (MNO-679)—a multicomponent fluted point site, and MNO-680—a single component Great Basin Stemmed point site (Basgall et al. 2002). At MNO-679 and MNO-680, groundstone tools were rare while finely made projectile points were common.

Turning back to coastal Southern California, the fact that some of the earliest dated assemblages are dominated by processing tools runs counter to traditional notions of mobile hunter–gatherers traversing the landscape for highly valued prey. Evidence for the latter—that is, typical Paleoindian assemblages—may have been located along the coastal margin at one time, prior to glacial desiccation and a rapid rise in sea level during the early Holocene (pre-7500 BP) that submerged as much as 1.8 kilometers (1.1 miles) of the San Diego coastline. If this were true, however, it would also be expected that such sites would be located on older landforms near the current coastline. Some sites, such as SDI-210 along Agua Hedionda Lagoon, contained stemmed points similar in form to Silver Lake and Lake Mojave projectile points (pre-8000 BP) that are commonly found at sites in California's high desert (Basgall and Hall 1993). SDI-210 yielded one corrected radiocarbon date of 8520–9520 BP (Warren et al. 2004). However, sites of this nature are extremely rare and cannot be separated from large numbers of milling tools that intermingle with old projectile point forms.

Warren et al. (2004) claimed that a biface manufacturing tradition present at the Harris site complex (SDI-149) is representative of typical Paleoindian occupation in the San

Diego region that possibly dates between 10,365 and 8200 BC (Warren et al. 2004, p. 26). Termed San Dieguito (Rogers 1945), assemblages at the Harris site are qualitatively distinct from most others in the San Diego region because the site has large numbers of finely made bifaces (including projectile points), formal flake tools, a biface reduction trajectory, and relatively small amounts of processing tools (Warren 1964, 1968). Despite the unique assemblage composition, the definition of San Dieguito as a separate cultural tradition is hotly debated. Gallegos (1987) suggested that the San Dieguito pattern is simply an inland manifestation of a broader economic pattern. Gallegos' interpretation of San Dieguito has been widely accepted in recent years, in part because of the difficulty in distinguishing San Dieguito components from other assemblage constituents. In other words, it is easier to ignore San Dieguito as a distinct socioeconomic pattern than it is to draw it out of mixed assemblages.

The large number of finished bifaces (i.e., projectile points and non-projectile blades), along with large numbers of formal flake tools at the Harris site complex, is very different than nearly all other assemblages throughout the San Diego region, regardless of age. Warren et al. (2004) made this point, tabulating basic assemblage constituents for key early Holocene sites. Producing finely made bifaces and formal flake tools implies that relatively large amounts of time were spent for tool manufacture. Such a strategy contrasts with the expedient flake-based tools and cobble-core reduction strategy that typifies non-San Dieguito Archaic sites. It can be inferred from the uniquely high degree of San Dieguito assemblage formality that the Harris site complex represents a distinct economic strategy from non-San Dieguito assemblages.

If San Dieguito truly represents a distinct socioeconomic strategy from the non-San Dieguito Archaic processing regime, its rarity implies that it was not only short-lived, but that it was not as economically successful as the Archaic strategy. Such a conclusion would fit with other trends in southern California deserts, wherein hunting-related tools are replaced by processing tools during the early Holocene (Basgall and Hall 1993).

Archaic (8000 BC–AD 500)

The more than 1500-year overlap between the presumed age of Paleoindian occupations and the Archaic period highlights the difficulty in defining a cultural chronology in the San Diego region. If San Dieguito is the only recognized Paleoindian component in the San Diego region, then the dominance of hunting tools implies that it derives from Great Basin adaptive strategies and is not necessarily a local adaptation. Warren et al. (2004) admitted as much, citing strong desert connections with San Dieguito. Thus, the Archaic pattern is the earliest local socioeconomic adaptation in the San Diego region (Hale 2001, 2009).

The Archaic pattern is relatively easy to define with assemblages that consist primarily of processing tools: millingstones, handstones, battered cobbles, heavy crude scrapers, incipient flake-based tools, and cobble-core reduction. These assemblages occur in all environments across the San Diego region, with little variability in tool composition. Low assemblage variability over time and space among Archaic sites has been equated with cultural conservatism (Byrd and Reddy 2002; Warren 1968; Warren et al. 2004). Despite enormous amounts of archaeological work at Archaic sites, little change in assemblage composition occurs until the bow and arrow is adopted at around AD 500, as well as ceramics at approximately the same time (Griset 1996; Hale 2009). Even then, assemblage formality remains low. After the bow is adopted, small arrow points appear in large quantities and already low amounts of formal flake tools are replaced by increasing amounts of expedient flake tools. Similarly, shaped millingstones and handstones decrease in proportion relative to expedient, unshaped groundstone tools (Hale 2009). Thus, the terminus of the Archaic period is equally as hard to define as its beginning because basic assemblage constituents and patterns of manufacturing investment remain stable, complimented only by the addition of the bow and ceramics.

Late Prehistoric (AD 500–1769)

The period of time following the Archaic and prior to Ethnohistoric times (AD 1769) is commonly referred to as the Late Prehistoric (M. Rogers 1945; Wallace 1955; Warren et al. 2004). However, several other subdivisions continue to be used to describe various shifts in assemblage composition, including the addition of ceramics and cremation practices. In northern San Diego County, the post-AD 1450 period is called the San Luis Rey Complex (True 1980), while the same period in southern San Diego County is called the Cuyamaca Complex and is thought to extend from AD 500 until Ethnohistoric times (Meighan 1959). Rogers (1929) also subdivided the last 1,000 years into the Yuman II and III cultures, based on the distribution of ceramics. Despite these regional complexes, each is defined by the addition of arrow points and ceramics, and the widespread use of bedrock mortars. Vagaries in the appearance of the bow and arrow and ceramics make the temporal resolution of the San Luis Rey and Cuyamaca complexes difficult. For this reason, the term Late Prehistoric is well-suited to describe the last 1,500 years of prehistory in the San Diego region.

Temporal trends in socioeconomic adaptations during the Late Prehistoric period are poorly understood. This is partly due to the fact that the fundamental Late Prehistoric assemblage is very similar to the Archaic pattern, but includes arrow points and large quantities of fine debitage from producing arrow points, ceramics, and cremations. The appearance of mortars and pestles is difficult to place in time because most mortars are on bedrock surfaces; bowl mortars are actually rare in the San Diego region. Some argue that the Ethnohistoric intensive acorn economy extends as far back as AD 500 (Bean and Shipek 1978). However, there is no substantial evidence that reliance on acorns, and the accompanying use of mortars and pestles, occurred prior to AD 1400. True (1980) argued that acorn processing and ceramic use in the northern San Diego region did not occur until the San Luis Rey pattern emerged after approximately AD 1450. For southern San Diego County, the picture is less clear. The Cuyamaca Complex is the southern counterpart to the San Luis Rey pattern, however, and is most recognizable after AD 1450 (Hector 1984). Similar to True (1980), Hale (2009) argued that an acorn economy did not appear in the southern San Diego region until just prior to Ethnohistoric times, and that when it did occur, a major shift in social organization followed.

Ethnohistoric (post-AD 1769)

The history of the Native American communities prior to the mid-1700s has largely been reconstructed through later mission-period and early ethnographic accounts. The first records of the Native American inhabitants of the San Diego region come predominantly from European merchants, missionaries, military personnel, and explorers. These brief, and generally peripheral, accounts were prepared with the intent of furthering respective colonial and economic aims and were combined with observations of the landscape. They were not intended to be unbiased accounts regarding the cultural structures and community practices of the newly encountered cultural groups. The establishment of the missions in the San Diego region brought more extensive documentation of Native American communities, though these groups did not become the focus of formal and in-depth ethnographic study until the early twentieth century (Boscana 1846; Fages 1937; Geiger and Meighan 1976; Harrington 1934; Laylander 2000). The principal intent of these researchers was to record the precontact, culturally specific practices, ideologies, and languages that had survived the destabilizing effects of missionization and colonialism. This research, often understood as “salvage ethnography,” was driven by the understanding that traditional knowledge was being lost due to the impacts of modernization and cultural assimilation. Alfred Kroeber applied his “memory culture” approach (Lightfoot 2005, p. 32) by recording languages and oral histories within the San Diego region. Kroeber’s

1925 assessment of the impacts of Spanish missionization on local Native American populations supported Kumeyaay traditional cultural continuity:

> San Diego was the first mission founded in upper California; but the geographical limits of its influence were the narrowest of any, and its effects on the natives comparatively light. There seem to be two reasons for this: first, the stubbornly resisting temper of the natives; and second, a failure of the rigorous concentration policy enforced elsewhere (Kroeber 1925, p. 711).

In some ways this interpretation led to the belief that many California Native American groups simply escaped the harmful effects of contact and colonization all together. This, of course, is untrue. Ethnographic research by Dubois, Kroeber, Harrington, Spier, and others during the early twentieth century seemed to indicate that traditional cultural practices and beliefs survived among local Native American communities. These accounts supported, and were supported by, previous governmental decisions which made San Diego County the location of more federally recognized tribes than anywhere else in the United States: 18 tribes on 18 reservations that cover more than 116,000 acres (CSP 2009).

The traditional cultural boundaries between the Luiseño and Kumeyaay Native American tribal groups have been well defined by anthropologist Florence C. Shipek:

> In 1769, the Kumeyaay national territory started at the coast about 100 miles south of the Mexican border (below Santo Tomas), thence north to the coast at the drainage divide south of the San Luis Rey River including its tributaries. Using the U.S. Geological Survey topographic maps, the boundary with the Luiseño then follows that divide inland. The boundary continues on the divide separating Valley Center from Escondido and then up along Bear Ridge to the 2240 contour line and then north across the divide between Valley Center and Woods Valley up to the 1880-foot peak, then curving around east along the divide above Woods Valley (Shipek 1993, as summarized in County of San Diego 2007, p. 6).

Based on ethnographic information, it is believed that at least 88 different languages were spoken from Baja California Sur to the southern Oregon state border at the time of Spanish contact (Johnson and Lorenz 2006, p. 34). The distribution of recorded Native American languages has been dispersed as a geographic mosaic across

California through six primary language families (Golla 2007, p. 71). Based on the North City Project location, the Native American inhabitants of the region would have likely spoken both the Ipai and Tipai language subgroup of the Yuman language group. Ipai and Tipai, spoken respectively by the northern and southern Kumeyaay communities, are mutually intelligible. For this reason, these two are often treated as dialects of a larger Kumeyaay tribal group rather than as distinctive languages, though this has been debated (Luomala 1978; Laylander 2010).

Victor Golla has contended that one can interpret the amount of variability within specific language groups as being associated with the relative “time depth” of the speaking populations (Golla 2007, p. 80) A large amount of variation within the language of a group represents a greater time depth then a group’s language with less internal diversity. One method that he has employed is by drawing comparisons with historically documented changes in Germanic and Romantic language groups. Golla has observed that the “absolute chronology of the internal diversification within a language family” can be correlated with archaeological dates (Golla 2007, p. 71). This type of interpretation is modeled on concepts of genetic drift and gene flows that are associated with migration and population isolation in the biological sciences.

Golla suggested that there are two language families associated with Native American groups who traditionally lived throughout the San Diego County region. The northern San Diego tribes have traditionally spoken Takic languages that may be assigned to the larger Uto–Aztecan family (Golla 2007, p. 74). These groups include the Luiseño, Cupeño, and Cahuilla. Golla has interpreted the amount of internal diversity within these language-speaking communities to reflect a time depth of approximately 2,000 years. Other researchers have contended that Takic may have diverged from Uto–Aztecan ca. 2600 BC–AD 1, which was later followed by the diversification within the Takic speaking San Diego tribes, occurring approximately 1500 BC–AD 1000 (Laylander 2010). The majority of Native American tribal groups in southern San Diego region have traditionally spoken Yuman languages, a subgroup of the Hokan Phylum. Golla has suggested that the time depth of Hokan is approximately 8,000 years (Golla 2007, p. 74). The Kumeyaay tribal communities share a common language group with the Cocopa, Quechan, Maricopa, Mojave, and others to east, and the Kiliwa to the south. The time depth for both the Ipai (north of the San Diego River, from Escondido to Lake Henshaw) and the Tipai (south of the San Diego River, the Laguna Mountains through Ensenada) is approximated to be 2,000 years at the most. Laylander has contended that previous research indicates a divergence between Ipai and Tipai to have occurred approximately AD 600–1200 (Laylander 1985). Despite the distinct linguistic differences between the Takic-speaking tribes to the north, the Ipai-speaking communities in central San Diego, and the Tipai southern Kumeyaay, attempts to illustrate the distinctions between these groups based solely on cultural material alone have had only limited success (Pigniolo 2004; True 1966).

The Kumeyaay generally lived in smaller family subgroups that would inhabit two or more locations over the course of the year. While less common, there is sufficient evidence that there were also permanently occupied villages, and that some members may have remained at these locations throughout the year (Owen 1965; Shipek 1982; Shipek 1985; Spier 1923). Each autonomous triblet was internally socially stratified, commonly including higher status individuals such as a tribal head (Kwaaypay), shaman (Kuseyaay), and general members with various responsibilities and skills (Shipek 1982). Higher-status individuals tended to have greater rights to land resources, and owned more goods, such as shell money and beads, decorative items, and clothing. To some degree, titles were passed along family lines; however, tangible goods were generally ceremonially burned or destroyed following the deaths of their owners (Luomala 1978). Remains were cremated over a pyre and then relocated to a cremation ceramic vessel that was placed in a removed or hidden location. A broken metate was commonly placed at the location of the cremated remains, with the intent of providing aid and further use after death. At maturity, tribal members often left to other bands in order to find a partner. The families formed networks of communication and exchange around such partnerships.

Areas or regions, identified by known physical landmarks, could be recognized as band-specific territories that might be violently defended against use by other members of the Kumeyaay. Other areas or resources, such as water sources and other locations that were rich in natural resources, were generally understood as communal land to be shared amongst all the Kumeyaay (Luomala 1978). The coastal Kumeyaay exchanged a number of local goods, such as seafood, coastal plants, and various types of shell for items including acorns, agave, mesquite beans, gourds, and other more interior plants of use (Luomala 1978). Shellfish would have been procured from three primary environments, including the sandy open coast, bay and lagoon, and rocky open coast. The availability of these marine resources changed with the rising sea levels, siltation of lagoon and bay environments, changing climatic conditions, and intensity of use by humans and animals (Gallegos and Kyle 1988; Pigniolo 2005; Warren 1964). Shellfish from sandy environments included *Donax*, *Saxidomus*, *Tivela*, and others. Rocky coast shellfish dietary contributions consisted of *Pseudochama*, *Megastraea*, *Saxidomus*, *Protothaca*, *Megathura*, *Mytilus*, and others. Lastly, the bay environment would have provided

Argopecten, *Chione*, *Ostrea*, *Neverita*, *Macoma*, *Tagelus*, and others. Although marine resources were obviously consumed, terrestrial animals and other resources likely provided a large portion of sustenance. Game animals consisted of rabbits, hares (Leporidae), birds, ground squirrels, woodrats (*Neotoma* sp.), deer, bears, mountain lions (*Puma concolor*), bobcats (*Lynx rufus*), coyotes (*Canis latrans*), and others. In lesser numbers, reptiles and amphibians may have been consumed.

A number of local plants were used for food and medicine. These were exploited seasonally, and were both traded between regional groups and gathered as a single triblet moved between habitation areas. Some of the more common of these that might have been procured locally or as higher elevation varieties would have included buckwheat (*Eriogonum fasciculatum*), *Agave*, *Yucca*, lemonade sumac (*Rhus integrifolia*), sugarbush (*Rhus ovata*), sage scrub (*Artemisia californica*), yerba santa (*Eriodictyon* sp.), sage (*Salvia* sp.), *Ephedra*, prickly pear (*Opuntia* sp.), mulefat (*Baccharis salicifolia*), chamise (*Adenostoma fasciculatum*), elderberry (*Sambucus nigra*), oak (*Quercus* sp.), willow (*Salix* sp.), and *Juncus* grass among many others (Wilken 2012).

Historic Period (post-AD 1542)

San Diego history can be divided into the Spanish Period (1769–1821), Mexican Period (1821–1846) and American Period (1846–Present). European activity in the region began as early as AD 1542, when Juan Rodríguez Cabrillo landed in San Diego Bay. Sebastián Vizcaíno returned in 1602, and it is possible that there were subsequent contacts that went unrecorded. These brief encounters made the local native people aware of the existence of other cultures that were technologically more complex than their own. Epidemic diseases may also have been introduced into the region at an early date, either by direct contacts with the infrequent European visitors or through waves of diffusion emanating from native peoples farther to the east or south (Preston 2002). It is possible, but as yet unproven, that the precipitous demographic decline of native peoples had already begun prior to the arrival of Gaspar de Portolá and Junípero Serra in 1769.

The Spanish colonization of Alta California began in 1769 with the founding of Mission San Diego de Alcalá by Father Junípero Serra. Concerns over Russian and English interests in California motivated the Spanish government to send an expedition of soldiers, settlers and missionaries to occupy and secure the northwestern borderlands of New Spain through the establishment of a Presidio, Mission, and Pueblo. The Spanish explorers first camped on the shore of the bay in the area that is now downtown San Diego. Lack of water at this location, however, led to moving the camp on May 14, 1769, to a small hill closer to the San Diego River and near the Kumeyaay village of Cosoy. Father Junípero Serra arrived in July of the same year to find the Presidio serving mostly as a hospital. The Spanish built a primitive mission and presidio structure on the hill near the river.

Bad feelings soon developed between the native Kumeyaay and the soldiers, resulting in construction of a stockade which, by 1772, included barracks for the soldiers, a storehouse for supplies, a house for the missionaries and the chapel, which had been improved. The log and brush huts were gradually replaced with buildings made of adobe bricks. Flat earthen roofs were eventually replaced by pitched roofs with rounded roof tiles. Clay floors were eventually lined with fired brick.

In August, 1774 the Spanish missionaries moved the Mission San Diego de Alcalá to its present location 6 miles up the San Diego River valley (modern Mission Valley) near the Kumeyaay village of Nipaguay. Begun as a thatched chapel and compound built of willow poles, logs, and tules, the new Mission was sacked and burned in the Kumeyaay uprising of November 5, 1775. The first adobe chapel was completed in October 1776 and the present church was begun the following year. A succession of building programs through 1813 resulted in the final rectilinear plan that included the church, bell tower, sacristy, courtyard, residential complex, workshops, corrals, gardens and cemetery. Orchards, reservoirs and other agricultural installations were built to the south on the lower San Diego River alluvial terrace and were irrigated by a dam and aqueduct system. The initial Spanish occupation and mission system brought about profound changes in the lives of the Kumeyaay people. Substantial numbers of the coastal Kumeyaay were forcibly brought into the mission or died from introduced diseases.

As early as 1791, presidio commandants in California were given the authority to grant small house lots and garden plots to soldiers and their families and sometime after 1800, soldiers and their families began to move down the hill near the San Diego River. Historian William Smythe noted that Don Blas Aguilar, who was born in 1811, remembered at least 15 such grants below Presidio Hill by 1821, of which only five of these grant lands within the boundaries of what would become Old Town had houses in 1821. These included the retired commandant Francisco Ruiz Adobe (now known as the Carrillo Adobe), another building later owned by Henry Fitch on Calhoun Street, the Ybanes and Serrano houses on Juan Street near Washington Street, and a small adobe house on the main plaza owned by Juan Jose Maria Marron.

In 1822 the political situation changed as Mexico won its independence from Spain and San Diego became part of the Mexican Republic. The Mexican Government opened California to foreign trade; began issuing private land grants in the early 1820s, creating the rancho system of large agricultural estates; secularized the Spanish missions in 1833; and oversaw the rise of the civilian pueblo. By 1827, as many as 30 homes existed around the central plaza and in 1835, Mexico granted San Diego official pueblo (town) status. At this time the town had a population of nearly 500 residents, later reaching a peak of roughly 600. By 1835 the presidio, once the center of life in Spanish San Diego, had been abandoned and lay in ruins. Mission San Diego de Alcalá fared little better. The town and the ship landing area at La Playa were now the centers of activity in Mexican San Diego. However, the new Pueblo of San Diego did not prosper as did some other California towns during the Mexican Period.

The secularization in San Diego County triggered increased Native American hostilities against the Californios during the late 1830s. The attacks on outlying ranchos, along with unstable political and economic factors helped San Diego's population decline to around 150 permanent residents by 1840. San Diego's official Pueblo status was removed by 1838 and it was made a subprefecture of the Los Angeles Pueblo. When the Americans took over after 1846, the situation had stabilized somewhat, and the population had increased to roughly 350 non-Native American residents. The Native American population continued to decline, as Mexican occupation brought about continued displacement and acculturation of Native American populations.

The American Period began in 1846 when United States military forces occupied San Diego and this period continues today. When United States military forces occupied San Diego in July 1846, the town's residents split on their course of action. Many of the town's leaders sided with the Americans, while other prominent families opposed the United States invasion. In December 1846, a group of Californios under Andres Pico engaged United States Army forces under General Stephen Kearney at the Battle of San Pasqual and inflicted many casualties. However, the Californio resistance was defeated in two small battles near Los Angeles and effectively ended by January 1847. The Americans assumed formal control with the Treaty of Guadalupe-Hidalgo in 1848 and introduced Anglo culture and society, American political institutions and especially American entrepreneurial commerce. In 1850, the Americanization of San Diego began to develop rapidly.

On February 18, 1850, the California State Legislature formally organized San Diego County. The first elections were held at San Diego and La Playa on April 1, 1850, for county officers. San Diego grew slowly during the next decade. San Diegans attempted to develop the town's interests through a transcontinental railroad plan and the development of a new town closer to the bay. The failure of these plans, added to a severe drought which crippled ranching and the onset of the Civil War, left San Diego as a remote frontier town. The troubles led to an actual drop in the town's population from 650 in 1850 to 539 in 1860. Not until land speculator and developer Alonzo Horton arrived in 1867 did San Diego begin to develop fully into an active American town.

Alonzo Horton's development of a New San Diego (modern downtown) in 1867 began to swing the community focus away from Old Town and began the urbanization of San Diego. Expansion of trade brought an increase in the availability of building materials. Wood buildings gradually replaced adobe structures. Some of the earliest buildings to be erected in the American Period were "pre-fab" houses that were built on the east coast of the United States and shipped in sections around Cape Horn and reassembled in San Diego. Development spread from downtown based on a variety of factors, including the availability of potable water and transportation corridors. Factors such as views and access to public facilities affected land values, which in turn affected the character of neighborhoods that developed. During the Victorian Era of the late 1800s and early 1900s, the areas of Golden Hill, Uptown, Banker's Hill and Sherman Heights were developed. Examples of the Victorian Era architectural styles remain in these communities, as well as in Little Italy, which developed at the same time. At the time downtown was being built, there began to be summer cottage/retreat development in what are now the Beach communities and La Jolla area. The early structures in these areas were not of substantial construction; they were primarily for temporary vacation housing.

Development also spread to the Greater North Park and Mission Hills areas during the early 1900s. The neighborhoods were built as small lots, a single lot at a time; there was not large tract housing development of those neighborhoods. It provided affordable housing away from the downtown area, and development expanded as transportation improved. Barrio Logan began as a residential area, but because of proximity to rail freight and shipping freight docks, the area became more mixed with conversion to industrial uses. This area was more suitable to industrial uses because land values were not as high; topographically the area is more level, and it is not as interesting in terms of views as are the areas north of downtown. Various ethnic groups settled in the area because of the availability of land ownership.

San Ysidro began to be developed at about the turn of the twentieth century. The early settlers were followers of the Littlelanders movement. There, the pattern of development was designed to accommodate small plots of land for each homeowner to farm as part of a farming-residential cooperative community. Nearby Otay Mesa–Nestor began to be developed by farmers of Germanic and Swiss background. Some of the prime citrus groves in California were in the Otay Mesa–Nestor area; in addition, there were grape growers of Italian heritage who settled in the Otay River Valley and tributary canyons and produced wine for commercial purposes.

San Diego State University was established in the 1920s; development of the state college area began then and the development of the Navajo community was outgrowth from the college area and from the west. There was farming and ranching in Mission Valley until the middle portion of the twentieth century, when the uses were converted to commercial and residential. There were dairy farms and chicken ranches adjacent to the San Diego River where now there are motels, restaurants, office complexes and regional shopping malls. There was little development north of the San Diego River until Linda Vista was developed as military housing in the 1940s. The federal government improved public facilities and extended water and sewer pipelines to the area. From Linda Vista, development spread north of Mission Valley to the Clairemont Mesa and Kearny Mesa areas. Development in these communities was mixed use and residential on moderate-size lots.

Tierrasanta, previously owned by the U.S. Navy, was developed in the 1970s. It was one of the first planned unit developments with segregation of uses. Tierrasanta and many of the communities that have developed since, such as Rancho Peñasquitos and Rancho Bernardo, represent the typical development pattern in San Diego in the last 25 to 30 years: uses are well segregated, with commercial uses located along the main thoroughfares and the residential uses located in between. Industrial uses are located in planned industrial parks. Examples of every major period and style remain. Among the recognized styles in San Diego are Spanish Colonial, Pre-Railroad New England, National Vernacular, Victorian Italianate, Stick, Queen Anne, Colonial Revival, Neoclassical, Shingle, Folk Victorian, Mission, Craftsman, Prairie, French Eclectic, Italian Renaissance, Spanish Eclectic, Egyptian Revival, Tudor Revival, Modernistic, and International.

Religious and/or Sacred Use Areas

A search of the Native American Heritage Commission (NAHC) Sacred Lands File was conducted for the North City Project APE on July 25, 2016 (Appendix C in Appendix F2). A search of this type requires NAHC staff to review their list for the presence of Native American sites, which are organized spatially based on a Public Land Survey System section grid (measuring 1 square mile). The NAHC results letter indicated the presence of Native American resources within the North City Project APE, although specific locations and details on the type of resources were not provided. Additionally, the NAHC response letter included a list of Native American group representatives who should be contacted for information about these sites.

Outreach letters were mailed on August 16, 2016, to all Native American group representatives included on the NAHC contact list (Appendix C in Appendix F2). These letters attempt to solicit additional information relating to Native American resources that may be affected by the North City Project. Native American representatives were requested to define a general area where known resources intersect the North City Project APE. This will help guide communications with tribal groups and representatives that maintain specific traditional associations with particular sectional of the North City Project APE. To date, there have been no responses to these outreach letters. However, in response to tribal outreach conducted in support of the SANDER Site Vernal Pool Mitigation Project, one letter was received. The City has proposed the SANDER Site as a possible mitigation site for permanent impacts to sensitive upland vegetation communities and vernal pools associated with development of the North City Project. The largely undeveloped site is located approximately 0.70 mile southeast of the Metro Biosolids Center (MBC) in Kearny Mesa. Outreach letters were mailed on April 20, 2017, to all Native American group representatives included on the NAHC contact list. To date, only the Viejas Band of Kumeyaay Indians has responded to the outreach letter. The Viejas Band requested that a Kumeyaay cultural monitor be present for future ground-disturbing activities associated with the SANDER Site Vernal Pool Mitigation Project.

Native American Consultation

Three tribal entities have previously requested to be included on the City's Assembly Bill 52 (AB 52) Notice List for Project consultation: the Iipay Nation of Santa Ysabel (Santa Ysabel), the Jamul Indian Village of Kumeyaay Nation (Jamul), and Mesa Grande Band of Mission Indians (Mesa Grande). The City sent initial consultation letters to representatives of these tribal entities via certified mail on June 29, 2017 (see Appendix C of Appendix F2). Representatives from Santa Ysabel and Jamul responded positively to the consultation request, while no response was received from Mesa Grande.

City representatives met with representatives from Santa Ysabel and Jamul on July 14, 2017. The City described the North City Project and presented the results of this inventory to the tribal representatives. After reviewing the proposed mitigation measures (Section 6.10.3.3), both Santa Ysabel and Jamul representatives agreed that the required archaeological and Native American monitoring would reduce possible impacts to Tribal Cultural Resources to a non-significant level. At the conclusion of this meeting, Santa Ysabel and Jamul representatives agreed that no further consultation under AB 52 review is required.

5.10.3 METHODOLOGIES

Survey

The survey of the North City Project APE was conducted between July 25 and 29, August 27, and October 18, 2016. The APE is located in a highly developed area, and it was determined prior to field work that survey of the entire APE would be unproductive. Large portions of the APE surface are covered by buildings, pavement, and landscaping, obscuring any remnants of archaeological sites. The survey team first conducted a reconnaissance survey of the entire APE in a motor vehicle. This vehicle survey allowed the survey team to assess the APE and identify undeveloped, or at least less developed, portions of the APE where ground surface was visible and archaeological resources could be identified.

Linear portions of the APE, such as proposed pipeline routes, were surveyed using transects parallel to the route at 10-meter (33-foot) intervals. Larger, more open portions of the APE, such as proposed facility footprints, were surveyed using a combination of north/south and east/west transects at 15-meter (50-foot) intervals. In this manner, all portions of traversable land were subject to pedestrian survey. Portions of the APE that were so steep that they presented a safety risk or were so densely vegetated that ground visibility was completely obscured were not surveyed. Likewise, portions of the APE that were located on private property were not subject to pedestrian survey unless the City was granted access. This study relied on previous inventories of MCAS Miramar property, and no pedestrian survey of MCAS Miramar was performed.

An iPad Air with georeferenced Project maps and Global Positioning System (GPS) capabilities was used to aid surveying and site recordation. Records of sites previously identified within the APE were loaded onto the iPad for field reference. Field work was conducted under the supervision of Dudek archaeologist Matthew DeCarlo. Victor Herrera participated in the survey as a field crew member, and Justin Linton of Red Tail Monitoring and Research Inc. participated in the survey as the Native American monitor.

The intent of the survey was to identify the presence and status of both previously recorded and unrecorded resources within the North City Project APE to determine the possible impacts the North City Project might have on cultural resources. By being aware of their presence, the City can implement avoidance measures when possible to avoid impacts to the cultural resources in the APE. Because avoidance of cultural resources is the preferred method of mitigation, this study focused on the avoidability of cultural resources within the APE. Thus, resources that were difficult or unsafe to access, such as those located on private property or beyond some natural barrier such as a hillside or drainage, were not always surveyed as their avoidability was evident.

Documentation of cultural resources complied with the Office of Historic Preservation and Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716–44740) and the California Office of Historic Preservation Planning Bulletin Number 4(a). All sites identified during this inventory were recorded on California Department of Parks and Recreation Form DPR 523 (Series 1/95), using the Instructions for Recording Cultural Resources (Office of Historic Preservation 1995). New and updated site forms for each resource encountered are included in Confidential Appendix D of Appendix F2 and will be submitted to the South Coastal Information Center.

Visibility throughout the North City Project APE varied greatly. The areas immediately adjacent to paved and developed land often showed signs of previous grading. This often provided excellent ground visibility but the grading would have disturbed any cultural resource that may have been present. Other portions of the APE such as Mission Gorge Road passed through less-developed areas. The terrain in these areas was dominated by hillsides that were covered with grasses and dense chaparral. This reduced ground visibility to less than 5%. The weather was optimal during the survey with no cloud cover to cast shadows and obscure surface artifacts.

Excavation

While the evaluation strategy varied slightly based on the conditions encountered at each evaluated site, the same basic methods were employed. Sites were evaluated using close-interval survey, shovel test pits (STPs), and shovel test units (STUs). STPs are 0.5 × 0.3 meter (1.6 × 1 foot), excavated in 20-centimeter (8-inch) levels. STUs are 1 × 0.5 meter (3.3 × 1.6 feet), excavated in decimeter (4-inch) levels. All hand-excavated soils were screened through 1/8-inch (3-millimeter) mesh. All excavated units were backfilled at the conclusion of the unit's excavation.

Photographs of each unit profile were recorded to documented soils and disturbances. An iPad Air with georeferenced project maps and GPS capabilities was used to record the locations of excavation units and surface artifacts. Field notes were recorded on standardized forms to log artifact recovery, soil descriptions, disturbances, and any other pertinent information.

Laboratory and Cataloging Procedures

Initial laboratory procedures included cleaning (as appropriate), sorting, and cataloging of all artifacts and ecofacts. Each item was individually examined and cataloged according to class, subclass, and material; counted; and weighed on a digital scale. All coded data were entered into a Microsoft Access database. Data manipulation of a coded master catalog combining all sites was performed in Microsoft Excel.

The cultural material was sorted during cataloging into the following potential categories: 13 classes of prehistoric artifacts; 2 classes of ecofacts; ethnohistoric items, historic items, and modern items; and organic samples. The prehistoric artifact classes potentially included debitage, cores, utilized core tools, modified core tools, utilized flakes, retouched flakes, bifaces, percussing tools, groundstone, ceramics, bone artifacts, shell artifacts, and miscellaneous items.

Debitage, including both flakes and debris, was sorted by material type and cortical variation (primary, secondary, and interior) during cataloging. Maximum length, width, and thickness measurements were taken for all tools and cores using a sliding caliper.

Groundstone artifacts were classified by type, including millingstones and handstones. Maximum length, width, and thickness measurements were taken on complete groundstone items. Organic artifact classes (ecofacts) consisted of vertebrate specimens.

Once preliminary cataloging of the material was completed, more detailed attribute analysis of lithics and groundstone was performed. Stone artifacts (both flaked and ground) were individually analyzed for selected morphological and technological attributes, as well as material and condition, in an attempt to gain insight into the period of occupation and the range of activities undertaken. Ceramic artifacts were initially sorted by traditional ware (brown or buff) and sherd fragment types (body, rim, or modified). They were then inspected in order to identify other modifications. Specific analytical methods are described in the analytical results section. All artifacts, ecofacts, and samples were subject to appropriate conservation in the field and laboratory, including proper packaging and handling. Vertebrate remains were highly fragmented and could not be identified to family level so they were sorted by class and size.

Curation

All artifacts collected during archaeological testing for this study will be curated at the San Diego Archaeological Center. Any artifacts collected as part of future archaeological studies, or confiscated from looters, should also be curated so that the materials are preserved for the benefit of the general public and for archaeologists for future study. Proper curation of collected artifacts (and other materials, including documentation) can contribute to any mitigation to offset impacts to archaeological sites. ~~Curation could also consist of interpretive displays as part of any public awareness activities.~~

5.10.4 SURVEY RESULTS

Using a combination of vehicular and pedestrian survey, the entire North City Project APE was inventoried. The North City Project APE consists of multiple components, and several of these components consist of alternative routes. The inventory identified 38 previously identified cultural resources (prehistoric and historic-period sites) and 1 (one) newly identified resource (i.e., P-37-036497) within the Project APE (Table 5.10-1). The prehistoric sites include 14 artifact scatters, 5 milling stations, 3 possible temporary camps, and 9 isolated artifact locations. The historic-period sites include railroad features, a road, remnants of a water flume, a cistern, two refuse scatters, and a WWII training camp. P-37-036497 is a bedrock milling station that was evaluated by Dudek (Dudek recommends the site not eligible for listing on the NRHP or the CRHR). To date, 3 of the previously identified resources have previously been evaluated and recommended not eligible for listing on the CRHR or NRHP, 1 is listed on the San Diego Register of Historic Resources (SDRHR), and the remaining 34 resources have not yet been evaluated.

The condition and project proximity of each of these 39 resources (i.e., 38 previously identified and 1 newly identified resource) are described below, categorized by the Project component in which they were identified. Resource location maps showing the resource proximity to the APE can be found in Confidential Appendix E to Appendix F2.

Table 5.10-1
Cultural Resources within the North City Project APE

Site Number	Era	Description	NRHP/CRHR Eligibility	North City Project Component	Project Proximity
CR 450 (HRB 450)	Historic	Scripps Meanley Stables and House Complex	SDRHR	North City Pure Water Pipeline	Within 100 feet
NCAWPF-IF-1	Prehistoric	Isolated quartzite core	No formal evaluation	North City Pure Water Facility (NCPWF)	Intersects
NCAWPF-IF-2	Prehistoric	Isolated metavolcanic flake	No formal evaluation	NCPWF	Intersects
NCAWPF-IF-3	Prehistoric	Isolated quartzite flake	No formal evaluation	NCPWF	Intersects
P-37-004505	Prehistoric	Pictograph panel, lithic scatter, and rock pile	No formal evaluation	San Vicente Pipeline	Within 100 feet
P-37-006660	Historic	San Diego Mission Flume segment	No formal evaluation	San Vicente Pipeline	Within 100 feet
P-37-009117	Historic	WWII training camp remnants	No formal evaluation	Landfill Gas (LFG) Pipeline; San Vicente Pipeline	Within 100 feet
P-37-011077	Prehistoric	Bedrock milling feature	No formal evaluation	San Vicente Pipeline	Within 100 feet
P-37-011459	Prehistoric	Lithic and groundstone scatter	No formal evaluation	San Vicente Pipeline	Within 100 feet

Table 5.10-1
Cultural Resources within the North City Project APE

Site Number	Era	Description	NRHP/CRHR Eligibility	North City Project Component	Project Proximity
P-37-011611	Prehistoric	Lithic quarry	No formal evaluation	San Vicente Pipeline	Within 100 feet
P-37-011612	Prehistoric	Lithic artifact scatter	No formal evaluation	San Vicente Pipeline	Within 100 feet
P-37-011761	Historic	Concrete cistern	No formal evaluation	San Vicente Pipeline	Within 100 feet
P-37-012138	Prehistoric	Shell midden and fire affected rock	No formal evaluation	MBC	Intersects
P-37-012139	Prehistoric	Lithic scatter	No formal evaluation	MBC	Intersects
P-37-012408	Prehistoric	Lithic scatter	6Y	LFGPipeline; San Vicente Pipeline	Intersects
P-37-012439	Prehistoric	Artifact scatter	6Y	LFG Pipeline; San Vicente Pipeline	Intersects
P-37-012453	Multicomponent	Shell, lithics, and historic glass scatter	No formal evaluation	Morena Wastewater Forcemain and Brine/Centrate Line (Morena Pipelines)	Within 100 feet
P-37-013629	Historic	Foster rail depot	No formal evaluation	San Vicente Pipeline Tunnel Alternative Terminus (TAT)	Intersects
P-37-013630	Prehistoric	Bedrock milling and a rock art panel	Recommended eligible CRHR	San Vicente Pipeline – TAT	Intersects
P-37-013651	Prehistoric	Milling and artifact scatter	No formal evaluation	San Vicente Pipeline	Within 100 feet
P-37-013846	Prehistoric	Bedrock milling site	No formal evaluation	San Vicente Pipeline – In-Reservoir Alternative Terminus (IRAT); San Vicente Pipeline Marina Alternative Terminus (MAT)	Within 100 feet

Table 5.10-1
Cultural Resources within the North City Project APE

Site Number	Era	Description	NRHP/CRHR Eligibility	North City Project Component	Project Proximity
P-37-014119	Prehistoric	Isolated core	No formal evaluation	San Vicente Pipeline – (MAT	Within 100 feet
P-37-014654	Multicomponent	Marine shell scatter and rock retaining wall	No formal evaluation	San Vicente Pipeline	Intersects
P-37-014655	Prehistoric	Milling artifact scatter	No formal evaluation	San Vicente Pipeline	Intersects
P-37-014656	Prehistoric	Milling artifact scatter	No formal evaluation	San Vicente Pipeline	Within 100 feet
P-37-014657	Prehistoric	Artifact and marine shell scatter	No formal evaluation	San Vicente Pipeline	Within 100 feet
P-37-014658	Prehistoric	Lithic and groundstone scatter	No formal evaluation	San Vicente Pipeline	Within 100 feet
P-37-014660	Prehistoric	Lithic and marine shell scatter	No formal evaluation	San Vicente Pipeline	Within 100 feet
P-37-014661	Prehistoric	Marine shell and flake scatter	No formal evaluation	San Vicente Pipeline	Intersects
P-37-014961	Prehistoric	Isolated flake	No formal evaluation	San Vicente Pipeline	Within 100 feet
P-37-014981	Prehistoric	Isolated flake and core	No formal evaluation	LFG Pipeline	Intersects
P-37-015477	Prehistoric	Quartzite cobble tool	No formal evaluation	San Vicente Pipeline– IRAT	Within 100 feet
P-37-018327	Prehistoric	Shell and lithic scatter	No formal evaluation	Miramar Water Treatment Plant	Intersects
P-37-026967	Prehistoric	Bedrock milling	No formal evaluation	San Vicente Pipeline	Within 100 feet
P-37-026969	Historic	Glass scatter	No formal evaluation	San Vicente Pipeline – TAT	Within 100 feet
P-37-026974	Historic	Concrete road	6Z	San Vicente Pipeline	Intersects

Table 5.10-1
Cultural Resources within the North City Project APE

Site Number	Era	Description	NRHP/CRHR Eligibility	North City Project Component	Project Proximity
P-37-035477	Prehistoric	Isolated lithic flake	No formal evaluation	Morena Pipelines	Intersects
P-37-035478	Prehistoric	Isolated lithic flake	No formal evaluation	Morena Pipelines	Within 100 feet
P-37-036497	Prehistoric	Bedrock milling	Recommended not eligible	San Vicente Pipeline – TAT	Within 100 feet

5.10.4.1 North City Pure Water Program Components

Morena Pump Station

No cultural resources have been identified within the Morena Pump Station APE.

Although not listed in Table 5.10-1, one potential historic resource was identified within the Morena Pump Station APE: 877 Sherman Street (APN 436-451-06), the original site of the San Diego Humane Society. Originally a milk plant, the property was adapted in 1951 to house the San Diego Humane Society, which was founded March 10, 1880, by George W. Marston and George W. Hazard. New kennels were added along the southwestern boundary of the property between 1953 and 1964. In 1958, a new garage was designed by John S. M. Daniels and built by R. E. Hazard. A house at the southeastern side of the property was on the site prior to 1966. In 1974, a thrift store opened on the property to raise funds for operating costs, as well as construction of a new two-story building. Several modern modular temporary buildings also exist on the site. Investigation (see Appendix F1) revealed that the property was not eligible for listing at the national, state, or local level.

Morena Wastewater Forcemain and Brine/Centrate Line

Cultural resources within the Morena Wastewater Forcemain and Brine/Centrate Line (Morena Pipelines) APE are presented in Table 5.10-1a and are discussed below.

Table 5.10-1a
Cultural Resources within the Morena Pipelines APE

Site Number	Era	Description	NRHP/CRHR Eligibility	Project Proximity
P-37-012453	Multicomponent	Shell, lithics, and historic glass scatter	No formal evaluation	Within 100 feet
P-37-035477	Prehistoric	Isolated lithic flake	No formal evaluation	Intersects
P-37-035478	Prehistoric	Isolated lithic flake	No formal evaluation	Within 100 feet

P-37-012453; CA-SDI-12453

This multicomponent artifact scatter was identified in 1991 and included historical glass fragments, prehistoric lithics with possibly associated marine shell. The assemblage consisted of a volcanic rock core, volcanic flakes, and cobalt blue glass sherds. The record noted that a railroad line bisected the scatter and greatly disturbed the site. A site record update in 2011 could not relocate any cultural material and postulated that the scatter was destroyed during the construction of the second rail line in 2002.

The current study revisited the site and, like the 2002 survey, was unable to identify any remnants of the P-37-012453 scatter. In observation of railway safety protocol, the current survey maintained a 25-foot buffer from the railway. Extensive earthmoving is evident and a large portion of the original site boundary is now covered by rock ballast, dirt roads, and leveled roadside.

P-37-035477

This prehistoric isolate was recorded in 2016 as two metavolcanic and one quartzite flake. The flakes were recovered during potholing activities within Genesee Avenue.

P-37-035478

This prehistoric isolate was recorded in 2016 and consists of one quartzite flake. The flake was recovered from back dirt from a trench excavated during sewer work.

While not listed in Tables 5.10-1 or 5.10-1a, one historic-era structure (i.e., the Tecolote Creek concrete channel) was identified within the Morena Pipelines section of the APE. More specifically, the Morena Pipelines alignment intersects the channel north of Sea World Drive. The concrete channel through which the western portion of Tecolote Creek flows is U-shaped and shallow, with a broad, flat bottom and angled sides. Roughly 1 mile in length, the width of the channel gradually increases downstream. The City of San Diego built the concrete channel between 1953 and1958 and in doing so, shifted the stream course a few hundred feet south of its then unconfined location. Repositioning the stream and controlling its location by creating the mile-long concrete channel enabled development of the area for commercial, light industrial and residential uses. The structure is recommended as not eligible for listing in the NRHP or the CRHR.

North City Water Reclamation Plant Expansion, Influent Pump Station, and North City Renewable Energy Facility

No cultural resources or built environmental resources have been identified within the North City Water Reclamation Plant, Influent Pump Station, or North City Renewable Energy Facility APE.

North City Pure Water Facility and Pump Station

Cultural resources within the North City Pure Water Facility (NCPWF) and Pump Station APE are identified in Table 5.10-1b and are discussed below. No built environment resources were identified within the North City Pure Water Facility section of the APE.

Table 5.10-1b
Cultural Resources within the NCPWF APE

Site Number	Era	Description	NRHP/CRHR Eligibility	Project Proximity
NCAWPF-IF-1	Prehistoric	Isolated quartzite core	No formal evaluation	Intersects
NCAWPF-IF-2	Prehistoric	Isolated metavolcanic flake	No formal evaluation	Intersects
NCAWPF-IF-3	Prehistoric	Isolated quartzite flake	No formal evaluation	Intersects

NCAWPF-IF-1

This prehistoric isolate was recorded in 2016 as a tan, medium-grained, quartzite core fragment. The current survey relocated the isolate within the NCPWF APE.

NCAWPF-IF-2

This prehistoric isolate was recorded in 2016 as a brown, metavolcanic flake isolate. The current survey relocated the isolate within the NCPWF APE.

NCAWPF-IF-3

This prehistoric isolate was recorded in 2016 as a grey, medium-grained, quartzite flake isolate. The current survey was unable to relocate the isolate within the dense vegetation that covers the NCPWF APE.

Landfill Gas Pipeline

Cultural resources within the Landfill Gas (LFG) Pipeline APE are presented in Table 5.10-1c and are discussed below. No built environment resources were identified within the LFG Pipeline APE.

Table 5.10-1c
Cultural Resources within the LFG Pipeline APE

Site Number	Era	Description	NRHP/CRHR Eligibility	Project Proximity
P-37-009117	Historic	WWII training camp remnants	No formal evaluation	Within 100 feet
P-37-012408	Prehistoric	Lithic scatter	6Y	Intersects
P-37-012439	Prehistoric	Artifact scatter	6Y	Intersects
P-37-014981	Prehistoric	Isolated flake and core	No formal evaluation	Intersects

P-37-009117; CA-SDI-009117

This site was originally recorded in 1981 as a possible World War II training camp. The site contained several concrete slabs, refuse scatters, and demolished building materials. A possible prehistoric lithic scrapper was also identified and collected. A site record update in 1992 found the site to be 90% destroyed by grading activities associated with the Miramar Landfill. Most of the concrete slabs and debris had been pushed into a ravine and were difficult to observe. Metal, glass, and concrete fragments have been scattered across the site boundary. The 1992 update did note that several slabs were still in situ in the southern portion of the mesa top site, one measuring 25 × 50 feet. Another site record update in 2014 identified only three elements associated with P-37-009117, including two piles of broken concrete and a scatter of roughly 25 church-key opened soldered cans. The original site boundaries measured 1,000 by 800 feet.

The current survey was not granted permission to revisit P-37-009117. The proposed LFG Pipeline APE crosses the originally recorded boundary of P-37-009117 but is nearly 300 feet east of any of the extant features of the resource recorded in 2014.

P-37-012408; CA-~~RIV~~SDI-12408

This prehistoric artifact scatter was first identified in 1991 and described as a lithic scatter of 25–35 specimens including scrapers, flakes, debitage, a mano, and a core. The initial recordation noted that the site had been disturbed by grading and vegetation-clearing activities. The site was revisited in 1995 for archaeological testing. The study collected 73 stone tools and flakes from the surface. Ten shovel test probes and ten test units were excavated that produced 69 similar artifacts. The 1995 study recommended that the site was not eligible for listing on the NRHP. A later visit to the site in 1995 was unable to relocate the site.

The current study did not revisit the site as it was located on MCAS Miramar; however, aerial photographs show that the location of P-37-012408 was completely developed between 2010 and 2012.

P-37-012439; CA-~~RIV~~SDI-12439

This prehistoric artifact scatter was first identified in 1991 and described as a lithic scatter of 25–30 specimens including flakes, scrapers, and a mano. The site was revisited and tested in 2006. The study only found one isolated quartz flake on the surface within the site boundaries. Four shovel test probes and one test unit produced no subsurface component. The 2006 study recommended the resource not eligible for listing on the NRHP.

The current study did not revisit the P-37-012439 as it is located on MCAS Miramar.

P-37-014981

This prehistoric isolate was recorded in 1990 as a quartzite flake and core. The original site record map suggests that the resource was discovered within the roadbed of Miramar Road. Because this portion of Miramar Road was constructed as early as 1972, it is unclear how this could be.

Metro Biosolids Center

Cultural resources within the MBC APE are presented in Table 5.10-1d and are discussed below. No built environment resources were identified within the MBC APE.

Table 5.10-1d
Cultural Resources within the MBC APE

Site Number	Era	Description	NRHP/CRHR Eligibility	Project Proximity
P-37-012138	Prehistoric	Shell midden and fire-affected rock	No formal evaluation	Intersects
P-37-012139	Prehistoric	Lithic scatter	No formal evaluation	Intersects

P-37-012138; CA-SDI-12138

This prehistoric scatter was identified in 1992 as a shell midden with a scatter of fire-affected rock and artifact scatter. The artifacts included one granitic mano, a granitic mano fragment, and more than 30 volcanic and quartzite flakes. The site was revisited in 1995 but the survey could not relocate the scatter. That study postulated that the site was destroyed by activities at Miramar Landfill.

The current study revisited the P-37-012138 location and found that it has been completely developed into the MBC.

P-37-012139; CA-SDI-12139

This prehistoric artifact scatter was originally recorded in 1992 and included three lithic cores and more than 40 flakes of fine-grained volcanic materials. The light scatter covered a low knoll and measured 50 × 150 meters (165 × 490 feet). The site was revisited in 1995 but the survey could not relocate the scatter. That study postulated that the site was destroyed by activities at Miramar Landfill.

The current study revisited the P-37-012139 location and found that it has been completely developed into the MBC.

North City Pure Water Pipeline

Cultural resources within the North City Pure Water Pipeline (North City Pipeline) APE are identified in Table 5.10-1e and are discussed below.

Table 5.10-1e
Cultural Resources within the North City Pipeline APE

Site Number	Era	Description	NRHP/CRHR Eligibility	Project Proximity
CR 450	Historic	Scripps Meanley Stables and House Complext	SDRHR	Within 100 feet

CR 450

This cultural resource was originally recorded in 1986 as the T.M. Meanley House, a ranch complex constructed during 1934–1935 for Thomas Meanley and Nackey Scripps Meanley, daughter of prominent newspaper publisher Edward Willis Scripps. At the time of initial recordation, the complex consisted of a Mission Revival architectural style home, stables and workshops, a stone wall, a eucalyptus-tree-lined dirt drive, and Evan's Pond, which originally provided irrigation water for the property. Nackey Scripps Meanley passed in 1981 and her husband, Thomas, in 1985. In June 1985 the property, including the ranch and stable complex as well as the acreage, was sold to Currie/Samuelson Development Co. for $11,505,000 for commercial/industrial development (Ryon 1985). The 1986 recordation of the complex served as mitigation for proposed demolition of the house and outbuildings, which aerial photographs show was completed prior to 1989.

In 2000, the site was revisited, and three of the original features were found to be extant: the stone wall, the segment of eucalyptus-tree-lined dirt drive adjacent to the wall, and Evan's Pond. The extant features were then nominated and listed in the local SDRHR as CR 450. The stone wall, segment of tree-lined dirt drive, and Evan's Pond are still recognizable today and are used as public space adjacent to the Scripps Miramar Ranch Library Center.

The current survey revisited CR 450 (also identified as HRB 450 in the Historical Resources Technical Report; see Appendix F1) and found it to be in relatively the same condition as recorded in 2000. A site survey conducted on August 27, 2016, documented the existing conditions of the three remaining built historic resources. The tree-lined dirt drive and Evan's Pond are intact and in good condition. However, the stone wall is in fair to poor condition. Sections along the top edge and sporadic cobbles are missing and, despite evidence of previous mortar repair campaigns, numerous cracks (some quite large) are evident.

One historic resource was identified within the North City Pipeline APE: the parcel located between 10256 and 10301 Meanley Drive, adjacent to and south of the Scripps Miramar Ranch Library Center. Investigation revealed that the property was listed locally in the SDRHR as HRB 450 (see above).

Miramar Water Treatment Plant

Cultural resources within the Miramar Water Treatment Plant (WTP) APE are presented in Table 5.10-1f and are discussed below. No built environment resources were identified within the Miramar WTP APE.

Table 5.10-1f
Cultural Resources within the Miramar WTP APE

Site Number	Era	Description	NRHP/CRHR Eligibility	Project Proximity
P-37-018327	Prehistoric	Shell and lithic scatter	No Formal Evaluation	Intersects

P-37-018327; CA-SDI-15556

This low-density scatter of marine shell and three possible metavolcanic flakes was originally recorded in 1999. The scatter is located on the premises of the Miramar WTP and was likely disturbed by the construction of the facility. Shell and the possible lithic flakes were exposed in the landscaped and less developed areas of the plant. The site was revisited in 2009 and found to be in the same condition as originally recorded.

San Vicente Pure Water Pipeline

Cultural resources within the San Vicente Pipeline APE are presented in Table 5.10-1g, and are discussed following the table. No built environment resources were identified within the San Vicente Pipeline APE.

Table 5.10-1g
Cultural Resources within the San Vicente Pipeline APE

Site Number	Era	Description	NRHP/CRHR Eligibility	Project Proximity
P-37-004505	Prehistoric	Pictograph panel, lithic scatter, and rock pile	No formal evaluation	Within 100 feet
P-37-006660	Historic	San Diego Mission Flume segment	No formal evaluation	Within 100 feet

Table 5.10-1g
Cultural Resources within the San Vicente Pipeline APE

Site Number	Era	Description	NRHP/CRHR Eligibility	Project Proximity
P-37-009117	Historic	WWII training camp remnants	No formal evaluation	Within 100 feet
P-37-011077	Prehistoric	Bedrock milling feature	No formal evaluation	Within 100 feet
P-37-011459	Prehistoric	Lithic and groundstone scatter	No formal evaluation	Within 100 feet
P-37-011611	Prehistoric	Lithic quarry	No formal evaluation	Within 100 feet
P-37-011612	Prehistoric	Lithic artifact scatter	No formal evaluation	Within 100 feet
P-37-011761	Historic	Concrete cistern	No formal evaluation	Within 100 feet
P-37-012408	Prehistoric	Lithic scatter	6Y	Intersects
P-37-012439	Prehistoric	Artifact scatter	6Y	Intersects
P-37-013651	Prehistoric	Milling and artifact scatter	No formal evaluation	Within 100 feet
P-37-014654	Multicomponent	Marine shell scatter and rock retaining wall	No formal evaluation	Intersects
P-37-014655	Prehistoric	Milling artifact scatter	No formal evaluation	Intersects
P-37-014656	Prehistoric	Milling artifact scatter	No formal evaluation	Within 100 feet
P-37-014657	Prehistoric	Artifact and marine shell scatter	No formal evaluation	Within 100 feet
P-37-014658	Prehistoric	Lithic and groundstone scatter	No formal evaluation	Within 100 feet
P-37-014660	Prehistoric	Lithic and marine shell scatter	No formal evaluation	Within 100 feet
P-37-014661	Prehistoric	Marine shell and flake scatter	No formal evaluation	Intersects
P-37-014961	Prehistoric	Isolated flake	No formal evaluation	Within 100 feet
P-37-026967	Prehistoric	Bedrock milling	No formal evaluation	Within 100 feet
P-37-026974	Historic	Concrete road	6Z	Intersects

P-37-004505; CA-SDI-004505

This prehistoric temporary camp site was originally recorded in 1978 as a large area, low-density lithic scatter that included milling features and a single pictograph panel. The site boundaries encompass a depression and distant hillside north of Mission Gorge Road. Nine loci were identified throughout the 0.5-mile-wide site. A 1995 update consisted of a pictograph analysis only. Three pictograph panels were identified, consisting of anthropomorphic and geometric shapes painted in red on a southeast-facing granitic boulder.

Locus A of P-37-004505, consisting of a basalt flaked scraping tool and four additional flakes, is located immediately north of Mission Gorge Road. The San Vicente Pipeline component proposes that the pipeline be installed along the southern side of the road. The APE extends roughly 20 feet north of Mission Gorge Road into the site boundary of P-37-004505. The current survey found the terrain immediately north of the road to be steep and heavily vegetated presenting a safety risk and poor visibility. The hillside and vegetation act as natural barriers between any proposed San Vicente Pipeline activities and the resource.

P-37-006660; CA-SDI-006660

These segments of the San Diego Mission Flume was originally recorded in 1978 as a water conveyance system constructed of earth, stone, brick, and tile. A trench was excavated into the hillside along the San Diego River and local rocks were piled on the downhill edge to create a short wall. Wide bricks and stones were placed at the base of the trench to support a mission-made tile on which the water flowed. By 1978, the flume was greatly disturbed and only the stone retaining wall and trench were evident in many sections. A 2008 site record update identified eight previously unrecorded flume segments running parallel to Mission Gorge Road.

The current survey was unable to revisit P-37-006660 due to access restrictions. The 2008 site record update suggests that segments 7 and 8 fall within the San Vicente Pipeline APE.

P-37-009117; CA-SDI-009117

This site was originally recorded in 1981 as a possible World War II training camp. The site contained several concrete slabs, refuse scatters, and demolished building materials. A possible prehistoric lithic scrapper was also identified and collected. A site record update in 1992 found the site to be 90% destroyed by grading activities associated with the Miramar Landfill. Most of the concrete slabs and debris had been pushed into a ravine and were difficult to observe. Metal, glass, and concrete fragments have been scattered across the site boundary. The 1992 update did note that several slabs were still in situ in the southern portion of the mesa top site, one measuring 25 × 50 feet. Another site record update in 2014 identified only three elements associated with P-37-009117, including two piles of broken concrete and a scatter of roughly 25 church-key opened soldered cans. The original site boundaries measured 1,000 by 800 feet.

The current survey was not granted permission to revisit P-37-009117. The proposed San Vicente Pipeline APE encroaches on the originally recorded boundary of P-37-009117 but is nearly 300 feet east of any of the extant features of the resource recorded in 2014. Also, this portion of the San Vicente Pipeline consists of an extant pipeline that will be repurposed for the Project.

P-37-011077; CA-SDI-11077

This prehistoric milling station was originally recorded in 1989 as consisting of one bedrock outcrop that included three lightly worn slicks. Ground visibility was high and a single bifacial mano was identified adjacent to the milling station. The resource was located on a hillside overlooking an ephemeral drainage and described as remote and unlikely to be disturbed by humans. A 1990 site record update described the site as containing only two boulders, each with one milling slick.

The current survey revisited P-37-011077 and found the milling station to be in the same condition as previously recorded. Though located within the APE, the 10-meter × 10-meter (33-foot × 33-foot) resource is located 70 feet east of Mission Gorge Road.

P-37-011459; CA-SDI-11459

This prehistoric artifact scatter was recorded in 1989 and consisted of three mano fragments, two cores, and four quartzite flakes. The light scatter covered an area of 125 meters × 120 meters (410 feet × 394 feet), and five STPs determined that the site had no depth. The site was located north of Mission Gorge Road in an undeveloped field in 1989.

During the current survey, the recorded location P-37-011459 was revisited; however, the location has been completely developed. The area now consists of a residential development and the previous site boundaries are covered by a home, pavement, and landscaping. Historical aerial photographs suggest that the residential development was constructed between 1989 and 1995.

P-37-011611; CA-SDI-11611

This prehistoric quarry was recorded in 1990 as an exposure of white metavolcanic material with red-stained fractures. The low-lying material exposure is located on a hillside with materials and flakes eroding down the hillside. The original record noted 400+ flakes and angular assayed cobbles.

P-37-011611 is located 40 feet north of Mission Gorge Road. A hillside slopes steeply upward from Mission Gorge Road towards the resource. Due to the steep slope and poor visibility, only the southernmost extent of the resource, the 30-foot-wide section that fell within the APE, was surveyed during the current study. The current survey found no lithic flakes within this section of the site.

P-37-011612; CA-SDI-11612

This prehistoric artifact scatter was originally recorded in 1990 and consisted of three manos, a core, a hammerstone, and five fine-grained green metavolcanic flakes. The site was identified on a knoll near a large hillside, adjacent to Mission Gorge Road. The original recordation noted that there was extensive grading in areas adjacent to the resource and postulated that the original extent of the site might have been impacted. Intensive survey in 2004 was unable to relocate any artifacts and noted that the site area appears to have been subject to ground-disturbing activities.

The current survey revisited P-37-011612 and, like the 2004 survey, could not relocate the artifacts. The area shows signs of ground-disturbing activities likely associated with the construction of Mission Gorge Road to the south and the trailhead parking area to the west. The dense vegetation obscured ground visibility and may have hidden artifacts. Regardless, the resource boundary is 50 feet north of Mission Gorge Road where Project activities are proposed. Additionally, the hillside acts as a natural barrier between the San Vicente Pipeline activities and the resource boundary.

P-37-011761; CA-SDI-11761

This historic feature was recorded in 1990 and consists of a possible cistern with round, steel-reinforced concrete walls. The possible cistern was in good condition but its age was undetermined.

During the current survey, the recorded location P-37-011761 was revisited; however, the location has been completely developed. The area now consists of a residential development and the previous site boundaries are covered by a home, pavement, and landscaping. Historical aerial photographs suggest that the residential development was constructed between 1989 and 1995.

P-37-012408; CA-~~RIV~~SDI-12408

This prehistoric artifact scatter was first identified in 1991 and described as a lithic scatter of 25–35 specimens including scrapers, flakes, debitage, a mano, and a core. The initial recordation noted that the site had been disturbed by grading and vegetation clearing activities. The site was revisited in 1995 for archaeological testing. The study collected 73 stone tools and flakes from the surface. Ten shovel test probes and ten test units were excavated that produced 69 similar artifacts. The 1995 study recommended that the site was not eligible for listing on the NRHP. A later visit to the site in 1995 was unable to relocate the site.

The current study did not revisit the site, because it was located on MCAS Miramar; however, aerial photographs show that the location of P-37-012408 was completely developed between 2010 and 2012.

P-37-012439; CA-~~RIV~~SDI-12439

This prehistoric artifact scatter was first identified in 1991 and described as a lithic scatter of 25–30 specimens, including flakes, scrapers, and a mano. The site was revisited and tested in 2006. The study only found one isolated quartz flake on the surface within the site boundaries. Four shovel test probes and one test unit produced no subsurface component. The 2006 study recommended the resource not eligible for listing on the NRHP.

The current study did not revisit the P-37-012439, because it is located on MCAS Miramar.

P-37-13651; CA-SDI-13651

This prehistoric habitation site was originally recorded in 1993 as containing five milling features with over 30 elements, lithic tools, debitage, ceramic fragments, fire-affected rock, and midden. A 2009 site record update found the resources to be in the same condition as 1993 but expanded the resource boundary to include an additional milling feature.

The current survey revisited P-37-13651 and found it to be in the same condition as previously recorded in 2009. The resource is located 50 feet east of the San Vicente Pipeline APE centerline; however, the resource is located atop a hillside. The steep hillside acts as a natural barrier between the proposed San Vicente Pipeline activities and the resource boundary.

P-37-014654; CA-SDI-014267

This multicomponent resource was originally recorded in 1996 as a prehistoric marine shell scatter and a historic rock retaining wall. The marine shells included *Chione*, *Pecton*, *Ostrea*, limpet, and gastropod. The rock retaining wall was 20 meters (66 feet) long and three courses high. A site record update in 2002 could not gain access to the private property due to a fence. From Moreno Avenue, the surveyors were able to confirm that the retaining wall was still present and that the shell scatter area had recently been brushed.

The current survey revisited P-37-014654 but could not gain access to the private property. The current survey could not relocate the rock retaining wall by looking through the fence. Recent earthmoving activities have taken place within the private property, and it is possible that the resource has been destroyed. This cannot be confirmed unless access to the property is granted. Regardless, although the site falls within the San Vicente Pipeline APE, the private fence protects the recorded location of the resource from San Vicente Pipeline activities.

P-37-014655; CA-SDI-14268

This prehistoric artifact scatter was originally recorded in 1996 as four metate fragments, seven pieces of debitage, one bifacial mano fragment, and one pestle fragment. The resource was recorded on the east side of Moreno Avenue but the surveyors could not explore the resource further east due to private property fences. An update in 1997 found that a large portion of the site had been graded. Subsurface testing produced no prehistoric artifacts and confirmed that road fill or cobble was introduced into the area during the construction of Moreno Avenue.

The current survey revisited P-37-014655 but was unable to relocate any artifacts. The area between the private property and Moreno Avenue has been completely leveled and is used by the adjacent residence for vehicle parking. Any remnants of the resource may have been destroyed by roadside maintenance or collected by the local residences.

P-37-014656; CA-SDI-14269

This prehistoric artifact scatter was recorded in 1996 as two pestles, a groundstone fragment, and a truncated metate fragment. The resource was recorded on the east side of Moreno Avenue but the surveyors could not explore the resource farther east due to private property fences.

The current survey revisited P-37-014656 but was unable to relocate any artifacts. The area between the private property and Moreno Avenue has been completely leveled and is used by the adjacent residence for vehicle parking. Any remnants of the resource may have been destroyed by roadside maintenance or collected by the local residences.

P-37-014657; CA-SDI-14270

This prehistoric scatter was recorded in 1996 and included marine shell, two manos, and one piece of debitage. The resource was identified on the east side of Moreno Avenue but the surveyors could not explore the resource further east due to private property fences.

The current survey attempted to revisit P-37-014656 but was separated from the resource by a private fence. The area within the fence has been completely graded with several buildings. Although the resource is located within the San Vicente Pipeline APE, the private fence will protect the site from the proposed trenching within or immediately adjacent to Moreno Avenue.

P-37-014658; CA-SDI-14271

This prehistoric artifact scatter was recorded in 1996 as two pieces of debitage, a mano, a pestle, and a possible metate fragment. The resource was recorded on the east side of Moreno Avenue but the surveyors could not explore the resource further east due to private property fences.

The current survey revisited P-37-014658 but was unable to relocate any artifacts. The area between the private property and Moreno Avenue has been completely leveled and is used by the adjacent residence for vehicle parking. A manhole cover within the site boundary suggests that the subsurface has been completely disturbed. The remnants of the resource may have been destroyed by roadside maintenance or collected by the local residences.

P-37-014660; CA-SDI-14273

This prehistoric scatter was recorded in 1996 and contained *Chione* and *Pecton* shell, four lithic flakes, and one core. At the time of recordation, the surveyors noted that the site was subject to considerable river erosion, grading, and excavation for installation of a pipeline. The site measured 50 feet × 50 feet and was located in a depression between Lakeside Avenue and State Route 67.

The current survey revisited P-37-014660 but was unable to access the site due to a private fence. Through the fence, the current surveyors could see that the area has been greatly disturbed. The resource location is located within the San Vicente Pipeline APE but is 40 feet east of Lakeside Avenue where the pipeline trench is proposed. Review of an aerial photograph shows that the portion of the resource that falls within the APE was graded between 2010 and 2012. The resource was likely destroyed in this section of the APE at this time.

P-37-014661; CA-SDI-14274

This resource was originally recorded in 1996 as a prehistoric shell scatter and five lithic flakes. A site record update from 2000, however, determined that the shell was not the result of prehistoric subsistence but rather a recent product of imported bay sediments. The update also concluded that the reported flakes were the result of heavy equipment passing over rock.

P-37-014961

This prehistoric isolate was recorded in 1990 and consists of a single volcanic flake. The resource is located within fenced military land and the current survey was not able to access the flake. The resource is located within the San Vicente Pipeline APE but it is protected from San Vicente Pipeline activities by the well-maintained fence. Additionally, isolated finds have limited data potential and are not considered eligible for listing in the NRHP or the CRHR.

P-37-026967; CA-SDI-17652

This prehistoric resource was originally recorded in 2005 as a single milling station feature. Photographs of the single boulder suggest that the feature possessed six conical mortars. The original recorded stated that the feature appears to have been relocated to its recorded position. A 2009 site record update found the resource in the same location as originally recorded but noted extensive disturbance to the area due to construction of a park entrance.

The current survey revisited the recorded location of P-37-026967 but could not relocate the feature. It is possible that this feature was removed during the continued construction mentioned in the 2009 site record update.

P-37-026974; CA-SDI-17656

This historic resource is the concrete road that ran through the railroad depot and the Town of Foster in the early twentieth century. This half-mile segment of concrete highway used to connect Julian, California, to San Diego, California, but the route was discontinued with the construction of the San Vicente Dam. This site is associated with the P-37-013629; CA-SDI-13629, the remnants of the Town of Foster. A site record update in 2009 evaluated the site and stated that the condition of the road had worsened, likely from its use by heavy machinery. Due to its diminished integrity to convey its significance, the resource was recommended not significant for listing in the NRHP or the CRHR.

The current survey revisited P-37-026974 and found the road to be in diminishing condition. The original light-colored concrete road with large dark rock inclusions had been cracked and repaired in many areas. Potholes and entire sections have been covered with asphalt. If the easternmost route of the proposed San Vicente Pipeline is chosen, a trench would be excavated in the historical concrete road.

San Vicente Pipeline – In-Reservoir Alternative Terminus

Cultural resources within the San Vicente Pipeline – In-Reservoir Alternative Terminus (IRAT) APE are presented in Table 5.10-1h, and are discussed following the table. No built environment resources were identified within the San Vicente Pipeline – IRAT APE.

Table 5.10-1h
Cultural Resources within the San Vicente Pipeline – IRAT APE

Site Number	Era	Description	NRHP/CRHR Eligibility	Project Proximity
P-37-013846	Prehistoric	Bedrock milling site	No formal evaluation	Within 100 feet
P-37-015477	Prehistoric	Quartzite cobble tool	No formal evaluation	Within 100 feet

P-37-013846; CA-SDI-13846

This prehistoric milling station was originally recorded in 1993 and consists of three bedrock milling features containing ten milling slicks and an associated handstone. The site was revisited 2009 and found to be in the same condition as originally recorded.

The current survey revisited P-37-013846 and found it to be in the same condition as previously recorded in 2009. The resource is located on a hillside overlooking a paved road. This paved road is the route for the San Vicente Pipeline – IRAT trench.

P-37-015477

This prehistoric isolate was recorded in 1993 as a quartzite cobble tool. Since the time of its discovery, the area in which it was located has been completely developed and graded. The current survey was unable to relocate the isolate.

San Vicente Pipeline – Marina Alternative Terminus

Cultural resources within the San Vicente Pipeline – Marina Alternative Terminus (MAT) APE are presented in Table 5.10-1i and are discussed following the table. No built environment resources were identified within the San Vicente Pipeline – MAT APE.

Table 5.10-1i
Cultural Resources within the San Vicente Pipeline – MAT APE

Site Number	Era	Description	NRHP/CRHR Eligibility	Project Proximity
P-37-013846	Prehistoric	Bedrock milling site	No formal evaluation	Within 100 feet
P-37-014119	Prehistoric	Isolated core	No formal evaluation	Within 100 feet

P-37-013846; CA-SDI-13846

This prehistoric milling station was originally recorded in 1993 and consists of three bedrock milling features containing ten milling slicks and an associated handstone. The site was revisited 2009 and found to be in the same condition as originally recorded.

The current survey revisited P-37-013846 and found it to be in the same condition as previously recorded in 2009. The resource is located on a hillside overlooking a paved road. This paved road is one possible route for the San Vicente Pipeline – MAT trench.

P-37-014119

This prehistoric isolate was recorded in 1994 as a purple, brown aphanitic volcanic core. Since the time of its discovery, the area in which it was located has been completely developed and graded. The current survey was unable to relocate the isolate. The resource was located within the San Vicente Pipeline – MAT APE, but it has been completely destroyed, so no avoidance measures will be required during adjacent construction activities.

San Vicente Pipeline – Tunnel Alternative Terminus

Cultural resources within the San Vicente Pipeline – Tunnel Alternative Terminus (TAT) APE are presented in Table 5.10-1j and are discussed following the table.

Table 5.10-1j
Cultural Resources within the San Vicente Pipeline –TAT APE

Site Number	Era	Description	NRHP/CRHR Eligibility	Project Proximity
P-37-013629	Historic	Foster rail depot	No formal evaluation	Intersects
P-37-013630	Prehistoric	Bedrock milling and a rock art panel	Recommended eligible CRHR	Intersects
P-37-026969	Historic	Glass scatter	No formal evaluation	Within 100 feet
P-37-036497	Prehistoric	Bedrock milling	Recommended not eligible	Within 100 feet

P-37-013629; CA-SDI-13629

This resource consists of the remnants of the railroad depot and city of Foster. The site was originally recorded in 1993 and three historical refuse scatters loci were identified. Additionally, the original concrete road was also recorded and was still in use at the time of recordation. A 1997 site record update relocated the three artifact loci but only identified diagnostic refuse at Locus C. Subsurface investigations including post-hole and test unit excavations identified segments of the original San Diego Cuyamaca and Eastern railroad track.

The current survey revisited P-37-013629 but was only able to relocate remnants of Locus C and the concrete road. The proposed trench for the San Vicente Pipeline – TAT is within the historical concrete road. The historic road segment of P-37-013629 has been recorded separately as P-37-026974. For a further discussion of the possible impacts to the road, please see P-37-026974.

P-37-013630; CA-SDI-13630

This prehistoric temporary camp was originally recorded in 1993 and consisted of a granite outcrop with milling features, two possible rock walled rooms, a possible pictograph of red pigment, and artifacts. The three milling features contained more than 10 slicks and the artifacts consisted of more than 100 lithic flakes, 5 ceramic fragments, and 1 mano. A 1996 site record update relocated and mapped the milling features and identified 20 brownware ceramic sherds, a pestle tip, a core, and debitage. No mention was made of the rock art, but a rock wall was included on the sketch map. The site was again updated in 2000, but this time the survey identified the three milling features and the rock art panel. The rock walled shelters and artifacts were not relocated.

The recorded site boundary of P-37-013630 measures roughly 30 meters × 12.5 meters (100 feet × 40 feet). This area encompasses a terrace of earth and granite outcrops on a steep knoll. The terrace overlooks a leveled area which has been developed and contains a house and outbuildings. A large portion of this recorded site boundary falls within the San Vicente Pipeline – TAT APE. The proposed pipeline trench is located 80 feet south of the site; however, a proposed work area encompasses the southern portion of the resource.

The current survey revisited P-37-013630 on July 29, 2016. The resource was identified on top of the hillside terrace which is located at least 12 feet above the ground surface. The milling features, over 100 lithic flakes, several brownware ceramic sherds, and midden soil were identified. The rock wall was not relocated during the current survey. A granite rock face was identified with red staining; however, the staining appeared to be natural and not a pictograph.

Because it is an unevaluated cultural resource, P-37-013630 was evaluated by Dudek through additional close-interval survey and excavation of four STPs and a STU. The excavations demonstrated a continuation of midden soil to bedrock and produced 224 pieces of debitage, 4 lithic bifaces, 29 ceramic sherds, 86 vertebrate remains, and a handstone fragment. Considering the high yield compared to the low volume (0.2 cubic meters) of the excavation units, archaeological testing demonstrated that P-37-013630 has a significant subsurface deposit. Further research of P-37-013630 is likely to yield information important in prehistory and, as such, Dudek recommends P-37-013630 eligible for listing on the NRHP and the CRHR under criteria D and 4, respectively. Please refer to Appendix F2 for additional analysis regarding site P-37-013630.

P-37-026969; CA-SDI-17654

This historical refuse scatter was recorded in 2005 and consists of broken glass whiskey and beer bottles concentrated at the base of a rock. The glass bottles exhibit hand finished crown lips and are now purple due to exposure by the sun. These qualities would date the materials to the early twentieth century.

This resource is located on a steep and densely vegetated hillside. Although it is located within the San Vicente Pipeline – TAT APE, P-37-026969 is located in a section of the alignment that will be directionally drilled.

P-37-036497; CA-SDI-22092This newly discovered site was identified during the current survey and contains three prehistoric milling features and an associated artifact cache. The milling features consist of three granite bedrock boulders with six milling slicks ranging in dimensions from 24 centimeters to 70 centimeters (9 inches to 28 inches). The cache of lithic artifacts was located along the northern base of the northernmost granite boulder and appears to have been recently deposited. The cache includes three unidirectional cores, three manos, one granite hammerstone, and one metavolcanic flake. This resource was given the temporary identifier PWP-01.

P-37-036497is located on a slight hillside overlooking a saddle between two hills that was leveled for the construction of a single-family residence. P-37-013630, another prehistoric milling site, is located 215 feet west of P-37-036497 on the other side of the leveled saddle. The leveling of this saddle may have disturbed a larger site that may have prehistorically linked these two milling sites.

P-37-036497 is located within the San Vicente Pipeline – TAT APE. P-37-036497 is located in a section of the possible alignment that will be directionally drilled and the underground tunnel will have no impact on the surface resource.

Because it is an unevaluated cultural resource, P-37-036497 was evaluated through additional close-interval survey and excavation of four STPs. Excavation of the STPs produced three pieces of debitage and one groundstone fragment. Further excavations at P-37-036497 are unlikely to yield information important to prehistory. Dudek recommends the P-37-036497not eligible for listing on the NRHP or the CRHR. Please refer to Appendix F2 for additional analysis of site P-37-036497.

Also, although not listed in Table 5.10-1 or Table 5.10-1j, one potential historic resource was identified within the San Vicente Pipeline – TAT APE. The subject property is located in the community of Lakeside, California, in unincorporated San Diego County, on a parcel identified with APN 329-121-0300. The property is situated on the east side of the 13500 block of Moreno Avenue, approximately 1,200 feet south of where Moreno Avenue reaches a dead end at the San Vicente Reservoir dam at the reservoir's southern bank. An address above the door on the property reads "5111" but the associated street is simply noted as "Private Road" on maps. For purposes of this analysis, the potential resource is identified as 5111 Private Road.

The house is a one-story, single-family residence likely constructed between 1947 and 1953 (NETR 2012), and is a heavily altered example of the Minimal Traditional style. The building is roughly rectangular in-plan with a front-facing, moderately pitched gable roof clad in composition shingles, and a slight eave overhang with exposed rafters. Turbine roof vents and a brick chimney project from roof. The exterior of the building is clad in textured stucco. Windows throughout the property consist of various sized horizontal sliding aluminum sash windows. The west elevation contains a large screened-in porch addition set atop a concrete block foundation, and accessed via a set of concrete block steps with a metal pipe hand railing. The porch has a flat, shed roof extension supported by a series of beams that align with the base of the main gable. Once inside the porch, the residence is accessed via a sliding glass door with an aluminum frame. The southwest elevation contains a simple wooden door with a single-hung aluminum sash window set atop a set of concrete steps and set beneath a shed roof extension supported by simple wooden posts with attached porch railings. The southeast elevation contains a dilapidated shade structure supported by metal posts with a wood panel awning. The northeast elevation contains a large concrete pad that connects to a concrete walkway in front of the northwest elevation. The grounds surrounding the property contain two wooden pergola structures, a series of picnic tables and benches, metal storage containers, a water tank, a small outhouse, utility boxes, and a scatter of debris consisting of building materials and crates. Investigation revealed that the property was not eligible for listing at the national, state, or local level.

Mission Trails Booster Station

No cultural resources have been identified within the Mission Trails Booster Station APE.

5.10.4.2 Archaeological Testing Results

The current survey identified two previously unevaluated cultural resources, both of which were located within the San Vicente Pipeline – TAT APE, that could have been potentially impacted by Project activities: P-37-013630 and P-37-036497. Archaeological testing was conducted to gather information to determine the eligibility of these sites for listing on the NRHP or the CRHR. Since these excavations, the City has committed to avoiding impacts to these resources.

P-37-013630

Dudek archaeologists revisited P-37-013630 and conducted excavations on September 29, 2016. The entire terrace was surveyed using transects at less than 1-meter intervals. Over 100 lithic flakes were identified on the surface. Identified materials included quartz, cryptocrystalline silicates (CCS), volcanic, and obsidian. Ten brownware sherds were also identified on the surface of the terrace. To determine the presence of a subsurface deposit, four STPs were excavated along the terrace and one 1 meter × 0.5 meter test unit (TU-1) was excavated within the highest concentration of surface artifacts, as shown on the DPR form in Appendix F1. The four STPs were excavated to a depth ranging from 20 to 30 centimeters. Heavy granite boulders or bedrock prevented continued excavation in STPs 1, 3, and 4 (see Appendix F1). STP-2 was the most productive of the STPs and was still productive when it was abandoned at 30 centimeters depth. STP-4 was located furthest from the ground surface concentration and only produced two pieces of debitage. Dark midden soil was observed to depth in all excavation units except STP-4. TU-1 did show signs of ground disturbance in the form of modern ceramics and rusted metal found subsurface. Due to the high artifact content recovered from the first 10 centimeters excavated level of TU-1 was so productive and demonstrated a significant subsurface deposit, TU-1 was abandoned at 10 centimeters depth.

P-37-036497Dudek archaeologists revisited and conducted excavations as P-37-036497 on September 29, 2016. A 20-meter buffer surrounding the three bedrock milling features was resurveyed by Dudek archaeologists using transects at less than 1-meter intervals. Ground visibility was less than 30% due to dense grass and brush; however, one groundstone fragment was identified during the close-interval survey near Feature 1. The groundstone fragments prompted the location of STP-2. STP-3 and STP-4 were excavated 3 meters and 8 meters south of Feature 3, respectively (refer to DPR form in Appendix F1). All STPs were excavated to a depth of 30 centimeters below surface. STP-2 produced one groundstone fragment and two pieces of debitage. All three artifacts were identified in the first 20 centimeters. STP-1, STP-3, and STP-4 produced no cultural materials and no midden soil was noted in any of the four STPs.

5.10.5 ~~APPLICABLE REGIONAL PLANS AND POLICIES~~ REGULATORY FRAMEWORK

Federal

Executive Order 13751, Consultation and Coordination with Indian Tribal Governments, 63 FR 96

Executive Order 13175 was issued to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications. When implementing such policies, agencies shall consult with tribal officials as to the need for federal standards and any alternatives that limits their scope or otherwise preserves the prerogatives and authority of Indian tribes.

Secretarial Order No. 3206 – American Indian Tribal Rights, Federal – Tribal Trust Responsibilities, and the Endangered Species Act

This order clarifies the responsibilities of the Department of the Interior agencies with regard to how federal Endangered Species Act compliance actions affect, or may affect, Indian lands, tribal trust resources, or the exercise of American Indian tribal rights. Interior agencies will carry out their responsibilities in a manner that harmonizes the federal trust responsibility to tribes, tribal sovereignty, and statutory missions of the departments, and that strives to ensure that Indian tribes do not bear a disproportionate burden for the conservation of listed species.

Indian Policy of the Bureau of Reclamation

As stated in the 2016 Reclamation Manual, "Reclamation will carry out its programs and projects in compliance with the letter and the spirit of laws and policies relating to Indians; acknowledge and affirm the special relationship between the United States and federally recognized Indian tribes; and actively seek partnerships with Indian tribes to ensure that tribes have the opportunity to participate fully in the Reclamation program as they develop and manage their water and related resources" (BOR 2016).

36 CFR 800 and Section 106 of the National Historic Preservation Act

The National Historic Preservation Act (NHPA) established the NRHP and the President's Advisory Council on Historic Preservation, and provided that states may establish State Historic Preservation Officers to carry out some of the functions of the NHPA. Most significantly for federal agencies responsible for managing cultural resources, Section 106 of the NHPA directs that "[t]he head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP." Section 106 also affords the President's Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking (16 U.S.C. 470f).

Title 36 of the Code of Federal Regulations, Part 800, implements Section 106 of the NHPA. It defines the steps necessary to identify historic properties (those cultural resources listed in or eligible for listing in the NRHP), including consultation with federally recognized Native American tribes to identify resources with important cultural values; to determine whether or not they may be adversely affected by a proposed undertaking; and to outline the process for eliminating, reducing, or mitigating the adverse effects.

The content of 36 CFR 60.4 defines criteria for determining eligibility for listing in the NRHP. The significance of cultural resources identified during an inventory must be formally evaluated for historical significance in consultation with the California State Historic Preservation Office to determine whether the resources are eligible for inclusion in the NRHP. Cultural resources may be considered eligible for listing if they possess integrity of location, design, setting, materials, workmanship, feeling, and association. The criteria for determining eligibility are essentially the same in content and order as those outlined under the California Environmental Quality Act (CEQA), but the criteria under NHPA are labeled A through D (rather than 1–4 under CEQA).

Regarding criteria A through D of Section 106, the quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, cultural resources, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that:

A. Are associated with events that have made a significant contribution to the broad patterns of our history; or

B. Are associated with the lives of persons significant in our past; or

C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Have yielded or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

The President's Advisory Council on Historic Preservation provides methodological and conceptual guidance for identifying historic properties. In 36 CFR 800.4, the steps necessary for identifying historic properties include:

- Determine and document the APE (36 CFR 800.16(d)).
- Review existing information on historic properties within the APE, including preliminary data.
- Confer with consulting parties to obtain additional information on historic properties or concerns about effects to these.
- Consult with Native American tribes (36 CFR 800.3(f)) to obtain knowledge on resources that are identified with places which they attach cultural or religious significance.
- Conduct appropriate fieldwork (including phased identification and evaluation).
- Apply NRHP criteria to determine a resource eligibility for NRHP listing (36 CFR 800.4).

Fulfilling these steps is generally thought to constitute a reasonable effort to identify historic properties within the APE for an undertaking. The obligations of a federal agency must also assess whether an undertaking will have an adverse effect on cultural resources. An undertaking will have an adverse effect when:

> …an undertaking may alter, directly or indirectly, any of the characteristics of a historic property hat qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to

> all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative (36 CFR Part 800.5(1)).

The process of determining whether an undertaking may have an adverse effect requires the federal agency to confer with consulting parties in order to appropriately consider all relevant stakeholder concerns and values. Consultation regarding the treatment of a historic property may result in a Programmatic Agreement and/or Memorandum of Agreement between consulting parties that typically include the lead federal agency, State Historic Preservation Office, and Native American tribes if they agree to be signatories to these documents. Treatment documents—whether resource-specific or generalized—provide guidance for resolving potential or realized adverse effects to known historic properties or to those that may be discovered during implementation of the undertaking. In all cases, avoidance of adverse effects to historic properties is the preferred treatment measure and it is generally the burden of the federal agency to demonstrate why avoidance may not be feasible. Avoidance of adverse effects may not be feasible if it would compromise the objectives of an undertaking that can be reasonably said to have public benefit. Other non-archaeological considerations about the benefit of an undertaking may also apply, resulting in the determination that avoidance is not feasible. In general, avoidance of adverse effects is most difficult when a permitted undertaking is being implemented, such as identification of an NRHP-eligible archaeological resource during earthmoving.

National Environmental Policy Act of 1969

The National Environmental Policy Act (NEPA; 42 U.S.C. 4321 et seq.) establishes national policies and goals for the protection, maintenance, and enhancement of the environment and provides a framework for implementing these goals within the federal agencies. Section 102 of NEPA requires federal agencies to address environmental effects in their planning and decision-making documents. Specifically, all agencies are required to prepare detailed statements or reports that analyze and assess the environmental impacts of and alternatives to major federal action which could potentially affect the environment. Coordination efforts between NEPA and NHPA (Section 106) are established in 36 CFR 800.8(c). This section also established the process through which a federal agency can use the

NEPA process and documentation to comply with Section 106. These are being coordinated for this project. NEPA establishes the federal government's responsibility to preserve and protect significant historic, cultural, and natural resources of the United States.

State

California Register of Historical Resources

In California, the term "cultural resource" includes but is not limited to "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (California Public Resources Code, Section 5020.1(j)). In 1992, the California legislature established CRHR "to be used by state and local agencies, private groups, and citizens to identify the state's cultural resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (California Public Resources Code, Section 5024.1(a)). A resource is eligible for listing in the CRHR if the State Cultural Resources Commission determines that it is a significant resource and that it meets any of the following NRHP criteria:

1. Associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. Associated with the lives of persons important in our past.
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
4. Has yielded, or may be likely to yield, information important in prehistory or history (California Public Resources Code, Section 5024.1(c)).

Resources less than 50 years old are not considered for listing in the CRHR, but may be considered if it can be demonstrated that sufficient time has passed to understand the historical importance of the resource (see 14 CCR, Section 4852(d)(2)).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing on the NRHP are automatically listed on the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local cultural resource surveys. The State Historic Preservation Office maintains the CRHR.

Native American Historic Cultural Sites

The Native American Historic Resources Protection Act (California Public Resources Code, Section 5097 et seq.) addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and establishes the NAHC to resolve disputes regarding the disposition of such remains. In addition, the Native American Historic Resource Protection Act makes it a misdemeanor punishable by up to 1 year in jail to deface or destroy an Indian historic or cultural site that is listed or may be eligible for listing in the CRHR.

California Native American Graves Protection and Repatriation Act

The California Native American Graves Protection and Repatriation Act, enacted in 2001, requires all state agencies and museums that receive state funding and that have possession or control over collections of human remains or cultural items, as defined, to complete an inventory and summary of these remains and items on or before January 1, 2003, with certain exceptions. The act also provides a process for the identification and repatriation of these items to the appropriate tribes.

California Environmental Quality Act

As described further below, the following CEQA statutes and CEQA Guidelines are relevant to the analysis of archaeological and historic resources:

1. California Public Resources Code, Section 21083.2(g): Defines "unique archaeological resource."
2. California Public Resources Code, Section 21084.1, and CEQA Guidelines, Section 15064.5(a): Defines cultural resources. In addition, CEQA Guidelines, Section 15064.5(b), defines the phrase "substantial adverse change" in the

significance of a cultural resource. It also defines the circumstances when a project would materially impair the significance of a cultural resource.

3. California Public Resources Code, Section 21074(a): defines "Tribal cultural resources" and Section 21074(b): defines a "cultural landscape."
4. California Public Resources Code, Section 5097.98, and CEQA Guidelines, Section 15064.5(e): These statutes set forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated ceremony.
5. California Public Resources Code, Sections 21083.2(b)–21083.2(c), and CEQA Guidelines, Section 15126.4: These statutes and regulations provide information regarding the mitigation framework for archaeological and historic resources, including options of preservation-in-place mitigation measures; identifies preservation-in-place as the preferred manner of mitigating impacts to significant archaeological sites.

Under CEQA, a project may have a significant effect on the environment if it may cause "a substantial adverse change in the significance of an [sic] cultural resource" (California Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5(b)). A "cultural resource" is any site listed or eligible for listing in the CRHR. The CRHR listing criteria are intended to examine whether the resource in question: (a) is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; (b) is associated with the lives of persons important in our past; (c) embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or (d) has yielded, or may be likely to yield, information important in pre-history or history.

The term "cultural resource" also includes any site described in a local register of historic resources, or identified as significant in a cultural resources survey (meeting the requirements of California Public Resources Code Section 5024.1(q)).

CEQA also applies to "unique archaeological resources." California Public Resources Code, Section 21083.2(g), defines a "unique archaeological resource" as any 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:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person (California Public Resources Code, Section 21083.2(g)).

In 2014, CEQA was amended through AB 52 to apply to "tribal culture resources" as well. Specifically, California Public Resources Code, Section 21074, provides guidance for defining tribal cultural resources as either of the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following: (A) Included or determined to be eligible for inclusion in the California Register of Cultural Resources. (B) Included in a local register of cultural resources as defined in subdivision (k) of §5020.1.
- 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 §5024.1. In applying the criteria set forth in subdivision (c) of §5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe. (b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape (California Public Resources Code, Section 21074).

All cultural resources and unique archaeological resources – as defined by statute – are presumed to be historically or culturally significant for purposes of CEQA (California Public Resources Code, Section 21084.1; 14 CCR 15064.5(a)). The lead agency is not precluded from determining that a resource is a cultural resource even if it does not fall within this presumption (California Public Resources Code, Section 21084.1; 14 CCR 15064.5(a)). A site or resource that does not meet the definition of "cultural resource" or "unique archaeological resource" is not considered significant under CEQA and need not be analyzed further (California Public Resources Code, Section 21083.2(a); 14 CCR 15064.5(c)(4)).

Under CEQA a significant cultural impact results from a "substantial adverse change in the significance of an [sic] cultural resource [including a unique archaeological resource]" due to the "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an cultural resource would be materially impaired" (14 CCR 15064.5(b)(1); California Public Resources Code, Section 5020.1(q)). In turn, the significance of a cultural resource is materially impaired when a project:

1. Demolishes or materially alters in an adverse manner those physical characteristics of an cultural resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register; or
2. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of cultural resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an cultural resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
3. Demolishes or materially alters in an adverse manner those physical characteristics of a cultural resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA (14 CCR 15064.5(b)(2)).

Pursuant to these sections, CEQA first evaluates evaluating whether a project site contains any "cultural resources," then assesses whether that project will cause a substantial adverse change in the significance of a cultural resource such that the resource's historical significance is materially impaired.

When a project significantly affects a unique archaeological resource, CEQA imposes special mitigation requirements. Specifically:

> [i]f it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require

> reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. Examples of that treatment, in no order of preference, may include, but are not limited to, any of the following:
>
> 1. Planning construction to avoid archaeological sites.
> 2. Deeding archaeological sites into permanent conservation easements.
> 3. Capping or covering archaeological sites with a layer of soil before building on the sites.
> 4. Planning parks, greenspace, or other open space to incorporate archaeological sites (California Public Resources Code, Sections 21083.2(b)(1)–21083.2(b)(4)).

If these "preservation in place" options are not feasible, mitigation may be accomplished through data recovery (California Public Resources Code, Section 21083.2(d); 14 CCR 15126.4(b)(3)(C)). California Public Resources Code, Section 21083.2(d), states that:

> [e]xcavation as mitigation shall be restricted to those parts of the unique archaeological resource that would be damaged or destroyed by the project. Excavation as mitigation shall not be required for a unique archaeological resource if the lead agency determines that testing or studies already completed have adequately recovered the scientifically consequential information from and about the resource, if this determination is documented in the environmental impact report (California Public Resources Code, Section 21083.2(d)).

These same requirements are set forth in slightly greater detail in CEQA Guidelines, Section 15126.4(b)(3), as follows:

> A. Preservation in place is the preferred manner of mitigating impacts to archaeological sites. Preservation in place maintains the relationship between artifacts and the archaeological context. Preservation may also avoid conflict with religious or cultural values of groups associated with the site.
>
> B. Preservation in place may be accomplished by, but is not limited to, the following:

1. Planning construction to avoid archaeological sites;
2. Incorporation of sites within parks, greenspace, or other open space;
3. Covering the archaeological sites with a layer of chemically stable soil before building tennis courts, parking lots, or similar facilities on the site[; and]
4. Deeding the site into a permanent conservation easement.

C. When data recovery through excavation is the only feasible mitigation, a data recovery plan, which makes provision for adequately recovering the scientifically consequential information from and about the cultural resource, shall be prepared and adopted prior to any excavation being undertaken (14 CCR 15126.4(b)(3)).

Note that, when conducting data recovery, "[i]f an artifact must be removed during project excavation or testing, curation may be an appropriate mitigation" (14 CCR 15126.4(b)(3)). However, "[d]ata recovery shall not be required for an cultural resource if the lead agency determines that testing or studies already completed have adequately recovered the scientifically consequential information from and about the archaeological or historic resource, provided that determination is documented in the EIR and that the studies are deposited with the California Cultural Resources Regional Information Center" (14 CCR 15126.4(b)(3)(D)).

Finally, CEQA Guidelines, Section 15064.5, assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are set forth in California Public Resources Code, Section 5097.98.

California Health and Safety Code Section 7050.5

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. California Health and Safety Code Section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains shall occur until the County coroner has examined the remains (California Health and Safety Code, Section 7050.5b). If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the NAHC within 24 hours (California Health and Safety Code, Section 7050.5c). The NAHC will notify the Most Likely Descendant (MLD). With the permission of the landowner, the MLD may inspect the site of discovery. The inspection must be completed within 24 hours of notification of the MLD by the NAHC. The MLD may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

Local

County of San Diego Ordinance No. 9493

The purpose and intent of the County's Ordinance No. 9493 is to create a local register of historical resources located within unincorporated areas of the County of San Diego by the addition of Section 396.7 to the San Diego County Administrative Code. Section 1 of the Ordinance states that:

> The Local Register is an authoritative listing and guide to be used by local agencies, private groups, and citizens in identifying historical resources in the County of San Diego. In addition, the listing shall also be used as a management tool for planning, and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change.

Section IV of the Ordinance defines what historical resources are eligible for listing in the San Diego County Local Register of Historical Resources as follows:

(a) Historical resources to be listed automatically in the Local Register include the following:

(1) Historical resources listed on the National Register of Historic Places or California Register of Historical Resources. Normally, sites that are determined as eligible for listing on the National Register of Historic Places or California Register of Historical Resources or sites previously designated as Historic/Archaeological Landmarks or Districts through the application of the "H" or "J" special area designator are eligible for listing in the Local Register.

(b) Historical resources that require nomination to be listed in the Local Register may be nominated by individuals, organizations, or governmental agencies. Resources that are to be listed in the Local

Register must have owner approval prior to consideration for listing. These resources include:

(1) Local historical resources identified as significant during CEQA environmental review.

(2) An historical resource or historic district.

(3) An historical resource contributing to the significance of a nominated historic district.

(4) A group of historical resources identified in historic resource surveys, if the survey meets the criteria and standards of documentation as identified in Section V(e) below.

(5) An historical resource, a group of historical resources, or historic districts designated or listed as County landmarks or historical resources or districts pursuant to any County ordinance, if the criteria for designation or listing under the ordinance have been reviewed by the Historic Site Board as meeting the Local Register criteria.

(6) Historic Landmarks or Districts designated through the application of the "H" or "J" special area designator.

Section V(b) of the Ordinance specifies the criteria for evaluating the significance of historical resources. An historical resource must be significant at the local level under one or more of the following four criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of San Diego County's history and cultural heritage;

(2) Is associated with the lives of persons important to the history of San Diego County or its communities;

(3) Embodies the distinctive characteristics of a type, period, San Diego County region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(4) Has yielded or may be likely to yield, information important in prehistory or history.

The historical resource must also retain sufficient integrity. Integrity is the authenticity of an historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Historical resources eligible for listing in the Local Register must meet one of the criteria of significance described in Section V(b), above, and retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Historical resources that have been preserved, rehabilitated, or restored according to the guidelines approved by the Secretary of Interior may also be evaluated for listing.

Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. It must also be judged with reference to the particular criteria under which a resource is proposed for eligibility. Alterations over time to a resource or changes in its use may themselves have historical, cultural, or architectural significance.

City of San Diego Cultural Resources Guidelines

The City of San Diego Cultural Resources Guidelines outlines its purpose as follows:

> To provide property owners, the development community, consultants and the general public with explicit guidelines for the management of cultural resources located within the jurisdiction of the City of San Diego. These guidelines are designed to implement the City's Cultural Resources Regulations contained in the Land Development Code (Chapter 14, Division 3, Article 2) in compliance with the applicable local, state, and federal policies and mandates (City of San Diego 2001).

The City of San Diego Cultural Resources Guidelines observe that "cultural resource" means:

> Site improvements, buildings, structures, historic districts, signs, features (including trees or other landscaping), places, place names, interior elements and fixtures designated in conjunction with a property, or other objects of historical, archaeological, scientific, educational, cultural, architectural, aesthetic, or traditional significance to citizens of the city. They include buildings, structures, objects, archaeological sites, districts, or landscapes possessing physical evidence of human activities that are

> typically over 45 years old, regardless of whether they have been altered or continue to be used (City of San Diego 2001).

The purpose and intent of the Cultural Resources Regulation of the Land Development Code (Chapter 14, Division 3, Article 2) is outlined as follows:

> To protect, preserve and, where, damaged, restore the cultural resources of San Diego. The regulations apply to all development within the City of San Diego when cultural resources are present within the premises regardless of the requirement to obtain Neighborhood Development Permit or Site Development Permit (City of San Diego 2001).

The City of San Diego General Plan Program Environmental Impact Report states the following:

> The Cultural Resources Regulations require that designated cultural resources and traditional cultural properties be preserved unless deviation findings can be made by the decision maker as part of a discretionary permit. Minor alterations consistent with the U.S. Secretary of the Interior's Standards are exempt from the requirement to obtain a separate permit but must comply with the regulations and associated cultural resources guidelines. Limited development may encroach into important archaeological sites if adequate mitigation measures are provided as a condition of approval.
>
> Cultural Resources Guidelines, located in the Land Development Manual, provide property owners, the development community, consultants and the general public explicit guidance for the management of cultural resources located within the City's jurisdiction. These guidelines are designed to implement the cultural resources regulations and guide the development review process from the need for a survey and how impacts are assessed to available mitigation strategies and report requirements and include appropriate methodologies for treating cultural resources located in the City (City of San Diego 2008a).

In order to assess the significance of the Pure Water Program's effects on cultural resources, the City of San Diego's Scoping Letter for the Pure Water Program (City of San Diego 2014), as well as the City's Significance Determination Thresholds (City of San Diego 2016), identify the following thresholds:

- Result in the alteration or destruction of a prehistoric or historic archaeological site, or adverse physical or aesthetic effects to a prehistoric building, structure, object, or site.
- Result in any impact to existing religious or sacred uses or result in the disturbance of any human remains within the potential impact area.

In general, the City's cultural resources regulations build on federal and state cultural resources laws and guidelines in an attempt to streamline the process of considering impacts to cultural resources within the City's jurisdiction, while maintaining that some resources not significant under federal or state law may be considered historical under the City's guidelines. In order to apply the criteria and determine the significance of potential project impacts to a cultural resource, the APE of the project must be defined for both direct impacts and indirect impacts. Indirect impacts can include increased public access to an archaeological site, or visual impairment of a historically significant view shed related to a historic building or structure.

City of San Diego Comprehensive Historic Preservation Plan

The Comprehensive Historic Preservation Plan was prepared by the Historical Site Board and the San Diego Planning Department in order to direct and focus the City's efforts to deal with increasingly complex historic preservation issues. There are four elements to this plan, which are the Inventory Element, the Incentives Element, the Education Element, and the Draft Historic Resource Board Ordinance. The first three elements were adopted by the City Council in February 1992; the final element was incorporated into Chapter 14, Article 3, Division 2 of the Land Development Code.

City of San Diego Historical Resource Board

The Historical Resources Board is established by the City Council as an advisory board to identify, designate and preserve the historical resources of the City; to review and make a recommendation to the appropriate decision making authority on applications for permits and other matters relating to the demolition, destruction, substantial alteration, removal or relocation of designated historical resources; to establish criteria and provide for a Historical Resources Inventory of properties within the boundaries of the City; and to recommend to the City Council and Planning Commission procedures to facilitate the use of the Historical Resources Inventory results in the City's planning process in accordance with Section 111.0206 of the Land Development Code.

City of San Diego Historical Resources Board Design Criteria

The Historical Resources Guidelines of the City of San Diego's Land Development Manual (City of San Diego 2001) identifies the criteria under which a resource may be historically designated. It states that any improvement, building, structure, sign, interior element and fixture, site, place, district, area, or object may be designated a historical resource by the City of San Diego Historical Resources Board if it meets one or more of the following designation criteria:

a. Exemplifies or reflects special elements of the City's, a community's or a neighborhood's historical, archaeological, cultural, social, economic, political, aesthetic, engineering, landscaping or architectural development;

b. Is identified with persons or events significant in local, state or national history;

c. Embodies distinctive characteristics of a style, type, period or method of construction or is a valuable example of the use of indigenous materials or craftsmanship;

d. Is representative of the notable work of a master builder, designer, architect, engineer, landscape architect, interior designer, artist or craftsman;

e. Is listed or has been determined eligible by National Park Service for listing on the National Register of Historic Places or is listed or has been determined eligible by the State Historical Preservation Office for listing on the State Register of Historical Resources; or

f. Is a finite group of resources related to one another in a clearly distinguishable way or is a geographically definable area or neighborhood containing improvements which have a special character, historical interest or aesthetic value or which represent one or more architectural periods or styles in the history and development of the City.

City of San Diego Process Guide and General Plan

The Historic Preservation Element offers a general guide for preserving, protecting, restoring, and rehabilitating historical and cultural resources within the City in order to maintain and encourage appreciation of its history and culture, improve the quality of the City's built environment, maintain the character and identity of its communities, and enhance the local economy through historic preservation. The primary goals of the Historic Preservation Element are outlined below:

A. Identification and Preservation of Historical Resources
   - Identification of the historical resources of the City.
   - Preservation of the City's important historical resources.
   - Integration of historic preservation planning in the larger planning process.

B. Historic Preservation, Education, Benefits, and Incentives
   - Public education about the importance of historical resources.
   - Provision of incentives supporting historic preservation.
   - Cultural heritage tourism promoted to the tourist industry (City of San Diego 2008b).

The detailed policies associated with items A and B above can be found in the Historic Preservation Element (City of San Diego 2008b), available on the City's website at http://www.sandiego.gov/planning/genplan/.

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5.11 HYDROLOGY AND WATER QUALITY

5.11.1 INTRODUCTION

The purpose of this section is to describe the surface water hydrology and water quality conditions of the North City Project area. The relevant study area consists of the watersheds crossed by the North City Project Alternatives (Project Alternatives), including all drainages and receiving waters into which stormwater and non-stormwater discharges from the Project Alternatives would occur. This chapter is based on review of the Water Quality Control Plan for the San Diego Basin (Basin Plan; San Diego RWQCB 2016a) and maps and data from Project Clean Water (2016), the City of San Diego (City) and County of San Diego (County) online geographical database (SanGIS 2016), and the State Water Resources Control Board (SWRCB 2016). In addition, the water quality conditions of the Miramar Reservoir are based on the Water Quality Modeling of Miramar Reservoir in Support of Assessment of Nutrients and Productivity, included as Appendix G. A complete listing of these references is included in Chapter 11.

5.11.2 ENVIRONMENTAL SETTING

The North City Project components (project components) are located within the San Diego Hydrologic Region, which is defined by all areas in the region that drain west into the Pacific Ocean. The San Diego Hydrologic Region encompasses approximately 3,900 square miles and is further subdivided into 11 major watersheds (San Diego RWQCB 2016a; Project Clean Water 2016).

Watersheds

A watershed is an area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel. The word *watershed* is sometimes used interchangeably with *drainage basin* or *catchment*, and can often be identified differently for the same site, depending on the scale of interest.

Regionally, watersheds within the North City Project Area (Project Area) can be characterized as "hydrologic units" that are defined in the Basin Plan for the purpose of water quality planning (San Diego RWQCB 2016a). These hydrologic units are made up of one or more watersheds as defined in the U.S. Geological Survey Watershed Boundary Dataset (USGS 2016). The project components intersect 2 of the 11 hydrologic units within the San Diego Hydrologic Region: the

Los Peñasquitos Hydrologic Unit and the San Diego River Hydrologic Unit (Figure 5.11-1, Regional Hydrology). The Miramar Reservoir Alternative—with the exception of the southern end of the Morena Wastewater Forcemain and Brine/Centrate Line (Morena Pipelines) and the Morena Pump Station (and overflow pipes)—is within the Los Peñasquitos Hydrologic Unit. The San Vicente Reservoir Alternative crosses both hydrologic units, with the majority of the San Vicente Pure Water Pipeline (San Vicente Pipeline) within the San Diego River Hydrologic Unit.

Project Clean Water (2016), which provides a centralized point of access to water quality information and resources for San Diego region, describes each of these hydrologic units as follows:

- **The Los Peñasquitos Hydrologic Unit** comprises the Poway Creek watershed, the Mission Beach–Frontal Pacific Ocean watershed, and the Mission Bay watershed. These watersheds drain a highly urbanized region located mostly west of Interstate 15 in coastal San Diego County. Collectively and individually, the watersheds support a variety of water supply, economic, recreational, and habitat-related beneficial uses. The major receiving waters, Los Peñasquitos Lagoon and Mission Bay, are both fragile systems that support diverse native wildlife and plant species. Both water bodies are especially sensitive to the effects of pollutants due to restricted or intermittent tidal flushing. Combined, the watersheds contributing to Mission Bay, Los Peñasquitos Lagoon, and the coastal areas between the two drain 161 square miles.
- **The San Diego River Hydrologic Unit** is the second largest hydrologic unit in San Diego County, with a land area of 440 square miles. The Project Alternatives cross the 162-square-mile Lower San Diego River watershed and the 82-square-mile San Vicente Creek watershed. The San Diego River Hydrologic Unit has the highest population of the County's watersheds and contains portions of the cities of San Diego, El Cajon, La Mesa, Poway, and Santee, as well as several unincorporated communities. Important hydrologic resources in the hydrologic unit include five water storage reservoirs, a large groundwater aquifer, extensive riparian habitat, coastal wetlands, and tide pools. Approximately 58.4% of the San Diego River Hydrologic Unit is currently undeveloped. The majority of this undeveloped land is in the upper, eastern portion of the watershed, whereas the lower reaches are more highly urbanized, with residential (14.9%), freeways and roads (5.5%), and commercial/ industrial (4.2%) land uses predominating.

Figure 5.11-1 shows the main rivers in the region and their associated watersheds (USGS 2016). Rivers crossed or closely paralleled by the Project Alternatives include tributaries to Soledad Canyon Creek (North City Pure Water Pipeline), Rose Creek (Morena Pipelines, San Vicente Pipeline (repurposed 36-inch-diameter segment), and Landfill Gas Pipeline), San Clemente Creek (Morena Pipelines and San Vicente Pipeline (repurposed 36-inch pipeline)), Tecolote Creek (Morena Pipelines), Murphy Canyon Creek (San Vicente Pipeline), the San Diego River (San Vicente Pipeline), Forrester Creek (San Vicente Pipeline), and San Vicente Creek (San Vicente Pipeline). The Project Alternatives cross a number of unnamed ephemeral drainages as well.

The proposed Project Alternatives affect Miramar Reservoir and San Vicente Reservoir, respectively. Both reservoirs are municipal water reservoirs that receive imported water from the State Water Project and the Colorado River Aqueduct, but they differ in terms of both their physical size and the degree to which they are interconnected with the natural drainage network. The Miramar Reservoir holds 6,680 acre-feet of water at full capacity, has a surface area of 183 acres, and has a maximum depth of 114 feet. The San Vicente Reservoir holds 242,000 acre-feet of water at full capacity, has a surface area of 1,600 acres, and has a maximum depth of 306 feet. The watershed draining into the San Vicente Reservoir covers a 74.2-square-mile area, and the reservoir was created by constructing a large dam on the San Vicente Creek. In contrast, the watershed draining into Miramar Reservoir is limited to the immediate area that surrounds it (approximately 1 square mile), and the reservoir is largely a constructed feature that does not intersect a major drainage. The reservoir itself occupies 21% of this watershed area, and all of the surface runoff from the urban portions of the watershed (primarily consisting of single-family residential subdivisions) is collected in storm drain facilities serving those areas and diverted to adjoining watersheds (i.e., diverted away from the reservoir). As a result, the existing watershed draining to the reservoir is limited to the upland open space area that immediately surrounds it. The storage capacity and the watershed size of the Miramar Reservoir are 2.7% and 1.3% that of the San Vicente Reservoir, respectively. San Vicente Reservoir receives a greater amount of local runoff due to its larger watershed size, about 4,000 acre-feet per year, though this amount approximately equals yearly evaporative losses (City of San Diego 2016). With respect to factors affecting water quality, both the San Vicente Reservoir and Miramar Reservoir are influenced to a greater degree by the quality of raw imported water supplies than by local runoff.

Floodplains

A 100-year flood event is a flood that has a 1% chance of being equaled or exceeded in any given year. The 100-year flood is the standard used by most federal and state agencies and the National Flood Insurance Program for floodplain management. Several project components would cross areas located within a 100-year floodplain or a 100-year floodway (Figure 5.11-1). The proposed conveyance facilities crossing 100-year flood zones are planned to use trenchless drilling methods, with the exception of a 2.3-mile portion of the San Vicente Pipeline below the San Vicente Reservoir. The Morena Pump Station overflow pipeline would be located within Panel 1614G of the federal Flood Insurance Rate Map. There are no aboveground facilities within or partially within a 100-year flood zone. Flood hazard areas are generally coincident with the courses of rivers and streams, and also include some coastal areas.

Tsunami and Seiches

A tsunami is a sea wave generated by submarine earthquakes, landslides, or volcanic activity that displaces a relatively large volume of water in a very short period. Seiches are defined as oscillations in a semi-confined body of water due to seismic shaking. The Morena Pump Station may be subject to tsunami hazards due to its proximity to the tidal section of the San Diego River. In addition, project components near Miramar Reservoir or San Vicente Reservoir are at risk of seiche.

Water Quality

The San Diego region has 13 stream systems that flow to the Pacific Ocean. Most of the streams of the San Diego region are interrupted and have both perennial[1] and ephemeral[2] components due to the rainfall pattern and the development of surface water impoundments.

The Project Area falls within the geographic area addressed within the San Diego Basin Plan. The Basin Plan, in part, designates beneficial uses of surface water and groundwater within each watershed of the San Diego Region. Beneficial uses are defined as “the uses of water necessary for the survival or well-being of man, plants, and wildlife.” These uses of water serve to promote the tangible and intangible economic, social and environmental goals of mankind. Examples include drinking,

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[1] A perennial stream or river (channel) has continuous flow in parts of its streambed all year round during years of normal rainfall.

[2] An ephemeral stream or river flows for only hours or days following rainfall.

swimming, industrial and agricultural water supply and the support of fresh and saline aquatic habitats” (San Diego RWQCB 2016a). Designated beneficial uses for water bodies the North City Project would potentially impact are presented in Table 5.11-1. In recognition that multiple beneficial uses may have competing water quality goals, the San Diego RWQCB passed a resolution clarifying their policy on beneficial uses (Resolution No. R9-2017-0030) in February 2017 indicating that the key (highest) beneficial use for drinking water reservoirs, including Miramar Reservoir, is for drinking water supply (MUN). Beneficial uses associated with habitats and ecosystems (e.g., WARM and WILD) are prioritized for ocean waters, bays and estuaries, and stream systems, but are not considered as a “key” beneficial uses for drinking water reservoirs (Resolution R9-2017-0030; San Diego RWQCB 2017).

Table 5.11-1
Beneficial Uses of Inland Surface Waters, Lakes, and Reservoirs Applicable to the North City Project

Beneficial Use	Miramar Reservoir	Rose Canyon	San Clemente Canyon	Tecolote	San Vicente Reservoir	San Vicente Creek and Lower San Diego River	
Hydrologic Basin Number	*6.10*	*6.40*	*6.40*	*6.50*	*7.21*	*7.11*	*7.12*
Municipal and domestic supply (MUN)	X	+	+	+	X	+	P
Agricultural supply (AGR)					X	X	
Industrial service supply (IND)	X	P	P		X	X	X
Industrial process supply (PROC)					X		
Water contact recreation (REC 1)	X[1]	X	X	X	X[1]	X	X
Non-contact water recreation (REC 2)	X	X	X	X	X	X	X
Preservation of biological habitats of special significance (BIOL)						X	
Warm freshwater habitat (WARM)	X	X	X	X	X	X	X
Cold freshwater habitat (COLD)			X		X		
Wildlife habitat (WILD)	X	X	X	X	X	X	X

Table 5.11-1
Beneficial Uses of Inland Surface Waters, Lakes, and Reservoirs Applicable to the North City Project

Beneficial Use	Miramar Reservoir	Rose Canyon	San Clemente Canyon	Tecolote	San Vicente Reservoir	San Vicente Creek and Lower San Diego River	
Hydrologic Basin Number	*6.10*	*6.40*	*6.40*	*6.50*	*7.21*	*7.11*	*7.12*
Rare, threatened or endangered species (RARE)			X			X	X
Spawning, reproduction, and/or early development (SPWN)			X				
Hydropower generation (POW)	X						

Source: San Diego RWQCB 2016a.
X = existing beneficial use; P = potential beneficial use; + = excepted from MUN; X^1 = fishing from boats allowed but no swimming.

Water quality in receiving waters adjacent to urbanized areas can be impacted by pollutants in stormwater runoff. Pollutants generated from human activities settle on impervious surfaces until precipitation events wash them into the municipal separate storm sewer system (MS4). Common pollutants found in urban runoff include metals, pesticides, fertilizers, bacteria, litter, and sediment. Stormwater runoff picks up and transports these pollutants, non-native vegetation, and other components and then discharges them to waterways via the MS4. MS4 discharges are regulated under a suite of National Pollutant Discharge Elimination System (NPDES) permits, further described in Section 5.11.3, Applicable Regional Plans and Policies. Water quality in non-urban areas and downstream can be adversely affected by current and historical agricultural and resource extraction activities.

Under Section 303(d) of the Clean Water Act (CWA), the SWRCB is required to develop a list of water quality limited segments for jurisdictional waters of the United States. The waters on the list do not meet water quality standards and therefore the RWQCB is required to establish priority rankings and develop total maximum daily loads (TMDLs) to improve water quality. The list includes pollutants causing impairment to receiving waters or, in some cases, the condition leading to impairment. The CWA Section 303(d) impairments associated with receiving waters for the North City Project are listed below by water body (SWRCB 2016):

- **Lower San Diego River:** Enterococcus, fecal coliform, low dissolved oxygen, manganese, nitrogen, phosphorus, toxicity.
- **Rose Creek:** Selenium, toxicity.
- **Tecolote Creek:** Cadmium, copper, indicator bacteria, nitrogen, phosphorus, selenium, turbidity, zinc.
- **San Vicente Reservoir:** Chloride, color, pH (high), sulfates, total nitrogen as N.
- **Mission Bay:** Eutrophic, lead, enterococcus, fecal coliform, total coliform.
- **Los Peñasquitos Lagoon:** Sedimentation/siltation.

Figure 5.11-2, Water Quality Sensitive Areas, shows locations where proposed conveyance facilities cross streams identified as impaired under CWA Section 303(d), as well as those waters identified as having the beneficial use of RARE (i.e., uses of waters that support habitats necessary for the survival and successful maintenance of plant or animal species established under state and/or federal law as rare, threatened, or endangered). In addition, Figure 5.11-2 shows multiple habitat planning areas. Collectively, these areas indicate areas that are particularly sensitive from a water quality perspective. All of the pipeline facilities cross water quality sensitive areas at one or multiple points. Besides the pipelines, project components within or partially within a water quality sensitive area are the North City Water Reclamation Plant Expansion and the Miramar Water Treatment Plant Improvements. None of the other project components cross a water quality sensitive area.

Much of Los Peñasquitos Lagoon is adversely affected by coliform bacteria inputted by urban runoff and sewage spills and sediment, which are discharged by the main tributaries and smaller conveyances draining the watershed. Much of Mission Bay is adversely affected by coliform bacteria inputted by urban runoff and sewage spills, which are discharged by the main tributaries and smaller conveyances draining the watershed. The San Diego RWQCB has adopted a TMDL for indicator bacteria on the Lower San Diego River and Tecolote Creek (and all other bacteria-impaired waterbodies), and for sediment in the Los Peñasquitos Lagoon.

Miramar Reservoir Water Quality

Virtually 100% of the water within Miramar Reservoir is imported water provided by the San Diego County Water Authority and the Metropolitan Water District of Southern

California. The imported water supplies provided to the City are derived from the Colorado River Basin and State Water Project, with the Colorado River basin supply typically representing the dominant portion (sometimes 100%) of the imported water supply. Water quality within Miramar Reservoir is dependent on the blend and quality of quality of imported supplies provided to the City by the San Diego County Water Authority and Metropolitan Water District of Southern California.

The reservoir's primary water quality monitoring station (Station A) is located within the deepest part of the reservoir roughly 300 feet northwest of the outlet tower. The reservoir is normally kept at approximately 80% full, but has 4 outlet ports at depths of 52 feet (Port #1), 66 feet (Port #2), 81 feet (Port #3), and 96 feet (Port #2) below the normal operating surface, in addition to an emergency outlet. General physical and biochemical parameters within the reservoir, including temperature, conductivity, total dissolved solids, pH, dissolved oxygen, chlorophyll and blue-green algae, are monitored weekly at Station A at 24 vertical intervals throughout the water column. General mineral parameters, including nitrogen and phosphorus, are monitored monthly at the reservoir's water surface, bottom, at depths corresponding to the reservoir's outlet ports, and at the middle of the hypolimnion.[3]

Water quality monitoring of Miramar Reservoir indicates a high variability in certain water quality parameters, depending primarily on the source of imported water supply at any one time, seasonal stratification of the lake, and the depth at which samples are taken. Imports from the Colorado River, for example, have been historically high in total dissolved solids (TDS), and low in nutrients (i.e., nitrogen and phosphorus); whereas State Water Project supplies have significantly higher nutrient levels and lower salinity levels compared to the Colorado River supplies (SDCWA 2016). Water delivered to the Miramar Reservoir comes from Lake Skinner via the Second San Diego Aqueduct, and is typically dominated by water from the Colorado River, with a low percentage of water coming from the State Water Project (i.e., California Aqueduct). In 2016 the percentage varied between 0% and 31%, with an average of 8% (Metropolitan 2017). Because of the low nutrient levels within Colorado River supplies, Miramar Reservoir is phosphorus-limited, meaning growth of primary producers (e.g., phytoplankton/algae and zooplankton) is largely a function of phosphorus inputs to the reservoir. The low nutrient levels in Miramar Reservoir mean algae growth events are rare and short-lived, but have been observed in cases where the Skinner Plant output has high nutrient concentrations. This can occur at times when a greater percentage of State Water Project water is being delivered from Lake Skinner via the

[3] The cold, anoxic layer of water in a thermally stratified lake that lies below the thermocline.

Second San Diego Aqueduct. Algae blooms are undesirable from both a public health perspective and a wildlife perspective due to the potential for toxins to be produced, taste and odor impacts, because they lower the levels of dissolved oxygen, and can produce localized eutrophic conditions harmful to aquatic biota.

As part of the Water Quality Modeling of Miramar Reservoir in Support of Assessment of Nutrients and Productivity (Appendix G), Water Quality Solutions Inc. used existing water quality monitoring data over a 2-year period to calibrate the model. The reservoir is thermally stratified for much of the year, undergoing mixing/turnover in the winter months. The data show dissolved oxygen within the reservoir ranges seasonally from approximately 7 to 10 milligrams per liter (mg/L) at the surface and from 0.0 to 10 mg/L at the bottom. Low minimum dissolved oxygen levels at the bottom of the reservoir correspond to the expected anoxic conditions that develop in the summer and fall months as the reservoir thermally stratifies. Chlorophyll-*a*, which is a proxy measurement of primary productivity (i.e., presence of algae), ranges from 0.21 micrograms per liter (μg/L) to 2.72 μg/L at the surface (Appendix G). In general, chlorophyll-*a* concentrations are very low in Miramar Reservoir, but tend to peak in the spring, since the reservoir is replenished with nutrients released from sediments during turnover in late December, and when temperatures and increased sunlight become sufficient to initiate algal growth. Based on City of San Diego Secchi depth data for 2012 through 2014, water column clarity is generally good, with visibility ranging from 3.9 meters to 14.3 meters (12.8 feet to 46.9 feet) with a mean value of 9.5 meters (31 feet). A decade of data for total nitrogen (TN) and total phosphorus (TP), two key biological nutrients in aquatic systems, shows median concentrations from surface samples of 0.24 mg/L and <0.078 mg/L, respectively (City of San Diego 2017). Because TP was not detected in 90% of the samples taken, the median can only be expressed as being less than the laboratory method detection limit for TP, which is 0.078 mg/L.

Given the high number of non-detects and the long period of record for TP, it is likely that the concentrations that were measured above the laboratory method detection limit in the reservoir represent outliers (i.e., anomalies) or the extreme tail end of the distribution of TP concentrations. Nutrient concentrations, when placed on a probability distribution plot, typically have a positive skew,[4] which means that the median concentration of TP in Miramar Reservoir is likely to be less than half the

4 A distribution that is positively skewed (or skewed to the right) has a mean that is greater than the median, and a higher concentration of measured values on the lower end of a probability distribution plot.

method detection limit, or <0.039 mg/L. The high water clarity and the low chlorophyll-*a* concentrations, despite a median TN concentration of 0.24 mg/L, provide further evidence that the primary productivity in the reservoir is limited by low TP levels.

Up until 2016, Miramar Reservoir was listed as impaired for nitrogen under CWA Section 303(d) is based on data collected by the City of San Diego from January 2005 to December 2006 showing that 26 of the 28 samples collected exceeded a concentration of 0.25 mg/L (SWRCB 2016). However, as part of the 2014 Integrated Report, finalized in 2016 and per San Diego RWQCB Resolution R9-2016-0196, Miramar Reservoir was delisted from the 303(d) list (i.e., the impairment for nitrogen was removed) (San Diego RWQCB 2016b). The decision was based on review of monitoring data over a longer period of record that supported the decision to remove nitrogen as an impairment. There is no numeric objective for nitrogen contained in the San Diego RWQCB Basin Plan. The overarching objective in the Basin Plan is that inland surface waters shall not contain biostimulatory substances (e.g., TN and TP) in concentrations that promote aquatic growth to the extent that such growths cause nuisance or adversely affect beneficial uses (San Diego RWQCB 2016a). Previously, in determining the CWA Section 303(d) impairment for nitrogen, a threshold value of 0.25 mg/L for nitrogen was used, based on the Basin Plan threshold total phosphorus concentration of <0.025 mg/L, and the provision that a 10:1 N:P ratio (on a weight to weight basis) be used in the absence of data establishing natural ratios of N:P (see Table 6.11-2). As further described in Chapter 6.11 (Section 6.11.4.1), “natural” ratios of N:P do not exist because Miramar Reservoir is a constructed reservoir primarily managed for the purpose of municipal water supply. In addition, historical water quality data indicates that TP is the nutrient currently limiting aquatic growths, with typical N:P ratios much higher than 10:1 (City of San Diego 2016c).

Groundwater

Groundwater is subsurface water that occurs beneath the water table in soils and geologic formations that are fully saturated. Aquifers are groundwater-bearing formations sufficiently permeable to transmit and yield significant quantities of water. Areas of high groundwater may result in excavation problems. All major drainage basins in the San Diego region contain groundwater basins. The basins are relatively small in area and usually shallow. Although these groundwater basins are limited in size, the groundwater yield from the basins has been historically important to the development of the region.

5.11.3 REGULATORY FRAMEWORK

Federal

Clean Water Act

Increasing public awareness and concern for controlling water pollution led to enactment of the federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the Clean Water Act (CWA). The CWA established basic guidelines for regulating discharges of pollutants into the waters of the United States. The CWA requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the CWA.

- **Section 401**. Section 401 of the CWA requires an applicant for a federal permit, such as the construction or operation of a facility that may result in the discharge of a pollutant, to obtain certification of those activities from the state in which the discharge originates. This process is known as the Water Quality Certification for the project. For projects in San Diego County, the San Diego RWQCB issues Section 401 permits.
- **Section 402**. Section 402 of the CWA established the NPDES to control water pollution by regulating point sources that discharge pollutants into waters of the United States. In California, the U.S. Environmental Protection Agency (EPA) has authorized the SWRCB permitting authority to implement the NPDES program. In general, the SWRCB issues two baseline general permits: one for industrial discharges and one for construction activities. The Phase II Rule that became final on December 8, 1999, expanded the existing NPDES program to address stormwater discharges from construction sites that disturb land equal to or greater than 1 acre, and to address "small municipal separate storm sewer systems."
- **Section 404**. Section 404 of the CWA established a permitting program to regulate the discharge of dredged or filled material into waters of the United States. The definition of waters of the United States includes wetlands adjacent to national waters. This permitting program is administered by the U.S. Army Corps of Engineers and is enforced by the EPA.
- **Section 303(d).** Under Section 303(d) of the CWA, the SWRCB is required to develop a list of water quality limited segments for jurisdictional waters of the United States. The RWQCBs are responsible for establishing priority

rankings and developing action plans, referred to as TMDLs, to improve water quality of water bodies included in the 303(d) list. The most recent 303(d) List of Water Quality Limited Segments approved by the EPA is from 2010. The list includes pollutants causing impairment to receiving waters or, in some cases, the condition leading to impairment. Alternative pathways to traditional TMDLs may be considered by the RWQCB for pollutants listed on the 303(d) list. A pollutant may be addressed in ways other than creating a TMDL, such as by incorporation into NPDES permits.

State

Porter–Cologne Water Quality Control Act

State of California regulation of water quality predates the CWA by more than two decades, and California's nine RWQCBs were established by the Dickey Water Pollution Control Act in 1949. The Porter–Cologne Water Quality Control Act (Porter–Cologne Act, Division 7 of the California Water Code) was implemented in 1969, and (as amended) remains the basic water quality control law for California. The Porter–Cologne Act established the State Water Resources Control Board (SWRCB) and created a regulatory program to protect water quality and beneficial uses of the state's waters. After the subsequent establishment of the EPA and implementation of the CWA, EPA delegated authority to the SWRCB and RWQCBs to implement and enforce the CWA and state-adopted water quality control plans. Most of San Diego County falls within the jurisdiction of the San Diego RWQCB (Region 9). Each RWQCB is responsible for water quality control planning within its region, including adopting and implementing a Basin Plan.

Water Quality Control Plan for the San Diego Basin (Region 9)

The federal CWA, NPDES program, California Water Code, and Porter–Cologne Act require that the RWQCB adopt a water quality control plan to guide and coordinate the management of water quality in the region. The San Diego Basin Plan (1) designates beneficial uses of surface water and groundwater within each watershed of the San Diego Region, (2) establishes water quality objectives to protect the designated beneficial uses, and (3) establishes implementation policies to achieve the objectives.

The current version of the Basin Plan was adopted in 1994, but this 1994 version has been amended and updated on numerous occasions. Table 5.11-2 presents Basin Plan water quality objectives for the receiving waters applicable to the North City Project.

Surface water quality objectives established within the Basin Plan have been approved by the EPA as federal water quality standards that are subject to the protections and enforcement provisions established under the CWA.

Table 5.11-2
Water Quality Objectives for the North City Project's Receiving Waters

Receiving Waters	Total Dissolved Solids	Chloride	Sulfate	Sodium	Nitrogen and Phosphorus	Methylene Blue-Activated Substances	Turbidity
	mg/L			*%*	*mg/L*		*NTU*
Miramar Reservoir	500	250	250	60	*	0.5	20
Lower San Diego River	1,000	400	500	60	*	0.5	20
San Vicente Reservoir	300	50	65	60	*	0.5	20
Pacific Ocean	—	—	—	—	*	—	—

Source: San Diego RWQCB 2016a.
Notes: Concentrations not to be exceeded more than 10% of the time during any 1-year period.
* Concentrations of nitrogen and phosphorus, by themselves or in combination with other nutrients, shall be maintained at levels below those which stimulate algae and emergent plant growth. Threshold total phosphorus concentrations shall not exceed 0.05 mg/L in any stream at the point where it enters any standing body of water, nor 0.025 mg/L in any standing body of water. Analogous threshold values have not been set for nitrogen compounds; however, natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P = 10:1 , on a weight to weight basis shall be used. These values are not to be exceeded more than 10% of the time unless studies of the specific body in question clearly show that water quality objective changes are permissible and changes are approved by the RWQCB.

In addition to the objective in Table 5.11-2, at no time or place shall the temperature of any cold freshwater habitat water be increased more than 5°F above the natural receiving water temperature. Water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels specified in Table 64449-A of Section 64449 of Title 22 of the California Code of Regulations (Secondary Maximum Contaminant Levels, Consumer Acceptance Limits). Finally, dissolved oxygen levels shall not be less than 5.0 mg/L in inland surface waters with designated marine habitat (MAR) or warm freshwater habitat beneficial uses or less than 6.0 mg/L in waters with designated cold freshwater habitat beneficial uses.

The annual mean dissolved oxygen concentration shall not be less than 7 mg/L more than 10% of the time. The Basin Plan contains numerous additional narrative and numeric water quality objectives that apply to particular receiving waters or beneficial uses, and serve as one of the benchmarks considered in the development of both individual and general NPDES permits and waste discharge requirements (WDRs).

California Toxics Rule and State Implementation Policy

In 2000, the EPA promulgated statewide numerical water quality standards for toxic constituents that apply to California's inland surface waters, enclosed bays, and estuaries (California Toxics Rule, 40 CFR 131.38). The Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California (State Implementation Policy, or SIP) was adopted by the SWRCB on March 2, 2000, and amended in February 2005 (SWRCB 2005). The SIP, as amended:

- Establishes a standardized approach for permitting discharges of priority toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency
- Applies to discharges of priority toxic pollutants into the inland surface waters, enclosed bays, and estuaries of California subject to regulation under the state's Porter-Cologne (California Water Code, Division 7) and the federal CWA
- Implements priority pollutant criteria (federally established through the California Toxic Rule) through NPDES permits as required by the CWA, Section 402, for point-source discharges to surface waters
- Does not apply to regulation of stormwater discharges

The requirements in the SIP are implemented through SWRCB or RWQCB activities such as the issuance of NPDES permits or other relevant regulatory approaches to ensure achievement of water quality standards (i.e., water quality criteria or objectives, the beneficial uses being protected, and corresponding state and federal antidegradation policies).

Exceptions to the SIP may be granted to address certain discharges and factors that conflict with other existing federal and state regulations and/or policies. The RWQCBs may grant an exception from complying with a SIP requirement if it is determined that the discharge is necessary to implement control measures regarding drinking water conducted to fulfill statutory requirements under the federal Safe Drinking Water Act or the California Health and Safety Code for protection of public health and safety. Such exceptions may also be granted for draining water supply reservoirs, canals, and pipelines for maintenance; for draining municipal storm water conveyances for cleaning or maintenance; or for draining water treatment facilities for cleaning or maintenance. The exceptions are not to TMDL-related requirements and thus do not modify any waste load allocations or other TMDL-related requirements. The exceptions do not apply to discharges from new systems into a water body that is impaired for a constituent that exists in the new discharge at a concentration greater than the criteria the impairment is based on. Finally, the exception does not apply to direct discharges into Areas of Special Biological Significance.

Ocean Plan and Thermal Plan

The SWRCB has established objectives for the protection of marine water quality in the Water Quality Control Plan for the Ocean Waters of California (Ocean Plan; SWRCB 2015) and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan; SWRCB 1975). The Ocean Plan:

- Establishes receiving water quality standards and discharge prohibitions to protect designated beneficial uses of ocean waters
- Establishes technology-based effluent standards applicable to all discharges of wastewater to the ocean
- Establishes implementation policies and procedures for point source and non-point source discharges to ensure compliance with the water quality standards and to protect beneficial uses.

The Ocean Plan establishes water quality objectives for protection of marine aquatic life, human health-noncarcinogens, and human health-carcinogens. These receiving water standards are listed in Table 1 of the Ocean Plan. The requirements in the Ocean Plan are implemented through SWRCB or RWQCB activities, such as the issuance of NPDES permits, or other relevant regulatory approaches to ensure achievement of water quality standards (i.e., water quality criteria or objectives, the beneficial uses being protected, and corresponding state and federal antidegradation policies).

Some of the objectives and standards from the Ocean Plan and Thermal Plan include the following:

Thermal Plan

- **Thermal Water Quality Objectives:** Water quality objectives for existing discharge into coastal waters require that elevated temperature wastes shall comply with limitations necessary to assure protection of the beneficial uses and areas of special biological significance. Water quality objectives for new discharges to coastal waters require that: (1) elevated temperature wastes shall be discharged to the open ocean away from the shoreline to achieve dispersion through the vertical water column; (2) elevated temperature wastes shall be discharged a sufficient distance from areas of special biological significance to assure the maintenance of natural temperature in these areas; (3) the maximum temperature of thermal waste discharges shall not exceed the natural temperature of receiving waters by more than 20° Fahrenheit (°F); (4) the discharge of elevated temperature wastes shall not result in increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of any ocean substrate, or (c) the ocean surface beyond 1,000 feet from the discharge system. The surface temperature limitation shall be maintained at least 50% of the duration of any complete tidal cycle; and (5) additional limitations shall be imposed when necessary to assure protection of beneficial uses.

Ocean Plan

- **Bacterial Characteristics:** Samples of water from each sampling station shall have a density of total coliform less than 1,000 per 100 milliliter (10 per ml), provided that not more than 20% of the samples at any sampling station, in any 30-day period, may exceed 1,000 per 100 ml (10 per ml), and provided further that no single sample when verified by a repeat sample taken within 48 hours shall exceed 10,000 per 100 ml (100 per ml). In addition, the fecal coliform density, based on a minimum of not less than five samples for any 30-day period, shall not exceed a geometric mean of 200 per 100 ml nor shall more than 10% of the total samples during any 60-day period exceed 400 per 100 ml. For all areas where shellfish may be harvested for human consumption, as determined by the RWQCB, the median total coliform density shall not exceed 70 per 100 ml, and not more than 10% of the samples shall exceed 230 per 100 ml. The SWRCB is in the process of amending the Ocean Plan to incorporate additional EPA water quality criteria for the protection of recreational use.

- **Physical Characteristics:** Ocean waters shall be free of visible floating particulates, grease, oil, and discoloration. Natural light shall not be significantly reduced at any point outside the initial dilution zone as the result of the discharge of waste. In addition, the rate of deposition of inert solids and the characteristics of inert solids in ocean sediments shall not be changed such that benthic communities are degraded.
- **Chemical Characteristics:** The dissolved oxygen concentration shall not at any time be depressed more than 10% from that which occurs naturally as a result of the discharge of oxygen-demanding waste materials, while the pH shall not be changed at any time more than 0.2 units from that which occurs naturally. In addition, the amounts of dissolved sulfide, nutrient materials, and harmful substances in marine sediments shall be limited so as not to negatively impact marine life.
- **Biological Characteristics:** Marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded (i.e., significant differences in major biotic groups shall not be caused). In addition, the natural taste, odor, and color of marine resources used for human consumption shall not be altered, nor shall the concentration of organic materials bioaccumulate to levels that are harmful to human health.
- **Radioactivity:** Discharge of radioactive waste shall not degrade marine life.
- **General Requirements:** Waste management systems that discharge to the ocean must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community. Waste discharged to the ocean must be essentially free of substances that will accumulate to toxic levels in marine waters, sediments, or biota.

Wastewater treatment plants and water reclamation plants involving discharge to the ocean must meet these objectives, which are enforced through requirements to apply for and maintain valid NPDES permits and WDRs.

Waste Discharge Requirements

Actions that involve, or are expected to involve, discharge of waste are subject to water quality certification under Section 401 of the CWA (e.g., if a federal permit is being sought or granted) and/or WDRs under the Porter–Cologne Act. Chapter 4, Article 4 of the Porter–Cologne Act (California Water Code, Sections 13260–13274) states that persons discharging or proposing to discharge waste that could affect the quality of waters of the state (other than into a community sewer system) shall file a report of waste discharge with the applicable RWQCB. For discharges to surface water (i.e., waters of the United States), an NPDES permit is required, which is issued by the RWQCB pursuant to authority delegated by the EPA. The RWQCB regulates discharges to state waters through the issuance of WDRs, including discharges to land (e.g., spoils disposal and storage), erosion from soil disturbance, and discharges to isolated (non-federal) wetlands, WDRs are issued exclusively under state law. WDRs typically include many of the same best management practices (BMPs) and pollution control technologies as those required by NPDES-derived permits. Further, the WDR application process is generally the same as for CWA Section 401 water quality certification, although in the case of WDRs, it does not matter whether the particular project is subject to federal regulation.

Due to the broad scope of state and federal water quality regulations, the SWRCB and RWQCBs have developed general WDRs specific to activities that involve similar types of discharges and thus also require similar types of pollution control. This is the focus of the various stormwater programs administered by the SWRCB and RWQCB, such as the construction stormwater program, the industrial stormwater program, and the municipal stormwater program. RWQCBs, including the San Diego RWQCB, also have the authority to implement general permits to multiple permittees, and to provide for waivers of WDRs. These are listed in the following section.

Statewide General NPDES/WDRs

- **Construction General Permit (SWRCB Order No. 2009-0009-DWQ, as amended):** For stormwater discharges associated with construction activity in the State of California, the SWRCB has adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) in order to avoid and minimize water quality impacts attributable to such activities. The Construction General Permit applies to all projects in which construction activity disturbs 1 acre or more of soil. Construction activity subject to this permit includes clearing, grading, grubbing and other disturbances to the ground such as stockpiling and excavation. The Construction General Permit requires the development and implementation of a stormwater pollution prevention plan (SWPPP), which would include and specify BMPs designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving off site into receiving waters. Routine inspection of all BMPs is required under the provisions of the Construction General Permit. In addition, the SWPPP must contain a visual monitoring program, a chemical monitoring program for non-visible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the Section 303(d) list for sediment. SWPPPs must be developed and implemented by qualified individuals with appropriate credentials and training, as defined by the SWRCB.

- **Industrial General Permit for Storm Water (SWRCB Order No. 2014-0057-DWQ):** The SWRCB adopted the Industrial General Permit applicable to certain categories of industrial activity, which includes facilities that store, treat, recycle, and reclaim sewage. The Industrial General Permit is not applicable to advanced water purification facilities and pump stations. The Industrial General Permit requires stormwater dischargers to eliminate unauthorized non-stormwater discharges, develop and implement SWPPPs, implement BMPs, conduct monitoring, compare monitoring results to numeric action levels, perform appropriate exceedance response actions when numeric action levels are exceeded, and certify and submit all permit registration documents. Changes under the new Industrial General Permit (in effect as of June 30, 2015) compared to the Industrial General Permit issued in 1997 are that stormwater dischargers are required to implement minimum BMPs; electronically file all permit registration documents via the SWRCB's Storm Water Multiple Application and Report Tracking System; comply with new training expectations and roles for qualified industrial stormwater practitioners; sample to detect exceedance of annual and instantaneous numeric action levels; develop and implement exceedance response actions if annual or instantaneous numeric action levels are exceeded; monitor for parameters listed under CWA Section 303(d); design treatment control BMPs for flow- and volume-based criteria; and understand new criteria, sampling protocols, and sampling frequency for qualifying storm events. The new general order also defines design storm standards for treatment control BMPs, qualifying storm events, and sampling protocols to follow during a design storm event.
- **General Waste Discharge Requirements for Discharges from Drinking Water Systems to Surface Waters (SWRCB Order No. 2014-0194-DWQ, NPDES No. CAG140001):** This order provides regulatory coverage for short-term or seasonal planned and emergency (unplanned) discharges resulting from a water purveyor's essential operations and maintenance activities undertaken to comply with the federal Safe Drinking Water Act, the California

Health and Safety Code, and the SWRCB's Division of Drinking Water permitting requirements for providing reliable delivery of safe drinking water. To obtain coverage under this permit, a water purveyor must submit to the RWQCB a Notice of Intent, including information on the locations, frequency, and duration of planned discharges; must comply with standard provisions (which includes BMPs to address dechlorination and copper and zinc management); must implement a monitoring and reporting program; and must agree to notify the RWQCB and MS4 operator immediately of unplanned/emergency discharges and describe the corrective measures taken.

- **Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (SWRCB Order No. 2006-0003-DWQ):** This order establishes minimum requirements to prevent sanitary sewer overflows from publicly owner/operated sanitary sewer systems. The SWRCB adopted the order on May 3, 2006, and it is the primary regulatory mechanism for sanitary sewer systems statewide, but allows each RWQCB to issue more stringent or more prescriptive WDRs for sanitary sewer systems within their respective jurisdiction. Accordingly, the San Diego RWQCB regulates sanitary sewer overflows using a region-specific order (Order R9-2007-0005) that includes a strict prohibition on all discharges from the sanitary sewer system upstream of the treatment works. The San Diego RWQCB enforces these prohibitions by requiring the City to implement a Monitoring and Reporting Program to document any instances of sanitary sewer overflows and report it promptly to the RWQCB and other appropriate agencies so that appropriate responses can be identified and coordinated.
- **Water Reclamation Requirements for Recycled Water Use (Order WQ 2016-0068-DDW):** This general order establishes standard conditions for recycled water use and conditionally delegates authority to an administrator to manage a water recycling program and issue water recycling permits to recycled water users. Only treated municipal wastewater for non-potable uses can be permitted, such as landscape irrigation, crop irrigation, dust control, industrial/commercial cooling, decorative fountains, etc. Potable reuse activities are not authorized under this general order.

Regional NPDES/WDRs and Conditional Waivers

- **Municipal Storm Water Permit (San Diego RWQCB Order No. R9-2013-0001, as amended by Order No. R9-2015-0001 and Order No. R9-2015-0100):** Municipalities in San Diego County, including all municipalities in the program area, collect and discharge stormwater and urban runoff containing pollutants through their stormwater conveyance systems. The San Diego RWQCB adopted a NPDES Municipal Storm Water Permit on May 8, 2013 (Order No. R9-2013-0001, amended by Order No. R9-2015-0001 and Order No. R9-2015-0100). The permit requires the development and implementation of BMPs in planning and construction of private and public development projects. Development projects are also required to include BMPs to reduce pollutant discharges from the project site in the permanent design. BMPs associated with the final design are described in the Regional Best Management Practices (BMP) Design Manual. Regional BMP design practices and associated standards are incorporated into the City of San Diego Storm Water Standards manual, which is periodically updated to reflect the currently adopted MS4 permit. The RWQCB's Municipal Permit also requires each co-permittee in the region to develop a jurisdictional runoff management plan. In addition, new multi-jurisdictional water quality improvement plans (WQIPs) are required by watershed management area (note that watershed management areas differ in some cases from the hydrologic units and "watersheds" described earlier in this section). WQIPs that include parts of the City of San Diego within their respective watershed management areas and highest-priority water quality conditions include the San Dieguito River WQIP (bacteria); Los Peñasquitos WQIP (sediment, bacteria, and freshwater discharges during dry weather); Mission Bay and La Jolla WQIP, covering the southern part of the Los Peñasquitos watershed as described earlier in this section (bacteria and erosion and transport of soil and sediment); and the San Diego River WQIP (bacteria). The WQIPs, among other things, assess watershed management areas to prioritize water quality conditions of concern and develop and implement strategies through jurisdictional runoff management programs to protect, preserve, enhance, and restore water quality and beneficial uses. An adaptive planning and management process is emphasized.

- **Conditional Waivers of Waste Discharge Requirements for Low-Threat Discharges in the San Diego Region (San Diego RWQCB Order No. R9-2014-0041):** This order authorizes several categories of discharges within the San Diego region that have a low threat to water quality, provided certain conditions are met to ensure compliance with water quality standards and Basin Plan objectives. Included among waiver categories are short-term construction dewatering operations (Waiver No. 3). Construction dewatering is generally authorized so long as the discharge is made to land and not directly (or indirectly) to a receiving water body, including an MS4, and it does not adversely affect the quality or the beneficial uses of the waters of the state. If the construction dewatering discharge would exceed 5,000 gallons per day for any continuous 180-day period, or if it is in or near an area with soil and/or groundwater contamination or an investigation or corrective action in effect, the discharger must submit to the San Diego RWQCB a Notice of Intent, applicable fees, monitoring data, and BMPs, as required, to demonstrate that adequate measures will be taken to prevent adverse effects on water quality.

Individual (Discharger-Specific) NPDES/WDRs

Treated wastewater discharges to the Pacific Ocean through wastewater outfalls require compliance with WDRs (under the Porter–Cologne Act) and NPDES permits (under the CWA). The North City Water Reclamation Plant does not have an ocean outfall, and thus is governed under a WDR. The two ocean outfalls used by the City of San Diego are the Point Loma Ocean Outfall (PLOO) and the South Bay Ocean Outfall (SBOO).

- **Waste Discharge and Water Recycling Requirements for the Production and Purveyance of Recycled Water for the City of San Diego North City Water Reclamation Plant (Order No. R9-2015-0091):** Order No. R9-2015-0091 regulates the City's treatment and purveyance of recycled water to qualified customers in the northern part of the City of San Diego for appropriate uses of tertiary-treated recycled water, including landscape irrigation, agricultural irrigation, industrial processes, construction, landscape impoundments, and other uses. The WDR sets discharge specifications for the North City Water Reclamation Plant that limits constituents of concern to concentrations that avoid exceedance of Basin Plan objectives for groundwater. Numeric discharge specifications are set for turbidity, total coliform, pH, total suspended solids (TSS), biochemical oxygen demand, TDS, and a number of metals and organic and inorganic minerals. It also establishes reporting and compliance measures to ensure the water purveyed is used only as authorized and complies with recycled water rules and regulations (e.g., avoiding backflow or cross-connections with the potable water system). The City complies with the monitoring and reporting program attached to the WDR, which requires monthly and annual reports that show the analytical results of effluent for a wide range of constituents, so that compliance with the discharge specifications can be verified by the San Diego RWQCB.

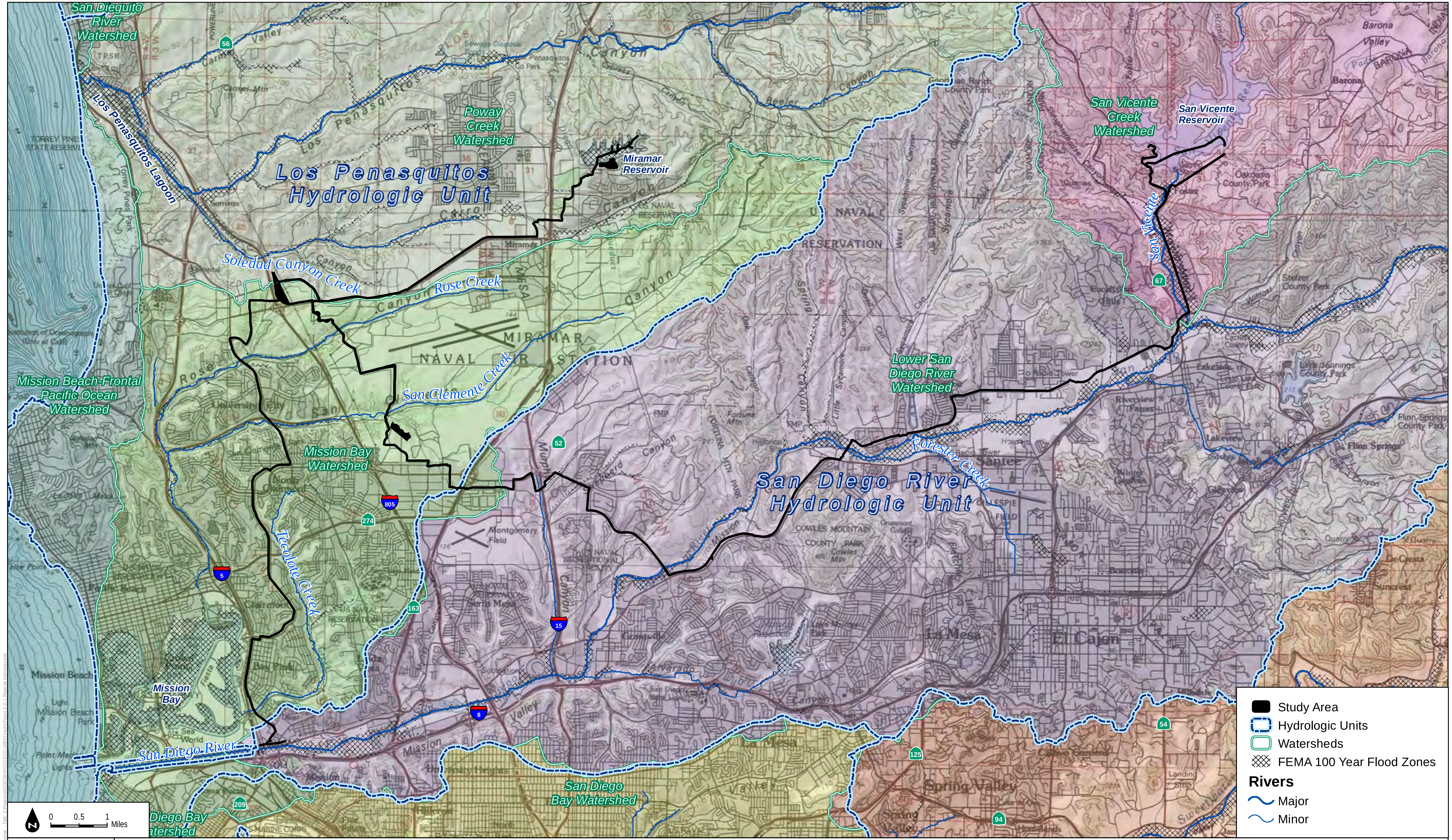
- **Waste Discharge Requirements for the Point Loma Wastewater Treatment Plant (Point Loma WWTP; San Diego RWQCB Order No. R9-2017-0007, EPA NPDES CA0107409):** The discharge of treated wastewater from the Point Loma WWTP to the Pacific Ocean via the PLOO is regulated by a joint permit issued by the EPA and the San Diego RWQCB. RWQCB Order No. R9-2009-0001 establishes effluent limitations, discharge specifications, receiving water limitations, and monitoring and reporting program requirements, among other elements, to allow the discharge up to 240 million gallons per day (MGD) of secondary treated wastewater from the Point Loma WWTP to the Pacific Ocean through the PLOO. EPA developed secondary treatment regulations specified in Title 40 of the Code of Federal Regulations, Section 133, that apply to all publicly owned treatment works. The regulations identify the minimum level of effluent quality attainable by secondary treatment in terms of biochemical oxygen demand, TSS, and pH unless EPA grants a Secondary Treatment Waiver pursuant to CWA Section 301(h). This variance was originally granted to the Point Loma WWTP in 1995 in accordance with Sections 301(h) and 301(j)(5) of the CWA, allowing variance from secondary requirements for the discharge of TSS and biochemical oxygen demand. Order No. R9-2017-0007 extends this renewable waiver to year 2022. The City of San Diego's comprehensive effluent and receiving water monitoring program has documented that the combination of enhanced source control, flow diversion to recycled water use, chemically enhanced primary treatment at the Point Loma WWTP, and a deep and efficient ocean outfall ensures that the PLOO discharge complies with all NPDES permit limits and all applicable state and federal water quality-based standards.
- **Waste Discharge Requirements for the South Bay Water Reclamation Plant (RWQCB Order No. R9-2013-0006, EPA NPDES CA0109045):** The discharge of secondary treated wastewater from the South Bay Water Reclamation Plant to the Pacific Ocean via the SBOO is currently regulated by a joint permit issued by the San Diego RWQCB and EPA. RWQCB Order No. R9-2013-0006 establishes effluent limitations, discharge specifications, receiving water limitations, monitoring and reporting program requirements, among other elements, to allow the discharge up to 15 MGD of secondary treated wastewater from the South Bay Water Reclamation Plant to the Pacific Ocean through the SBOO. The SBOO is shared with the International Wastewater Treatment Plant operated by the U.S. Section of the International Boundary and Water Commission. Discharges of secondary

treated wastewater from the SBOO is only required during periods when the demand for non-potable recycled water is low.

San Diego RWQCB Order No. R9-2017-0007 (NPDES No. CA0107409) recognizes the City's phased implementation of a proprietary technology called Peroxide Regenerated Iron Sulfide Control, which has contributed to a significant increase in TSS removal. Findings within Order No. R9-2017-0007 also document the incremental decreases in PLOO discharges and TSS annual mass emission rates that would occur with successful implementation of the Pure Water Program, of which the Project Alternatives are an initial phase.

As noted within the Fact Sheet (Attachment F) to Order No. R9-2017-0007, wastewater flows and associated loads to the PLOO will be offloaded as each new advanced water purification facility and associated facilities become operational. This will reduce wastewater flows and pollutant loads discharged from the facility to the Pacific Ocean, resulting in TSS annual mass emission rates that are less than or equivalent to the 9,942 metric tons per year (MT/yr) that would have occurred if the 240 MGD facility were to achieve TSS concentration standards consistent with secondary treatment regulations. This concept is referred to by the City as "secondary treatment equivalency." The TSS average annual mass emission rate for 2015 was less than 6,000 MT/yr (San Diego RWQCB 2016c). Based on an increase in TSS due to water conservation and on historic TSS removal rates, the City is conservatively projecting TSS average annual mass emission rates of 9,678 MT/yr or less in 2023, 9,433 MT/yr or less in 2027, and 7,832 MT/yr or less in 2035 (San Diego RWQCB 2016c). Based on upstream recycled water production and use; diversion of flows to the South Bay Water Reclamation Plant; and production and use of purified water, the City is projecting annual flow rates of 172 MGD in 2023, 160 MGD in 2027, and 139 MGD in 2035 (San Diego RWQCB 2016c).

As a condition of the Secondary Treatment Waiver, Order No. R9-2017-0007 incorporates in Section VI.C.7 a detailed compliance schedule of enforceable tasks covering the 5-year term of the order that focus on the initial 30 MGD potable reuse component of the Pure Water Program. As a condition of the renewable Secondary Treatment Waiver, Order No. R9-2017-0007 also notes that: "The Discharger has committed to implementing the Pure Water San Diego Program, and thus the 2035 goal that post-dates the term of this Order/Permit is included, with the expectation that details associated with the 2035 goal and necessary additional or final implementation goals will be provided and described in subsequent Permits/Orders" (San Diego RWQCB 2017).



SOURCE: USGS, 2016; California Dept. of Water Resources 2014; SANDAG, 2016

DUDEK

North City Pure Water Project

FIGURE 5.11-1

Regional Hydrology

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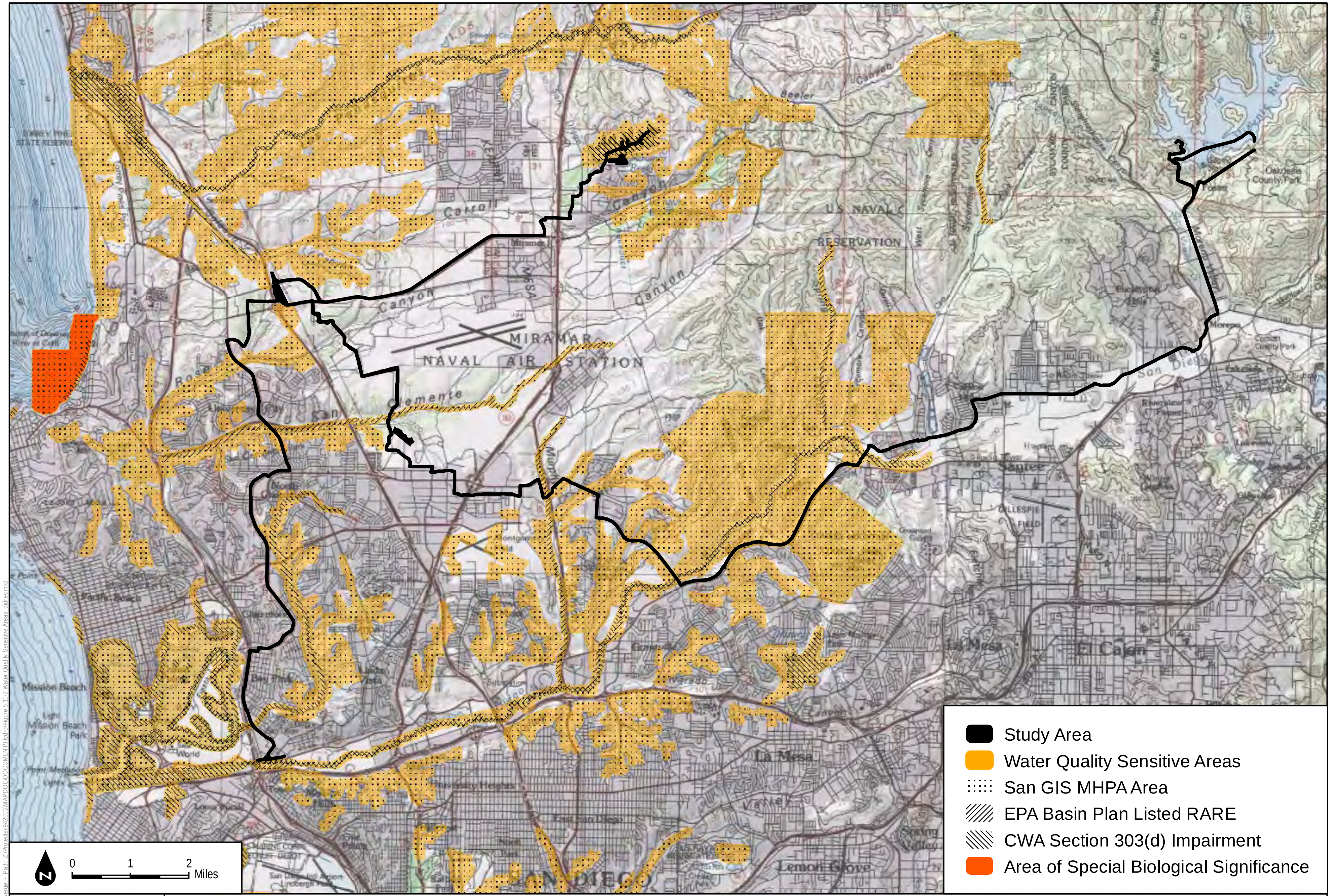

SOURCE: USGS, 2016; California Dept. of Water Resources 2014; SANDAG, 2016

FIGURE 5.11-2

Water Quality Sensitive Areas

North City Project EIR/EIS

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5.12 NOISE

5.12.1 INTRODUCTION

The following section identifies the noise setting for the North City Project and applicable regulations. Information in this section is from the Noise Technical Report for the North City Project Environmental Impact Report/Enviromental Impact Statement (EIR/EIS), City of San Diego, prepared by Dudek (September 2017) and included as Appendix H.

5.12.2 ENVIRONMENTAL SETTING

5.12.2.1 Fundamentals of Noise and Vibration

The following is a brief discussion of fundamental noise concepts and terminology.

Sound, Noise, and Acoustics

Sound is actually a process that consists of three components: the sound source, the sound path, and the sound receiver. All three components must be present for sound to exist. Without a source to produce sound, there is no sound. Similarly, without a medium to transmit sound pressure waves, there is no sound. Finally, sound must be received; a hearing organ, sensor, or object must be present to perceive, register, or be affected by sound or noise. In most situations, there are many different sound sources, paths, and receptors rather than just one of each. Acoustics is the field of science that deals with the production, propagation, reception, effects, and control of sound. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired.

Sound Pressure Levels and Decibels

The amplitude of a sound determines its loudness. Loudness of sound increases with increasing amplitude. Sound pressure amplitude is measured in units of micronewton per square meter, also called micropascal. One micropascal is approximately one-hundred billionth (0.00000000001) of normal atmospheric pressure. The pressure of a very loud sound may be 200 million micropascals, or 10 million times the pressure of the weakest audible sound. Because expressing sound levels in terms of micropascal would be very cumbersome, sound pressure level in logarithmic units is used instead to describe the ratio of actual sound pressure to a reference pressure squared. These units are called Bels. To provide a finer resolution, a Bel is subdivided into 10 decibels (dB).

A-Weighted Sound Level

Sound pressure level alone is not a reliable indicator of loudness. The frequency, or pitch, of a sound also has a substantial effect on how humans will respond. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness, or human response, is determined by the characteristics of the human ear.

Human hearing is limited not only in the range of audible frequencies, but also in the way it perceives the sound in that range. In general, the healthy human ear is most sensitive to sounds between 1,000 and 5,000 hertz, and it perceives a sound within that range as more intense than a sound of higher or lower frequency with the same magnitude. To approximate the frequency response of the human ear, a series of sound level adjustments is usually applied to the sound measured by a sound level meter. The adjustments (referred to as a weighting network) are frequency-dependent.

The A-scale weighting network approximates the frequency response of the average young ear when listening to ordinary sounds. When people make judgments about the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special situations (e.g., B-scale, C-scale, D-scale), but these scales are rarely used in conjunction with most environmental noise. Noise levels are typically reported in terms of A-weighted sound levels. All sound levels discussed in this report are A-weighted decibels (dBA). Examples of typical noise levels for common indoor and outdoor activities are depicted in Table 5.12-1.

Table 5.12-1
Typical Sound Levels in the Environment and Industry

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
Jet fly over at 300 meters (1,000 feet)	110	Rock band
Gas lawn mower at 1 meter (3 feet)	100	Food blender at 1 meter (3 feet)
Diesel truck at 15 meters (50 feet), at 80 kilometers per hour (50 miles per hour)	90	Garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime	80	Vacuum cleaner at 3 meters (10 feet);
Gas lawn mower at 30 meters (100 feet)	70	Normal speech at 1 meter (3 feet)
Commercial area;	60	Large business office
Heavy traffic at 90 meters (300 feet)	50	Dishwasher next room
Quiet urban, daytime	40	Theater; large conference room (background)

Table 5.12-1
Typical Sound Levels in the Environment and Industry

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
Quiet urban, nighttime	30	Library
Quiet suburban, nighttime	20	Bedroom at night; concert hall (background)
Quiet rural, nighttime	10	Broadcast/Recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2009.

Human Response to Changes in Noise Levels

Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of 1 dBA when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of 2 dBA in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dBA. A change of 5 dBA is readily perceptible, and a change of 10 dBA is perceived as twice or half as loud. A doubling of sound energy results in a 3 dBA increase in sound, which means that a doubling of sound energy (e.g., doubling the volume of traffic on a road) would result in a barely perceptible change in sound level).

Noise Descriptors

Additional units of measure have been developed to evaluate the long-term characteristics of sound. The equivalent sound level (L_{eq}) is also referred to as the time-average sound level. It is the equivalent steady-state sound level that in a stated period of time would contain the same acoustical energy as the time-varying sound level during the same time period. The 1-hour A-weighted equivalent sound level, L_{eq}(h), is the energy average of the A-weighted sound levels occurring during a 1-hour period, and is the basis for the City of San Diego's noise ordinance criteria, as well as the basis for the County of San Diego and the other cities in which the Project would be constructed.

People are generally more sensitive and annoyed by noise occurring during the evening and nighttime hours. Thus, another noise descriptor used in community noise assessments—the community noise equivalent level (CNEL)—was introduced. The CNEL scale represents a time-weighted, 24-hour average noise level based on the A-weighted sound level. The CNEL accounts for the increased noise sensitivity during the evening hours (7 p.m. to 10 p.m.) and nighttime hours (10 p.m. to 7 a.m.) by adding 5 dBA and 10 dBA, respectively, to the average sound levels occurring during the evening and nighttime hours.

Sound Propagation

Sound propagation (i.e., the passage of sound from a noise source to a receiver) is influenced by geometric spreading, ground absorption, atmospheric effects, and shielding by natural and/or built features.

Sound levels attenuate (or diminish) at a rate of approximately 6 dBA per doubling of distance from an outdoor point source due to the geometric spreading of the sound waves. Atmospheric conditions such as humidity, temperature, and wind gradients can also temporarily either increase or decrease sound levels. In general, the greater the distance the receiver is from the source, the greater the potential for variation in sound levels due to atmospheric effects. Additional sound attenuation can result from built features such as intervening walls and buildings, and by natural features such as hills and dense woods.

Groundborne Vibration Fundamentals

Groundborne vibration is a small, rapidly fluctuating motion transmitted through the ground. The strength of groundborne vibration attenuates fairly rapidly over distance. Some soil types transmit vibration quite efficiently; other types (primarily sandy soils) do not. Several basic measurement units are commonly used to describe the intensity of ground vibration. The descriptors used by the Federal Transit Administration are peak particle velocity (PPV), in units of inches per second, and velocity decibel (VdB). The calculation to determine PPV at a given distance is as follows:

$$PPV_{dist} = PPV_{ref} * (25/D)^{\wedge}1.5$$

Where:

PPV_{dist} = the peak particle velocity in inches per second of the equipment adjusted for distance

PPV_{ref} = the reference vibration level in inches per second at 25 feet

D = the distance from the equipment to the receiver

The velocity parameter (instead of acceleration or displacement) best correlates with human perception of vibration. Thus, the response of humans, buildings, and sensitive equipment to vibration is described in this section in terms of the root-mean square velocity level in VdB units relative to 1 micro-inch per second. As a point of reference, the average person can just barely perceive vibration velocity levels below 70 VdB (typically in the vertical direction). The calculation to determine the root-mean square at a given distance is as follows:

$$L_v(D) = L_v(25 \text{ feet}) - 30*\log(D/25)$$

Where:

$L_v(D)$ = the vibration level at the receiver

$L_v(25 \text{ feet})$ = the reference source vibration level

D = the distance from the vibration activity to the receiver

Typical background vibration levels are between 50 and 60 VdB, and the level for minor cosmetic damage to fragile buildings or blasting generally begins at 100 VdB.

5.12.2.2 Existing Conditions

Given the wide geographical area encompassed by the North City Project, the existing noise environments are varied. In general, the Project area mainly consists of suburban land uses. The noise environments through most of the North City Project area are characterized by a background or "ambient" noise level generated by vehicular traffic. Typical secondary noise sources include distant aircraft, rustling leaves, landscaping maintenance, construction noise, birds, children playing, and passing conversations. Noise-sensitive receptors are locations where human activity may be adversely affected by noise. Examples of noise sensitive receptors are residences, hotels and motels, educational institutions, libraries and hospitals and clinics. The locations of noise-sensitive receptors within 1,000 feet of the proposed project area is shown in Figure 5.12-1 and Figures 5.12-2A through 5.12-2D.

Ambient Noise Monitoring

Noise measurements were made using a Rion NL-52 integrating sound-level meter equipped with a 0.5-inch pre-polarized condenser microphone with pre-amplifier. The sound-level meter meets the current American National Standards Institute standard for a Type 1 (Precision Grade) sound-level meter. The sound-level meter was calibrated before and after the measurements, and the measurements were conducted with the microphone positioned 5 feet above the ground and covered with a windscreen.

Short-term noise measurements were conducted at 16 locations in the North City Project vicinity on April 16 and 17, 2015, and October 6 and 7, 2016, as depicted on Figure 5.12-1, Noise Measurement Locations. A brief description of where each noise measurement was conducted as well as the measured time-average sound level and maximum sound level during the measurement interval are summarized in Table 5.12-2. Detailed noise measurement data are included as Appendix H.

Table 5.12-2
Measured Noise Levels

Receptors	Description	L_{eq} (dBA)	L_{max} (dBA)
M1	Vacant parcel adjacent to industrial uses on Eastgate Mall San Diego, California; east of San Vicente Pure Water Pipeline and southeast of the North City Pure Water Facility.	51.2	61.6
M2	Multi-family residential complex on Genesee Avenue San Diego, California; west of Morena Wastewater Forcemain and Brine Pipeline	68.0	82.9
M3	MCAS Miramar north entrance on Miramar Road San Diego, California; south of North City Pure Water Pipeline	72.8	89.7
M4	Villa Pacific Apartments Clairemont Drive San Diego, California; east of Morena Wastewater Forcemain and Brine Pipeline	65.8	87.2
M5	Junipero Serra High School on Santo Road San Diego, California; west of San Vicente Pure Water Pipeline	54.8	60.6
M6	Multi-family residential complex on Rancho Mission Road San Diego, California; south of San Vicente Pure Water Pipeline and northeast of Mission Trails Booster Station	56.7	74.7
M7	Single family residential home on Moreno Avenue Lakeside, California; west of San Vicente Pure Water Pipeline	64.3	81.1
M8	Scripps Ranch Library on Scripps Lake Drive San Diego, California; west of the North City Pipeline alignment	56.1	59.8
M9	Multi-family residential complex on Scripps Lake Drive San Diego, California; southeast of North City Pipeline alignment	53.7	79.2
M10	Willowbrook RV Stoarage on Riverside Drive Lakeside, California; south of San Vicente Pure Water Pipeline	53.2	75.5
M11	Single family residential home on Mast Boulevard Santee, California; west of San Vicente Pure Water Pipeline	68.3	81.1
M12	Multi-family residential complex on Tecolote Road San Diego, California; east of Morena Wastewater Forcemain and Brine Pipeline	60.0	68.8
M13	Multi-family residential complex on Caminito Velasquez San Diego, California; south of San Vicente Pure Water Pipeline	66.1	77.5

Table 5.12-2
Measured Noise Levels

Receptors	Description	L_{eq} (dBA)	L_{max} (dBA)
M14	Cul-de-sac on Tierrasanta Boulevard San Diego, California; south of San Vicente Pure Water Pipeline	50.3	85.5
M15	Multi-family residential complexon W Hills Parkway Santee, California; east of San Vicente Pure Water Pipeline	64.6	74.1
M16	A & B Saw and Lawnmowers on Highway 67 Lakeside, California; north and west of San Vicente Pure Water Pipeline	70.3	81.3

Source: Appendix H.
Note: L_{eq} = equivalent continuous sound level (time-averaged sound level); L_{max} = maximum sound level during the measurement interval

5.12.3 REGULATORY FRAMEWORK

Environmental noise is typically regulated by local governments. The following discussion summarizes the federal, state, and local requirements as they relate to environmental noise.

5.12.3.1 Federal

The U.S. Enviromental protection Agency (EPA) has indicated that residential noise exposure of 55 dBA to 65 dBA is acceptable when analyzing land use compatibility (EPA 1981); however, these guidelines are not regulatory. With regard to noise exposure and workers, the federal Occupational Safety and Health Administration (OSHA) establishes regulations to safeguard the hearing of workers exposed to occupational noise (29 CFR 1910.95). OSHA specifies that sustained noise over 85 dBA (8-hour time-weighted average) can be a threat to workers' hearing, and if worker exposure exceeds this amount, the employer shall develop and implement a monitoring plan (29 CFR 1910.95(d)(1)).

5.12.3.2 State

Government Code Section 65302(g)

California Government Code Section 65302(g) requires the preparation of a Noise Element, which shall identify and appraise the noise problems in the community. The Noise Element shall recognize the guidelines adopted by the Office of Noise

Control in the State Department of Health Services and shall quantify, to the extent practicable, current and projected noise levels for the following sources:

- Highways and freeways
- Primary arterials and major local streets
- Passenger and freight on-line railroad operations and ground rapid transit systems
- Aviation and airport-related operations
- Local industrial plants
- Other ground stationary noise sources contributing to the community noise environment

5.12.3.3 Local

Because the North City Project components would be located in a number of municipal and unincorporated areas in addition to the City of San Diego, the applicable regulatory provisions of those agencies are described in this section.

City of San Diego

City of San Diego Municipal Code 59.5.0401 (Noise Ordinance)

Section 59.5.0401 of the City of San Diego's Municipal Code sets forth sound level limits. It is unlawful for any person to cause noise by any means to the extent that the 1-hour average sound level exceeds the applicable limit given in the following table (Table 5.12-3) at any location in the City of San Diego on or beyond the boundaries of the property on which the noise is produced. The noise subject to these limits is the part of the total noise at the specified location that is due solely to the action of said person/event.

Table 5.12-3
City of San Diego Applicable Limits

Land Use	Time of Day	1-Hour Average Sound Level (dBA)
Single-family residential	7 a.m. to 7 p.m.	50
	7 p.m. to 10 p.m.	45
	10 p.m. to 7 a.m.	40

Table 5.12-3
City of San Diego Applicable Limits

Land Use	Time of Day	1-Hour Average Sound Level (dBA)
Multi-family residential (up to a maximum density of 1/2,000)	7 a.m. to 7 p.m.	55
	7 p.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
All other residential	7 a.m. to 7 p.m.	60
	7 p.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
Commercial	7 a.m. to 7 p.m.	65
	7 p.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	60
Industrial or agricultural	Any time	75

Source: City of San Diego 2010.

City of San Diego Municipal Code 59.5.0404 (Noise Ordinance)

Construction Noise

Section 59.5.0404 of the City of San Diego's Municipal Code sets forth limitations related to construction noise (City of San Diego 2010).

A. It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter, or repair any building or structure in such a manner as to create disturbing, excessive, or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. In granting such permit, the Administrator shall consider whether the construction noise in the vicinity of the proposed work site would be less objectionable at night than during the daytime because of different population densities or different neighboring activities; whether obstruction and interference with traffic, particularly on streets of major importance, would be less objectionable at night than during the daytime; whether the type of work to be performed emits noises at such a low level as to not cause significant disturbances in the vicinity of the work site; the character and nature of the neighborhood of the proposed work site; whether great economic hardship would occur if the work were spread over a longer time; and whether proposed night work is in the general public interest; and he/she shall prescribe such conditions, working times, types of construction equipment to be used, and permissible noise levels as he/she deems to be required in the public interest.

B. Except as provided in Subsection C hereof, it shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 p.m.

C. The provisions of Subsection B of this section shall not apply to construction equipment used in connection with emergency work, provided the Administrator is notified within 48 hours after commencement of work.

City of Santee Municipal Code

8.12.040 Sound Level Limits

Section 8.12.040 of the City of Santee's Municipal Code sets forth sound level limits, as described below.

A. Unless a variance has been applied for and granted pursuant to Title 8 of the City of Santee's Municipal Code, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth below except that construction noise level limits shall be governed by Section 8.12.290 of City of Santee's Municipal Code.

Table 5.12-4 outlines the sound levels within each zoning designations.

Table 5.12-4
City of Santee One-Hour Average Sound Level

Zone	Time of Day	Applicable Limit One-Hour Average Sound Level (Decibels)
A-70, A-72, R-S, R-V, R-R, R-MH, S-87, S-88, S-90	7 a.m. to 7 p.m.	50
	7 p.m. to 10 p.m.	45
	10 p.m. to 7 a.m.	40
R-U, R-C, and C-31	7 a.m. to 7 p.m.	55
	7 p.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45

Table 5.12-4
City of Santee One-Hour Average Sound Level

Zone	Time of Day	Applicable Limit One-Hour Average Sound Level (Decibels)
All other commercial zones	7 a.m. to 7 p.m.	60
	7 p.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
M-50, M-52	Anytime	70
All other industrial zones	Anytime	75
The sound level at the location on a boundary between an industrial zone and a residential zone	7 a.m. to 7 p.m.	60
	7 p.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50

Source: City of Santee 1984.

B. For all other zones the sound level limit on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts; provided, however, that the noise level limit applicable to extractive industries, including but not limited to borrow pits and mines, shall be the noise level limit applicable to the M-52 zone, or other standard as required for industrial uses adjacent to a residential zone.

C. Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this section, measured at or beyond six feet from the boundary of the easement upon which the equipment is located (City of Santee 1984).

8.12.290 Construction Equipment

Section 8.12.290 of the City of Santee's Municipal Code sets forth noise limitations on construction equipment.

A. Except for emergency work, it is unlawful for any person, including the city, to operate any single or combination of powered construction equipment at any construction site, except as outlined as follows:

   1. It shall be unlawful for any person, including the city, to operate any single or combination of powered construction equipment at any construction site on Sundays, January 1st, the last Monday in May, known as "Memorial Day," July 4th, the first Monday in September, December 25th, and every day appointed by the President, Governor, or the city council for a public fast, thanksgiving, or holiday. When January

1st, July 4th, or December 25th falls on a Sunday, it shall be unlawful for any person to operate any single or combination of powered construction equipment at any construction site on the following Monday. Notwithstanding the above, a person may operate powered construction equipment on the above-specified days between the hours of ten a.m. and five p.m. in compliance with the requirements of subdivision 2 of this subsection at his residence for himself, provided such operation of powered construction equipment is not carried on for profit or livelihood. In addition, it shall be unlawful for any person to operate any single or combination of powered construction equipment at any construction site on Mondays through Saturdays except between the hours of seven a.m. and seven p.m.

2. No such equipment, or combination of equipment regardless of age or date of acquisition, shall be operated so as to cause noise at a level in excess of seventy-five decibels for more than eight hours during any twenty-four-hour period when measured at or within the property lines of any property which is developed and used either in part or in whole for residential purposes. These sound levels shall be corrected for time duration in accordance with the following table [Table 5.12-5]:

Table 5.12-5
City of Santee Construction Noise Allowance

Total Duration in 24 Hours	Decibel Level Allowance	Total Decibel Level
Up to 15 minutes	+15	90
Up to 30 minutes	+12	87
Up to 1 hour	+9	84
Up to 2 hours	+6	81
Up to 4 hours	+3	78
Up to 8 hours	0	75

Source: City of Santee n.d.

B. In the event that lower noise limit standards are established for construction equipment pursuant to state or federal law, the lower limits shall be used as a basis for revising and amending the noise level limits specified in subsection A2 of this section.

17.30.030 Performance Standards

The conduct and operation of all uses in all districts shall comply with the minimum standards of performance set forth in Section 17.30.030 of the City of Santee's Municipal Code (City of Santee 1985).

A. Noise.

***

2. Commercial/Industrial. All commercial and industrial uses shall be established and operated in compliance with the city noise ordinance, commencing with Section 8.12.010 of the Santee Municipal Code, or as may be hereafter amended.

***

E. Vibration. No operation or activity is permitted which will create vibration noticeable without instruments at the perimeter of the subject property.

County of San Diego

36.404. General Sound Level Limits

Section 36.404 of the County of San Diego's Municipal Code sets forth general sound level limitations.

a. Except as provided in section 36.409 of the County of San Diego's Municipal Code, it shall be unlawful for any person to cause or allow the creation of any noise, which exceeds the one-hour average sound level limits in [Table 5.12-6], when the one-hour average sound level is measured at the property line of the property on which the noise is produced or at any location on a property that is receiving the noise.

Table 5.12-6
Sound Level Limits In Decibels (dBA)

Zone	Time	1-Hour Average Sound Level Limits (Dba)
(1) RS, RD, RR, RMH, A70, A72, S80, S81, S90, S92, RV, and RU with a General Plan Land Use Designation density of less than 10.9 dwelling units per acre.	7 a.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45

Table 5.12-6
Sound Level Limits In Decibels (dBA)

Zone	Time	1-Hour Average Sound Level Limits (Dba)
(2) RRO, RC, RM, S86, FB-V5, RV and RU with a General Plan Land Use Designation density of 10.9 or more dwelling units per acre.	7 a.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
(3) S94, FB-V4, AL-V2, AL-V1, AL-CD, RM-V5, RM-V4, RM-V3, RM-CD and all commercial zones.	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	55
(4) FB-V1, FB-V2, RM-V1, RM-V2	7 a.m. to 7 p.m.	60
	7 p.m. to 10 p.m.	55
FB-V1, RM-V2	10 p.m. to 7 a.m.	55
FB-V2, RM-V1	10 p.m. to 7 a.m.	50
FB-V3	7 a.m. to 10 p.m.	70
	10 p.m. to 7 a.m.	65
(5) M50, M52, and M54	Anytime	70 70
(6) S82, M56, and M58.	Anytime	75
(7) S88 (see subsection (c) below)		

Source: County of San Diego 2014.

b. Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit, which authorizes the noise-generating use or activity and the decision making body approving the Major Use Permit determined that those mitigation measures reduce potential noise impacts to a level below significance, implementation and compliance with those noise mitigation measures shall constitute compliance with subsection (a) above.

c. S88 zones are Specific Planning Areas which allow different uses. The sound level limits in [Table 5.12-6] that apply in an S88 zone depend on the use being made of the property. The limits in [Table 5.12-6], subsection (1) apply to property with a residential, agricultural or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52 or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.

d. If the measured ambient noise level exceeds the applicable limit in [Table 5.12-6], the allowable one-hour average sound level shall be the one-hour average ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.

e. The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. The one-hour average sound level limit applicable to extractive industries, however, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone in which the extractive industry is located.

f. A fixed-location public utility distribution or transmission facility located on or adjacent to a property line shall be subject to the sound level limits of this section measured at or beyond six feet from the boundary of the easement upon which the facility is located.

36.408. Hours of Operation of Construction Equipment

Section 36.408 of the County of San Diego's Municipal Code sets forth limitations on hours of operation of construction equipment. Except for emergency work, it shall be unlawful for any person to operate or cause to be operated, construction equipment:

a. Between 7 p.m. and 7 a.m.

b. On a Sunday or a holiday. For purposes of this section, a holiday means January 1st, the last Monday in May, July 4th, the first Monday in September, the fourth Thursday in November and December 25th. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10 a.m. and 5 p.m. at the person's residence or for the purpose of constructing a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limitations in sections 36.409 and 36.410 of the County of San Diego's Municipal Code.

36.409. Sound Level Limitations on Construction Equipment

Section 36. 409 of the County of San Diego's Municipal Code sets forth sound level limitations on construction equipment. Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels for an 8-hour period, between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

36.410. Sound Level Limitations on Impulsive Noise

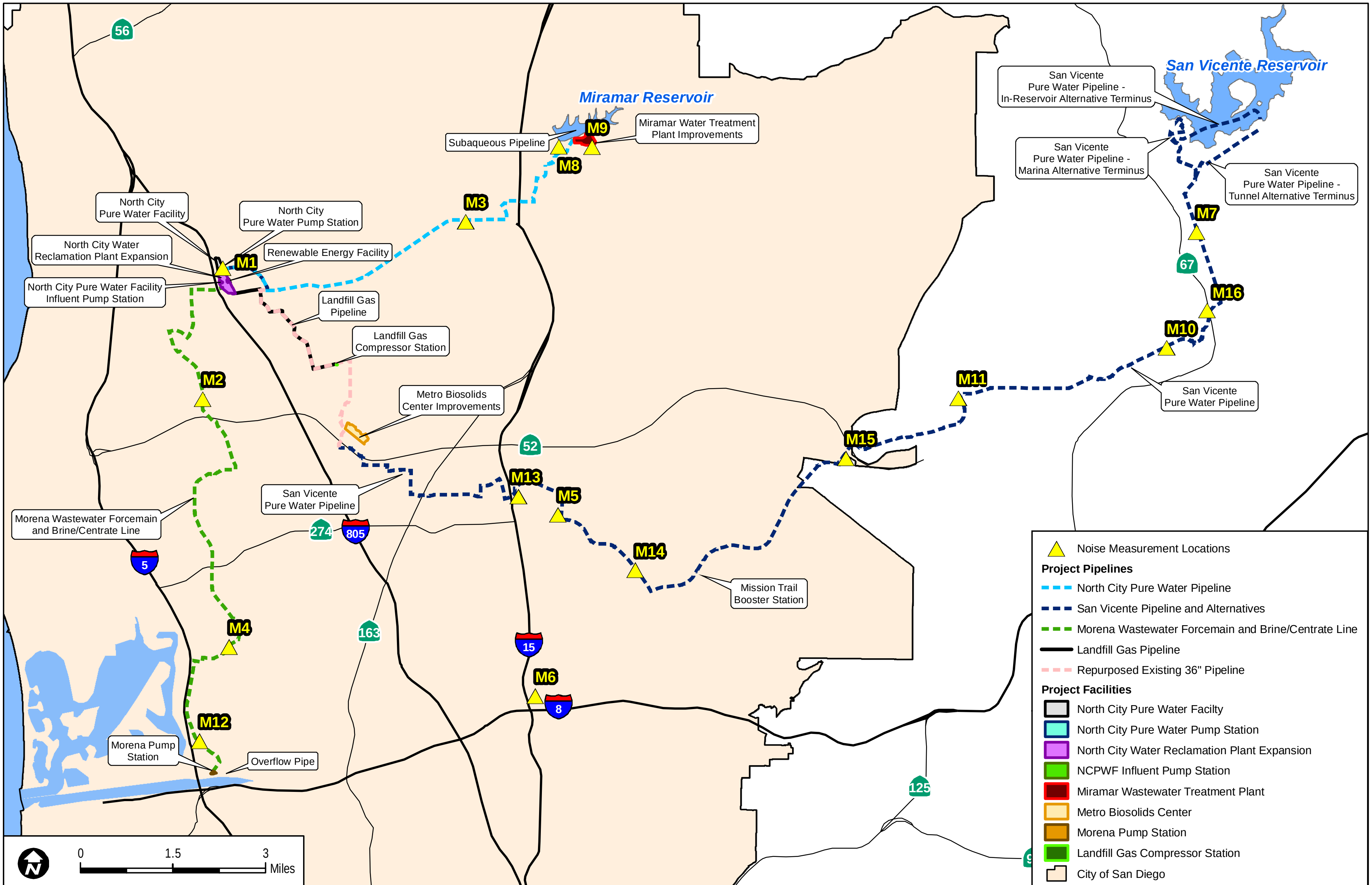
Section 36. 410 of the County of San Diego's Municipal Code sets forth sound level limitations on impulsive noise (County of San Diego 2009). In addition to the general limitations on sound levels in section 36.404 of the County of San Diego's Municipal Code and the limitations on construction equipment in section 36.409 of the County of San Diego's Municipal Code, the following additional sound level limitations shall apply:

a. Except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in [Table 5.12-7], when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25% of the minutes in the measurement period. The maximum sound level depends on the use being made of the occupied property.

Table 5.12-7
Maximum Sound Level (Impulsive) Measured at Occupied Property In Decibels (Dba)

Occupied Property Use	Decibels (Dba)
Residential, village zoning or civic use	82
Agricultural, commercial or industrial use	85

Source: County of San Diego 2009.



DUDEK

SOURCE: City of San Diego, 2015, 2016; SanGIS 2016

FIGURE 5.12-1

Noise Measurement Locations

Pure Water San Diego Program North City Project EIR/EIS

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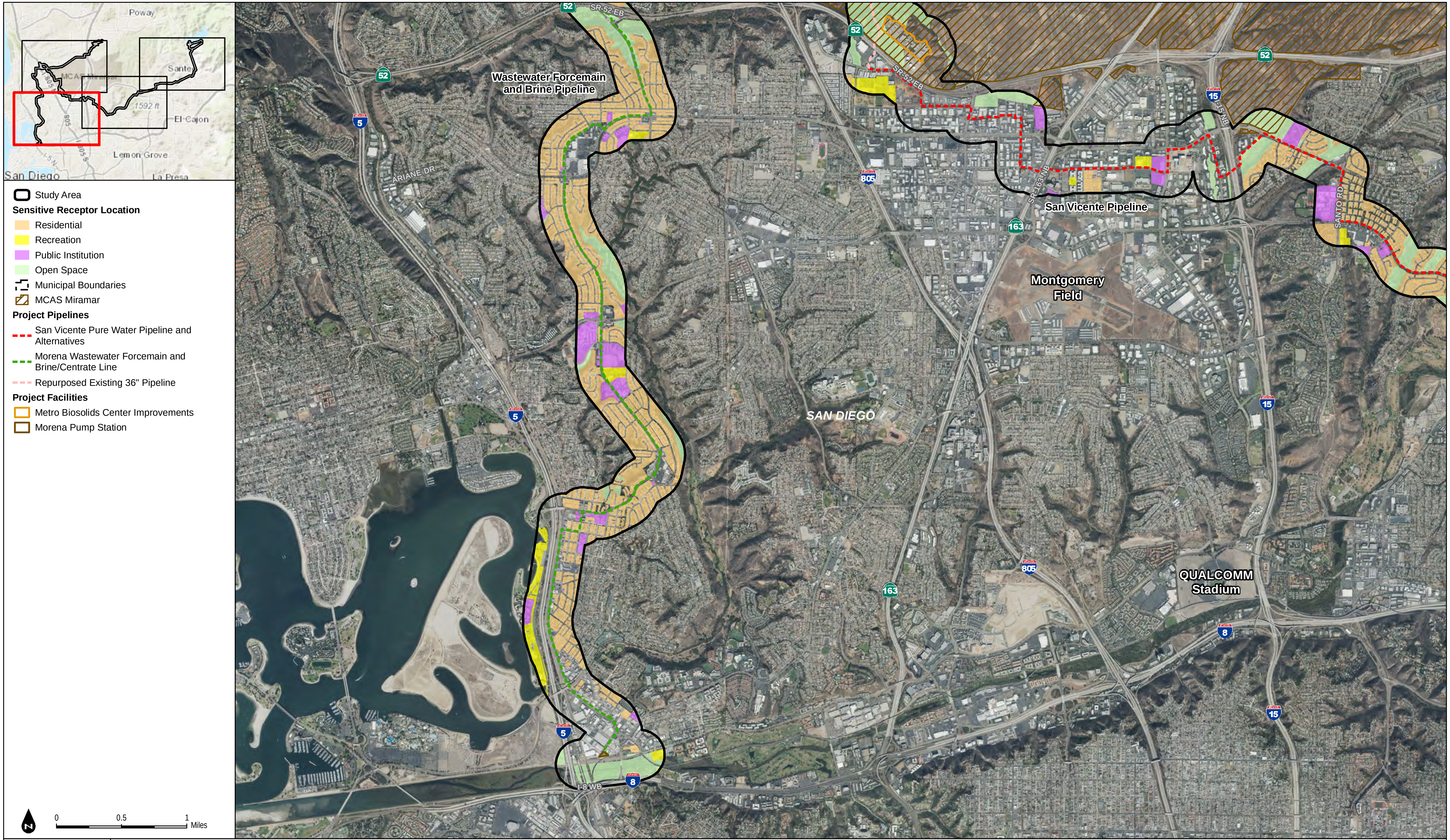

SOURCE: SanGIS 2016; SANDAG 2016

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FIGURE 5.12-2A

Noise Sensitive Receptor Locations

Pure Water San Diego Program North City Project EIR/EIS

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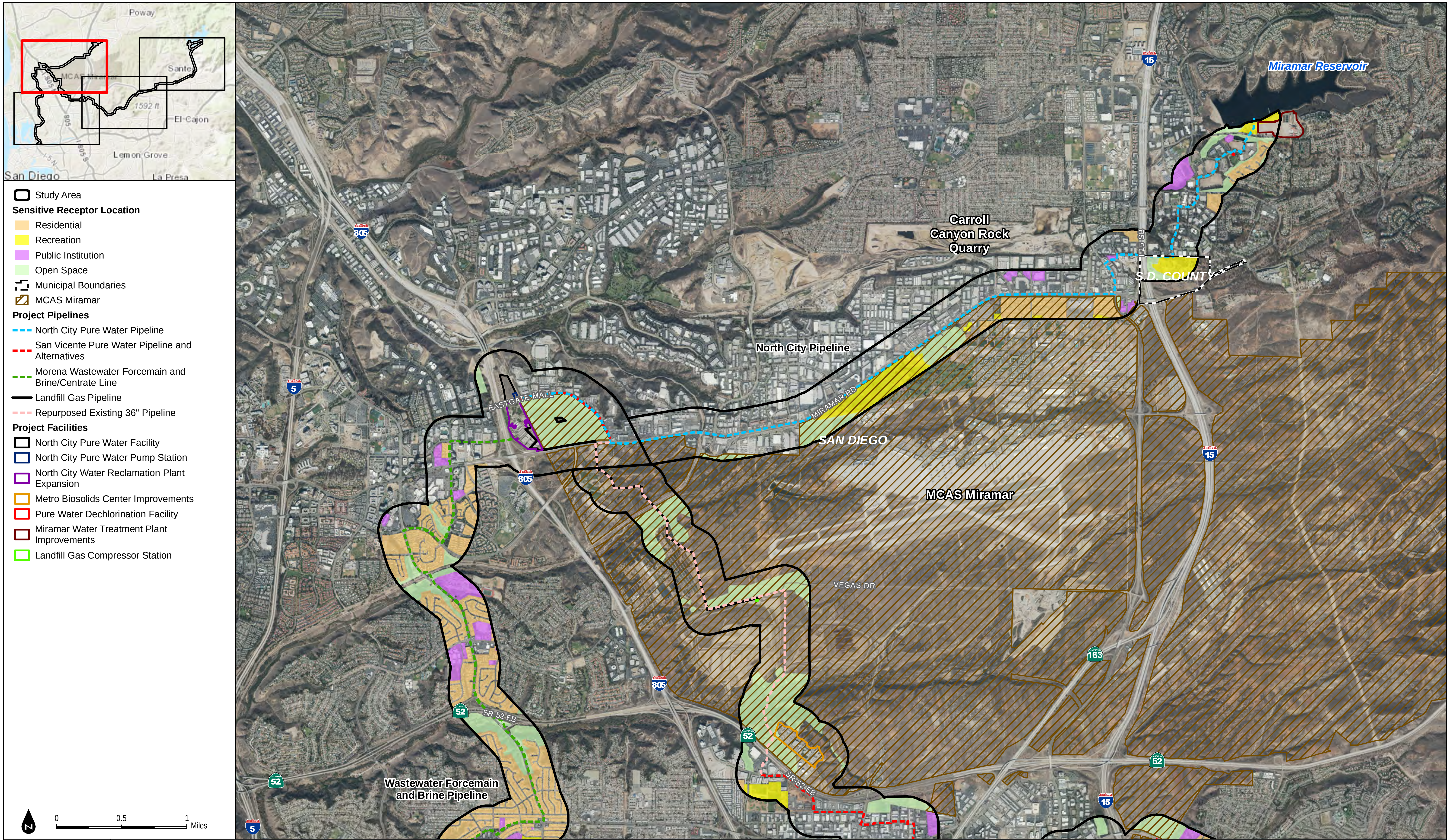

Study Area

Sensitive Receptor Location

- Residential
- Recreation
- Public Institution
- Open Space
- Municipal Boundaries
- MCAS Miramar

Project Pipelines

- North City Pure Water Pipeline
- San Vicente Pure Water Pipeline and Alternatives
- Morena Wastewater Forcemain and Brine/Centrate Line
- Landfill Gas Pipeline
- Repurposed Existing 36" Pipeline

Project Facilities

- North City Pure Water Facility
- North City Pure Water Pump Station
- North City Water Reclamation Plant Expansion
- Metro Biosolids Center Improvements
- Pure Water Dechlorination Facility
- Miramar Water Treatment Plant Improvements
- Landfill Gas Compressor Station

0 0.5 1 Miles

DUDEK

SOURCE: SanGIS 2016; SANDAG 2016

FIGURE 5.12-2B

Noise Sensitive Receptor Locations

Pure Water San Diego Program North City Project EIR/EIS

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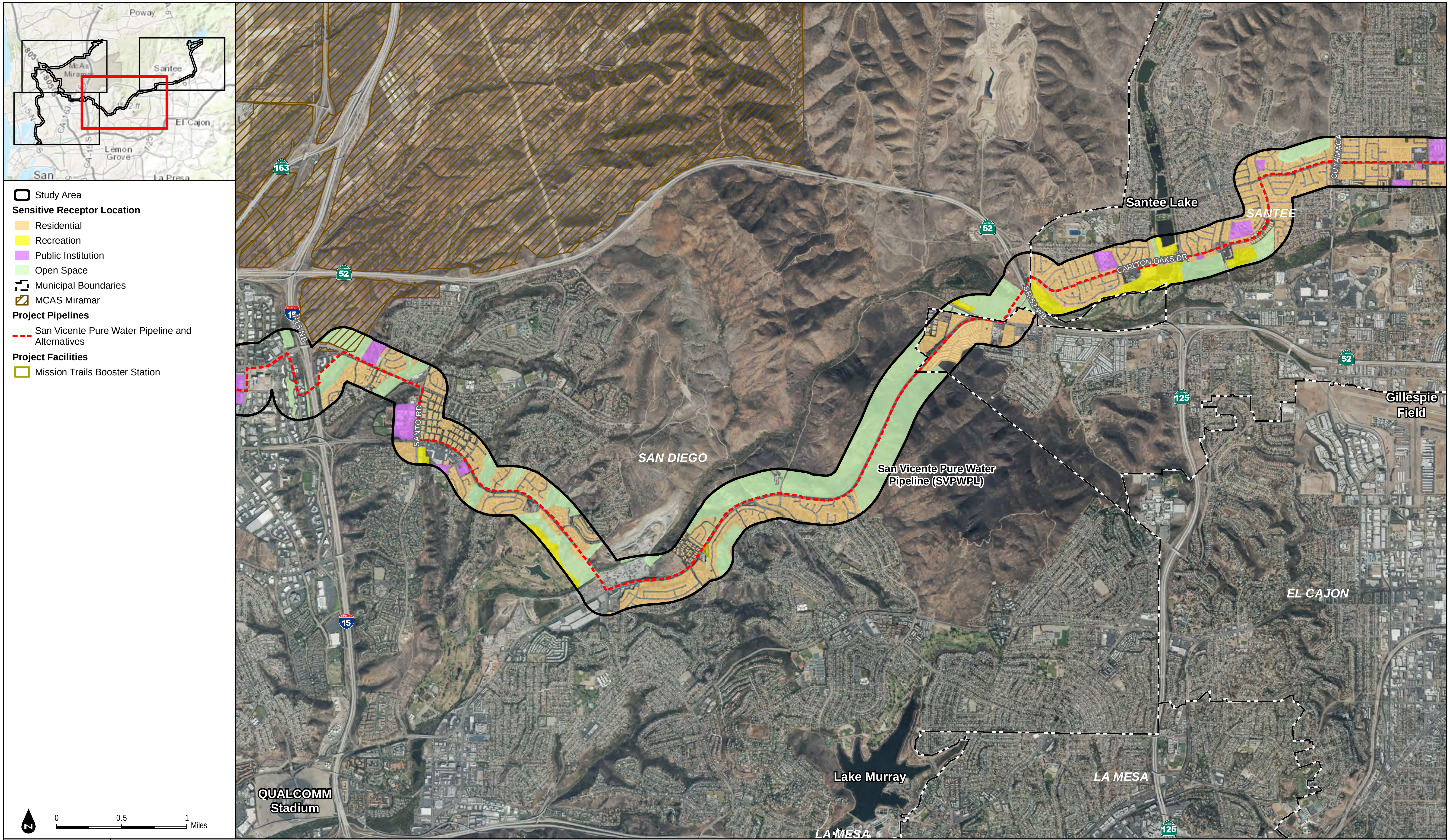

SOURCE: SanGIS 2016; SANDAG 2016

DUDEK

FIGURE 5.12-2C

Noise Sensitive Receptor Locations

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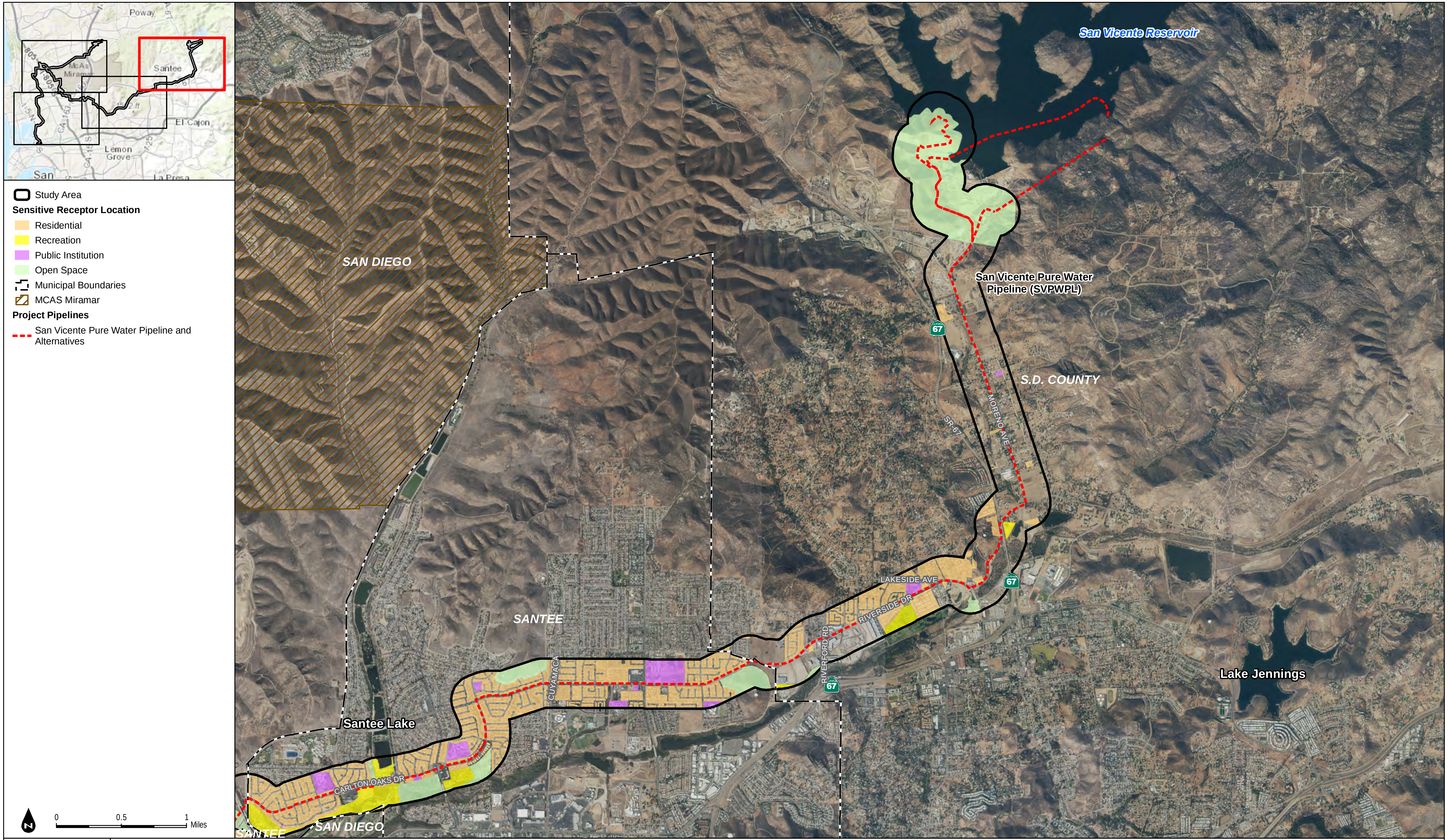

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SOURCE: SanGIS 2016; SANDAG 2016

FIGURE 5.12-2D

Noise Sensitive Receptor Locations

Pure Water San Diego Program North City Project EIR/EIS

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5.13 PALEONTOLOGICAL RESOURCES

5.13.1 INTRODUCTION

This section discusses the environmental setting and applicable regulations with regards to paleontological resources.

Paleontological resources (i.e., fossils) are the remains and/or traces of prehistoric plant and animal life. Fossil remains, such as bones, teeth, shells, and leaves, are found in the geologic deposits within which they were originally buried. For the purposes of this discussion, paleontological resources can be thought of as including not only the actual fossil remains, but also the areas and geologic formations likely to contain those fossils.

The paleontological resources information provided in this section is based on review of published geological maps covering the project area and a Paleontological Records Search for the North City Project conducted by the San Diego Natural History Museum (SDNHM) (SDNHM 2016).

5.13.2 ENVIRONMENTAL SETTING

Geologic rock units that underlie the North City Project Area of Potential Effect (APE) are listed in Table 5.13-1. As shown Table 5.13-1, geologic rock units that underlie the North City Project APE include the following: Ardath Shale, Artificial fill, Quaternary younger alluvium (Recent, of Holocene alluvium), Quaternary landslide deposits, Pleistocene old alluvial flood plain deposits (Qoa), Bay Point Formation, Lindavista Formation, Stadium Conglomerate, Friars Formation, Scripps Formation, Cretaceous intrusive igneous rocks, and Mesozoic metasedimentary and metavolcanic rocks, undivided. Following the City of San Diego and County of San Diego Guidelines for Paleontological Resources, each rock unit underlying the APE was subsequently assigned a paleontological resource sensitivity rating by the SDNHM during the records search conducted for the North City Project. The sensitivity of these rock units is listed in Table 5.13-1.

Table 5.13-1
Paleontological Sensitivity of Geological Rock Units Underlying the North City Project APE

Geological Rock Units	Paleontological Resources Sensitivity Rating
Ardath Shale (Ta)	High
Artificial fill (Af)	Low

Table 5.13-1
Paleontological Sensitivity of Geological Rock Units Underlying the North City Project APE

Geological Rock Units	Paleontological Resources Sensitivity Rating
Quaternary younger alluvium (Recent or Holocene alluvium) (Qya)	Low
Quaternary landslide deposits (Qls)	Low
Pleistocene old alluvial flood plain deposits (Qoa)	High
Bay Point Formation (Obp)	High
Lindavista Formation (Oln)	Moderate[1]
Stadium Conglomerate (Tst)	High[2]
Friars Formation (Tf)	High
Scripps Formation (Tsd)	High
Cretaceous intrusive igneous rocks (Kgu)	Zero[3]
Mesozoic metasedimentary and metavolcanic rocks, undivided (Mzu)	Moderate

Source: SDNHM 2016.
Notes:
1 This formation is elevated to high sensitivity in Mira Mesa and Tierrasanta.
2 See discussion of Stadium Conglomerate below for sensitivity rating discrepancies.
3 Plutonic igneous rocks do not preserve fossils because they crystallize at extremely high temperatures and pressures several miles below the Earth's surface, so these rocks are assigned no paleontological sensitivity.

Ardath Shale. Ardath Shale has yielded diverse and well-preserved assemblages of marine microfossils, macroinvertebrates, and vertebrates. This formation occurs in the western extent of the APE in the community of Clairemont. Because of its production of diverse and well-preserved assemblages of fossils, high resource sensitivity is given to this formation.

Artificial fill. Because artificial fill has been previously disturbed, any contained fossil remains have lost their original stratigraphic contextual data and are thus of little scientific value. For these reasons, artificial fill is assigned low paleontological sensitivity.

Holocene alluvial deposits. Holocene alluvial deposits (mapped by Kennedy and Tan 2008, and Todd 2004 et al., as Qya) occur in modern canyons and floodplains. Holocene alluvial deposits are generally less than 10,000 years old, and are assigned a low paleontological sensitivity based on their young geologic age and the lack of known fossil localities; however, these deposits may overlie sensitive units that could be impacted where the contact is relatively shallow.

Quaternary landslide deposits. The landslide deposits underlying the North City Project APE appear to be derived from the Lindavista Formation (moderate paleontological sensitivity, see below) and the Friars Formation (high paleontological sensitivity, see below); thus it is possible that fossils originally contained within these units may have been redeposited within the landslide deposits. However, without associated stratigraphic contextual data, fossil remains within Quaternary landslide deposits may be of little scientific value. Accordingly, landslide deposits are assigned a low paleontological sensitivity.

Pleistocene old alluvial flood plain deposits. Pleistocene-age (approximately 10,000 to 2.6 million years old) old alluvial flood plain deposits (mapped by Kennedy and Tan 2008, and Todd et al. 2004, as Qoa) underlie portions of the North City Project APE. Recovered fossils from these deposits include scientifically significant terrestrial vertebrate fossils (e.g., reptiles, birds, small mammals, and large-bodied "Ice-Age" mammals such as mammoth, bison, horse, and camel) (Deméré and Walsh 1993). Therefore, these deposits are assigned a high paleontological sensitivity.

Bay Point Formation. The nearshore marine deposits of the Pleistocene-age (approximately 10,000 to 750,000 years old) Bay Point Formation within the North City Project APE rest on the Nestor terrace (approximately 120,000 years old) of Kern and Rockwell (1992), and are equivalent to Unit 6, old paralic deposits of Kennedy and Tan (2008). Recorded fossil localities from the Bay Point have yielded fossilized impressions or remains of plants (e.g., angiosperms), marine invertebrates (e.g., chitons, snails, clams, mussels, oysters, decapods, barnacles, and sea urchins), marine vertebrates (e.g., sharks, rays, and bony fish), and terrestrial vertebrates (e.g., birds, rodents, and mammoths). The Bay Point Formation has been assigned a high paleontological sensitivity for the diverse and well-preserved fossils of marine invertebrates and marine vertebrates that have been recovered from these deposits.

Lindavista Formation. The western portion of the North City Project APE is underlain throughout by the marine and/or non-marine terrace deposits of the early to middle Pleistocene age (approximately 0.5 to 1.5 million years old) Lindavista Formation (mapped by Kennedy and Tan 2008, as Quaternary Very Old Paralic deposits, various units). Recorded fossil localities from the Lindavista Formation have produced trace fossils (e.g., burrows), and fossilized impressions or remains of plants (e.g., vascular plants), marine invertebrates (e.g., snails, clams, mussels, and sand dollars), and marine vertebrates (e.g., rays). Fossil localities are somewhat rare within the Lindavista Formation, so it is generally assigned a moderate paleontological sensitivity.

Stadium Conglomerate. Non-marine deposits of the middle Eocene-age (approximately 42 to 44 million years old) Stadium Conglomerate underlie the San Vicente Reservoir and along the upper slopes of modern drainages across the central portion of the North City Project APE. Recorded fossil localities from the Stadium Conglomerate have produced fossilized impressions and remains of plants (e.g., willows and other vascular plants). The strata that yielded the localities (which directly underlies the project alignment near the southwest edge of the San Vicente Reservoir) could not be correlated with the upper or lower member due to the distance between these and other exposures of the Stadium Conglomerate in Mission Valley. While the upper and lower members of the Stadium Conglomerate have been assigned distinct paleontological resource sensitivities (high to moderate, and high, respectively), these deposits should be treated as having a high fossil potential when it is not possible to distinguish the two members.

Friars Formation. The fluvial deposits of the middle Eocene-age (approximately 46 to 47 million years old) Friars Formation underlie the North City Project APE in the central portion of the City of Santee and sporadically along the upper slopes of modern drainages across the central portion of the project area in the City of San Diego. The SDNHM has 46 recorded fossil localities from the Friars Formation within a 1-mile radius of the project alignment. These localities yielded trace fossils (e.g., insect pupae, egg shells, coprolites), and fossilized impressions or remains of plants (e.g., green algae, ferns, water lilies, willows, and horsetails), marine invertebrates (e.g., sea snails, clams, and ostracods), terrestrial or nonmarine invertebrates (e.g., land snails), and terrestrial vertebrates (e.g., frogs, turtles, lizards, snakes, crocodiles, marsupials, assorted insectivorous mammals, bats, primates, carnivorous mammals, rodents, artiodactyls, and perissodactyls). The Friars Formation is assigned a high paleontological sensitivity on the basis of the recovery of diverse and well-preserved assemblages of both marine invertebrates and terrestrial vertebrates from these deposits.

Scripps Formation. The marine continental shelf deposits of the early middle Eoceneage (approximately 47 million years old) Scripps Formation is exposed along the western portion of the North City Project APE. Recorded fossil localities from the Scripps Formation have produced trace fossils (e.g., worm burrows, clam and sponge borings, and coprolites), and fossilized impressions or remains of plants (e.g., green algae, ferns, horsetails, and flowering plants), marine invertebrates (e.g., foraminifers, sponges, corals, bryozoans, polychaete worms, snails, clams, mussels, oysters, tusk shells, nautiloids, crabs, and heart urchins), marine vertebrates (e.g., sharks, rays, and bony fish), and terrestrial vertebrates (e.g., crocodiles). Based on the diverse fossil assemblages known from this unit, as well as the co-occurrence of marine invertebrate and terrestrial vertebrate fossils, the Scripps Formation has been assigned a high paleontological sensitivity.

Cretaceous intrusive igneous rocks. The Cretaceous intrusive igneous rocks of San Diego County comprise part of the northern end of the Peninsular Ranges Batholith, and includes units mapped as granitoid rocks, granodiorite and tonalite, undivided, and tonalite, undivided, by Kennedy and Tan (2008) and Todd (2004). North of Cowles Mountain and in patches at the east end of the North City Project APE, these geological rock units underlie the North City Project APE. Plutonic igneous rocks do not preserve fossils because they crystallize at extremely high temperatures and pressures several miles below the earth's surface, so these rocks are assigned no paleontological sensitivity.

Mesozoic metasedimentary and metavolcanic rocks, undivided. Crystalline basement rocks of late Jurassic to early Cretaceous age (approximately 125 to 140 million years old), mapped as Mesozoic metasedimentary and metavolcanic rocks, undivided, by Kennedy and Tan (2008) and as the Santiago Peak Volcanics by Todd et al. (2004), underlie the North City Project APE near the San Vicente and Miramar reservoirs, west of Cowles Mountain, and at the east edge of the City of Santee. The metavolcanic portions of this unit rarely preserve fossils due to the high temperatures associated with their formation; some of the volcanic breccias, however, have produced petrified wood, and are assigned a marginal sensitivity (Deméré and Walsh 1993). The metasedimentary portions have the potential to yield fossils, including siliceous microfossils (e.g., radiolarians) and marine macroinvertebrates (e.g., clams and belemnites), the rock unit exposed along the project alignment are mapped as "undivided," specific paleontological sensitivity determinations should be made by a qualified paleontologist during monitoring of the areas mentioned above.

Table 5.13-2 identifies the geologic rock units that underlie components common to Project Alternatives and components specific to the Miramar Reservoir Alternative and the San Vicente Reservoir Alternative. For linear project components, the general location of where geologic rock units occur along the alignment is typically described. Figures 5.13-1A through 5.13-1D illustrate the paleontological sensitivity of geologic units underlying the project components.

Table 5.13-2
Paleontological Sensitivity of Geological Rock Units Underlying Project Components

Project Component	Geological Rock Units	Location	Sensitivity Rating
Components Common to Project Alternatives			
Morena Pump Station	Bay Formation	—	High
Morena Wastewater Forcemain and Brine/Centrate Line (Morena Pipelines)	Ardath Shale	Western portion of project alignment	High
	Scripps Formation	Western portion of project alignment	High
	Stadium Conglomerate	North of Rose Canyon crossing	High
	Pleistocene old alluvial flood plain deposits	Rose Canyon crossing	High
	Lindavista Formation	Western portion of project alignment	Moderate
	Bay Point Formation	Near southern terminus of alignment	High
	Artificial fill	Along Interstate 5, east of Mission Bay, near the southwest termination of the alignment	Low
North City Water Reclamation Plant Expansion, Influent Pump Station, and North City Renewable Energy Facility	Scripps Formation	—	High
	Lindavista Formation	—	Moderate
North City Pure Water Facility and Influent Pump Station	Scripps Formation	—	High
	Lindavista Formation	—	Moderate
Landfill Gas Pipeline	Scripps Formation	—	High
	Stadium Conglomerate		High
	Friars Formation		High
	Lindavista Formation		Moderate
Metro Biosolids Center Improvements	Friars Formation	—	High
	Stadium Conglomerate	—	High
	Lindavista Formation	—	Moderate

Table 5.13-2
Paleontological Sensitivity of Geological Rock Units Underlying Project Components

Project Component	Geological Rock Units	Location	Sensitivity Rating
Miramar Reservoir Alternative			
North City Pure Water Pipeline	Lindavista Formation	Along the western portion of the alignment	High*
	Stadium Conglomerate	Along the upper slopes of modern drainages across the central portion of the alignment	High
	Quaternary alluvium	—	Low
	Mesozoic metasedimentary and metavolcanic rocks, undivided	Near the Miramar Reservoir	Moderate
Dechlorination Facility	Stadium Conglomerate	—	High
Miramar Water Treatment Plant Improvements	Stadium Conglomerate	—	High
San Vicente Reservoir Alternative			
San Vicente Pure Water Pipeline	Pleistocene older alluvial deposits	Along the north side of the San Diego River Valley	High
	Mesozoic metasedimentary and metavolcanic rocks, undivided	Near the San Vicente, west of Cowles Mountain, and at the east edge of the City of Santee.	Moderate
	Quaternary younger alluvium (Recent, or Holocene alluvium)	Along drainages associated with the San Diego River Valley	Low
	Cretaceous intrusive igneous rocks (granite)	North of Cowles Mountain and in patches at the east end of the alignment	Zero
	Quaternary landslide deposits	Tierrasanta and area east of Murphy Canyon and north of Mission Valley	Low

Table 5.13-2
Paleontological Sensitivity of Geological Rock Units Underlying Project Components

Project Component	Geological Rock Units	Location	Sensitivity Rating
	Friars Formation	Central portion of alignment along the upper slopes of modern drainages across the City of San Diego; central portion of the City of Santee	High
	Stadium Conglomerate	Along the upper slopes of modern drainages across the central portion of the alignment; San Vicente Reservoir	High
Mission Trails Booster Station	Friars Formation	—	High

Note:
* This formation is elevated to high sensitivity in Mira Mesa and Tierrasanta.

Paleontological Records Search

A search of the paleontological records at the SDNHM was conducted in order to determine if any documented fossil collection localities occur along the project alignment or within the immediate surrounding area. The SDNHM has 216 recorded fossil localities within a 1-mile radius of the North City Project APE (see SDNHM 2016, Appendix 2). Sixty-seven of these localities are from geologic units that are not anticipated to be impacted by construction: the late Pliocene to early Pleistocene-age San Diego Formation; the middle Eocene-age Pomerado Conglomerate, Mission Valley Formation, and Ardath Shale; and an “unnamed formation” of early Eocene age. The remaining 149 localities are from the Pleistocene-age Bay Point Formation, the early to middle Pleistocene-age Lindavista Formation, and the middle Eocene-age Stadium Conglomerate, Friars Formation, and Scripps Formation, and are described in greater detail above.

5.13.3 REGULATORY FRAMEWORK

Federal

Paleontological Resources Preservation Act

The Paleontological Resources Preservation Act requires the secretaries of the Interior and Agriculture to manage and protect paleontological resources on federal land using scientific principles and expertise. The Omnibus Public Lands Act–Paleontological Resources Preservation (OPLA–PRP) includes specific provisions addressing management of these resources by the Bureau of Land Management (BLM), the National Park Service, the Bureau of Reclamation, the U.S. Fish and Wildlife Service, all of the Department of the Interior, and the U.S. Forest Service of the Department of Agriculture.

The OPLA–PRP affirms the authority for many of the policies that the federal land-managing agencies already have in place for the management of paleontological resources such as issuing permits for collecting paleontological resources, curation of paleontological resources, and confidentiality of locality data. The OPLA–PRP only applies to federal lands and does not affect private lands. It provides authority for the protection of paleontological resources on federal lands, including criminal and civil penalties for fossil theft and vandalism. As directed by the act, the federal agencies are in the process of developing regulations, establishing public awareness and education programs, and inventorying and monitoring federal lands.

Bureau of Land Management

Manual H-8270-1 – General Procedural Guidance for Paleontological Resource Management and IM 2009-11: Guidelines for Assessment and Mitigation of Potential Impacts to Paleontological Resources

While not identified as a lead or responsible agency for the North City Project, the paleontological resources procedural guidance (BLM 1998) and guidelines for assessment and mitigation (BLM 2009) developed by the BLM to address fossils at the federal level have been mirrored by other federal agencies including the Bureau of Reclamation. The BLM established the Potential Fossil Yield Classification (PFYC) system for categorizing the probability of geologic units to contain scientifically significant paleontological resources or noteworthy fossil occurrences. The PFYC has five levels or Classes, with Class 1 (Very Low) applied to geologic units that are not likely to contain significant fossils, through Class 5 (Very High) for geologic formations that have a high potential to yield scientifically significant fossils on a regular basis. If analysis of a proposed project determines that there is the potential to disturb PFYC Class 3 (Moderate), 4 (High), or 5 (Very High) formations or potentially fossil-bearing alluvium, or known significant localities, field surveys and/or other mitigation measures may be required to ensure the protection of paleontological resources.

The BLM guidelines also contain procedures for conducting a paleontological field survey, field monitoring, and determination of further mitigation requirements.

State

State guidelines require that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to paleontological resources. Paleontological resources are recognized as part of the environment under these guidelines.

County of San Diego Guidelines for Determining Significance: Paleontological Resources

As it is the underlying formation and geologic rock units that contain the fossil remains, resource sensitivity/potential levels are rated for individual geologic formations. The resource sensitivity levels and potential ratings are described in Table 5.13-3 and are adapted from the resource sensitivity levels and potential ratings described in the County of San Diego Guidelines for Determining Significance: Paleontological Resources.

Table 5.13-3
Paleontological Resource Sensitivity Criteria

Resource Sensitivity/ Potential	Definition
High	High resource potential and high sensitivity are assigned to geologic formations known to contain paleontological localities with rare, well preserved, critical fossil materials for stratigraphic or paleoenvironmental interpretation, and fossils providing important information about the paleoclimatic, paleobiological and/or evolutionary history (phylogeny) of animal and plant groups. In general, formations with high resource potential are considered to have the highest potential to produce unique invertebrate fossil assemblages or unique vertebrate fossil remains and are, therefore, highly sensitive.

Table 5.13-3
Paleontological Resource Sensitivity Criteria

Resource Sensitivity/ Potential	Definition
Moderate	Moderate resource potential and moderate sensitivity are assigned to geologic formations known to contain paleontological localities. These geologic formations are judged to have a strong, but often unproven, potential for producing unique fossil remains (Deméré and Walsh 1993).
Low	Low resource potential and low sensitivity are assigned to geologic formations that, based on their relatively young age and/or high-energy depositional history, are judged unlikely to produce unique fossil remains. Low resource potential formations rarely produce fossil remains of scientific significance and are considered to have low sensitivity. However, when fossils are found in these formations, they are often very significant additions to our geologic understanding of the area.
Marginal	Marginal resource potential and marginal sensitivity are assigned to geologic formations that are composed either of volcaniclastic (derived from volcanic sources) or metasedimentary rocks, but that nevertheless have a limited probability for producing fossils from certain formations at localized outcrops. Volcaniclastic rock can contain organisms that were fossilized by being covered by ash, dust, mud, or other debris from volcanoes. Sedimentary rocks that have been metamorphosed by heat and/or pressure caused by volcanoes or plutons are called metasedimentary. If the sedimentary rocks had paleontological resources within them, those resources may have survived the metamorphism and still be identifiable within the metasedimentary rock, but since the probability of this occurring is so limited, these formations are considered marginally sensitive.
No Potential	No resource potential is assigned to geologic formations that are composed entirely of volcanic or plutonic igneous rock, such as basalt or granite, and therefore do not have any potential for producing fossil remains. These formations have no paleontological resource potential, i.e. they are not sensitive.

Source: County of San Diego 2009.

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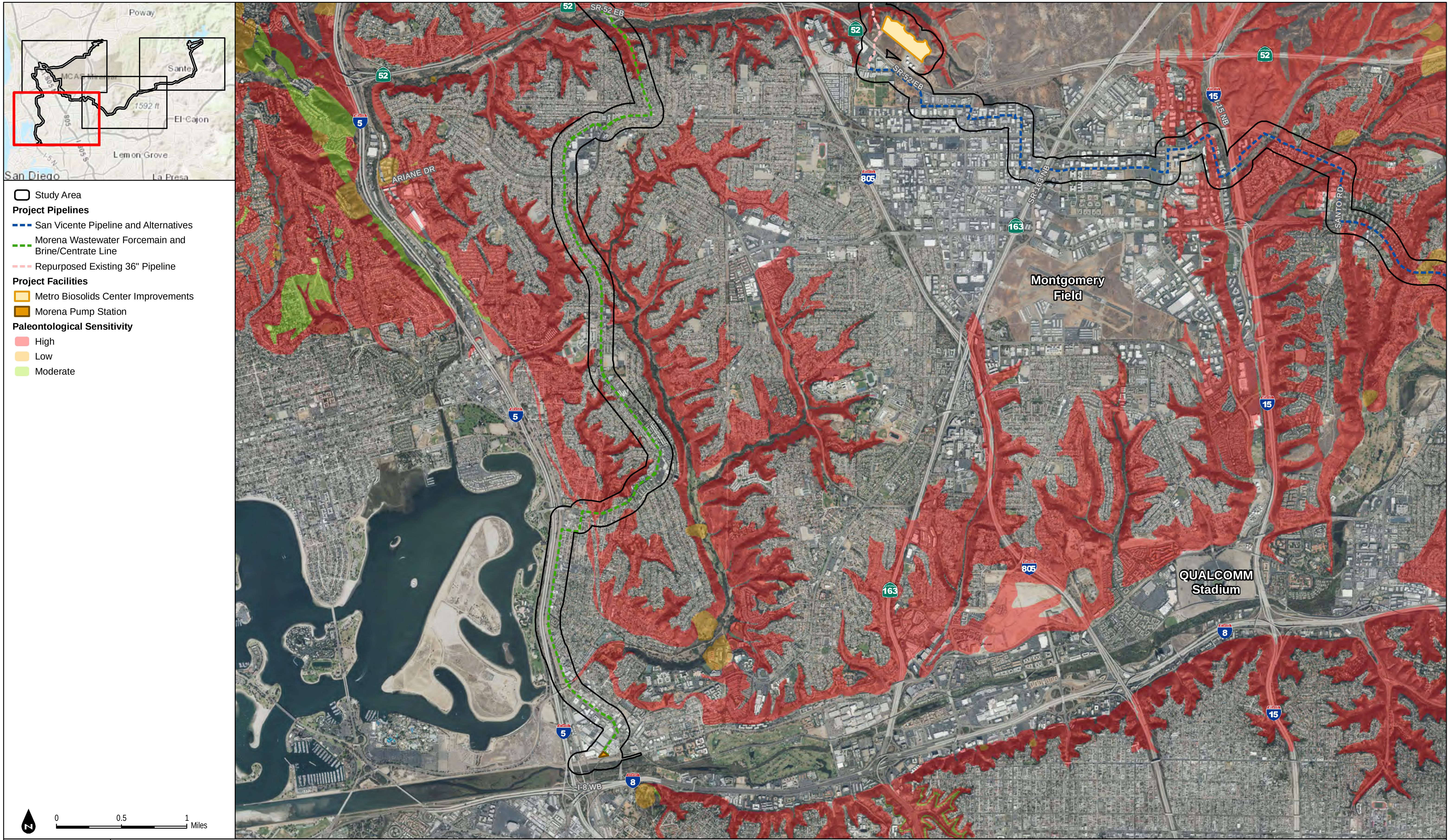

SOURCE: California Geological Society/Department of Water Resources; SANDAG 2014

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FIGURE 5.13-1A

Paleontological Resources Sensitivity

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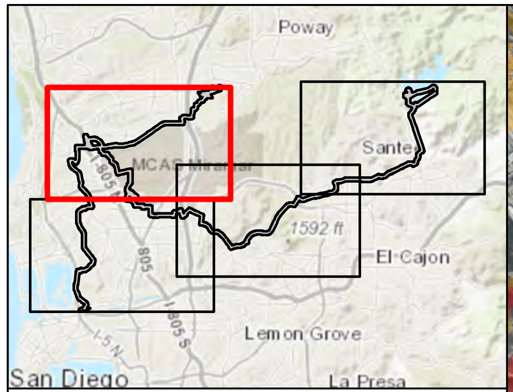


- Study Area

Project Pipelines

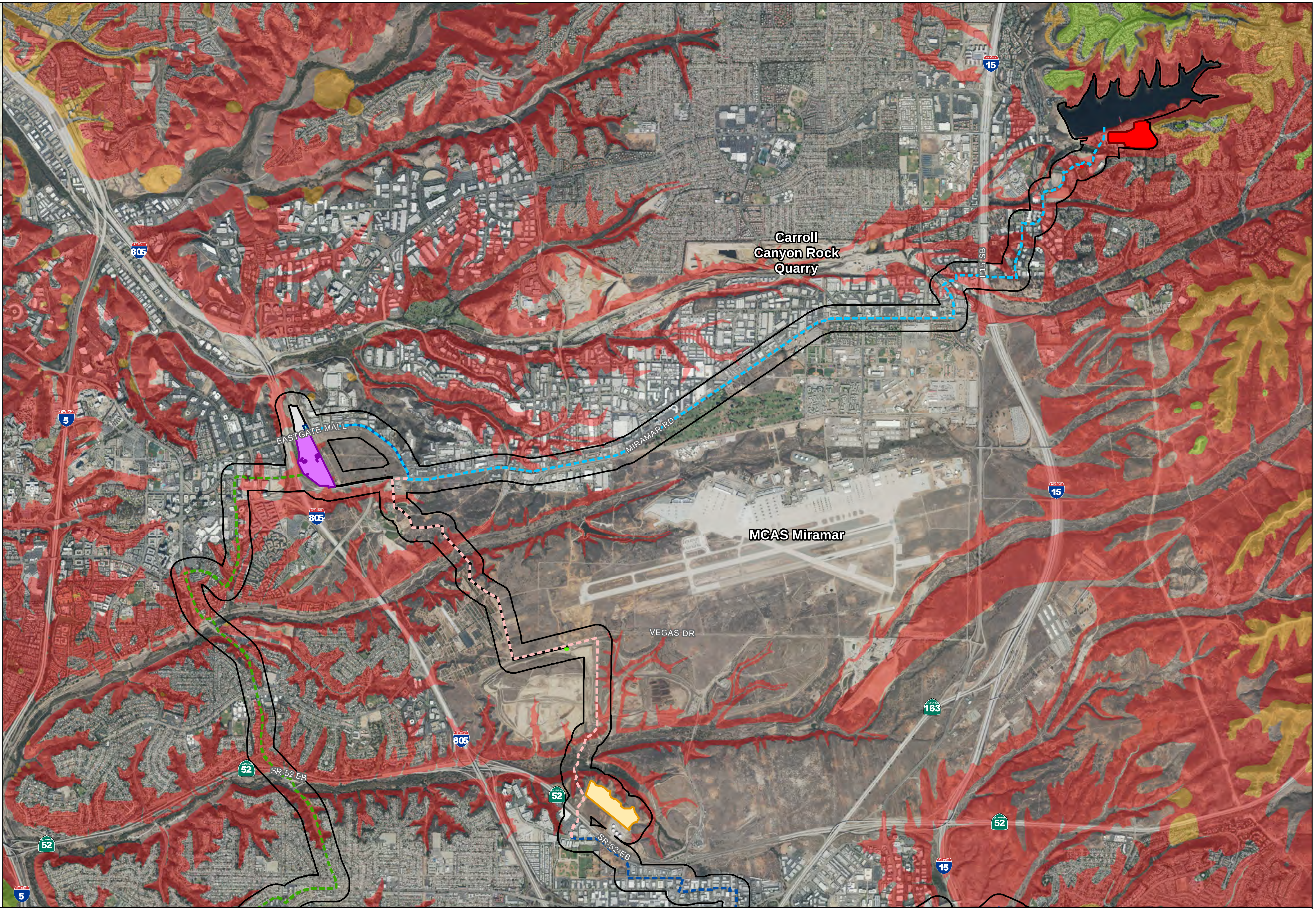
- North City Pure Water Pipeline
- San Vicente Pipeline and Alternatives
- Morena Wastewater Forcemain and Brine/Centrate Line
- Landfill Gas Pipeline
- Repurposed Existing 36" Pipeline

Project Facilities

- North City Pure Water Facility
- North City Pure Water Pump Station
- North City Water Reclamation Plant Expansion
- Metro Biosolids Center Improvements
- Pure Water Dechlorination Facility
- Miramar Water Treatment Plant Improvements
- Landfill Gas Compressor Station

Paleontological Sensitivity

- High
- Low
- Moderate



SOURCE: California Geological Society/Department of Water Resources; SANDAG 2014

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FIGURE 5.13-1B

Paleontological Resources Sensitivity

Pure Water San Diego Program North City Project EIR/EIS

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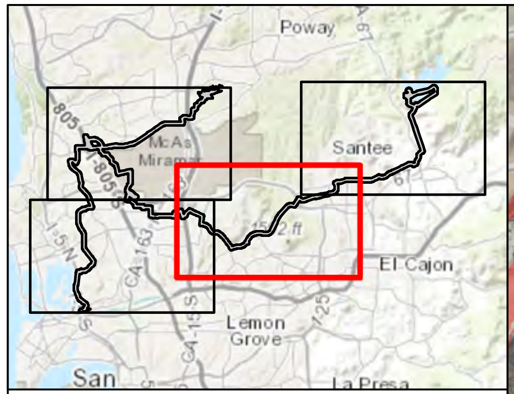

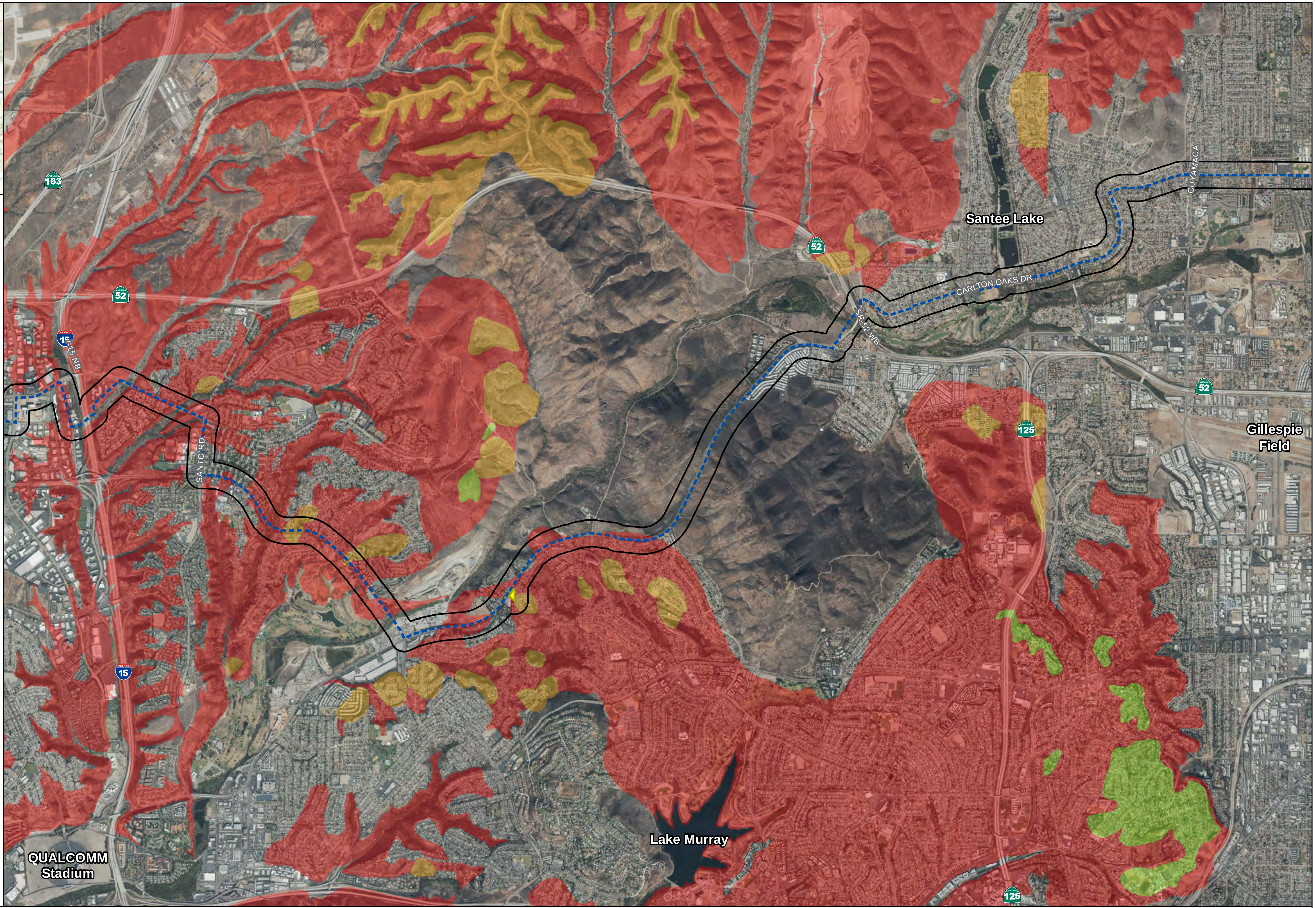

Study Area

Project Pipelines

San Vicente Pipeline and Alternatives

Project Facilities

Mission Trails Booster Station

Paleontological Sensitivity

High

Low

Moderate

0 0.5 1 Miles

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SOURCE: California Geological Society/Department of Water Resources; SANDAG 2014

FIGURE 5.13-1C

Paleontological Resources Sensitivity

Pure Water San Diego Program North City Project EIR/EIS

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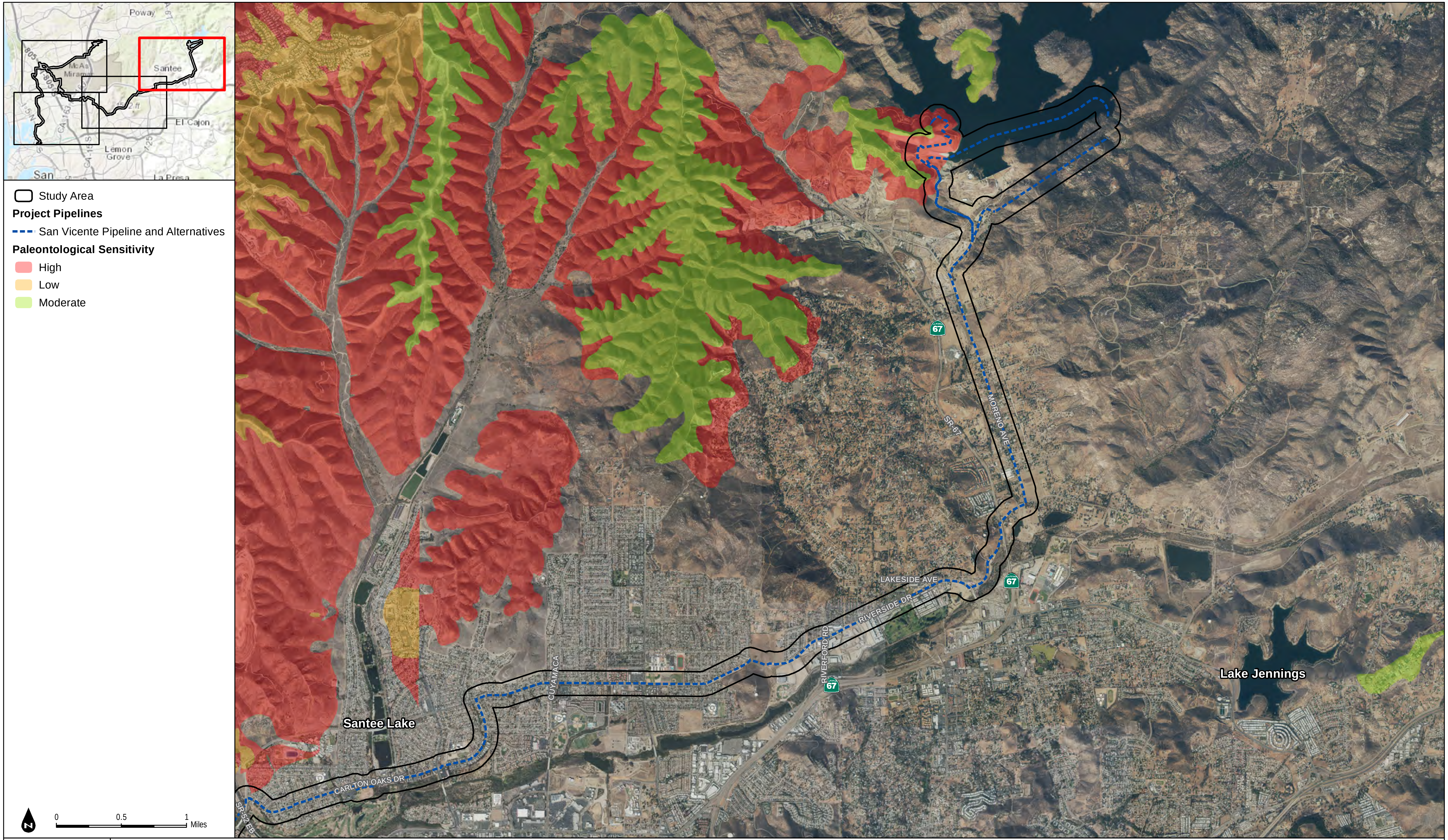

SOURCE: California Geological Society/Department of Water Resources; SANDAG 2014

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FIGURE 5.13-1D

Paleontological Resources Sensitivity

Pure Water San Diego Program North City Project EIR/EIS

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5.14 PUBLIC SERVICES

5.14.1 INTRODUCTION

This section addresses the environmental setting and applicable regulations with regards to public facilities and services, which include functions that serve residents on a community-wide basis. These functions include fire and police protection, public parks and recreation facilities, schools, and libraries. The information contained in this section was obtained from various sources, including the *City of San Diego General Plan* (City of San Diego 2008) and the different public service providers with jurisdiction over the locations of the various components of the Project Alternatives.

5.14.2 ENVIRONMENTAL SETTING

This section describes the existing public services and facilities for each component of the North City Project. It should be noted that all of the facilities that would be staffed would be located within the City of San Diego. The Miramar Reservoir Alternative would be located within the City of San Diego and Marine Corps Air Station (MCAS) Miramar. The San Vicente Reservoir Alternative would be located within the City of San Diego, MCAS Miramar, City of Santee, the community of Lakeside (County of San Diego), and other unicorporated portions of the County of San Diego. The description of each public service is separated by jurisdiction.

Police

City of San Diego

The City of San Diego General Plan Public Facilities, Services, and Safety Element includes goals, policies, and other information regarding police protection services. The City of San Diego Police Department (SDPD) focuses on providing police protection services with a goal for safe, peaceful, and orderly communities through a neighborhood policing philosophy that engages a responsibility between police officers and residents (City of San Diego 2008). The SDPD divides its jurisdiction into multiple neighborhood divisions, which are discussed in the following paragraphs.

Across the Project Alternatives, improvements and construction of the North City Water Reclamation Plant (NCWRP), North City Renewable Energy Facility, North City Pure Water Facility (NCPWF), all pump stations, portions of the pipelines, Miramar Water Treatment Plant (WTP), portions of the Landfill Gas Pipeline, and Metro Biosolids Center (MBC), would be located within the City of San Diego and the jurisdiction of the SDPD. The

NCWRP and NCPWF would be located within the Northwestern Division of the SDPD, which is headquartered at 12592 El Camino Real, approximately 3.5 miles northwest. The Northern Division headquarters is located in the vicinity of the NCPWF, approximately 1 mile to the west at 4175 Eastgate Mall. The MBC is located within the Eastern Division of the SDPD, which is headquartered at 9225 Aero Drive, approximately 2.7 miles to the southeast. The Miramar WTP is located within the Northeastern Division of the SDPD, which is headquartered at 13396 Salmon River Road, approximately 3.5 miles to the north. All unmanned components (pump stations, pipelines, and portions of the Landfill Gas Pipeline) would traverse several divisions of the SDPD, including Northern, Northwestern, Eastern, and Northeastern (SDPD 2013).

City of Santee

Portions of the San Vicente Reservoir Alternative pipelines would be located within the City of Santee. The San Diego County Sheriff's Department is contracted by the City of Santee and provides law enforcement services within the its boundaries. The City of Santee Sheriff's Station is located at 8811 Cuyamaca Street.

County of San Diego

Portions of the San Vicente Reservoir Alternative pipelines as well as the San Vicente Inlet Structure would be located within unicorporated areas of the County of San Diego and the community of Lakeside (County of San Diego). These areas are located within the law enforcement service jurisdiction of the San Diego County Sheriff. The Lakeside Substation is located at 12365 Parkside Street.

MCAS Miramar

The majority of the Landfill Gas Pipeline and the repurposing of the existing 36-inch-diameter recycled water pipeline would be located within MCAS Miramar. MCAS Miramar provides law enforcement services within its boundaries through the operation of Military Police.

Fire

City of San Diego

The City of San Diego General Plan Public Facilities, Services, and Safety Element includes goals, policies, and other information regarding fire protection services. City of San Diego Fire-Rescue Department (SDFD) provides traditional fire protection services as well as emergency medical services, water rescue, hazardous material response, confined space rescue, cliff rescue, high angle rescue, mass casualty incidents, and response to terrorism (City of San Diego 2008). The SDFD employs 801 fire personnel, 338, lifeguard personnel, and 161 civilian personnel across 48 fire stations and 9 permanent lifeguard stations (City of San Diego 2016a).

Across the Project Alternatives, improvements and construction of the NCWRP, North City Renewable Energy Facility, NCPWF, all pump stations, portions of the pipelines, Miramar WTP, portions of the Landfil Gas Pipeline, and MBC, would be located within the City of San Diego and the jurisdiction of the SDFD. The nearest fire station to NCWRP and proposed NCPWF (and Influent Pump Station and North City Pure Water Pump Station) is SDFD Fire Station 35, located at 4285 Eastgate Mall, San Diego, California 92037, approximately 1 mile to the west. Fire Station 35 houses the following apparatus: battalion vehicle, fire engine, aerial truck, brush engine, and chemical truck rig. SDFD Fire Station 36, located at 5855 Chateau Drive, San Diego, California 92117, is the nearest station to the MBC; this station is approximately 1.5 miles to the south and houses a fire engine and paramedic unit. The nearest fire station to the Miramar WTP is SDFD Fire Station 37, located at 11640 Spring Canyon Road, San Diego, California 92131, approximately 1.4 miles to the northeast. SDFD Fire Station 37 houses the following apparatus: fire engine, brush engine, and paramedic units (City of San Diego 2016b).

While unmanned, the nearest fire station to the Morena Pump Station is the SDFD Fire Station 20, located at 3305 Kemper Street, San Diego, California 92110. The nearest fire station to the Mission Trails Booster Station is the SDFD Fire Station 31, located at 6002 Camino Rico, San Diego, California 92120. The portions of the pipelines and Landfill Gas Pipeline would traverse across the jurisdiction of SDFD with several other fire stations located nearby along the alignments.

City of Santee

Portions of the San Vicente Reservoir Alternative pipelines would be located within the City of Santee. The Santee Fire Department provides full service fire suppression, paramedic ambulance service, search and rescue, fire prevention, public education, and emergency preparedness services to the City of Santee. The Santee Fire Department operates two fire stations: Fire Station 4, located at 8950 Cottonwood Avenue, and Fire Station 5, located at 9130 Carlton Oaks Drive. The Santee Fire Department employs 54 fire personel and 3 administrative personel (City of Santee 2015).

County of San Diego

Portions of the San Vicente Reservoir Alternative pipelines as well as the San Vicente Inlet Structure would be located within unicorporated areas of the County of San Diego and the community of Lakeside (County of San Diego). Project components would specifically be located within the jurisdiction of the Lakeside Fire Protection District comprised of 56 personel across 4 fire stations and 2 adminstation buildings. The nearest fire station to the proposed pipeline alignment is Lakeside Fire Protection District Fire Station 2, located at 12216 Lakeside Avenue.

MCAS Miramar

The majority of the Landfill Gas Pipeline and the repurposing of the existing 36-inch-diameter recycled water pipeline would be located within MCAS Miramar. MCAS Miramar operates the Miramar Fire Department within its boundaries. The Miramar Fire Department provides full service fire protection and emergency medical services within MCAS Miramar. The Miramar Fire Department employs 69 personel and operates 2 fire stations with 3 fire engines, 2 ambulance units, 2 brush trucks, and a hazardous materials truck (Miramar Fire Department 2016).

Schools

The staffed facilities of the Project Alternatives would be located within the San Diego Unified School District (City of San Diego 2008). The San Diego Unified School District serves more than 130,000 students and employs approximately 13,500 personel across 226 educational facilities (San Diego Unified School District 2016). Portions of the Project Alternatives would also be located within the Santee School District, Lakeside Union School District, and Grossmont Union High School District.

Parks

The primary facilities of the Project Alternatives would be located within the City of San Diego where the City of San Diego Park and Recreation Department is responsible for managing more than 340 parks, 26 miles of shoreline, 13 pools, 3 public golf courses, and 56 recreation centers (City of San Diego 2016c). The *City of San Diego General Plan* Recreation Element establishes a population-based park standard of 2.8 useable acres per 1,000 residents (City of San Diego 2008). Portions of the Project Alternatives would also be located within the service area of the City of Santee Recreation Services Division and County of San Diego Parks and Recreation Department.

Parks and recreational facilities/opportunities are in the North City Project area are described in greater detail in Section 5.18, Recreation.

Libraries

The primary facilities of the Project Alterantives would be located within the City of San Diego and within the San Diego Public Library system. The San Diego Public

Library consists of the Central Library and 35 branch libraries throughout the City of San Diego (City of San Diego 2016d). Portions of the Project Alternatives would also be located within the service area of the San Diego County Library system.

5.14.3 REGULATORY FRAMEWORK

City of San Diego General Plan

The City of San Diego General Plan Public Facilities, Services, and Safety Element contains goals and policies related to the provision of public services within its city limits. Applicable policies include:

Fire

PF-D.1. Locate, staff, and equip fire stations to meet established response times as follows:

a) To treat medical patients and control small fires, the first-due unit should arrive within 7.5 minutes, 90% of the time from the receipt of the 911 call in fire dispatch. This equates to 1-minute dispatch time, 1.5 minutes company turnout time and 5 minutes drive time in the most populated areas.

b) To provide an effective response force for serious emergencies, a multiple-unit response of at least 17 personnel should arrive within 10.5 minutes from the time of 911-call receipt in fire dispatch, 90% of the time.

   a. This response is designed to confine fires near the room of origin, to stop wildland fires to under 3 acres when noticed promptly, and to treat up to 5 medical patients at once.

   b. This equates to 1-minnute dispatch time, 1.5 minutes company turnout time and 8 minutes drive time spacing for multiple units in the most populated areas.

PF-D.2. Determine fire station needs, location, crew size and timing of implementation as the community grows.

a) Use the fire unit development performance measures (based on population density per square mile) shown in Table PF-D.1 [of the General Plan] to plan for needed facilities. Where more than one square mile is not populated at similar densities, and/or a contiguous area with different density types aggregates into a population cluster area, use the measures provided in Table PF-D.2 [of the General Plan].

b) Reflected needed fire-rescue facilities in community plans and associated facilities financing plans as a part of community plan updates and amendments.

PF-D.5. Maintain service levels to meet the demands of continued growth and development, tourism, and other events requiring fire-rescue services.

- Provide additional response units, and related capital improvements as necessary, whenever the yearly emergency incident volume of a single unit providing coverage for an area increases to the extent that availability of that unit for additional emergency responses and/or non-emergency training and maintenance activities is compromised. An excess of 2,500 responses annually requires analysis to determine the need for additional services or facilities.

Police

PF-E.1. Provide a sufficient level of police services to all areas of the City by enforcing the law, investigating crimes, and working with the community to prevent crime.

PF-E.2. Maintain average response time goals as development and population growth occurs. Average response time guidelines are as follows:

- Priority E Calls (imminent threat to life) within seven minutes.
- Priority 1 Calls (serious crimes in progress) within 12 minutes.
- Priority 2 Calls (less serious crimes with no threat to life) within 30 minutes.
- Priority 3 Calls (minor crimes/requests that are not urgent) within 90 minutes.
- Priority 4 Calls (minor requests for police service) within 90 minutes.

5.15 PUBLIC UTILITIES

5.15.1 INTRODUCTION

Public utilities are public or private facilities that provide the public with necessary services, such as water, wastewater, electricity, communication systems, solid waste disposal, and storm drains. The North City Project involves the construction of new water and sewer facilities and upgrades to existing facilities as addressed throughout this Environmental Impact Report/Environmental Impact Statement (EIR/EIS). This section introduces existing conditions and applicable regulations related to communication systems and solid waste disposal. Existing conditions related to stormwater drainage are discussed in Section 5.11, Hydrology and Water Quality. Existing conditions related to energy (natural gas and electrical power) are discussed in Section 5.6, Energy. Existing conditions related to water supply are discussed in Section 5.17, Water Supply.

Information in this section is incorporated from the Task Order 24: Metropolitan Biosolids Center, Biosolids Technology Evaluation (MWH Americas et al. 2017).

5.15.2 ENVIRONMENTAL SETTING

5.15.2.1 Communication Systems

AT&T is the nation's largest telecommunications company, providing local residents with integrated communications and entertainment services including IP-based network capabilities that integrate voice, data, and video. The dominant providers of communications networks and cable television programs throughout San Diego County (the County) are Cox Communications and Time Warner Cable, providing cable, high-speed internet, and digital telephone services (City of San Diego 2008).

5.15.2.2 Solid Waste

The City of San Diego (City) implements integrated solid waste management strategies that emphasize waste reduction and recycling, composting, and environmentally sound landfill management to meet the City's long-term disposal needs. The primary focus of the City's solid waste management planning is preventing materials from entering the waste stream through City-wide source reduction, recycling, and composting programs (City of San Diego 2008). This emphasis is consistent with federal law under the Resource Conservation and Recovery Act, Subtitle D, and the California's Integrated Waste Management Act.

These waste reduction programs are detailed in the City's Source Reduction and Recycling Element planning document, which is updated annually.

The City operates the Miramar Landfill, located on Marine Corps Air Station Miramar. More than 900,000 tons of waste is disposed at the Miramar Landfill every year (City of San Diego 2015a). Operation of the facility requires a Solid Waste Facility Permit, issued by the City's Local Enforcement Agency, which reports to the California Department of Resources Recycling and Recovery (CalRecycle). The Miramar Landfill has a current permitted site capacity of 87,760,000 cubic yards. The landfill is permitted for a daily throughput of 8,000 tons and the estimated life for the Miramar Landfill is 2025 (CalRecycle 2014).

Currently, only two other landfills provide disposal capacity within the urbanized region: Sycamore and Otay Landfills. The Sycamore Landfill is located to the east of the Miramar Landfill, within the City's jurisdictional boundaries; an expansion was approved in 2012. The Otay Landfill is located within an unincorporated island within the City of Chula Vista. The Otay Landfill has a maximum permitted throughput for non-hazardous municipal solid waste of 5,830 tons per day and a maximum permitted throughput for non-hazardous material for alternative daily cover (ADC)/beneficial reuse of 1,167 tons per day. The Otay Landfill has a total capacity of approximately 61 million cubic yards and an estimated remaining capacity of 24.5 million cubic yards (CalRecycle 2012).

Biosolids

The Metro Biosolids Center (MBC), located adjacent to the Miramar Landfill, is the City's central biosolids processing facility. Combined primary sludge and waste activated sludge pumped from the North City Water Reclamation Plant are received into receiving tanks at the MBC. The combined sludge is degritted and then thickened in five centrifuges before being digested in three anaerobic digesters. Grit is dried and disposed of off site. Digested sludge produced at the MBC is a Class B product and is combined with the digested sludge pumped from the Point Loma Wastewater Treatment Plant (also a Class B product) in a digested biosolids storage tank. The combined Class B biosolids are then dewatered in eight dewatering centrifuges. The thickening and dewatering centrate streams are returned to the sanitary sewer for eventual conveyance to the Point Loma Wastewater Treatment Plant. Dewatered biosolids are stored in silos and periodically trucked off site. A majority of the MBC biosolids are used as ADC in area landfills (mainly Otay Landfill). Most of the remaining biosolids are land applied, mainly in Arizona.

In 2015 the MBC produced 131,208 wet tons (35,659 dry tons) of digested biosolids. Approximately 96.9% of this quantity was beneficially reused as ADC at the Otay Landfill; about 3.1% was beneficially reused via land application at multiple locations in Yuma, Arizona; and Otay Landfill was available as an emergency disposal measure. Although quantities and mix of beneficial reuse and disposal modes varies from year to year, the basic biosolids management scheme today (2016) remains essentially similar to that described for 2015 (MWH Americas et al. 2017).

5.15.3 REGULATORY FRAMEWORK

5.15.3.1 Federal

Standards for the Use and Disposal of Sewage Sludge, 1993

The Standards for the Use and Disposal of Sewage Sludge establishes standards for the final use or disposal of sewage sludge when the sewage sludge is applied to agricultural and nonagricultural land, placed in or on surface disposal sites, or incinerated (40 CFR 257, 403, and 503). The rule does not apply to the processing of sewage sludge before its ultimate use or disposal, does not specify process operating methods or requirements for sludge entering or leaving a particular treatment process, and does not establish standards for sewage sludge that is disposed of with municipal solid waste. Under the Standards for the Use and Disposal of Sewage Sludge, the U.S. Environmental Protection Agency has established ceiling concentrations for metals and pathogen and vector attraction reduction standards (Table 5.15-1); management criteria for the protection of water quality and public health; and annual and cumulative discharge limitations of persistent pollutants to land for the protection of livestock, crop, and human health and water quality protection (40 CFR 503).

Table 5.15-1
Pollutant Limits for Land-Applied Biosolids

Constituent	Ceiling Concentration[a] (mg/kg dry weight)	Pollution Concentration[b] (mg/kg dry weight)
Arsenic	75	41
Cadmium	85	39
Copper	4,300	1,500
Lead	840	300
Mercury	57	17
Molybdenum	75	—[c]
Nickel	420	420

Table 5.15-1
Pollutant Limits for Land-Applied Biosolids

Constituent	Ceiling Concentration[a] (mg/kg dry weight)	Pollution Concentration[b] (mg/kg dry weight)
Selenium	100	100
Zinc	7,500	2,800

Source: 40 CFR 503.
Notes:
mg/kg = milligram/kilogram
[a] Land-applied biosolids cannot exceed the listed concentrations.
[b] Biosolids below the listed concentrations do not need a permit if other regulatory requirements are met.
[c] The February 25, 1994, Part 503 Rule Amendment deleted the molybdenum pollution concentration limits but retained the molybdenum ceiling concentration limits.

5.15.3.2 State

California Integrated Waste Management Act (AB 939)

The California Integrated Waste Management Act was enacted by the California Legislature in 1989 with the goal of reducing dependence on landfills for the disposal of solid waste and to ensure an effective and coordinated system for the safe management of all solid waste generated within the state. Assembly Bill (AB) 939 mandated a reduction in the amount of solid waste disposed of by jurisdictions and required diversion goals of 25% by 1995 and 50% by the year 2000. The Integrated Waste Management Act established a hierarchy of preferred waste management practices, which include (1) source reduction, (2) recycling and composting, and (3) environmentally safe disposal by transformation or landfilling. It addresses all aspects related to solid waste regulation, including the details regarding the lead enforcement agency's requirements and responsibilities; the permit process, including inspections and denials of permits; enforcement; and site clean-up and maintenance. It requires that each county prepare a countywide integrated waste management plan that is reviewed at least once every 5 years to assure that waste management practices remain consistent with the practices defined in the California Public Resources Code. In 2013, AB 341 increased the waste diversion target to 75%.

Waste Management (AB 1594)

"Alternative daily cover" (ADC) is cover material other than earthen material placed on the surface of the active face of a municipal solid waste landfill at the end of each operating day to control vectors, fires, odors, blowing litter, and scavenging. CalRecycle has approved 11 ADC material types that can currently be reported as diversion: ash and cement kiln dust, treated auto shredder waste, construction and demolition waste, compost, green material, contaminated sediment, sludge, and shredded tires. Generally, these materials must be processed so that they do not allow gaps in the exposed landfill face (CalRecycle 2015a).

Pursuant to California Public Resources Code Section 41781.3 and AB 1594, beginning January 1, 2020, the use of green material as ADC will not constitute diversion through recycling and will be considered disposal. Commencing August 1, 2018, local jurisdictions will be required to include information in an annual report on how the local jurisdiction intends to address the diversion requirements and divert green material that is being used as ADC. A jurisdiction that does not meet certain diversion requirements as a result of not being able to claim diversion for the use of green material as ADC would be required to identify and address, in an annual report, barriers to recycling green material and, if sufficient capacity at facilities that recycle green material is not expected to be operational before a certain date, to include a plan to address those barriers.

Mandatory Commercial Organics Recycling (AB 1826)

In October 2014, AB 1826 was signed into law requiring businesses to recycle their organic waste (e.g., food waste, green waste, landscape and pruning waste, food-soiled paper) on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that beginning January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units (CalRecycle 2015b).

Mandatory recycling of organic waste is the next step toward achieving California's aggressive recycling and greenhouse gas emission goals. California disposes approximately 30 million tons of waste in landfills each year, more than 30% of which could be used for compost or mulch. Organic waste such as green materials and food materials are recyclable through composting and mulching, and through anaerobic digestion, which can produce renewable energy and fuel. Greenhouse gas emissions resulting from the decomposition of organic wastes in landfills have been identified as a significant source of emissions contributing to global climate change. Reducing the amount of organic materials sent to landfills and increasing the production of compost and mulch are part of the AB 32 (California Global Warming Solutions Act of 2006) Scoping Plan (CalRecycle 2015b).

California Solid Waste: Diversion (AB 341)

AB 341, adopted in 2011, amended AB 939 by making a legislative declaration that it is the policy goal of the State of California that not less than 75% of solid waste generated be reduced, recycled, or composted by the year 2020. While a policy goal may not be legally enforceable, city and/or county ordinances and other mechanisms make AB 341 provisions enforceable within their jurisdictions. AB 341 also required a business (defined to include a commercial or public entity) that generates more than 8 cubic yards of commercial solid waste per week or is a multifamily residential dwelling of 5 units or more to arrange for recycling services, starting July 1, 2012.

Similar to AB 939, AB 341 impacts MBC biosolids because biosolids are a component of solid waste by definition.

California Solid Waste: Organic Waste (AB 1826)

AB 1826, adopted in 2014, amended AB 939—specifically, the portion of AB 939 added by the AB 341 amendment. AB 1826 decreases the threshold quantity of organic waste above which a business would be required to arrange for recycling services from 8 cubic yards or more to 4 cubic yards or more. AB 1826 also requires a business that generates 4 cubic yards or more of commercial solid waste per week to arrange for organic waste recycling services.

Under a strict interpretation, AB 1826 does not currently apply to MBC biosolids because biosolids are currently not included in the definition of organic waste. "Organic waste" is defined as "food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste" (CalRecycle 2015b). However, general industry consensus is that biosolids will eventually be included in the definition of organic waste and will be subject to AB 1826 requirements.

California Solid Waste: Green Waste (AB 1594)

AB 1594, adopted in 2014, is an amendment to AB 939 mandating that as of January 1, 2020, the use of green material as ADC at landfills will no longer constitute diversion through recycling and will instead be considered disposal for purposes of determining a jurisdiction's compliance with maximum allowable disposal targets.

"Green material" is defined as any plant material that is either separated at the point of generation, or separated at a centralized facility that employs methods to minimize contamination. Green material includes, but is not limited to, yard trimmings, untreated wood wastes, paper products, and natural fiber products. Green material does not include treated wood waste, mixed demolition or mixed construction debris, or manure and plant waste from the food processing industry, alone or blended with soil. Processed green material may include varying proportions of wood waste from urban and other sources and shall be ground, shredded, screened, source separated for grain size, or otherwise processed.

AB 1594 does not directly impact MBC biosolids because biosolids are not included in the definition of green material. However, because biosolids are also currently used as ADC at area landfills and because use of biosolids as ADC typically requires blending with green material to provide appropriate texture and consistency, any regulations that impact use of green material as ADC will likely indirectly impact the use of MBC biosolids as ADC.

5.15.3.3 Local

City of San Diego Zero Waste Plan: Road to Zero Waste, Next Stop 75%

State of California regulations for solid waste (California Public Resources Code, Section 41700 et seq.) require that each region have a plan with adequate capacity to manage or dispose of solid waste for at least 15 years into the future. The City of San Diego's Zero Waste Plan (City of San Diego 2015b) establishes goals to target 75% diversion by 2020, 90% diversion by 2035, and "zero" by 2040 and outlines potential diversion strategies to help the City achieve these goals.

The Whitebook: Standard Specifications for Public Works Construction

The City of San Diego has created the Whitebook (City of San Diego 2015c), a supplement which takes precedence over the specification language contained in The "Greenbook": Standard Specifications for Public Works Construction (Public Works Standards 2015), and addresses the unique conditions in the City that are not addressed in the Greenbook. Specifically, Part 1 – General Provisions (A), Section 7-21 addresses construction and demolition waste management.

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5.16 TRANSPORTATION, CIRCULATION, AND PARKING

5.16.1 INTRODUCTION

The following section describes the environmental setting and regulatory framework related to transportation, circulation, and parking for the North City Project. The information provided in this section is based on the North City Project Traffic Impact Study, prepared by Chen Ryan, dated July 2017, and memorandum prepared in February 2018 (provided as Appendix I).

5.16.2 ENVIRONMENTAL SETTING

This section describes the existing transportation, circulation, and parking conditions within the North City Project area and defines the study area and study scenarios.

Study Area

The North City Project will generate different numbers and types of vehicle trips associated with the operations of the facilities versus the construction of those facilities. The study areas for each analysis, operations and construction, are presented below.

Operations Study Area

Both the Miramar Reservoir Alternative and San Vicente Reservoir Alternative will result in the same operational traffic since the operations analysis is limited to the North City Pure Water Facility (NCPWF) and the North City Water Reclamation Plant (NCWRP), which are applicable to both Project Alternatives.

The City of San Diego (City) Traffic Impact Study Manual (City of San Diego 1998) requires that the defined study area include all regionally significant arterial system segments and intersections where a project would add 50 or more peak hour trips in either direction and mainline freeway locations where a project will add 150 or more peak hour trips in either direction. Additionally, it provides a methodology for determining potentially affected roadway segments using Average Daily Traffic (ADT) and roadway capacity.

Based on the City of San Diego Traffic Impact Study Manual requirements and the North City Project trip assignment, the following key study area roadway segments were analyzed to identify potential impacts related to the daily operations of the North City Project:

- Eastgate Mall between:
  - Towne Center Drive and Judicial Drive

  - Judicial Drive and 280 feet west of Interstate 805 (I-805) Overpass
  - 280 feet west of I-805 overpass and NCWRP driveway
  - NCWRP driveway and Eastgate Drive
  - Eastgate Drive and Miramar Road
- Towne Center Drive between:
  - Eastgate Mall and Executive Drive
  - Executive Drive and La Jolla Village Drive
- La Jolla Village Drive between Towne Center Drive and I-805 southbound ramps
- Miramar Road between:
  - I-805 southbound ramps and I-805 northbound ramps
  - I-805 northbound ramps and Nobel Drive
  - Nobel Drive and Eastgate Mall

The proposed work shifts for the employees at these facilities is from 6:00 a.m. to 3:00 p.m. and 3:00 p.m. to 6:00 a.m., which does not coincide with the regular commute hours of 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. Therefore, an intersection analysis was not conducted.

The North City Project is not anticipated to contribute more than 50 peak hour trips on I-805 in either direction; therefore, a freeway impact analysis was not conducted. Figure 5.16-1 illustrates the study area. The North City Project trip generation, trip distribution, and trip assignment are discussed in more detail in Section 6.16.

Construction Study Area

Construction traffic would be located along different alignments based on the specific pipeline under construction. For this reason, the construction of the North City Project Alternatives are analyzed separately. The construction analysis includes traffic related to the construction of buildings, pipelines, and all other associated infrastructure.

<u>Common Project Components</u>

The Morena Wastewater Forcemain and Brine/Centrate Line (Morena Pipelines) would be constructed under both the Miramar Reservoir Alternative and San Vicente Reservoir Alternative.

The Morena Pipelines will connect the Morena Pump Station to the NCWRP via Sherman Street, Morena Boulevard, West Morena Boulevard, ~~Ingulf~~ Jellett Street, Denver Street, Clairemont Drive, Clairemont Mesa Boulevard, Genesee Avenue, Nobel Drive, Towne Centre Drive, and Executive Drive, traversing the communities of Linda Vista, Clairemont Mesa, and University. The Morena Pipelines are included in both the Miramar Reservoir and San Vicente Reservoir Alternatives.

Pipeline construction is proposed to be largely open-trench, covering approximately 50,890 linear feet, or 93% of the total alignment, while the tunneling sections cover approximately 4,105 linear feet, or 7% of the total alignment. Based on information provided by City of San Diego Public Utilities Department and Construction Management and Field Services, the majority of the construction is proposed to take place during the nighttime, between 9:00 p.m. and 5:00 a.m., with daytime construction along some segments of the pipeline alignment. Table 5.16-1 provides the work hours proposed for the roadway segments analyzed for the Morena Pipelines construction. Nighttime work hours may be modified/reduced or work may be performed during weekends on roadways near residential areas.

Table 5.16-1
Roadway Segments Work Hours Morena Pipelines

Roadway	Segment	Work Hours
Executive Drive	End of cul-de-sac and Judicial Drive	9:00 p.m. to 5:00 a.m.
Executive Drive	Judicial Drive and Towne Centre Drive	9:00 p.m. to 5:00 a.m.
Towne Centre Drive	Executive Drive and La Jolla Village Drive	9:00 p.m. to 5:00 a.m.
Towne Centre Drive	La Jolla Village Drive and Golden Haven Drive	8:30 a.m. to 3:30 p.m.
Towne Centre Drive	Golden Haven Drive and Nobel Drive	8:30 a.m. to 3:30 p.m.
Nobel Drive	Towne Centre Drive and Genesee Avenue	7:30 a.m. to 4:30 p.m.
Genesee Avenue	Nobel Drive to Governor Drive	9:00 p.m. to 5:00 a.m.
Genesee Avenue	Governor Drive and SR-52 WB Ramps	9:00 p.m. to 5:00 a.m.
Genesee Avenue	SR-52 WB Ramps and SR-52 EB Ramps	9:00 p.m. to 5:00 a.m.
Genesee Avenue	SR-52 EB Ramps and Appleton Street	9:00 p.m. to 5:00 a.m.
Genesee Avenue	Appleton Street and Clairemont Mesa Blvd	NB) 9:00 PM to 5:00 AM, (SB) 7:30 a.m. to 2:30 p.m.
Clairemont Mesa Boulevard	Genesee Avenue and Clairemont Drive	8:30 a.m. to 3:30 p.m.
Clairemont Drive	Clairemont Mesa Boulevard and Lakehurst Avenue	7:30 a.m. to 4:30 p.m.
Clairemont Drive	Lakehurst Avenue and Clairemont Mesa Boulevard	7:30 a.m. to 4:30 p.m.

Table 5.16-1
Roadway Segments Work Hours Morena Pipelines

Roadway	Segment	Work Hours
Clairemont Drive	Clairemont Mesa Boulevard and Balboa Avenue	7:30 a.m. to 4:30 p.m.
Clairemont Drive	Balboa Avenue to Rappahannock Avenue	7:30 a.m. to 4:30 p.m.
Clairemont Drive	Rappahannock Avenue to Iroquois Avenue	7:30 a.m. to 4:30 p.m.
Clairemont Drive	Iroquois Avenue to Burgener Drive	9:00 p.m. to 5:00 a.m.
Clairemont Drive	Burgener Drive to Denver Street	9:00 p.m. to 5:00 a.m.
Denver Street	Clairemont Drive and ~~Ingulf~~Jellett Street	9:00 p.m. to 5:00 a.m.
~~Ingulf~~Jellett Street	Denver Street and West Morena Boulevard	9:00 p.m. to 5:00 a.m.
West Morena Boulevard	~~Ingulf~~Jellett Street to Littlefield Street	9:00 p.m. to 5:00 a.m.
West Morena Boulevard	Littlefield Street to Morena Blvd	9:00 p.m. to 5:00 a.m.
West Morena Boulevard	Morena Boulevard and Tecolote Road Overpass	9:00 p.m. to 5:00 a.m.
West Morena Boulevard	Tecolote Road Overpass and Vega Street	9:00 p.m. to 5:00 a.m.
West Morena Boulevard	Vega Street and Morena Boulevard	9:00 p.m. to 5:00 a.m.

Notes: SR = State Route; WB = westbound; EB = eastbound
Source: Appendix I.

The construction of the pipelines will also require closure to through traffic of two roadways~~—Ingulf~~Jellett Street and Denver Street. The closure of the aforementioned roadways segments will result in the following traffic detours:

- Closure of ~~Ingulf~~Jellett Street between West Morena Boulevard and Denver Street: Detour signs shall be placed redirecting traffic to travel on an alternative route along Milton Street, Lister Street, ~~Jellett Street,~~ and Galveston Street.
- Closure of Denver Street between ~~Ingulf~~Jellett Street and Clairemont Drive: Detour signs shall be placed redirecting traffic to travel on an alternative route along along Milton Street, Lister Street, ~~Jellett Street,~~ and Galveston Street.

Pipeline staging areas are proposed to be located within developed parking lots or other developed areas to minimize traffic and road disruptions and would move frequently as construction progresses along the alignment. No new access roads would be needed. Staging areas for open cut construction would range from 30 feet to 60 feet wide and would occupy half the roadway width. Staging areas for trenchless construction would range from 20 feet by 50 feet up to 100 feet by 150 feet. A jacking pit would be constructed at the beginning of each trenchless pipeline segment, and a receiving pit would be constructed at the end. The Miramar Landfill would be the main site as the origin and destination of material disposal trucks and State Route 52 (SR-52) would be the main route.

Both daily roadway segment and peak hour intersection analyses were conducted to analyze all potential construction traffic impacts associated with the Morena Pipelines, since daytime construction is proposed. Based on the location of construction, detours, and staging areas, the following roadways are included in the construction analysis:

- Executive Drive between:
    - End of cul-de-sac and Judicial Drive
    - Judicial Drive and Town Centre Drive
- Town Centre Drive between:
    - Executive Drive and La Jolla Village Drive
    - La Jolla Village Drive and Golden Haven Drive
    - Golden Haven Drive and Nobel Drive
- Nobel Drive between Town Centre Drive and Genessee Avenue
- Genesee Avenue between:
    - Nobel Drive and Governor Drive
    - Governor Drive and SR-52 westbound ramps
    - SR-52 westbound ramps and SR-52 eastbound ramps
    - SR-52 eastbound ramps and Appleton Street
    - Appleton Street and Clairemont Mesa Boulevard
- Clairemont Mesa Boulevard between Genesee Avenue and Clairemont Drive
- Clairemont Drive between:
    - Clairemont Mesa Boulevard and Lakehurst Avenue
    - Lakehurst Avenue and Clairemont Mesa Boulevard
    - Clairemont Mesa Boulevard and Balboa Avenue
    - Balboa Avenue and Rappahannock Avenue
    - Rappahannock Avenue and Iroquois Avenue
    - Iroquois Avenue and Burgener Drive

  - Burgener Drive and Denver Street
- Denver Street between Clairemont Drive and ~~Ingulf~~Jellett Street
- ~~Ingulf~~Jellett Street between Denver Street and West Morena Boulevard
- West Morena Boulevard between:
  - ~~Ingulf~~Jellett Street and Littlefield Street
  - Littlefield Street to Morena Boulevard
  - Morena Boulevard and Tecolote Road Overpass
  - Tecolote Road Overpass and Vega Street
  - Vega Street and Morena Boulevard

Table 5.16-2 shows the intersections that are included in the construction analysis for the Morena Pipelines based on the location of daytime construction, detours, and staging areas.

Table 5.16-2
Morena Pump Station and Pipelines Construction Study Intersections

ID	Intersection	Control Type	Jurisdiction
1	Towne Centre Drive and Golden Haven Drive	Signalized	City of San Diego
2	Towne Centre Drive and Nobel Drive	Signalized	City of San Diego
3	Genesee Avenue and Nobel Drive	Signalized	City of San Diego
4	Genesee Avenue and Appleton Street/Lehrer Drive	Signalized	City of San Diego
5	Genesee Avenue and Clairemont Mesa Boulevard	Signalized	City of San Diego
6	Clairemont Mesa Boulevard and Clairemont Drive/Kleefeld Avenue	Signalized	City of San Diego
7	Clairemont Drive and Clairemont Mesa Boulevard	Signalized	City of San Diego
8	Clairemont Drive and Balboa Avenue	Signalized	City of San Diego

Source: Appendix I.
Notes: EB = eastbound; WB = westbound.

Miramar Reservoir Alternative

Under the Miramar Reservoir Alternative, the Morena Pipelines (discussed above) and the North City Pure Water Pipeline (North City Pipeline) would be constructed primarily within roadway right-of-way (ROW) and are the only facilities that affect roadway operations. The Landfill Gas Pipeline would be primarily constructed in open space areas on Marine Corps Air Station (MCAS) Miramar, and therefore, is not included in the construction analysis.

The North City Pipeline connects the NCPWF site at I-805 and Eastgate Mall to the Miramar Reservoir via Eastgate Mall, Miramar Road, Kearny Villa Road, Candida Street, Via Pasar, Via Excelencia, under I-15 to Businesspark Avenue, Carroll Canyon Road, Hoyt Park Drive, and Meanley Drive.

Construction staging areas were assumed to be located at the NCWRP site off Eastgate Mall, Scripps Technology Ranch property, Miramar Water Treatment Plant (near tunnel shaft opening west of clearwells), and Miramar Reservoir (near the boat dock). Vulcan in Mira Mesa will be the main site used as the origin and destination of construction materials.

Pipeline construction is proposed largely to be open-trench and during nighttime (between 9:00 p.m. and 5:00 a.m.), with trenches backfilled and steel plated in order to open travel lanes during the day. As a result, typical commute AM and PM peak hour (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.) trips are not anticipated to be generated during the construction of the North City Pipeline, and no peak hour intersection analysis was conducted. Table 5.16-3 shows the proposed work hours for the roadway segments analyzed for the North City Pipeline construction. Nighttime work hours may be modified/reduced or work may be performed during weekends on roadways near residential areas.

Table 5.16-3
Roadway Segments Work Hours North City Pipeline

Roadway	Segment	Work Hours
Eastgate Mall	NCPWF and NCWRP Driveway and Miramar Road	9:00 p.m. to 5:00 a.m.
Miramar Road	Eastgate Mall and Camino Santa Fe	9:00 p.m. to 5:00 a.m.
	Camino Santa Fe and Carroll Road	9:00 p.m. to 5:00 a.m.
	Carroll Road and Camino Ruiz	9:00 p.m. to 5:00 a.m.
	Camino Ruiz and Black Mountain Road	9:00 p.m. to 5:00 a.m.
	Black Mountain Road and Kearny Villa Road	9:00 p.m. to 5:00 a.m.
Kearny Villa Road	Black Mountain Road/Carroll Centre Road and Miramar Road	9:00 p.m. to 5:00 a.m.
Candida Street	Kearny Villa Road and Via Pasar	9:00 p.m. to 5:00 a.m.
Via Pasar	Via Excelencia and Candida Street	9:00 p.m. to 5:00 a.m.
Via Excelencia	east of Via Pasar	9:00 p.m. to 5:00 a.m.
Businesspark Avenue	south of Willow Creek Road	9:00 p.m. to 5:00 a.m.
	Carrol Canyon Road and Willow Creek Road	9:00 p.m. to 5:00 a.m.
Carroll Canyon Road	Businesspark Avenue and Scripps Ranch Boulevard	9:00 p.m. to 5:00 a.m.

Table 5.16-3
Roadway Segments Work Hours North City Pipeline

Roadway	Segment	Work Hours
Scripps Ranch Boulevard	Carroll Canyon Road Hoyt Park Drive	9:00 p.m. to 5:00 a.m.
Hoyt Park Drive	Scripps Ranch Boulevard and Meanley Drive	9:00 p.m. to 5:00 a.m.

Notes: SR = State Route; WB = westbound; EB = eastbound
Source: Appendix I.

Based on the location of construction and staging areas, the following roadways are included in the North City Pipeline construction analysis:

- Eastgate Mall between NCPWF and NCWRP driveway and Miramar Road
- Miramar Road between:
  - Eastgate Mall and Camino Santa Fe
  - Camino Santa Fe and Carroll Road
  - Carroll Road and Camino Ruiz
  - Camino Ruiz and Black Mountain Road
  - Black Mountain Road and Kearny Villa Road
- Kearny Villa Road between Black Mountain Road/Carroll Centre Road and Miramar Road
- Candida Street between Kearny Villa Road and Via Pasar
- Via Pasar between Via Excelencia and Candida Street
- Via Excelencia east of Via Pasar
- Businesspark Avenue south of Willow Creek Road
- Businesspark Avenue between Carroll Canyon Road and Willow Creek Road
- Carroll Canyon Road between Businesspark Avenue and Scripps Ranch Boulevard
- Scripps Ranch Boulevard between Caroll Canyon Road and Hoyt Park Drive
- Hoyt Park Drive between Scripps Ranch Boulevard and Meanley Drive

Key Roadways

Four key roadways traverse the study area. Each of them are described below.

Towne Center Drive—Within the study area, Towne Center Drive is a four-lane roadway with a raised median and a posted speed limit of 40 miles per hour (mph) between Eastgate Mall and La Jolla Village Drive. Parallel parking is generally permitted on both sides of the roadway between Eastgate Mall and Executive Drive, while between Executive Drive and La Jolla Village Drive, parallel parking is prohibited on both sides of the roadway. Within the study area, sidewalks are present on both sides of the roadway. Bicycle facilities are not present on either side of the roadway between Eastgate Mall and Executive Drive, while a Class II bicycle lane is present on both sides of the roadway between Executive Drive and La Jolla Village Drive. Towne Center Drive is classified as a four-lane Major Arterial roadway in the currently adopted University Community Plan (City of San Diego 2016).

Eastgate Mall—Within the study area, Eastgate Mall is a four-lane roadway with a raised median between Towne Center Drive and just west (approximately 280 feet) of the I-805 overpass. Sidewalks and Class II bicycle lanes are present on both sides of the roadway. Between 280 feet west of the I-805 freeway overpass and the NCWRP driveway, the roadway transitions from a four-lane roadway with a raised median into a two-lane roadway. Just east of the I-805 overpass, unpaved shoulders are present, providing space for potential roadway widening in the event that this roadway needs to be widened and restriped to include left-turn pockets. Sidewalks are generally present on the south side of the roadway, while Class II bicycle lanes are present on both sides. East of the NCWRP driveway, Eastgate Mall is a two-lane roadway with a center left-turn lane between Eastgate Drive and Miramar Road with a posted limit of 45 mph. Parallel parking is allowed in some segments with a sidewalk on the westbound side and parallel and perpendicular parking in the dirt shoulder on the eastbound side. Eastgate Mall is classified as a four-lane Collector roadway between Towne Centre Drive and and Miramar Road in the currently adopted University Community Plan (City of San Diego 2016).

La Jolla Village Drive—Within the study area, La Jolla Village Drive is an eight-lane roadway with a landscape raised median and a posted speed limit of 50 mph between Towne Center Drive and the I-805 southbound (SB) ramps. Sidewalks are present on both sides and a Class II bicycle lane is present in the north side of the roadway. Parking is prohibited on both sides of the roadway. La Jolla Village Drive is classified as an eight-lane Primary Arterial roadway between Towne Center Drive and the I-805 SB ramps, in the currently adopted University Community Plan (City of San Diego 2016).

Miramar Road—Within the study area, Miramar Road is a six-lane roadway with a raised median and a posted speed limit of 50 mph between the I-805 SB ramps and the I-805 NB ramps. East of the I-805 NB Ramps, Miramar Road transitions from a six-lane roadway into an eight-lane roadway until reaching Nobel Drive, where it drops a lane and becomes a seven-lane roadway until reaching Eastgate Mall. Sidewalks and Class II bicycle lanes are present on both sides along the entire roadway, with the exception of approximately 300 feet of sidewalk on the south side of the roadway between the I-805 northbound (NB) ramps and Nobel Drive. Parking is prohibited on both sides of the roadway. Miramar Road is classified as a six-lane Primary Arterial between the I-805 SB ramps and Eastgate Mall, in the currently adopted University Community Plan (City of San Diego 2016).

San Vicente Reservoir Alternative

Under the San Vicente Reservoir Alternative, the Morena Pipelines (discussed above) and the San Vicente Pure Water Pipeline (San Vicente Pipeline) would be constructed primarily within roadway ROW and are the only facilities that affect roadway operations. The Landfill Gas Pipeline would be primarily constructed in open space areas on MCAS Miramar, and therefore, is not included in the construction analysis.

The San Vicente Pipeline connects the NCPWF site at I-805 and Eastgate Mall to the San Vicente Reservoir, traversing a number of local jurisdictions, including the cities of San Diego and Santee, and the community of Lakeside in unincorporated San Diego County.

Pipeline construction is proposed largely to be open-trench and during nighttime (between 9:00 p.m. and 5:00 a.m.), with trenches backfilled and steel plated in order to open travel lanes during the day. As a result, typical commute AM and PM peak hour (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.) trips are not anticipated to be generated during the construction of the San Vicente Pipeline, and no peak hour intersection analysis was conducted. Table 5.16-4 shows the proposed work hours for the roadway segments analyzed for the San Vicente Pipeline construction. Nighttime work hours may be modified/reduced or work may be performed during weekends on roadways near residential areas.

Table 5.16-4
Roadway Segments Work Hours San Vicente Pipeline

Roadway	Segment	Work hours
Section 1A		
Eastgate Mall	NCPWF and NCWRP Driveway and Miramar Road	9:00 p.m. to 5:00 a.m.
Miramar Road	Nobel Drive and Eastgate Mall	9:00 p.m. to 5:00 a.m.
Copley Drive	Hickman Field Drive and Copley Park Place	9:00 p.m. to 5:00 a.m.
Copley Park Place	Copley Drive and Convoy Street	9:00 p.m. to 5:00 a.m.
Convoy Street	Copley Park Place and Convoy Court	9:00 p.m. to 5:00 a.m.
Convoy Court	East of Convoy Street	9:00 p.m. to 5:00 a.m.
Section 1B		
Ronson Road	Ronson Court and Kearny Mesa Road	9:00 p.m. to 5:00 a.m.
Lightwave Avenue	Kearny Villa Road and Ruffin Road	9:00 p.m. to 5:00 a.m.
Ruffin Road	Clairemont Mesa Boulevard and Lightwave Avenue	9:00 p.m. to 5:00 a.m.
Clairemont Mesa Boulevard	Ruffin Road and Murphy Canyon Road	9:00 p.m. to 5:00 a.m.
Murphy Canyon Road	Clairemont Mesa Boulevard and 1,650 feet South of Clairemont Mesa Boulevard	9:00 p.m. to 5:00 a.m.
Clairemont Mesa Boulevard	1,300 feet East of I-15 NB Ramps and Santo Road	9:00 p.m. to 5:00 a.m.
Santo Road	Clairemont Mesa Boulevard and Tierrasanta Boulevard	9:00 p.m. to 5:00 a.m.
Tierrasanta Boulevard	Santo Road and Copperleaf Lane	9:00 p.m. to 5:00 a.m.
Princess View Drive	North of Mission Gorge Road	9:00 p.m. to 5:00 a.m.
Section 2		
Mission Gorge Road	Princess View Drive and Golfcrest Drive	9:00 p.m. to 5:00 a.m.
	Golfcrest Drive and Rockyridge Road	9:00 p.m. to 5:00 a.m.
	Rockyridge Road and W Hills Parkway	9:00 p.m. to 5:00 a.m.
W Hills Parkway	Mission Gorge Road and Carlton Oaks Drive	9:00 p.m. to 5:00 a.m.
Section 3		
Carlton Oaks Drive	W Hills Parkwaay and Fanita Parkway	9:00 p.m. to 5:00 a.m.
	400 feet West of Fanita Parkway and Stoyer Drive	9:00 p.m. to 5:00 a.m.
Halberns Boulevard	Stoyer Drive and Mast Boulevard	9:00 p.m. to 5:00 a.m.
Section 4		
Mast Boulevard	Halberns Boulevard and Magnolia Avenue	9:00 p.m. to 5:00 a.m.
	Magnolia Avenue and Eastern Terminus	9:00 p.m. to 5:00 a.m.
Mast Boulevard	Western Terminus and Riverford Road	9:00 p.m. to 5:00 a.m.
Riverside Drive	Riverford Road and Valle Vista Road	9:00 p.m. to 5:00 a.m.

Table 5.16-4
Roadway Segments Work Hours San Vicente Pipeline

Roadway	Segment	Work hours
Lakeside Avenue	Valle Vista Road and Lakeside Avenue/Channel Road	9:00 p.m. to 5:00 a.m.
	Lakeside Avenue/Channel Road and SR-67	9:00 p.m. to 5:00 a.m.
Willow Road	SR-67 and Moreno Avenue	9:00 p.m. to 5:00 a.m.
Moreno Avenue	San Vicente Reservoir and Willow Road	9:00 p.m. to 5:00 a.m.

Notes: SR = State Route; WB = westbound; EB = eastbound
Source: Appendix I.

Locations for staging for the San Vicente Pipeline have not yet been identified. Since the locations are unknown, a conservative approach to the trip assignment was taken by adding construction traffic to all roadways on the San Vicente Pipeline alignment. Based on the location of construction the following roadways are included in the San Vicente Pipeline construction analysis:

- Eastgate Mall between NCPWF and NCWRP driveway and Miramar Road
- Miramar Road between Nobel Drive and Eastgate Mall
- Copley Drive between Hickman Field Drive and Copley Park Place
- Copley Park Place between Copley Drive and Convoy Street
- Convoy Street between Copley Park Place and Convoy Court
- Convoy Court east of Convoy Street
- Ronson Road between Ronson Court and Kearny Mesa Road
- Lightwave Avenue between Kearny Villa Road and Ruffin Road
- Ruffin Road between Clairemont Mesa Boulevard and Lightwave Avenue
- Clairemont Mesa Boulevard between Ruffin Road and Murphy Canyon Road
- Murphy Canyon Road between Clairemont Mesa Boulevard and 1,650 feet south of Clairemont Mesa Boulevard
- Clairemont Mesa Boulevard between 1,300 feet east of I-15 NB ramps and Santo Road
- Santo Road between Clairemont Mesa Boulevard and Tierrasanta Boulevard
- Tierrasanta Boulevard between Santo Road and Copperleaf Lane
- Princess View Drive north of Mission Gorge Road

- Mission Gorge Road between:
  - Princess View Drive and Golfcrest Drive
  - Golfcrest Drive and Rockyridge Road
  - Rockyridge Road and W Hills Parkway
- W Hills Parkway between Mission Gorge Road and Carlton Oaks Drive
- Carlton Oaks Drive between:
  - W Hills Parkway and Fanita Parkway
  - 400 feet west of Fanita Parkway and Stoyer Drive
- Halberns Boulevard between Stoyer Drive and Mast Boulevard
- Mast Boulevard between:
  - Halberns Boulevard and Magnolia Avenue
  - Magnolia Avenue and Eastern Terminus
  - Western Terminus and Riverford Road
- Riverside Drive between Riverford Road and Valle Vista Road
- Lakeside Avenue between:
  - Valle Vista Road and Lakeside Avenue/Channel Road
  - Lakeside Avenue/Channel Road and SR-67
- Willow Road between SR-67 and Moreno Avenue
- Moreno Avenue between San Vicente Reservoir and Willow Road

Key Roadways

The study area for the San Vicente Pipeline traverses a number of jurisdictions and includes a large number of roadways. A variety of interstate, state, county roads, and city arterials provide routes for vehicle travel through the study area.

Level of Service Analysis Methodology

Level of Service (LOS) is a quantitative measure describing operational conditions of a traffic stream and the motorists' and/or passengers' perception of operations. LOS describes these conditions in terms of factors such as delay, speed, travel time, freedom to maneuver, interruptions in traffic flow, queuing, comfort, and convenience. Tables 5.16-5 and 15.16-6 provide definitions of the various LOS categories (A through F) as applied to intersection and roadway operations.

Intersections

The analysis of signalized intersections utilized the procedures outlined in the 2010 Highway Capacity Manual (HCM). This method defines LOS in terms of delay, or more specifically, average stopped delay per vehicle. Delay is a measure of driver and/or passenger discomfort, frustration, fuel consumption, and lost travel time. This technique uses 1,900 vehicles per hour per lane as the maximum saturation volume of an intersection. This saturation volume is adjusted to account for lane width, on-street parking, pedestrians, traffic composition (i.e., percentage trucks), and shared lane movements (i.e., through and right-turn movements originating from the same lane). The LOS criteria used for this technique are described in Table 15.16-5. The computerized analysis of intersection operations was performed utilizing Synchro 9.0 traffic analysis software. The following assumptions were utilized in conducting all intersection LOS analyses:

- Pedestrian Calls per Hour: 10 calls per hour for each pedestrian movement was assumed.
- Signal Timing: Based on existing signal timing plans as of November 2016, provided in Appendix I.
- Peak Hour Factor: Based on existing peak hour count data for Existing Conditions provided in Appendix I, and 0.92 for all Near Term Conditions.

Table 5.16-5
Signalized Intersection LOS Criteria

Average Stopped Delay per Vehicle	LOS	Definition of Operation
< 10.0	A	LOS A describes operations with very low delay. This occurs when progression is extremely favorable, and most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
10.1–20.0	B	LOS B describes operations with generally good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

Table 5.16-5
Signalized Intersection LOS Criteria

Average Stopped Delay per Vehicle	LOS	Definition of Operation
20.1–35.0	C	LOS C describes operations with higher delays, which may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
35.1–55.0	D	LOS D describes operations with high delay, resulting from some combination of unfavorable progression, long cycle lengths, or high volumes. The influence of congestion becomes more noticeable, and individual cycle failures are noticeable.
55.1–80.0	E	LOS E is considered the limit of acceptable delay. Individual cycle failures are frequent occurrences.
>80.0	F	LOS F describes a condition of excessively high delay, considered unacceptable to most drivers. This condition often occurs when arrival flow rates exceed the LOS D capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay.

Source: Appendix I.

Roadway Segments

Roadway segment LOS standards and thresholds provide the basis for analysis of arterial roadway segment performance. The analysis of roadway segment LOS is based on the functional classification of the roadway, the maximum capacity, roadway geometrics, and existing or forecasted ADT volumes. Table 5.16-6 presents the roadway segment capacity and LOS standards used for this analysis, which are based on the Traffic Impact Study Manual (City of San Diego 1998). Consistent with City policy, LOS D was used as the minimum acceptable LOS for roadway operations.

Table 5.16-6
City of San Diego Roadway Classifications and LOS Standards

Roadway Classification	LOS A ADT	LOS B ADT	LOS C ADT	LOS D ADT	LOS E ADT
Expressway (six lanes)	< 30,000	< 42,000	< 60,000	**< 70,000**	< 80,000
Primary Arterial (six lanes)	< 25,000	< 35,000	< 50,000	**< 55,000**	< 60,000
Major Arterial (six-lane, divided)	< 20,000	< 28,000	< 40,000	**< 45,000**	< 50,000
Major Arterial (four-lane, divided)	< 15,000	< 21,000	< 30,000	**< 35,000**	< 40,000

Table 5.16-6
City of San Diego Roadway Classifications and LOS Standards

Roadway Classification	LOS A ADT	LOS B ADT	LOS C ADT	LOS D ADT	LOS E ADT
Collector (four-lane w/ center lane)	< 10,000	< 14,000	< 20,000	**< 25,000**	< 30,000
Collector (four-lane w/o center lane)	< 5,000	< 7,000	< 10,000	**< 13,000**	< 15,000
Collector (two-lane w/ continuous left-turn lane)	< 5,000	< 7,000	< 10,000	**< 13,000**	< 15,000
Collector (two-lane no fronting property)	< 4,000	< 5,500	< 7,500	**< 9,000**	< 10,000
Collector (two-lane commercial-industrial fronting)	<2,500	< 3,500	< 5,000	**< 6,500**	< 8,000
Collector (two-lane multi-family)	<2,500	< 3,500	< 5,000	**< 6,500**	< 8,000
Sub-Collector (two-lane single family)	—	—	< 2,200	—	—
Expressway (six lanes)	< 30,000	< 42,000	< 60,000	**< 70,000**	< 80,000
Primary Arterial (six lanes)	< 25,000	< 35,000	< 50,000	**< 55,000**	< 60,000
Major Arterial (six-lane, divided)	< 20,000	< 28,000	< 40,000	**< 45,000**	< 50,000

Source: City of San Diego 1998.
Note: Bold numbers indicate the ADT thresholds for acceptable LOS.

These standards are used as long-range planning guidelines to determine the functional classification of roadways. The actual capacity of a roadway facility varies according to its physical attributes. Typically, the performance and LOS of a roadway segment is heavily influenced by the ability of the intersections on the roadway to accommodate peak hour traffic volumes.

Existing Roadway LOS

North City Project Operations

Existing traffic volumes are displayed in Figure 5.16-1. Roadway segment traffic counts were obtained from the University Community Plan Amendment Transportation Impact Study (Kimley-Horn 2016). These counts were collected in April and May 2015 and are provided in Appendix I.

Using the traffic counts shown in Figure 5.16-1 and the ADT thresholds shown in Table 5.16-6, LOS was estimated for Existing Conditions.

As shown in Table 5.16-7, all the key study area roadway segments currently operate at acceptable LOS D or better with the following three exceptions:

- Eastgate Mall between Eastgate Drive and Miramar Road – LOS E

- Miramar Road between I-805 SB ramps and I-805 NB ramps – LOS F
- Miramar Road, between Nobel Drive and Eastgate Mall – LOS E

Table 5.16-7
North City Project Operations Existing Conditions
Roadway Segment LOS Analysis

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Towne Center Drive	Eastgate Mall and Executive Drive	Four-lane Major Arterial	40,000	20,120	0.503	B
	Executive Drive and La Jolla Village Drive	Four-lane Major Arterial	40,000	20,120	0.503	B
Eastgate Mall	Towne Center Drive and Judicial Drive	Four-lane Major Arterial	40,000	11,120	0.278	A
	Judicial Drive and Driveway west of I-805 Overpass	Four-lane Major Arterial	40,000	10,100	0.253	A
	280 feet west of I-805 Overpass and NCWRP Driveway	Two-lane Collector w/ CLTL	15,000	10,100	0.673	D
	NCWRP Driveway and Eastgate Drive	Two-lane Collector w/ CLTL	15,000	10,100	0.673	D
	Eastgate Drive and Miramar Road	Two-lane Collector w/ CLTL	15,000	14,670	0.978	**E**
La Jolla Village Drive	Towne Center Drive and I-805 SB Ramps	Eight-lane Prime Arterial	80,000	58,830	0.735	C
Miramar Road	I-805 SB Ramps and I-805 NB Ramps	Six-lane Prime Arterial	60,000	66,140	1.102	**F**
	I-805 NB Ramps and Nobel Drive	Eight-lane Prime Arterial	80,000	47,990	0.600	C
	Nobel Drive and Eastgate Mall	Seven-lane Prime Arterial	70,000[1]	64,560	0.922	**E**

Source: Appendix I.
Notes: ADT = Average Daily Traffic; V/C = Volume to Capacity Ratio; NB = northbound; SB = southbound; EB = eastbound; WB = westbound; CLTL = controlled left-turn lane.
Bold indicates substandard LOS E or F.
[1] Based on the Capacity of an eight-lane Prime Arterial, reduced to exclude a lane (7/8*80,000 = 70,000).

Construction Study Areas

Morena Pipelines

Roadway segment and intersection traffic counts were obtained from a number of sources including the University Community Plan Amendment Existing Conditions Summary (City of San Diego 2015, as cited in Appendix I), the Morena Boulevard Station Area Planning Study (City of San Diego 2014), and the Clairemont Mesa Community Plan Update (City of San Diego 2011a). Count worksheets are provided in Appendix I.

Figure 5.16-2 displays the existing traffic volumes and study area, and Table 5.16-8 displays the daily roadway segment LOS results under Existing Conditions.

As shown in Table 5.16-8, the following four roadway segments operate at substandard LOS E or F:

- Clairemont Mesa Boulevard, between Genesee Avenue and Clairemont Drive – LOS E
- Clairemont Drive, between Clairemont Mesa Boulevard and Balboa Avenue – LOS F
- Clairemont Drive, between Burgener Drive and Denver Street – LOS F
- Denver Street, between Clairemont Drive and Ingulf Street – LOS F

Table 5.16-8
Morena Pipelines Existing Conditions Roadway Segment LOS Analysis

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Executive Drive	End of cul-de-sac and Judicial Drive	Two-lane Collector	8,000	5,920	0.739	D
	Judicial Drive and Towne Centre Drive	Four-lane Major Arterial	40,000	5,920	0.148	A
Town Centre Drive	Executive Drive and La Jolla Village Drive	Four-lane Major Arterial	40,000	20,130	0.503	B
	La Jolla Village Drive and Golden Haven Drive	Four-lane Major Arterial	40,000	13,790	0.345	A
	Golden Haven Drive and Nobel Drive	Four-lane Major Arterial	40,000	13,790	0.345	A

Table 5.16-8
Morena Pipelines Existing Conditions Roadway Segment LOS Analysis

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Nobel Drive	Towne Centre Drive and Genesee Avenue	Four-lane Major Arterial	40,000	18,490	0.462	B
Genesse Avenue	Nobel Drive and Governor Drive	Four-lane Major Arterial	40,000	30,920	0.773	D
	Governor Drive and SR-52 WB Ramps	Four-lane Major Arterial	40,000	30,920	0.773	D
	SR-52 WB Ramps and SR-52 EB Ramps	Four-lane Major Arterial	40,000	31,170	0.779	D
	SR-52 EB Ramps and Appleton Street	Four-lane Major Arterial	40,000	28,060	0.702	C
	Appleton Street and Clairemont Mesa Boulevard	Four-lane Major Arterial	40,000	28,060	0.702	C
Clairemont Mesa Boulevard	Genesee Avenue and Clairemont Drive	Four-lane Collector w/ CLTL	30,000	25,310	0.844	**E**
Clairemont Drive	Clairemont Mesa Boulevard and Lakehurst Avenue	Four-lane Collector w/ CLTL	30,000	8,820	0.294	A
	Lakehurst Avenue and Clairemont Mesa Boulevard	Four-lane Collector / CLTL	30,000	8,820	0.294	A
	Clairemont Mesa Boulevard and Balboa Avenue	Two-lane Collector w/ CLTL	15,000	21,260	1.417	**F**
	Balboa Avenue and Rappahannock Avenue	Four-lane Major Arterial	40,000	19,330	0.483	B
	Rappahannock Avenue and Iroquois Avenue	Four-lane Collector w/ CLTL	30,000	19,330	0.644	C
	Iroquois Avenue and Burgener Drive	Four-lane Collector w/ CLTL	30,000	14,080	0.469	C
	Burgener Drive and Denver Street	Two-lane Collector w/ CLTL	15,000	23,290	1.553	**F**
Denver Street	Clairemont Drive and Ingulf Street	Two-lane Collector	8,000	10,060	1.258	**F**

Table 5.16-8
Morena Pipelines Existing Conditions Roadway Segment LOS Analysis

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Ingulf Street	Denver Street and West Morena Boulevard	Two-lane Collector	8,000	5,190	0.648	D
West Morena Boulevard	Ingulf Street and Littlefield Street	Four-lane Major Arterial	40,000	15,960	0.399	B
	Littlefield Street to Morena Boulevard	Four-lane Major Arterial	40,000	15,960	0.399	B
	Morena Boulevard and Tecolote Road Overpass	Four-lane Major Arterial	40,000	10,150	0.254	A
	Tecolote Road Overpass	Four-lane Major Arterial	40,000	10,150	0.254	A
	Vega Street and Morena Boulevard	Five-lane Major Arterial	50,000	13,310	0.266	A

Source: Appendix I.
Notes: ADT = Average Daily Traffic; V/C = Volume to Capacity Ratio; EB = eastbound; WB = westbound; CLTL = controlled left-turn lane.
Bold indicates substandard LOS E or F.

Figure 5.16-3 shows the study area intersection geometries, and Figure 5.16-4 displays peak hour intersection volumes. Table 5.16-9 displays intersection LOS results and average delay results for study area intersections under Existing Conditions. LOS calculation worksheets for Existing Conditions are provided in Appendix I.

As shown in Table 5.16-9, the following six intersections currently operate under substandard LOS E or F during the peak hours:

- Genesee Avenue and Nobel Drive – LOS E during the AM peak hour
- Genesee Avenue and Appleton Street/Lehrer Drive – LOS F during the AM peak hour
- Genesee Avenue and Clairemont Mesa Boulevard – LOS E during the PM peak hour
- Clairemont Mesa Boulevard and Clairemont Drive/Kleefeld Avenue – LOS F during both the AM and PM peak hour
- Clairemont Drive and Clairemont Mesa Boulevard – LOS E during the AM peak hour
- Clairemont Drive and Balboa Avenue – LOS E during the PM peak hour

Table 5.16-9
Morena Pipelines Existing Conditions Intersection LOS Analysis

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Avg. Delay (sec)	*LOS*	*Avg. Delay (sec)*	*LOS*
Towne Centre Drive and Golden Haven Drive	Signalized	14.9	B	9.7	A
Towne Centre Drive and Nobel Drive	Signalized	34.2	C	28.2	C
Genesee Avenue and Nobel Drive	Signalized	69.4	**E**	33.5	C
Genesee Avenue and Appleton Street/Lehrer Drive	Signalized	84.8	**F**	34.9	C
Genesee Avenue and Clairemont Mesa Boulevard	Signalized	46.0	D	56.1	**E**
Clairemont Mesa Boulevard and Clairemont Drive/Kleefeld Avenue	Signalized	413.7	**F**	672.1	**F**
Clairemont Drive and Clairemont Mesa Boulevard	Signalized	78.7	**E**	53.8	D
Clairemont Drive and Balboa Avenue	Signalized	51.4	D	71.0	**E**

Source: Appendix I.
Notes: Avg. Delay (sec) = average delay (seconds); EB = eastbound; WB = westbound.
Bold indicates substandard LOS E or F.

North City Pipeline

Roadway segment traffic counts were collected in November 2016 and are provided in Appendix I. Figure 5.16-5 displays the existing traffic volumes and study area, and Table 5.16-10 displays the daily roadway segment LOS results under Existing Conditions.

As shown in Table 5.16-10, the following five roadway segments are currently operating at a substandard LOS E or F:

- Eastgate Mall, between the NCPWF and NCWRP driveway and Miramar Road – LOS E
- Miramar Road, between Eastgate Mall and Camino Santa Fe – LOS F
- Miramar Road, between Carroll Road and Camino Ruiz – LOS E
- Miramar Road, between Camino Ruiz and Black Mountain Road – LOS F
- Miramar Road, between Black Mountain Road and Kearny Villa Road – LOS F

Table 5.16-10
North City Pipeline Existing Conditions Roadway Segment LOS Analysis

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Eastgate Mall	NCPWF and NCWRP Driveway and Miramar Road	Two-lane Collector w/ CLTL	15,000	14,670	0.978	**E**
Miramar Road	Eastgate Mall and Camino Santa Fe	Six-lane Prime Arterial	60,000	67,750	1.129	**F**
	Camino Santa Fe and Carroll Road	Six-lane Prime Arterial	60,000	47,240	0.787	C
	Carroll Road and Camino Ruiz	Six-lane Prime Arterial	60,000	57,240	0.954	**E**
	Camino Ruiz and Black Mountain Road	Six-lane Prime Arterial	60,000	67,120	1.119	**F**
	Black Mountain Road and Kearny Villa Road	Six-lane Prime Arterial	60,000	65,780	1.096	**F**
Kearny Villa Road	Black Mountain Road/Carroll Centre Road and Miramar Road	Four-lane Collector w/ CLTL	30,000	17,860	0.595	C
Candida Street	Kearny Villa Road and Via Pasar	Two-lane Collector	8,000	1,520	0.190	A
Via Pasar	Via Excelencia and Candida Street	Two-lane Collector	8,000	1,130	0.141	A
Via Excelencia	east of Via Pasar	Two-lane Collector	8,000	930	0.117	A
Businesspark Avenue	south of Willow Creek Road	Two-lane Collector	8,000	2,630	0.329	B
	Carrol Canyon Road and Willow Creek Road	Three-lane Collector (1 SB and 2 NB)	12,000	7,490	0.624	C
Carroll Canyon Road	Businesspark Avenue and Scripps Ranch Boulevard	Four-lane Collector w/ CLTL	30,000	14,850	0.495	C
Scripps Ranch Boulevard	Carroll Canyon Road and Hoyt Park Drive	Four-lane Major Arterial	40,000	13,200	0.330	A
Hoyt Park Drive	Meanley Drive and Scripps Ranch Boulevard	Two-lane Collector (no fronting property)	10,000	2,600	0.260	A

Source: Appendix I.
Note: ADT = Average Daily Traffic; V/C = Volume to Capacity Ratio; NB = northbound; SB = southbound; CLTL = controlled left-turn lane.
Bold indicates substandard LOS E or F.

San Vicente Pipeline

Roadway segment traffic counts were obtained from a number of sources including the City of Santee Circulation Element Update project (late 2014, City of Santee 2014), the Kearny Mesa Community Plan Update project (late 2016, City of San Diego 2011b), and the San Diego Association of Governments (SANDAG) Series 13 base year traffic volumes (SANDAG 2013). Count worksheets are provided in Appendix I. Figure 5.16-6 displays the existing traffic volumes and study area, and Table 5.16-11 displays the daily roadway segment LOS results under Existing Conditions.

As shown in Table 5.16-11, all the key study area roadway segments currently operate at acceptable LOS D or better with the following two exceptions:

- Eastgate Mall, between the NCPWF and NCWRP driveway and Miramar Road – LOS E
- Willow Road, between SR-67 and Moreno Avenue – LOS F

Table 5.16-11
San Vicente Pipeline Existing Conditions Roadway Segment LOS Analysis

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Section 1A						
Eastgate Mall	NCPWF and NCWRP Driveway and Miramar Road	Two-lane Collector w/ CLTL	15,000	14,670	0.978	**E**
Miramar Road	Nobel Drive and Eastgate Mall	Eight-lane Prime Arterial	80,000	64,560	0.807	C
Copley Drive	Hickman Field Drive and Copley Park Place	Four-lane Collector	15,000	9,420	0.628	C
Copley Park Place	Copley Drive and Convoy Street	Four-lane Collector w/ CLTL	30,000	10,500	0.350	B
Convoy Street	Copley Park Place and Convoy Court	Four-lane Collector w/ CLTL	30,000	23,760	0.792	D
Convoy Court	east of Convoy Street	Two-lane Collector	8,000	1,710	0.214	A

Table 5.16-11
San Vicente Pipeline Existing Conditions Roadway Segment LOS Analysis

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Section 1B						
Ronson Road	Ronson Court and Kearny Mesa Road	Two-lane Collector	8,000	3,790	0.474	C
Lightwave Avenue	Kearny Villa Road and Ruffin Road	Four-lane Collector w/ CLTL	30,000	6,140	0.205	A
Ruffin Road	Clairemont Mesa Boulevard and Lightwave Avenue	Four-lane Major Arterial	40,000	10,730	0.268	A
Clairemont Mesa Boulevard	Ruffin Road and Murphy Canyon Road	Four-lane Major Arterial	40,000	25,970	0.649	C
Murphy Canyon Road	Clairemont Mesa Boulevard and 1,650 feet south of Clairemont Mesa Boulevard	Two-lane Collector	8,000	5,860	0.733	D
Clairemont Mesa Boulevard	1,300 feet east of I-15 NB Ramps and Santo Road	Four-lane Major Arterial	40,000	20,190	0.505	B
Santo Road	Clairemont Mesa Boulevard and Tierrasanta Boulevard	Four-lane Major Arterial	40,000	11,200	0.280	A
Tierrasanta Boulevard	Santo Road and Copperleaf Lane	Four-lane Major Arterial	40,000	21,100	0.528	C
Princess View Drive	north of Mission Gorge Road	Two-lane Collector	8,000	2,900	0.363	B
Section 2						
Mission Gorge Road	Princess View Drive and Golfcrest Drive	Six-lane Prime Arterial	60,000	20,700	0.345	A
	Golfcrest Drive and Rockyridge Road	Five-lane Prime Arterial (2EB and 3WB)	50,000	13,200	0.264	A
	Rockyridge Road and W Hills Parkway	Four-lane Major Arterial	40,000	14,300	0.358	A
W Hills Parkway	Mission Gorge Road and Carlton Oaks Drive	Four-lane Major Arterial	40,000	12,100	0.303	A

Table 5.16-11
San Vicente Pipeline Existing Conditions Roadway Segment LOS Analysis

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Section 3						
Carlton Oaks Drive	W Hills Parkway and Fanita Parkway	Two-lane Collector w/ CLTL	15,000	8,700	0.580	C
	400 feet west of Fanita Parkway and Stoyer Drive	Two-lane Collector w/ CLTL	15,000	10,300	0.687	D
Halberns Boulevard	Stoyer Drive and Mast Boulevard	Two-lane Collector w/ CLTL	15,000	7,100	0.473	C
Section 4						
Mast Boulevard	Halberns Boulevard and Magnolia Avenue	Four-lane Major Arterial	40,000	16,800	0.420	B
	Magnolia Avenue and Eastern Terminus	Two-lane Collector w/ CLTL	15,000	6,000	0.400	B
	Western Terminus and Riverford Road	Two-lane Collector	8,000	400	0.050	A
Riverside Drive	Riverford Road and Valle Vista Road	Two-lane Collector w/ CLTL	15,000	9,600	0.640	C
Lakeside Avenue	Valle Vista Road and Lakeside Avenue/Channel Road	Two-lane Collector w/ CLTL	15,000	7,800	0.520	C
	Lakeside Avenue/Channel Road and SR-67	Two-lane Collector	8,000	3,400	0.425	B
Willow Road	SR-67 and Moreno Avenue	Two-lane Collector	8,000	9,100	1.138	**F**
Moreno Avenue	San Vicente Reservoir and Willow Road	Two-lane Collector	8,000	3,900	0.488	C

Source: Appendix I.
Note: ADT = Average Daily Traffic; V/C = Volume to Capacity Ratio; NB = northbound; CLTL = controlled left-turn lane.
Bold indicates substandard LOS E or F.

5.16.3 REGULATORY FRAMEWORK

Federal

The Federal Highway Administration is an agency within the U.S. Department of Transportation that supports state and local governments in the design, construction, and maintenance of the nation's highway system (Federal Aid Highway Program) and various federally and tribally owned lands (Federal Lands Highway Program). The Federal Highway Administration provides financial and technical assistance to improve and maintain road and highway infrastructure.

State

California Department of Transportation

As the owner and operator of the State Highway System, the California Department of Transportation (Caltrans) implements established state planning priorities in all functional plans, programs, and activities. Caltrans has the responsibility to coordinate and consult with local jurisdictions when proposed local land use planning and development may impact state highway facilities. Pursuant to Section 21092.4 of the Public Resources Code, for projects of statewide, regional, or area-wide significance, the lead agency shall consult with transportation planning agencies and public agencies that have transportation facilities which could be affected by the project. Caltrans requires a traffic impact study when a project generates and assigns over 100 peak hour trips to a state highway facility; or if the project generates and assigns 50 to 100 peak hours trips to a state highway facility causing the facility to approach LOS C or D; or 1 to 49 peak hour trips are generated and assigned to a state highway facility causing it to experience significant congestion (LOS E or F), increased risk for traffic collisions, or affect access to the facility (Caltrans 2002).

Senate Bill 375: Sustainable Communities Strategy

Senate Bill (SB) 375 provides a new planning process to coordinate land use planning and regional transportation plans and funding priorities in order to help California meet the greenhouse gas reduction goals established in Assembly Bill (AB) 32. SB 375 requires that regional transportation plans developed by metropolitan planning organizations (e.g., SANDAG) incorporate a "sustainable communities strategy" (SCS) in their regional transportation plans that will achieve regional greenhouse gas emission reduction targets set by the California Air Resources Board. The development of the SCS requires scenario planning that considers a range of alternative land use patterns for the region, as well as transportation investments that achieve the regional target reduction in greenhouse gases. SB 375 also includes provisions for streamlined California Environmental Quality Act (CEQA) review for some infill projects, such as transit-oriented developments.

Senate Bill 743: Transit Oriented Development and Vehicle Miles Traveled

In September 2013, Governor Brown signed SB 743, which made significant changes to how transportation impacts are to be assessed under CEQA. SB 743 directs the Governor's Office of Planning and Research to develop a new metric and approach that replaces LOS analysis and suggests vehicle miles traveled as a metric. SB 743 also creates a new exemption for certain projects that are consistent with the regional SCS, and in some circumstances, eliminates the need to evaluate aesthetic and parking impacts of a project.

The Governor's Office of Planning and Research has released Draft CEQA Guidelines; however, at the time this analysis was completed, the CEQA Guidelines have not been finalized or adopted. It is anticipated that the revisions to the CEQA Guidelines will be finalized in 2017. According to the most recent Draft CEQA Guidelines released by the Governor's Office of Planning and Research, lead agencies would have a grace period of 2 years to update and adopt new thresholds once the new CEQA Guidelines have been adopted.

Regional

SANDAG is the region's transportation and land use planning agency for the County of San Diego's 19 local governments. SANDAG is governed by a Board of Directors composed of mayors, councilmembers, and county supervisors from each of those local governments, including the City of San Diego. The City of San Diego also participates in the development and adoption of SANDAG documents and programs through staff participation on advisory committees and direct citizen participation. Key regional planning efforts include the following plans and programs.

2050 Regional Transportation Plan and Sustainable Communities Strategy

SANDAG adopted San Diego Forward: The Regional Plan in 2015 in compliance with state and federal regulations. The Regional Plan has a horizon year of 2050 and was developed as a blueprint for a regional transportation system that further enhances quality of life, promotes sustainability, and offers more mobility options for people and goods. The plan includes new and better connections to more efficiently move people on foot, bikes, buses, trolleys, trains, and cars. It establishes the basis for state funding of local and regional transportation projects and is a prerequisite for federal funding. SANDAG prioritizes and allocates the expenditure of regional, state, and federal transportation funds to implement regional transportation plan projects.

Congestion Management Process

To address the increasing public concern that traffic congestion is impacting the quality of life and economic vitality of the State of California, Proposition 111 created the Congestion Management Program (CMP) in 1990. The intent of the CMP is to provide the analytical basis for transportation decisions through the State Transportation Improvement Program process. Included with the provision for additional transportation funding was a requirement to undertake a CMP within each county with an urbanized area having a population of 50,000 or more to be developed and adopted by a designated Congestion Management Agency. SANDAG was designated the Congestion Management Agency for San Diego County.

Implementation of the CMP was made voluntary by the passage of AB 2419 (Bowler 1996). However, Federal Highway Administration 23 CFR 450.320 requires that each transportation management area address congestion management through a process involving an analysis of multimodal metropolitan wide strategies that are cooperatively developed to foster safety and integrated management of new and existing transportation facilities eligible for federal funding. SANDAG has been designated as the transportation management area for the San Diego region.

In October 2009, the San Diego region elected to be exempt from the state CMP, and since this decision, SANDAG has been abiding by 23 CFR 450.320 to ensure the region's continued compliance with the federal congestion management process. San Diego Forward: The Regional Plan, the region's long-range transportation plan and SCS, meets the requirements of 23 CFR 450.320 by incorporating the following federal congestion management process: performance monitoring and measurement of the regional transportation system, multimodal alternatives and non-single occupancy vehicle analysis, land use impact analysis, the provision of congestion management tools, and integration with the Regional Transportation Improvement Program process.

Regional Bicycle Plan: Riding to 2050

The San Diego Regional Bicycle Plan was adopted to provide a regional strategy to make riding a bike a useful form of transportation for everyday travel. The Regional

Bicycle Plan supports the implementation of San Diego Forward: The Regional Plan, which calls for more transportation choices and a balanced regional transportation system that supports smart growth and a more sustainable region. The plan provides a critical component of that balanced system, as well as the programs that are necessary to support it.

Local

City of San Diego General Plan Mobility Element

The City of San Diego Mobility Element provides policies to attain a balanced, multimodal transportation network where each mode, or type of transportation, is able to contribute to an efficient network of services meeting varied user needs (City of San Diego 2015). In addition to addressing walking, streets, and transit, the Mobility Element also includes policies related to regional collaboration, bicycling, parking, goods movement, and other components of our transportation system. Taken together, these policies advance a strategy for congestion relief and increased transportation choices in a manner that strengthens the City of Villages land use vision and helps achieve a clean and sustainable environment. The City's California Environmental Quality Act Significance Determination Thresholds (City of San Diego 2016) contain significance guidelines related to transportation.

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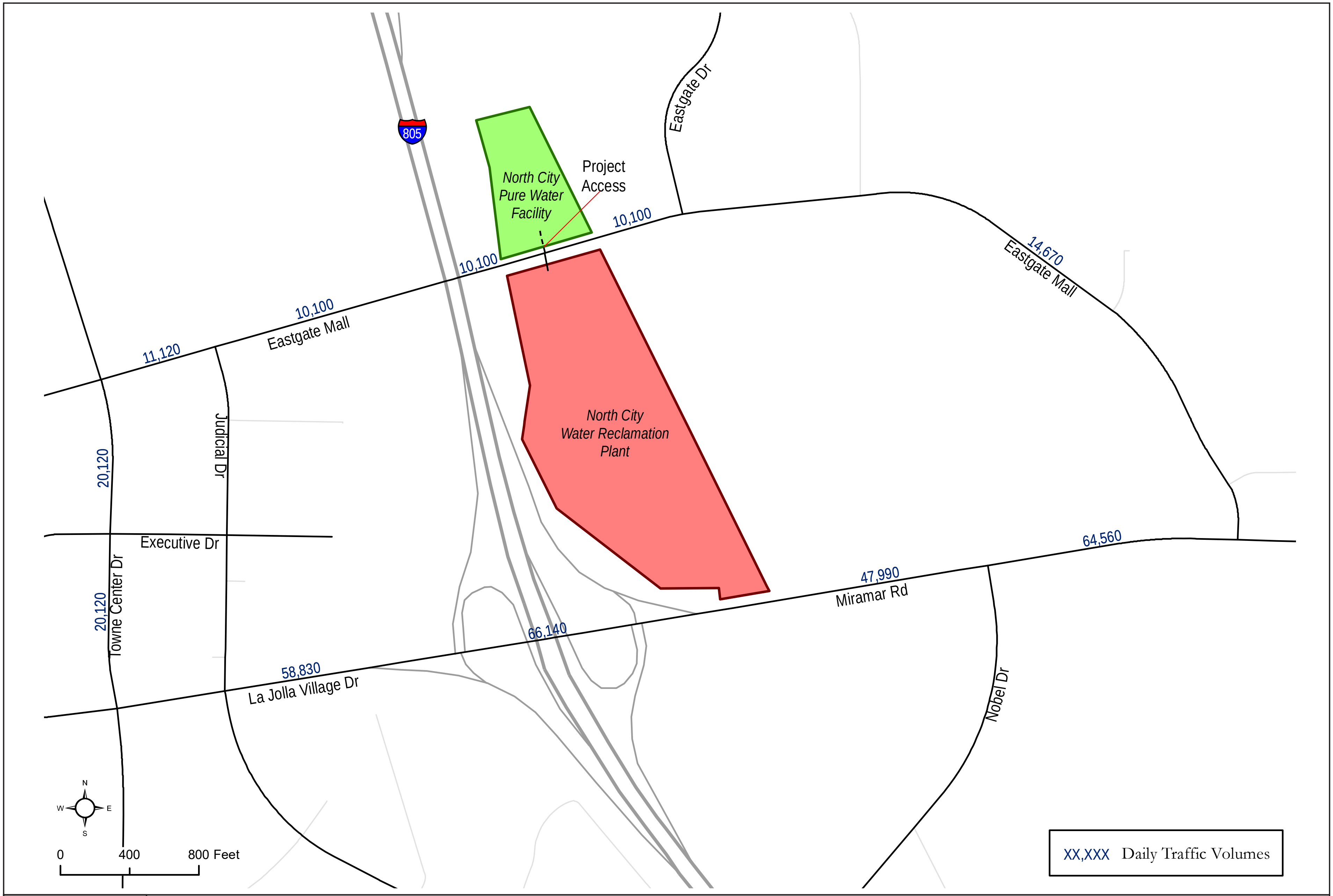

SOURCE: Chen Ryan, 2017

FIGURE 5.16-1

North City Project Operations Study Area and Existing Traffic Volumes

DUDEK

Pure Water San Diego Program North City Project EIR/EIS

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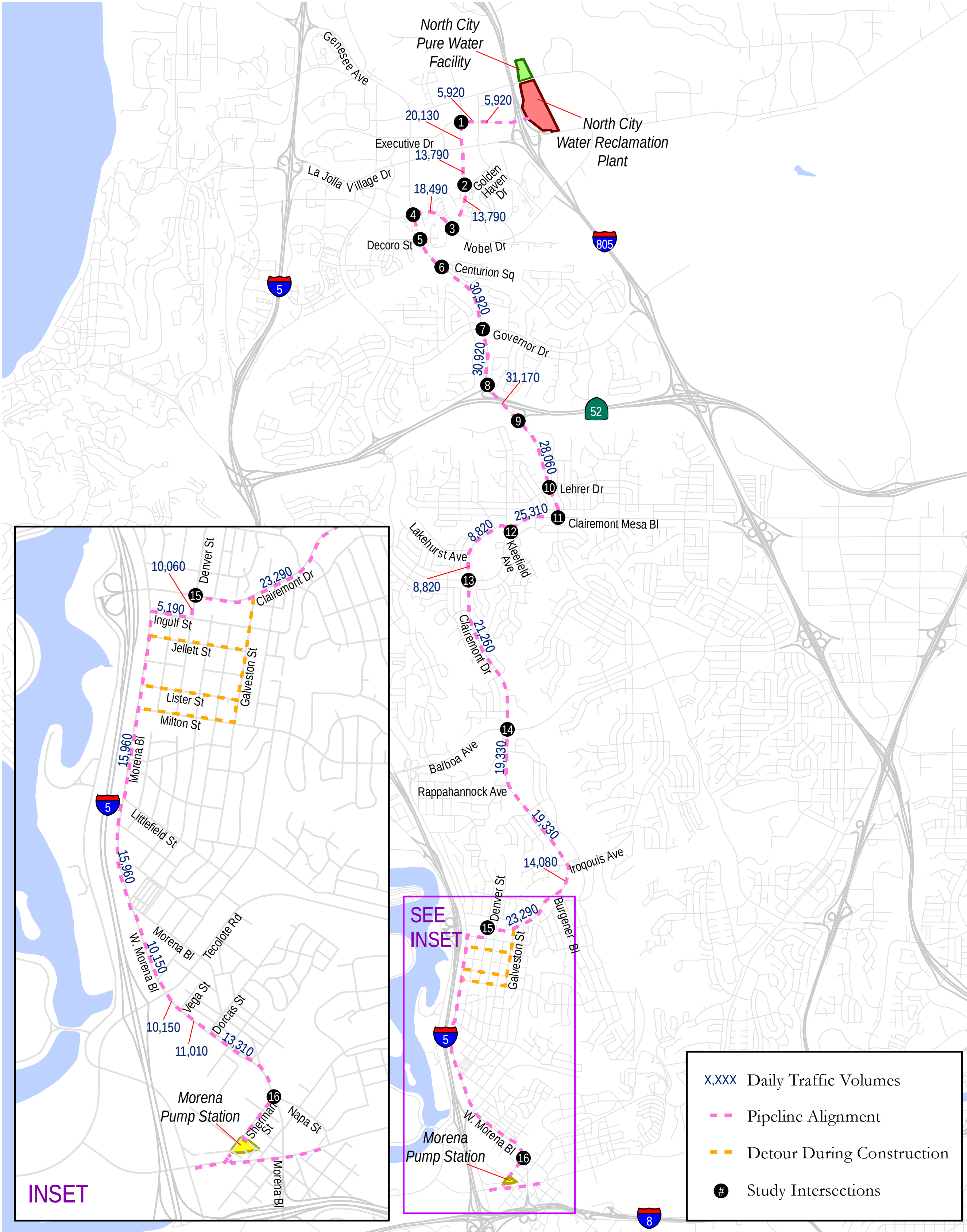

SOURCE: Chen Ryan, 2017

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FIGURE 5.16-2

Morena Pipelines Study Area and Existing Roadway Segment Traffic Volumes

Pure Water San Diego Program North City Project EIR/EIS

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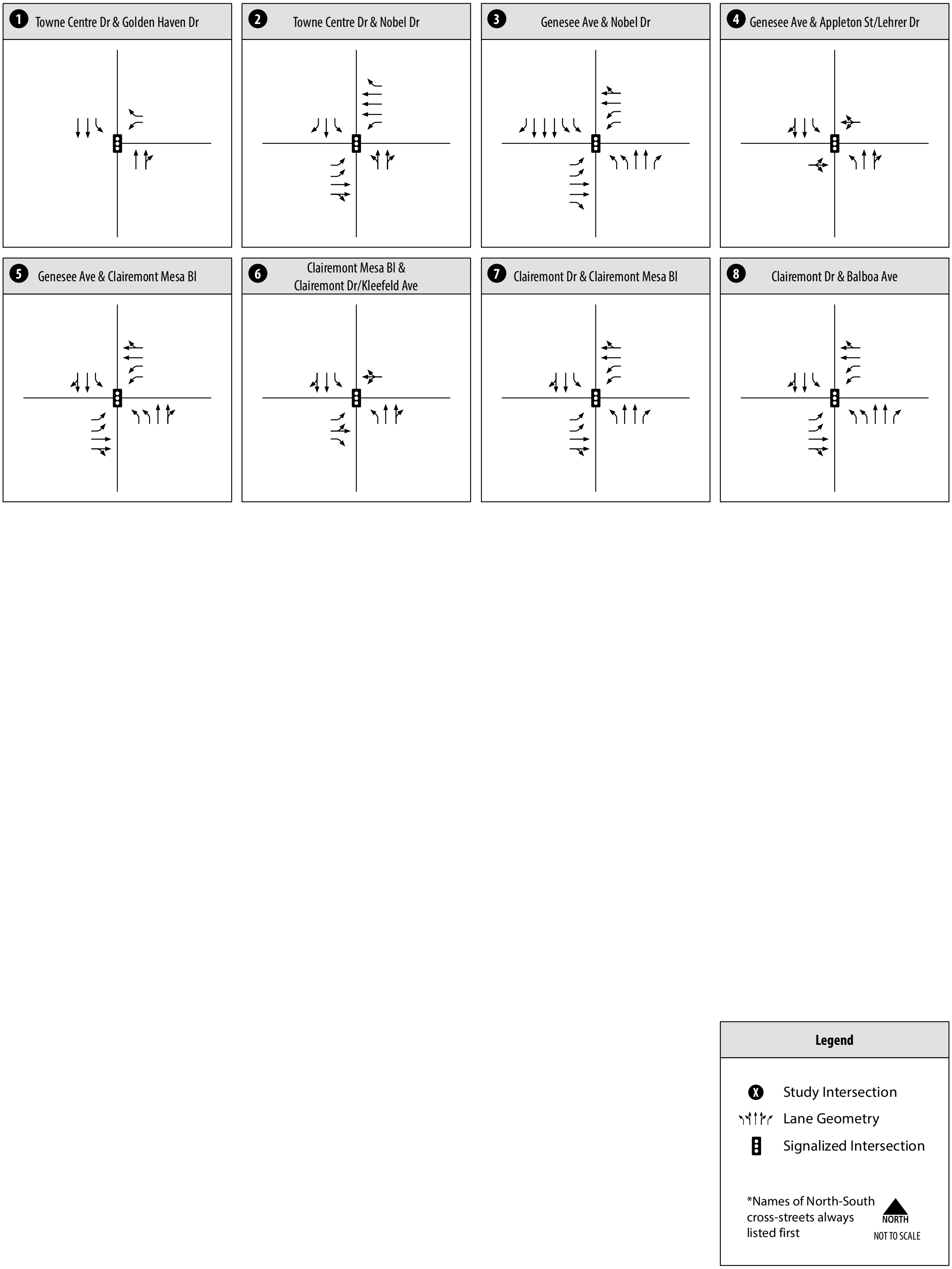

SOURCE: Chen Ryan, 2017

FIGURE 5.16-3

Morena Pipelines Existing Intersection Geometries

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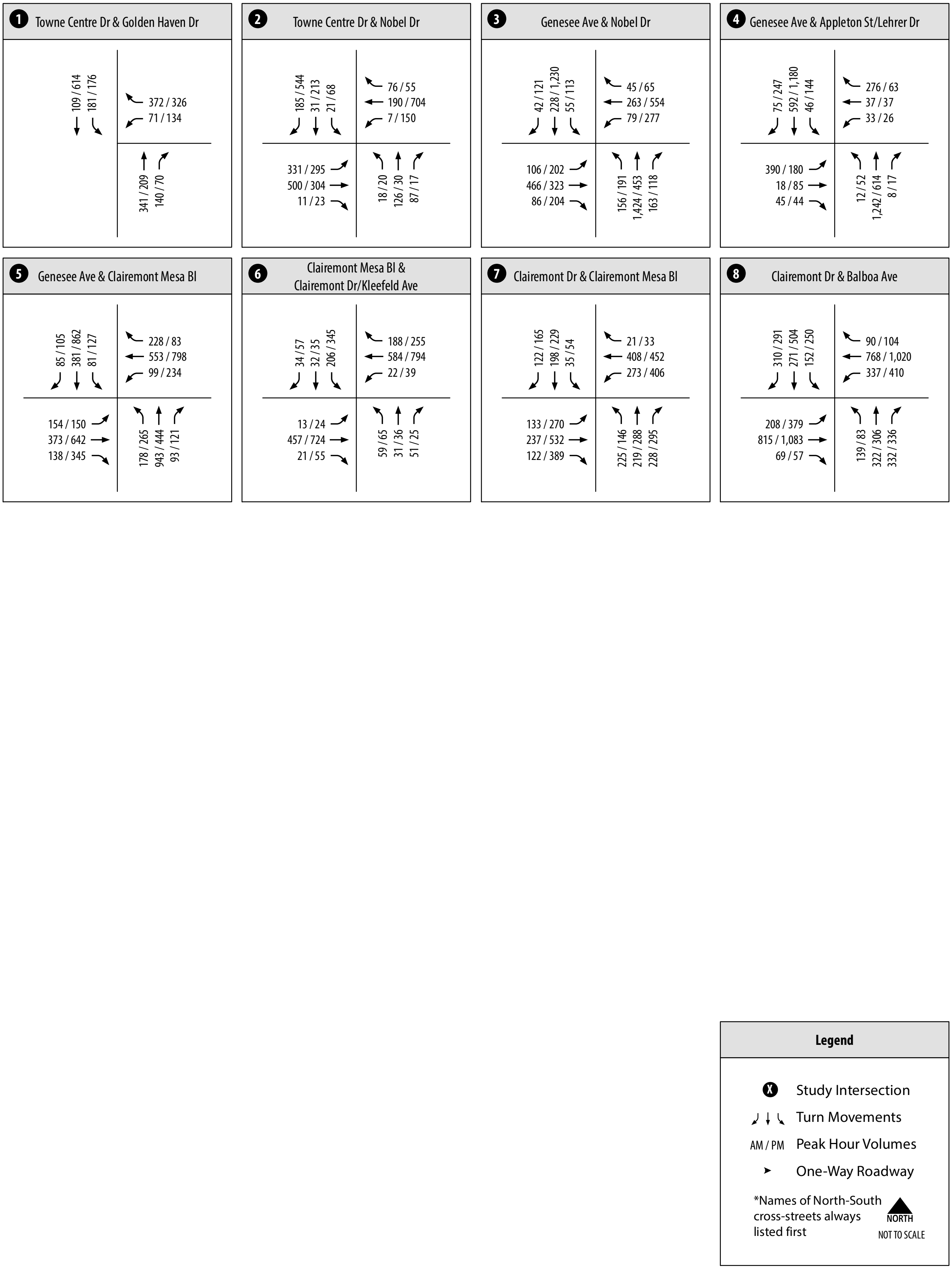

SOURCE: Chen Ryan, 2017

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FIGURE 5.16-4

Morena Pipelines Existing Intersection Traffic Volumes

Pure Water San Diego Program North City Project EIR/EIS

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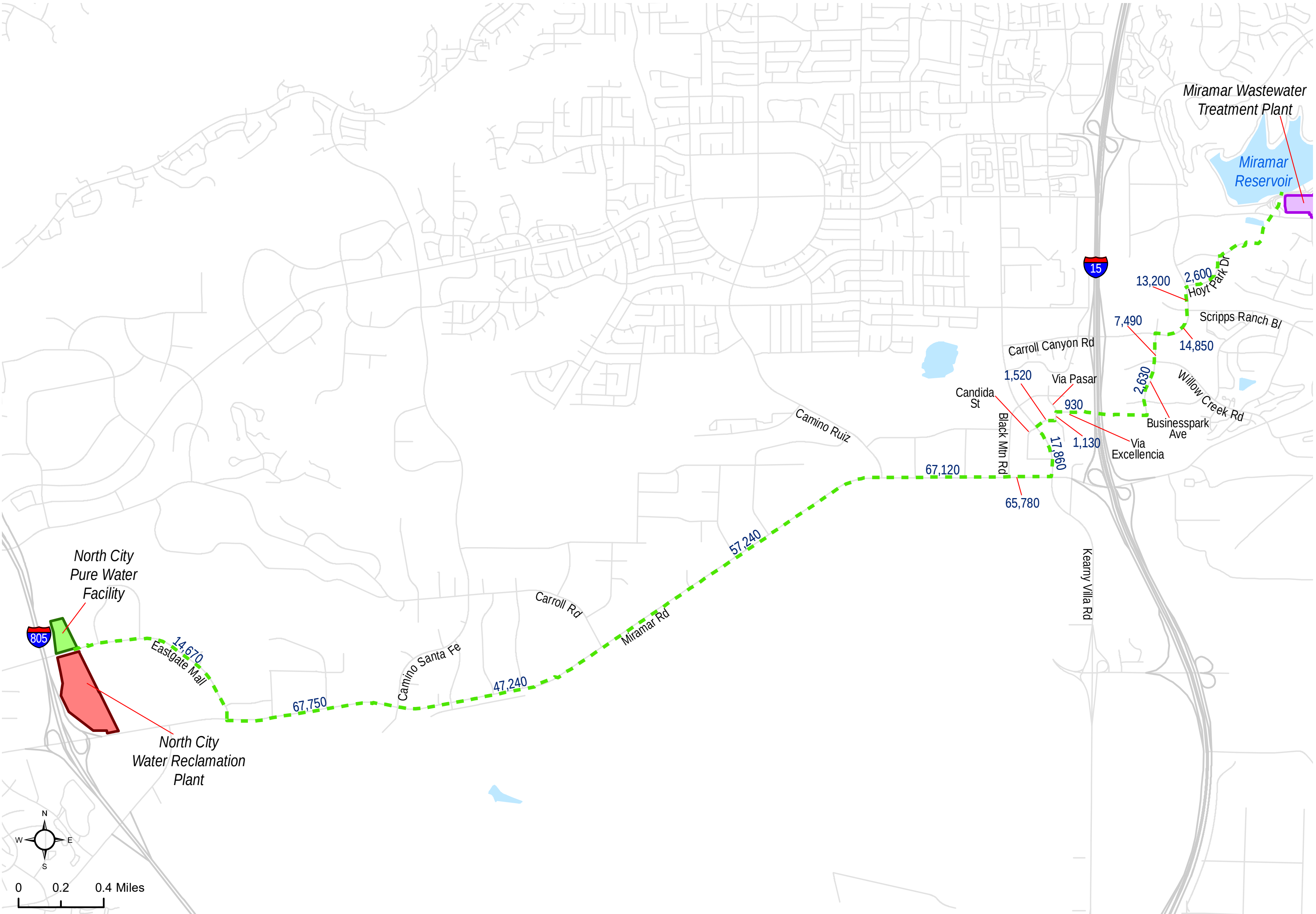

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SOURCE: Chen Ryan, 2017

FIGURE 5.16-5

North City Pipeline Study Area and Existing Traffic Volumes

Pure Water San Diego Program North City Project EIR/EIS

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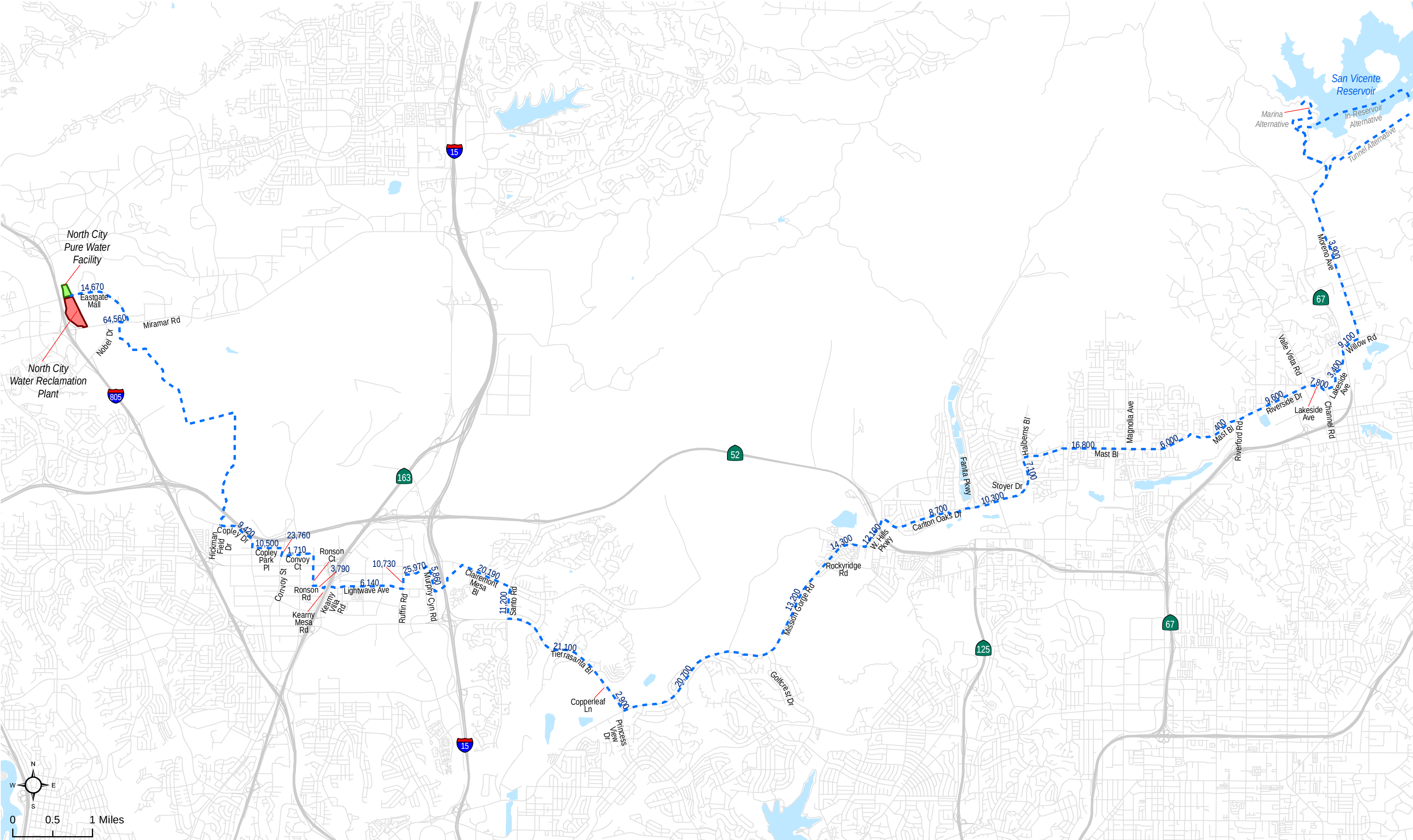

SOURCE: Chen Ryan, 2017

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FIGURE 5.16-6
San Vicente Pipeline Study Area and Existing Traffic Volumes

Pure Water San Diego Program North City Project EIR/EIS

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5.17 WATER SUPPLY

5.17.1 INTRODUCTION

The following section examines the impacts of the North City Project on existing and future water supply sources within the North City area. The information contained in this section was obtained from various sources, including the 2015 San Diego County Water Authority Urban Water Management Plan (UWMP; SDCWA 2016a) and the City of San Diego UWMP (City of San Diego 2016). Additional information is based on reports by the Metropolitan Water District of Southern California (Metropolitan), the San Diego County Water Authority (SDCWA), and City of San Diego Public Utilities Department.

5.17.2 ENVIRONMENTAL SETTING

Regional Water Supply

Metropolitan Water District of Southern California

Metropolitan is a consortium of 26 cities and water districts that can deliver 2.6 billion gallons of water per day to nearly 19 million people in parts of Los Angeles, Orange, San Diego, Riverside, San Bernardino and Ventura counties. Metropolitan obtains imported water from two primary sources: the Colorado River and the State Water Project.

Metropolitan has 10-year average annual sales of 1.99 million acre-feet (AF). In the fiscal year 2014–2015, Metropolitan sold 2.06 million AF of water, with daily system deliveries as high as 7,150 AF per day (for reference, 1 AF will serve two households in and around their homes for a year). Treated and untreated water sales were each about 50% of total sales. The growing awareness of drought and retail conservation caused sales last year to fall below the 10-year average annual sales of 1.99 million AF. Metropolitan sold approximately 1.91 million AF of water, about 150,000 AF (7.3%) lower than the prior fiscal year. The final State Water Project allocation for calendar year 2014 was just 5%, or 96,000 AF, the lowest in history (Metropolitan 2015).

San Diego County Water Authority

SDCWA is responsible for providing a safe and reliable supply of water to its 24 member agencies, including the City of San Diego (City). SDCWA serves 95% of San Diego County's (the County's) population over an area of 951,000 acres (1,486 square miles). Up to 80% of the region's water is imported from the Colorado River and Northern California via the State Water Project. Metropolitan is SDCWA's largest supplier, providing almost half of the water used in 2015. The remaining water supply comes from SDCWA's long-term water conservation and transfer agreement with the Imperial Irrigation District, conserved water resulting from lining of portions of the All-American and Coachella canals in Imperial Valley, and local supply sources including groundwater, local surface water, recycled water, and desalination (SDCWA 2016a). Potable reuse is also included in predicted future water supplies. Table 5.17-1 shows the most recent (2016) portfolio of SDCWA water supplies and predicted future (2020 and 2035) water supplies.

Table 5.17-1
SDCWA Water Supply

Water Source	2016		2020		2035	
	Amount (AF)	*Percent of Total*	*Amount (AF)*	*Percent of Total*	*Amount (AF)*	*Percent of Total*
Metropolitan Water District	187,000	41%	126,000	21%	88,000	13%
Imperial Irrigation District transfer	100,000	22%	190,000	32%	200,000	29%
All American and Coachella canal lining	79,000	17%	80,000	14%	80,000	12%
Potable Reuse	—	—	8,000	1%	110,000	16%
Recycled water	23,000	5%	43,000	7%	57,000	8%
Seawater desalination	27,000	6%	56,000	10%	72,000	10%
Groundwater	21,000	5%	33,000	6%	36,000	5%
Local surface water	18,000	4%	52,000	9%	51,000	7%
Total	**455,000**		**588,000**		**694,000**	

Sources: SDCWA 2016a; SDCWA 2016b.
Note: AF = acre-feet.

Water Use

Per capita (per person) water use in SDCWA's service area has fallen from more than 200 gallons per capita per day to about 150 gallons per capita per day over the past decade. In 2015, total regional use of potable water was approximately 452,000 AF per year (AFY) – almost 21% less than it was in 1990, even with a population increase of approximately 30% over that period. Between 2007 and 2015, total regional potable water use was lowest in 2015 and highest in 2007 at over 700,000 AFY (SDCWA 2016c).

City of San Diego

The City's current water supplies consist of (1) capture of local runoff from rainfall within seven of its nine surface reservoirs, (2) recycled water for non-potable water use, (3) limited local groundwater, and (4) water purchased from SDCWA.

Potable Water Supply

The City's Public Utilities Department serves more than 1.3 million people populating more than 340 square miles of developed land. In addition to supplying water within its own incorporated boundaries, the City conveys and sells water to the City of Del Mar, the Santa Fe Irrigation District, the San Dieguito Water District, and the California American Water Company, which in turn serves the cities of Coronado and Imperial Beach and portions of southern San Diego County. The City has agreements to sell surplus water to Otay Water District and exchange water to Ramona Municipal Water District. The City maintains several emergency connections to and from neighboring water agencies, including Santa Fe Irrigation District, Poway Municipal Water District, Otay Water District, California American Water Company, and Sweetwater Authority (City of San Diego 2016; City of San Diego 2017).

The City purchases imported water from SDCWA. The City's local water supplies consist of surface water obtained from local watersheds and recycled water. The City has nine local surface water reservoirs with more than 569,021 AF of capacity, which are connected directly or indirectly to three water treatment plants (WTPs). The largest reservoir is the San Vicente Reservoir, with a capacity of 242,000 AF since completion of the Emergency Storage Project. The Miramar WTP has a rated capacity of 144 million gallons per day (MGD) and generally serves the City's geographical area north of the San Diego River (north San Diego) (City of San Diego 2016). The Alvarado WTP recently underwent upgrades and improvements and has a current rated capacity of 120 MGD. The Alvarado WTP generally serves the geographical area from National City to La Jolla Village Drive/Miramar Road. The Otay WTP has a current rated capacity of 34 MGD and serves the geographical area bordering Mexico (south San Diego) and parts of the southeastern portion of central San Diego. The geographic areas served by the three WTPs are flexible such that areas of the City can be supplied by more than one of the treatment plants. The native water captured in these reservoirs provides approximately 19% of the City's total supply (based on average data from 2011 to 2015) (City of San Diego 2017).

The City maintains and operates more than 3,300 miles of water lines; 49 water pump stations; 32 standpipes, elevated tanks, and concrete and steel reservoirs with a potable water storage capacity of more than 200 million gallons; more than 24,000 fire hydrants; and approximately 290,000 water meters. The pipelines range in diameter size from 2-inch service lines to 96-inch transmission pipelines. Because of San Diego's diverse topography, including sea level beach communities, mesas, hills, valleys and canyons, the City maintains more than 120 pressure zones (City of San Diego 2017).

City of San Diego Current and Projected Water Demand

To prepare the City's water demand forecast, coordination with the San Diego Association of Governments (SANDAG) was necessary to obtain the most recent demographic projections. For the 2015 UWMP water demand forecast, demographic data for the City was based on SANDAG's latest projections made for the Series 13: 2050 Regional Growth Forecast, which used a 2013 population and housing estimate produced by the California Department of Finance. SANDAG's demographic forecast incorporates regional projections and local inputs gathered from the region's 18 incorporated cities and the County (City of San Diego 2016).

The City's actual water use declined between 2010 and 2015 from 188,860 AFY to 177,341 AFY, reflecting the City's conservation efforts. Single-family residential water use makes up the largest sector of demand within the City's retail service area (excluding wholesale deliveries), representing about 36% of the total use in 2015. In 2015, multifamily residential, commercial/institutional/industrial, and irrigation accounted for 23%, 28%, and 13% of total retail water use, respectively.

With the City's expected population growth in the future, water demands are projected to reach 264,840 AFY in 2030 and 273,408 AFY in 2040 (City of San Diego 2016), accounting for future water conservation. Cumulative sector demands are forecasted to increase by 37% between 2020 and 2040. Single-family residential water use is expected to peak in 2035 and begin to decline from 2035 to 2040. Overall single-family residential water use is projected to increase by 39% over the projection period of 2020 to 2040. Multifamily residential water use is forecasted to experience the greatest increase, at 69% over the projection period of 2020 to 2040; however, similar to single-family use, it is projected to experience a slight decline between 2035 and 2040. The declines in residential water use from 2035 to 2040 are attributed to a peak in single-family water use in 2035 and then a gradual decline in single-family housing thereafter.

Non-potable Recycled Water

Existing recycled water use in the City currently consists of non-potable reuse, which uses disinfected tertiary-treated recycled water that meets California water quality standards for uses that are not associated with drinking water, such as irrigation, industrial and construction purposes, ornamental fountains, and toilet and urinal flushing. The City owns and operates a recycled water system that supplies water to over 600 retail customers as well as several wholesale customers. The wholesale customers include the City of Poway, Olivenhain Municipal Water District, and Otay Water District.

Non-potable recycled water use is expected to remain relatively constant, with the North City Water Reclamation Plant providing an annual average of 7 MGD and South Bay Water Reclamation Plant providing 4 to 6 MGD. Between 2010 and 2015, recycled water use increased by approximately 3%, and meters increased by 38%. Recycled water demands for non-potable water use are estimated by the City's Public Utilities Department. These recycled water demands for non-potable use are expected to increase from the current 8,195 AFY to 13,650 AFY by 2020 and remain constant throughout 2040.

5.17.3 REGULATORY FRAMEWORK

Metropolitan Water District of Southern California

Integrated Water Resources Plan

In 1996 Metropolitan developed its first Integrated Water Resources Plan to address the complexity of developing, maintaining, and delivering a reliable supply of water to its member agencies. The plan established targets for a diversified portfolio of investments in water supply that have provided the foundation for continued water supply reliability during a period of prolonged drought and severe regulatory limitations. The plan established a long-term water resources strategy to fulfill Metropolitan's mission of providing a high-quality, reliable water supply for its service area by identifying a range of potential resource development needs, supply alternatives, adaptation measures, and program implementation blueprints.

An update in 2004 emphasized conservation and local resources development options and targets through 2025 and included the addition of a 10% planning buffer. The 2010 update manages current challenges including below-average precipitation conditions for the Colorado River and historic regulatory cutbacks for the State Water Project. It has three main components: the core resources strategy, which is designed to maintain reliable water supplies; the uncertainty buffer, which activates a suite of buffer actions to mitigate short-term change; and foundational actions, which detail strategies for securing additional water resources. The 2015 update's focus was on developing approaches for how Metropolitan will advance their conservation and local resources development and maximize its storage reserves in the future (Metropolitan 2016).

San Diego County Water Authority

Urban Water Management Plan

SDCWA's 2015 UWMP was prepared in accordance with the Urban Water Management Planning Act, which requires urban water suppliers to update their UWMP and submit a complete version to the California Department of Water Resources every 5 years. The UWMP serves as SDCWA's long-term planning document to ensure a reliable water supply for the region.

SDCWA's 2015 UWMP provides actual water use data for the year 2015 and projections through 2040 (SDCWA 2016a). The SDCWA projected water demands are based on the SANDAG 2050 Regional Growth Forecast population projections for the SDCWA service area.

SDCWA anticipates that the population in its service area will increase from approximately 3.3 million in 2020 to 3.8 million in 2040, which would translate into water demands increasing from 661,722 AFY in 2020 to approximately 849,995 AFY in 2040 under normal weather conditions.

Regional Water Facilities Optimization and Master Plan Update

The 2013 Regional Water Facilities Optimization and Master Plan Update (2013 Master Plan) is intended to serve as the San Diego region's roadmap for new infrastructure development through SDCWA's 2035 planning horizon. The 2013 Master Plan shifts from the previous 2003 Master Plan's emphasis on new infrastructure development to the operation and maintenance of a robust water production and delivery system. The 2013 Master Plan incorporates the latest supply and demand projections from the 2010 UWMP and places a greater emphasis on local supply development and conservation. Additionally, the 2013 Master Plan evaluates the emergence of new energy management and renewable energy opportunities and investigates the need to safeguard the regional aqueduct system from potential vulnerabilities and natural hazards (SDCWA 2014).

Water Shortage and Drought Response Plan

The Water Shortage and Drought Response Plan (2012) addresses the uncertainty associated with maintaining and developing local and imported water supplies by providing a way to allocate water when supplies fall short of demand and avoiding rationing through supply enhancement. The plan also contains a strategy to communicate with SDCWA's stakeholders regarding water supplies and provides guidance to SDCWA and its member agencies to plan for water supply reliability within the San Diego region. The plan contains a drought response matrix that identifies potential actions that SDCWA can take to avoid an allocation of water supplies to the member agencies. When supply enhancement options have been exhausted, the plan also provides a methodology for allocation of supplies among member agencies in a fair and equitable manner (SDCWA 2012).

City of San Diego

Urban Water Management Plan

The City's 2015 UWMP, adopted in 2016, is the most recent iteration of the UWMP and provides actual water use data for the year 2015 and projections through 2040 (City of San Diego 2016). The City's 2015 UWMP describes historic and project water supply and demand scenarios, water supply reliability, water usage trends, current and planned facilities to support demand, current and planned demand management programs, water shortage contingency plans, water recycling efforts, groundwater use, and alternative sources of water that the City is considering. The City's water conservation efforts are an important component of the City's overall water supply strategy.

The City anticipates that its population will increase to over 1.67 million residents by 2035, which would translate into water demands increasing to approximately 273,748 AFY in 2035 under normal weather conditions. These projections assume the City continues with an aggressive water conservation program. SDCWA is planning to supply the City with 234,398 AF by 2035 (City of San Diego 2016).

Long-Range Water Resources Plan

The City used an integrated water resources planning approach in developing its 2012 Long-Range Water Resources Plan (City of San Diego 2013). Integrated water resources planning is a process by which demand-side and supply-side options are viewed together in order to meet multiple objectives, such as reliability, cost, water quality, environmental protection, and implementation risks. This process also addresses uncertainties such as droughts, climate change, and regulatory change.

Assuming ongoing drought conditions and climate change impacts through year 2035, if the City's status quo of heavy dependence on imported water were continued without implementation of the 2012 Long-Range Water Resources Plan, reliance on imported water supplies would be approximately 83% and potential shortages would approach approximately 32% of projected water demand. With the implementation of the Long-Range Water Resources Plan strategy, reliance on imported water would be reduced to 50% under drought and climate change conditions, and there would be no anticipated water shortages (City of San Diego 2016).

5.18 RECREATION

5.18.1 INTRODUCTION

The following discussion describes the environmental setting and regulatory framework related to recreation for the North City Project. Specifically, this section identifies and describes the existing recreational facilities and opportunities in the Project area, both at and near Project component locations.

The information provided in this section is based on a review of the City of San Diego (City) General Plan Recreation Element, the City's Park and Recreation website (https://www.sandiego.gov/park-and-recreation), data from the San Diego Geographic Information Source (SanGIS) database (SanGIS 2013), the Google Earth geographical information program, City of Santee General Plan, City of Santee Recreation Services Division website (http://www.ci.santee.ca.us/ Index.aspx?page=426), and the County of San Diego Parks and Recreation website (http://www.sandiegocounty.gov/parks/). Further, for local area fishing facilities including Lake Miramar and San Vicente Reservoir, weekly fish reports are summarized to characterize use of facilities and the Lake Miramar Creel Report (2013-2014) prepared by the California Department of Fish and Wildlife (CDFW) was reviewed and summarized where determined to be appropriate.

5.18.2 ENVIRONMENTAL SETTING

The North City Project includes a variety of facilities located throughout the corporate boundaries of the City and proposed pipelines that would traverse a number of local jurisdictions, including the cities of San Diego and Santee, and the community of Lakeside in unincorporated San Diego County.

The City of San Diego Park and Recreation Department is responsible for the management of over 42,000 acres of developed and undeveloped park land, joint use, and open space that offer a diverse range of recreational opportunities (City of San Diego 2017a). The City's parks, beaches, open space, trails, lakes, reservoirs, and recreation centers annually serve millions of residents and visitors and play an important role in the physical, mental, social, and environmental health of the City and its residents.

Santee has eight public parks that are distributed throughout the city and provide a variety of recreational facilities and opportunities including athletic fields, open space, playgrounds and picnic areas, and aquatic programs for residents and the public (City of Santee 2017). Santee's park system and local recreational opportunities are augmented by the 107-acre Walker Preserve (owned by Santee), the Santee Lakes Recreation Preserve, Sycamore Canyon Open Space Preserve and Goodan Ranch, and Mission Trails Regional Park. While the majority of Mission Trails Regional Park is located within the City of San Diego's boundary, a small section of the park is within the Santee city limits and the East Fortuna Staging Area is (located at the intersection of State Route 52 (SR-52) and Mast Boulevard) is located in close proximity to the western city limits.

In addition to local and county parks, trails, a County preserve, and reservoirs encompass the recreational opportunities available in the unincorporated County of San Diego community of Lakeside. While surrounded by unincorporated County lands, San Vicente Reservoir is owned by the City of San Diego.

Parks and recreational facilities within 0.5 mile of Project components are identified on Figures 5.18-1A through 5.18-1D.

5.18.2.1 Components Common to Project Alternatives

Morena Pump Station

The Morena Pump Station site is bounded by Sherman Street and Custer Street and is located in southwestern area of Linda Vista. While the Morena Pump Station site located in an urban and industrial setting, recreational facilities and open space are located nearby. The nearest recreational facilities include the San Diego River Bike Path (located 0.20 mile south), Mission Bay Park (approximately 0.3 mile to the west (and west of I-5)), Presidio Park (approximately 0.3 mile to the southeast), Sefton Field (approximately 0.4 mile to the southeast), and Silver Terrace Park (approximately 0.4 mile to the east). In addition, the San Diego River is located approximately 230 feet south of the Morena Pump Station site (south of Friars Road) and this segment of the river and San Diego River Park is known as the Mission Valley Preserve.

San Diego River Bike Path

Located along the south bank of the San Diego River, the Estuary Section of the San Diego River Bike Path is paved, approximately 10-foot-wide, and occasionally striped path that runs from Sefton Field west to Dog Beach (i.e., in Ocean Beach).

Cyclists and other trail-based recreationists on the Estuary Section of the San Diego River Bike Path are physically buffered from the Morena Pump Station site by the San Diego River and Friars Road.

Mission Bay Park

Consisting of over 4,600 acre of land and water and 27 miles of shoreline, Mission Bay Park is the largest aquatic park of its kind in the country (City of San Diego 2017b). Mission Bay Park offers boat docks and launching facilities, sailboat and motor rentals, biking and walking paths, unprogrammed turf area, basketball courts, picnic facilities, and playgrounds. The City of San Diego identifies 15 individual park facilities and permit sites that include De Anza Cove in the northeast, Hospitality Point in the southwest, Sail Bay in the northwest, and Rose Marie Starns South Shores Park in the southeast (City of San Diego 2017c).

Mission Bay Park recreationists are physically buffered from the Morena Pump Station site by I-5 and intervening development located east of I-5 and north of Friars Road.

Presidio Park

Located in the Old Town Community Plan area and on the site of San Diego's original Spanish presidio and mission, Presidio Park (approximately 50 acres). The approximately 50-acre park offers both educational and recreational opportunities as the Junipero Serra Museum and more than 2 miles of trails, a recreation center, basketball courts, and picnic tables are located within the park boundaries (City of San Diego 2017d). Presidio Hills Golf Course is adjacent to Presidio Park and the public, par three, 18-hole golf course features a driving range and putting green.

Presidio Park recreationists (and Presidio Hills Golf Course recreationists) are physically buffered from the Morena Pump Station site by I-8, the San Diego River, and Friars Road.

Sefton Field

Located at 2508 Hotel Circle Place, Sefton Field consists of two Little League ("Majors") fields, two t-ball fields, and a Seniors/Juniors baseball field. Sefton Field is used by Presidio Little League Baseball generally during the spring and fall seasons.

Sefton Field recreationists (and spectators) are physically buffered from the Morena Pump Station site by the San Diego River and Friars Road. The approximate 0.85-acre park features a turf area, limited picnic facilities, and a children's playground.

Silver Terrace Park

Silver Terrace Mini-Park is located north of Friars Road, west of Colusa Street, and south of the SDG&E's Old Town substation. The approximate 0.85-acre park features a turf area, limited picnic facilities, and a children's playground.

Silver Terrace Mini-Park recreationists are physically buffered from the Morena Pump Station site by intervening development and roads including Morena Boulevard.

Mission Valley Preserve

Consisting primarily of passive open space, the Mission Valley Preserve is traversed by segments of the Estuary Section of the San Diego River Bike Path (see discussion above) and a system of unimproved, multi-use trails that link Sefton Field with the Mission Valley YMCA (one trail parallels the San Diego River Bike Path for approximately 0.5-mile). Also, the green line of the MTS Trolley spans the Mission Valley Preserve between I-8 and Friars Road (west of Morena Boulevard) and from Friars Road to the northern boundary of Sefton Field (east of Morena Boulevard) (City of San Diego 2016a).

The San Diego River and Friars Road physically buffer trail-based recreationists at the Mission Valley Preserve from the Morena Pump Station site.

Morena Wastewater Forcemain and Brine/Centrate Line

The Morena Wastewater Forcemain and Brine/Centrate (Morena Pipelines) Line primarily travel along paved roadways between the Morena Pump Station in Linda Vista and the North City Water Reclamation Plant (NCWRP) in the University Community Plan area. In addition to the recreational facilities discussed above for the Morena Pump Station, the nearest recreational facilities to the Morena Pipelines alignment include Tecolote Community Park (approximately 0.27 mile to the west near Sea World Drive crossing) in the Linda Vista Community Plan area. In the Clairemont Mesa Community Plan area, nearby recreational facilities include South Clairemont Community Park (3577 Clairemont Drive; adjacent to alignment along Clairemont Drive), Tecolote Canyon Natural Open Space Park (approximately 0.10 mile east near Balboa Avenue crossing), North Clairemont Community Park (approximately 0.12 mile south near Genesee Avenue crossing), Marian Bear Memorial Park (adjacent to alignment and Genesee Avenue south of SR-52). In the University Community Plan area, Rose Canyon Open Space Park (adjacent to alignment at Rose Canyon crossing) in the only park or recreational facility located within 1,000 feet of the forcemain and brine/centrate line alignment.

Tecolote Community Park

Tecolote Community Park features five baseball/softball fields, a recreation center, turf areas, basketball courts, a children's playground, walking paths, and limited picnic tables. In addition, the Tecolote Nature Center (technically a component of the Tecolote Canyon Natural Open Space Park) is located adjacent to the park boundaries at the northern extent of Tecolote Road.

Intervening development and roads physically buffer trail-based recreationists at Tecolote Community Park from the Morena Wastewater Forcemain and Brine/Centrate Line alignment in Morena Boulevard.

South Clairemont Community Park

South Clairemont Community Park is located adjacent south of Marston Middle School and north of the Clairemont Pool and the Mission Valley YMCA Krause Family Bike/Skate Park. In addition to a recreation center, South Clairemont Community Park features walking paths, turf areas, a gazebo/small picnic area, tennis court and, basketball court.

Access to the South Clairemont Community Park parking lot is provided off Clairemont Drive and as such, the park is located adjacent to the Morena Pipeline alignment. The park is also accessible via Waco Street, which parallels Clairemont Drive and the park's eastern boundary.

Tecolote Canyon Natural Open Space Park

Comprised primarily of undeveloped canyon lands stretching from Linda Vista Road to the south, Mesa College to the east, and Clairemont Mesa Boulevard to the north, Tecolote Canyon Natural Open Space Park features numerous trailheads that originate at local area parks and provide access to approximately 6.5 miles of multi-use trails (City of San Diego 2017e).

The closest trailhead to the Morena Pipeline alignment is situated at North Clairemont Community Park (City of San Diego 2017f). At its closest point, the Morena Pipeline alignment is located within 340 feet of Tecolote Canyon Natural Open Space Park however, trail-based recreationist are physically buffered from the Clairemont Drive alignment by residences and sloping canyon terrain.

North Clairemont Community Park

Similar to the South Clairemont Community Park, North Clairemont Community Park features a recreation center; multi-purpose field, outdoor basketball and tennis courts, and a children's play area. In addition, a gymnasium for basketball, soccer, volleyball, and other recreational pursuits is available at North Clairemont Community Park (City of San Diego 2017g).

Intervening development and roads physically buffer trail-based recreationists at North Clairemont Community Park from the Morena Pipeline alignment in Clairemont Mesa Boulevard.

Marian Bear Memorial Park

The Morena Pipeline alignment is located adjacent to Marian Bear Memorial Park as Genesee Avenue approaches SR-52 from the south. The open space park is comprised of undeveloped San Clemente Canyon bottom lands that parallel SR-52 and run west from I-805 to I-5. Multiple trailheads are provided from the south (i.e., at Limerick Avenue, Lehrer Drive, Cobb Drive, and Biltmore Street), and graveled staging/parking areas are located off Regents Road and Genesee Avenue (restroom facilities are provided at the Genesee Avenue staging/parking area). Park trails provide a connection to Rose Canyon Open Space hiking trails and Stadley Community Park in the University Community Plan area (City of San Diego 2017h).

Rose Canyon Open Space Park

The Morena Pipeline alignment is located adjacent to Rose Canyon Open Space Park as Genesee Avenue traverse Rose Canyon and spans existing railroad track. The open space park is comprised of undeveloped canyon bottom lands that that run west from I-805 to I-5 and parallel I-5 south to SR-52. A small staging area is available west of Genesee Avenue near University City High School (the parking area is only accessible via southbound Genesee Avenue) but parking is available at the high school when school is not in session (City of San Diego 2017i).

North City Water Reclamation Plant Expansion

The proposed NCWRP Expansion, North City Influent Pump Station, and North City Renewable Energy Facility would occur at the existing NCWRP, a City of San Diego water reclamation plant facility located south of the proposed North City Pure Water Facility (NCPWF) site and Eastgate Mall.

There are no parks or recreational facilities located within 1,000 feet of the NCWRP. The nearest recreational facility, Nobel Athletic Area, is located 0.50-mile southwest of the NCWRP. The athletic area is comprised of 30 acres including two softball fields, children's play area, an off-leash dog park, two soccer fields, a multipurpose fields, shaded picnic tables, barbeque pits, outdoor basketball courts, and walking paths (City of San Diego 2017j). In addition, designated open space (i.e., Carroll Canyon Open Space) is located 0.60-mile northeast of the NCWRP. Per the Carroll Canyon Master Plan, there are no designated trails or trailheads in the designated open space/canyon terrain located west of Camino Santa Fe (City of San Diego 1994) and the area is bound by railroad track to the south and industrial warehouse and office development to the north and east.

I-5, Miramar Road, and intervening development physically buffer recreationists at the Nobel Athletic Area from the NCWRP. While the Carroll Canyon Open Space does not offer developed recreational amenities, dispersed recreation that may occur there is physically buffered from the NCWRP site (and NCPWF site) by intervening development and canyon terrain.

North City Pure Water Facility

The NCPWF site is located on an undeveloped and disturbed triangular-shaped parcel located north of the existing NCWRP. The Nobel Athletic Area (see discussion above under North City Water Reclamation Plant Expansion) is the closest park to the NCPWF however, designated open space is located within 0.60-mile to the east (i.e., Carrol Canyon Open Space), and 0.70-mile to the northwest (i.e., Campus Point Open Space). Please refer to the North City Water Reclamation Plant Expansion discussion above for a description of designated open space in Carroll Canyon. Based on aerial imagery, the Campus Point Open Space area features a limited number of dirt trails that are accessible via informal trailheads located off Campus Point Drive and Eastgate Mall.

North City Pure Water Facility Influent Pump Station and Conveyance

The NCPWF Influent Pump Station would be constructed at the NCWRP. Please refer to North City Water Reclamation Plant Expansion above, for a discussion of parks and recreational facilities located near the NCPWF Influent Pump Station.

North City Pure Water Pump Station

The North City Pure Water Pump Station (North City Pump Station) site encompasses an approximate 0.7-acre site located adjacent to the southeastern corner of the

NCPWF site. Please refer to North City Pure Water Facility above, for a discussion of parks and recreational facilities located near the North City Pure Water Pump Station.

Landfill Gas Pipeline

The proposed underground Landfill Gas (LFG) Pipeline would primarily be located on Marine Corps Air Station (MCAS) Miramar land and would generally follow the existing disturbed City utility easement (recycled water line, centrate line, sludge line, landfill gas line, and fiber optic cable) that runs between the Miramar Landfill and NCWRP. As the landfill gas pipeline originates at the NCWRP, the parks and recreational facilities near the NCWRP Expansion would also be applicable to the landfill gas pipeline. See discussion above for the North City Water Reclamation Plant Expansion. In addition, designated open space in Rose Canyon is located within 0.75-mile of the landfill gas pipeline as measured from the pipeline alignment near the eastern terminus of Governor Drive. Please refer to the Rose Canyon Open Space Park discussion above under the Morena Wastewater Forcemain and Brine/Centrate Line heading.

I-5, Miramar Road, intervening development, and undeveloped MCAS Miramar lands physically buffer recreationists at the Nobel Athletic Area from the landfill gas pipeline alignment. I-5, intervening development (i.e., Miramar Wholesale Nursery), and undeveloped MCAS Miramar lands buffer trail–based recreationists on designated open space of Rose Canyon.

The NCCF LFG compressor station is located off Johnson Road in the City's Miramar Landfill lease area. In addition to the Miramar Landfill (located south of the NCCF LFG compressor station), MCAS Miramar lands are located to the north. There are no parks or public recreational facilities located within one mile of the NCCF LFG compressor station. The nearest park, University Garden Neighborhood Park, is located approximately 1.3 miles to the west (and west of I-805 and in the University Community Plan area) and offers a baseball field, large turf area, children's playground area, and limited picnic facilities.

Metro Biosolids Center Improvements

The Metro Biosolids Center is an existing regional biosolids treatment facility located on 39 acres adjacent to the Miramar landfill. The nearest parks and recreational facilities are located to the southwest and west of the Metro Biosolids Center, across from SR-52 and in the case of MacDowell Neighborhood Park, across from SR-52 and I-805. Located approximately 0.30-mile to the southwest of the Metro Biosolids

Center in the Kearny Mesa Community Plan area, the Hickman Field Athletic Area is a 44-acre complex that boasts space for 6 soccer fields, 10 baseball/softball fields for various age groups, and informal (i.e., unpaved) parking. MacDowell Neighborhood Park is located approximately 1.3 miles to the east of the Metro Biosolids Center and includes a walking path, turf area, children's play area and several picnic tables.

Recreationists (and spectators) at the Hickman Field Athletic Area are physically buffered from the Metro Biosolids Center by intervening development and SR-52. Intervening development, SR-52, and I-805 physically buffer recreationists at MacDowell Neighborhood Park from the Metro Biosolids Center.

5.18.2.2 Miramar Reservoir Alternative

North City Pure Water Pipeline and Dechlorination Facility

As proposed, the North City Pure Water Pipeline (North City Pipeline) alignment is primarily located within existing paved roadways and travels between the NCPWF – Miramar Reservoir (NCPWF-MR) and the Miramar Reservoir. The North City Pipeline alignment traverses MCAS Miramar and the City's University, Mira Mesa (primarily along Miramar Road), and Scripps Miramar Ranch communities. Through the City's University Community Plan area, the North City Pipeline alignment is located within 0.20-mile of designated open space in Carroll Canyon and in Miramar Road between Miramar Way and Keenan Street, the pipeline alignment is adjacent to the Miramar Memorial Golf Course (located on MCAS Miramar). No other parks or recreational facilities are located within 1,000 feet of the pipeline alignment through the Mira Mesa Community Plan area. Within the Scripps Miramar Ranch Community Plan area and along Hoyt Park Drive, the pipeline alignment is located within 1,000 feet of the designated open space that extends west from Hoyt Park. Lastly, the North City Pure Water Pipeline terminates at (and the subaqueous pipeline is located beneath the surface of) Miramar Reservoir. Lake View Park and Miramar Overlook Park are located east and west of Miramar Reservoir and both feature turf area, children's playgrounds, benches, restrooms, and covered picnic facilities.

Miramar Reservoir

Owned, operated, and maintained by the City of San Diego as a domestic drinking water supply, Miramar Reservoir offer diverse recreational opportunities including fishing, cycling, running, rollerblading, and picnicking (there are 18 barbeques and 48 picnic tables available) (City of San Diego 2017k). A paved, approximately 4.9-

mile long service road encircles the reservoir and is popular for walking, running, and cycling. While the majority of use is from runners, cyclists, and other forms of recreation besides fishing, Miramar Reservoir is also available for fishing (a permit is required for anglers and anglers 16 years or older must have a valid California Fishing License). Miramar Reservoir includes a concessions building from which recreationists can rent boats (private boats, kayaks and float tubes are also permitted on Miramar Reservoir) and purchase bait. Miramar Reservoir is open to fishing and private boats, kayaks and float tubes seven days a week from one-half hour before sunrise to sunset. Further, the gates are open from 5:30 a.m. to 8 p.m. during Daylight Savings Time and 5:30 a.m. to 6:30 p.m. when Daylight Savings Time is not in effect.

The reservoir has Florida-strain largemouth bass (*Micropterus salmoides floridanus*) (minimize size limit for bass is 12 inches), bluegill (*Lepomis macrochirus*), channel catfish (*Ictalurus punctatus*), and red ear sunfish (*Lepomis microlophus*) (City of San Diego 2017k). In addition, CDFW stocks the reservoir with rainbow trout (*Oncorhynchus mykiss*) in the 1- to 3.5-pound weight range during winter months (City of San Diego 2017l; CDFW 2016). Fish limits are five bass, five catfish and 25 bluegill in aggregate, with no limit of other species. In 2016, fish report detail that bass was the most regularly caught fish (nearly all reported catches (2,388 out of 2,389) included in the 2016 fish report were released) followed by Bluegill (222 reported catches), Channel Catfish (17 reported catches), and Redear Sunfish (3 reported catches) (City of San Diego 2017m). In addition, for the week ending April 9, 2017, 27 bass were caught and released and no other species of fish were reported caught (City of San Diego 2017n).

Angler, or "creel", surveys of Lake Miramar users were conducted by CDFW in 2013 and 2014. Along with population estimates and general fish surveys, creel surveys provide useful information on catch species and assist in fishery management decisions (CDFW 2014). According to the creel surveys, Miramar Reservoir experiences the most angling traffic during the spring season but the catch per unit effort (# fish caught/total angler hours) is highest during the fall season (CDFW 2014). As previously mentioned, the majority of fish caught at Miramar Reservoir are largemouth bass (and over 50% of all catches are in the 12-15 inch range) and the species consistently dominates the total catch during each season. The creel surveys demonstrate that anglers are very satisfied with their overall fishing experience (over 50% of anglers rated their overall experience as very good) and the majority of anglers rate both the number and size of fish caught as good (CDFW 2014). Among those responding to motive questions concerning their visit to

Miramar Reservoir, over 90% identified “enjoying the outdoors” as very important, and approximately 60% identified “to catch a fish” or “to be with friends and family” as very important. Nearly 50% of respondents identified “to catch a trophy fish” and/or “to reflect on past trip” as important and 60% identified “to develop fishing skills” as important (CDFW 2014).

The Dechlorination Facility site is located in an industrial office park area off the Meanley Drive cul-de-sac in the Scripps Miramar Ranch community. The large turf area located to the south of the Dechlorination Facility site comprises the Meanley Open Dog Park. In addition to dispersed parcels of designated open space the closest of which is located approximately 0.20-mile east of the Dechlorination Facility site, Hoyt Park and the Miramar Reservoir are located within 0.40-mile. Located at 10711 Canyon Lake Drive, offers a large turf area, picnic tables, and children’s play area. Recreational opportunities at Miramar Reservoir are described above for the North City Pure Water Pipeline.

Miramar Water Treatment Plant Improvements

The existing Miramar Water Treatment Plant is located in the Scripps Miramar Ranch community and operates along the southern shoreline of the reservoir. Parks and recreational facilities near the Miramar Water Treatment Plant (i.e., Miramar Reservoir, Lake View Park, and Miramar Overlook Park) are discussed above under North City Pure Water Pipeline and Dechlorination Facility.

5.18.2.3 San Vicente Reservoir Alternative

San Vicente Reservoir Pure Water Pipeline

The San Vicente Reservoir Pure Water Pipeline (San Vicente Pipeline) alignment is primarily located within existing paved roadways between the North City Pure Water Facility–San Vicente Reservoir (NCPWF-SVR) and the San Vicente Reservoir. The NCPWF-SVR is located on the same vacant 8.7-acre City-owned lot across Eastgate Mall to the north of the NCWRP as the NCPWF-MR. Similar to the NCPWF-MR, a pump station would also be located adjacent to the NCPWF-SVR. The alignment of the San Vicente Pipeline traverses MCAS Miramar, the City’s University, Kearney Mesa, Tierrasanta, East Elliott, and Navajo communities, the City of Santee, and the unincorporated County of San Diego community of Lakeside. The parks and recreational facilities located near the pipeline alignment as it traverses these communities are identified and described below.

Hickman Field Athletic Area

The western terminus of the San Vicente Pipeline is located in Copley Drive (near 5629 Copley Drive), approximately 400 feet north of the Hickman Athletic Field Area. Recreation amenities at the Hickman Athletic Field Area were previously discussed in Section 5.18.2.1 (see Metro Biosolids Center Improvements).

Tierrasanta Open Space

East of I-15 and west of Mission Trails Regional Park, undeveloped canyon lands in the Tierrasanta Community Plan area comprise the Tierrasanta Open Space network. Linear, unimproved trails are generally located on canyon bottoms and the nearest marked trailhead to the network via West Shepard Canyon is located immediately north of Clairemont Mesa Boulevard, approximately 530 feet east of Antigua Boulevard. Another trailhead to the open space network is located off Tierrasanta Boulevard, approximately 215 feet west of Rueda Drive. This trail provides access to North Rueda Canyon and the Canyon Trail.

Villa Monserate Neighborhood Park

No developed parks within Tierrasanta are located adjacent to the San Vicente Pipeline alignment. Located at 5728 Robusto Road, Villa Monserate Neighborhood Park is located approximately 0.25-mile north of the Clairemont Mesa Boulevard portion of the alignment. The neighborhood park features children's play areas, turf areas, and walking paths.

Recreationists at Villa Monserate Neighborhood Park are physically buffered from the San Vicente Pipeline alignment by intervening development and canyon terrain.

Roadrunner Neighborhood Park

Located immediately south of Farb Middle School, Roadrunner Park includes large rectangular turf area with two baseball/softball fields and six total backstops, a children's play area, picnic facilities, a southern turf area, and walking paths. Roadrunner Park is located approximately 0.20-mile southwest of the San Vicente Pipeline alignment at the La Cuenta Drive crossing.

Recreationists at Roadrunner Park are physically buffered from the San Vicente Pipeline alignment by intervening residential and commercial development and roads.

Rancho Mission Canyon Open Space

Undeveloped canyon lands located north of Waring Road and west of Navajo Road in the Navajo area encompass the Rancho Mission Canyon Open Space area. Trails generally line the bottom of canyons and are accessible via multiple trailheads, the closest of which is located at the eastern terminus of Larchwood Avenue, approximately 0.25-mile southeast of the Mission Gorge Road/Margerum Avenue intersection (City of San Diego 2017o). Walkers and runners are the primary users of the trail network. Through the Navajo community, the San Vicente Pipeline is located in Mission Gorge Road.

Trail-based recreationists at the Rancho Mission Canyon Open Space area are physically buffered from the San Vicente Pipeline alignment by intervening residential development and roads.

Rancho Mission Canyon Neighborhood Park

Located in the Navajo community at 6005 Larchwood Avenue, Rancho Mission Canyon Park is an approximately 5.5-acre facility featuring two turf areas lined by walking paths and featuring a parking lot. Trailheads to the Rancho Mission Canyon Open Space area are available at the northern and southern end of the park. Rancho Mission Canyon Park is located approximately 0.35-mile southeast of the San Vicente Pipeline alignment in Mission Gorge Road.

Trail-based recreationists at the Rancho Mission Canyon Open Space area are physically buffered from the San Vicente Pipeline alignment by intervening residential development and roads.

Mission Trails Regional Park

From Deerfield Street in Navajo northeast to Highridge Road in Santee (approximately 2.2 miles), Mission Gorge Road and the San Vicente Pipeline are located adjacent to Mission Trails Regional Park land. Encompassing 7,220 acres of natural and developed areas, Mission Trails Regional Park consists of rugged hills, valley, and open areas and is a popular destination for walking, hiking, trail running, mountain biking, equestrian use, camping (the 46-site Kumeyaay Campground is open for Friday and Saturday night camping), and rock climbing (Mission Trails Regional Park 2017a). The park also features a modern visitor and interpretive center where visitors can learn about the park's history, natural plant and animal activities, and the various activities and destinations available within the park (Mission Trails Regional Park Foundation 2017b).

Recreational opportunities accessible via Mission Gorge Road and the Father Junipero Sera Trail include BMX riding, hiking, rock climbing, and camping. Parking is provided off Mission Gorge Road at Deerfield Street, Father Junipero Serra Trail, and the Kumeyaay Lake Campground. Trails accessible via these parking areas include the Deerfield Loop, Visitor Center Loop, Oak Grove Loop, Climber's Loop, Canyon Trail, and the Kwaay Paay Peak Trail (City of San Diego 2017p).

Santee Lakes Recreation Preserve

Located off Carlton Oaks Drive and Fanita Parkway, the Santee Lakes Recreation Preserve is a 190-acre park and campground surrounding seven lakes filled with recycled water (Padre Dam Municipal Water District 2016). In addition to camping, recreation opportunities include fishing, picnicking, bird watching, boating, cycling, and running. Several children's play areas are also distributed throughout the recreation preserve. The lakes are stocked with catfish April to September and rainbow trout January through March and bass and bluegill are prevalent. The lakes are numbered 1 through 7 from south to the north and Lakes 1 through 5 are for day use fishing and Lakes 6 and 7 are for registered campers. No state fishing license is required at the Santee Lakes Recreational Preserve but a permit from the General Store is required (Padre Dam Municipal Water District 2017~~a~~).

Recreationist at Lake 1 (i.e., the southernmost lake and facility located closest to the San Vicente Pipeline alignment in Carlton Oaks Drive) are physically buffered from the pipeline alignment by intervening Padre Dam Municipal Water District facilities, parking lots, and City of Santee Fire Department Station #5 (located at 9130 Carlton Oaks Drive).

Mast Park (City of Santee)

Located at 9125 Carlton Hills Boulevard, Mast Park features a developed picnic area, barbeque grills, a picnic arbor, children's playground, basketball court, off-leash dog park, disc golf course, walking paths, and restrooms (City of Santee 2017a). In addition, natural habitat areas and an extensive trail system surround the park. The Mast Park parking lot is located off Carlton Hills Boulevard, approximately 0.10-mile south of Carlton Oaks Boulevard. The disc golf course portion of park (i.e., the easternmost area) is located as close as 240 feet from the San Vicente Pipeline alignment.

Recreationists at Mast Park are physically buffered from the pipeline alignment in Carlton Oaks Boulevard by intervening commercial and residential development.

Lakeside Baseball Park

The Lakeside Baseball Park is home to the Lakeside National Little League. Baseball park fields are located north of the San Diego River, approximately 0.15-mile south of Mast Boulevard, and west of Riverford Road. Marathon Parkway runs perpendicular to Mast Boulevard and provides access to the four, artificial turf field little league complex which also features batting cages, a children's playground, restrooms, concessions stand, and surface parking (Lakeside National Little League 2017). The fields host games for several divisions including t-ball, rookies, minors, and majors during the spring and summer regular season and fall ball season.

Recreationists (and spectators) at Lakeside Baseball Park are physically buffered from the pipeline alignment in Carlton Oaks Boulevard by intervening industrial warehouse development.

El Capitan Equestrian Facility

Situated on 4 acres at the intersection of Willow Road and Moreno Avenue, the El Capitan Equestrian Center offers boarding, training, and lessons. (El Capitan Equestrian Center 2017a). Site amenities at the privately owned and operated facility include two large arenas with night lighting for events, a round pen, 29 indoor barn stalls and a pasture (El Capitan Equestrian Center 2017b).

The San Vicente Pipeline is aligned in Moreno Avenue from north of Willow Road to the San Vicente Road driveway (approximately 2.15 miles).

Louis A. Stelzer County Park

Located at 11470 Wildcat Canyon Road in Lakeside, Louis A. Stelzer County Park consist of 310 acres of oak woodland and coastal sage scrub habitat with opportunities for bird watching, hiking, and picnicking. The park also contains playgrounds, a horseshoe pit, amphitheater, and barbeques (County of San Diego 2017a). The majority of parklands are located in V-shaped Wildcat Canyon and the easternmost portion of the park is located within 0.35-mile of the San Vicente Pipeline alignment in Moreno Avenue.

Recreationists at Louis A. Stelzer County Park are physically buffered from the pipeline alignment in Moreno Avenue by intervening rural residential development and equestrian facilities.

Oakoasis Preserve

Accessible via Wildcat Canyon Road and located within 0.25-mile of the southern shoreline of San Vicente Reservoir, Oakoasis Preserve boasts nearly 400 acres of chaparral, manzanita, and woodlands habitat (County of San Diego Parks and Recreation 2017b). The preserve features a 2.5-mile loop trail which affords trail-based recreationists sweeping views of surrounding mountains and valleys, and tent and cabin camping (cabin camping is available to youth groups only).

Recreationists at Oakoasis Preserve are physically buffered from the pipeline alignment (the in-reserve alternative and the tunnel alternative) by intervening mountainous terrain.

Berkeley Herring Preserve

The Berkeley Herring Preserve is a relatively small tract of designated open space situated west of San Vicente Reservoir and east~~ts~~ of SR-67. An SDG&E access road is aligned in a general northwestern-southeastern direction through the central portion of the preserve.

The San Vicente Reservoir's marina parking lot is located approximately 0.30-mile southeast of the preserve.

San Vicente Reservoir

In addition to providing fishing, general boating and kayaking, and water contact sport (i.e., water skiing, wakeboarding, and jet-skis) opportunities, marina facilities including a 900-foot, 6-lane launch ramp, a large parking lot, covered picnic facilities, restrooms, a bait shop and concessions store, and paved walking paths are provided at the west end of the San Vicente Reservoir. On Sundays, fishing, general boating and water contact sport are permitted at San Vicente Reservoir and on Thursdays, Fridays, Saturdays, and Mondays, fishing and general boating are permitted (water contact sport is not permitted). The reservoir is closed for recreational use on Tuesdays and Wednesdays. All persons age 8 and older entering reservoir property are required to pay daily use fees (anglers 16 years of age and older must have California state fishing license) and all access is provided on a first come first served basis (City of San Diego 2017q). Gates to the reservoir and boat launch area open 1.5 hours before sunrise. In September 2016, the reservoir reopened to recreationists after being closed for eight years during construction of the San Vicente Dam Raise Project.

Regarding opportunities for fishing, the reservoir is stocked with Florida-strain largemouth bass, crappie, bluegill, channel catfish, blue catfish, green sunfish, and carp. Minimum size limit for bass is 12 inches and 10 inches for crappie and fish limits are five bass, five catfish, 25 crappie and bluegill in aggregate, with no limit on other species. As with Miramar Reservoir, CDFW occasionally stocks San Vicente Reservoir with rainbow trout during winter months. A recent creel survey for San Vicente Reservoir was not located during the preparation of this section in April 2017 and given the duration of closure, it's highly unlikely the CDFW has prepared a recent survey for the reservoir. However, on Opening Day (i.e., September 22), 346 angler were checked, 19 bass were kept, and 4,173 bass were caught and released (San Diego Union Tribune 2016).

Mission Trails Booster Station

The Mission Trails Booster Station would be on an approximate 1.2-acre site located along Mission Gorge Road and north of a small commercial center. Nearby recreational facilities, include Rancho Mission Canyon Open Space, Rancho Mission Canyon Neighborhood Park, and Mission Trails Regional Park. For a description of the recreational opportunities available at these facilities, please refer to the San Vicente Reservoir Pure Water Pipeline discussion above.

5.18.3 REGULATORY FRAMEWORK

Federal

There are no federal regulations pertaining to recreation that are particularly applicable to the proposed project.

State

There are no state regulations pertaining to recreation that are particularly applicable to the proposed project.

Local

City of San Diego General Plan

The City's General Plan was unanimously adopted by the City Council on March 10, 2008, and was subsequently amended in 2010 and again in 2012. The General Plan consists of the following elements: Land Use Community Planning, Mobility, Urban Design, Economic Prosperity, Public Facilities, Services & Safety, Recreation, Conservation, Noise, and Historic Preservation. A discussion of the Recreation Element is provided below.

Recreation Element. The purpose of the Recreation Element is to preserve, protect, acquire, develop, operate, maintain, and enhance public recreation opportunities and facilities throughout the City for all users (City of San Diego 2015a). Three use categories of parks and recreation for residents and visitors are provided by the City of San Diego: population-based, resource-based, and open space. Population-based parks include Neighborhood and Community parks, are located in close proximity to residential development, and are intended to serve the daily needs of residents. Resource-based parks are located at, or centered on, notable natural or man-made features (beaches, canyons, habitat systems, lakes, historic sites, and cultural facilities) and are intended to serve the Citywide population and visitors. In addition to Mission Bay Park, Mission Trails Regional Park and Balboa Park are classified by the City as resource-based parks. Open space lands are City-owned lands located throughout the City, consisting of canyons, mesas, and other natural landforms, and are intended to preserve and protect native plants and animals, while providing public access and enjoyment by the use of hiking, biking, and equestrian trails.

Relevant policies of the Recreation Element include the following:

- RE-A.8. Provide population-based parks at a minimum ratio of 2.8 useable acres per 1,000.
- RE-C.1. Protect existing parklands and open space from unauthorized encroachment by adjacent development through appropriate enforcement measures.
- RE-F.1. Protect and enhance parklands from adjacent incompatible uses and encroachments.

University Community Plan

According to the University Community Plan, dominant existing uses include UCSD, University Towne Center, the research and corporate headquarters, and medical centers in the northern portion of the planning area and the major parkland resources of the Torrey Pines, Rose Canyon and San Clemente Canyon areas (City of San Diego 1986). According to the community plan's Open Space and Recreation Element, the open space in the University planning area serves primarily three functions: (1) the preservation of topographic or biotic resources and habitats for resident and migratory birds; (2) the provision of outlets for active or passive recreation; and (3)the protection of public health and safety (City of San Diego 2016b).

A relevant proposal of the University Community Plan is listed below. The University Community Plan does not contain policies and therefore, none are listed below.

- 7. San Clemente Canyon - Marian Bear Memorial Park should be preserved and maintained by the City of San Diego as a regional, resource-based park. The canyon and its riparian vegetation, including the mature oak and sycamore trees, should be preserved in their natural state.

Mira Mesa Community Plan

The Mira Mesa community is approximately 10,500 acres in area and is located in the northcentral portion of the City of San Diego (City of San Diego 2011a).

The following goal of the Mira Mesa Community Plan is relevant to the proposed project:

- Preservation of areas notable for scenic, natural or cultural attractions as resource-based parks.

The policies of the Mira Mesa Community Plan are not particularly relevant to the proposed project.

Clairemont Mesa Community Plan

Clairemont Mesa is an urbanized residential community with several shopping centers, parks and recreational facilities and educational opportunities. Development with the community is guided by the Clairemont Mesa Community Plan and applicable objectives, policies, and recommendations of the Open Space and Environmental Resources Element (City of San Diego 2015b) include:

- Objective 1: Preserve and enhance Marian Bear Memorial Park, Tecolote Canyon Natural Park, Stevenson Canyon and the finger canyons to provide visual open space and community identity.
- Objective 4: Protect the resource value of canyon areas and plant and animal wildlife within the community.
- Recommendation 6. Design: Any development proposed within or adjacent to the designated open space areas should be subject to development standards

of the Hillside Review Overlay Zone and Design and Development Guidelines and the Tecolote Canyon Rim Development Guidelines in order to protect the natural resources and preserve community identity.

- All public improvements such as roads, drainage channels and utility service and maintenance facilities should be developed in a manner that minimizes the visual and physical impacts of such improvements on the open space system.

None of the objectives or recommendations of the Population-Based Parks and Recreation Element are particularly relevant to the proposed project.

Linda Vista Community Plan

In Linda Vista, local parks serve the immediate population, while Tecolote Canyon Natural Park provide services to surrounding communities as well. (City of San Diego 2011b). There are three community parks (Kearny Mesa, Linda Vista, and Tecolote) and two neighborhood parks (Kelly Street and Mission Heights) within the Linda Vista community. Tecolote Canyon Natural Park is a resource-based park which forms the northwestern edge of the community. The park contains a golf course and passive recreational amenities.

Objectives and recommendations of the Open Space Element and the Community Facilities, Parks, and Services are not particularly relevant to the proposed project.

Kearny Mesa Community Plan

The community of Kearny Mesa is a major industrial and commercial center occupying a central location in the City of San Diego and the community meets employment, business, and retail needs for a large portion of the City (City of San Diego 2011c). Kearny Mesa is incised by two major canyon systems. The most prominent canyon, Murphy Canyon, parallels I-15 along the entire eastern boundary of the Plan area. The second canyon is a tributary of the San Clemente Canyon.

Applicable goals and policies of the Kearney Mesa Community Plan Conservation and Open Space Element are listed below:

- Policy 1: In order to conserve natural resources, prevent incompatible uses from locating on constrained land.

- Recommendation 1: Provide open areas within developments that provide visual relief and temporary respite from the work place.

Scripps Miramar Ranch Community Plan

Scripps Miramar Ranch is located on the north central part of metropolitan San Diego and the planning area contains approximately 4,365 acres of land (City of San Diego 2011d). The predominant land use in the planning area is residential although business park uses are concentrated in a southwestern portion of the community.

Relevant objectives of the Parks, Recreation, and Open Space Element include the following:

- Maximize preservation of existing mature eucalyptus groves, natural slopes and major canyons through careful siting of roadways and structures.
- Support creation of a regional park on Miramar Reservoir in accordance with the 1975 City Lakes Recreation Development Plan and the desires of local residents. Guarantee vehicular and pedestrian access to Scripps Ranch residents.

Tierrasanta Community Plan

The Tierrasanta community is centrally located within the greater San Diego metropolitan area, and with the exception of the Open Space portion of the plan area in Mission Trails Regional Park, the predominant land use in Tierrasanta is residential (City of San Diego 2011e).

None of the objectives or recommendations of the Tierrasanta Community Plan are particularly relevant to the proposed project.

Navajo Community Plan

The park system in the Navajo Community includes population-based parks, resource-based parks and open space lands (City of San Diego 2015c). Concerning Rancho Mission Neighborhood Park, the community plan states that the park encompasses an 18.84 acre site and features 9.42 useable acres including passive lawn areas, walkways through natural open space, picnic areas and on-site parking. Concerning Rancho Mission Canyon Open Space, the community plan states that approximately 21,900 lineal feet of trails are located throughout the open space network accessible from Conestoga Street, Margerum Street, Hemingway Street, Cabaret Street and Navajo Street. In addition, trail amenities include trail kiosk, trail makers, interpretive signs, native landscaping and benches (City of San Diego 1982b).

Applicable objectives of the Navajo Community Plan are listed below:

- Protect and enhance the integrity and quality of existing parks, open space and recreational programs in the Navajo Community.

City of Santee General Plan

Adopted in 2003, the City of Santee General Plan 2020 contains nine elements including a Recreation Element and a Trails Element. The City's Parks and Recreation Master Plan sets the City's goal for parks at 10 acres of parkland for every 1,000 people in the City. Of this 10 acres, five acres is developed public parkland and the remaining five acres would be comprised of other recreational facilities, such as the school facilities and the Mission Trails and Goodan Ranch Regional Parks. Through the City of Santee, the San Vicente Pipeline would be located within existing roadways including Carlton Oaks Drive and Mast Boulevard. No other Project components are proposed in Santee and because parks and recreational facilities are not located adjacent to the San Vicente Pipeline alignment, goals, objectives, and policies of the Recreation and Trails Elements are not applicable.

County of San Diego General Plan

Conservation and Open Space Element. The primary focus of the Conservation and Open Space Element Parks and Recreation Section is to identify how the County intends to meet the public need for parks and recreation opportunities and open space. Applicable goals and policies of the Conservation and Open Space Element Parks and Recreation Section (County of San Diego 2011a) include the following:

- Policy COS-23.1 Public Access. Provide public access to natural and cultural (where allowed) resources through effective planning that conserves the County's native wildlife, enhances and restores a continuous network of connected natural habitat and protects water resources.
- Policy COS-24.1 Park and Recreation Contributions. Require development to provide fair-share contributions toward parks and recreation facilities and trails consistent with local, state, and federal law.

Lakeside Community Plan

Lakeside is a rural residential community that has experienced pressure to urbanize and accommodate suburban residential developments (County of San Diego 2011b). Relevant policies of the Lakeside Community Plan are listed below:

- Policy 4: Minimize conflicts between trail users and adjacent properties.

County of San Diego Community Trails Master Plan – Lakeside Community Trails and Pathways Plan

Adopted in January 2005, the County Trails Program consists of a system of interconnected regional and community trails and pathways intended to address the public need for recreation and transportation and provide health and quality of life benefits associated with hiking, mountain biking, and horseback riding (County of San Diego 2005). Several proposed community trails and community pathway are identified along the San Vicente Pipeline alignment through the community of Lakeside. More specifically, community trails and community pathway are proposed along and perpendicular Riverside Drive, Lakeside Avenue (i.e., Lakeside Avenue Pathway), Willow Road (i.e., Willow Road Pathway), and Moreno Avenue (i.e., Moreno Avenue Pathway). However, as these facilities have not yet been established and would essentially parallel the San Vicente Pipeline alignment once established, conflicts between construction activities and operation of the pipeline and trail-based recreationists are not anticipated.

Regional Trails Plan

According to the Trails Master Plan, regional trails are significant on a countywide, state, or national level as they have characteristics and conditions that serve a regional function by covering long linear distances, transcending community and/or municipal borders, and/or providing important connections to existing parks and open space preserves (County of San Diego 2005). Of the nine trails in the regional trails plan, two (San Diego River Park Regional Trail and the Trans-County Trail) are located in the project area or would be traversed Project components.

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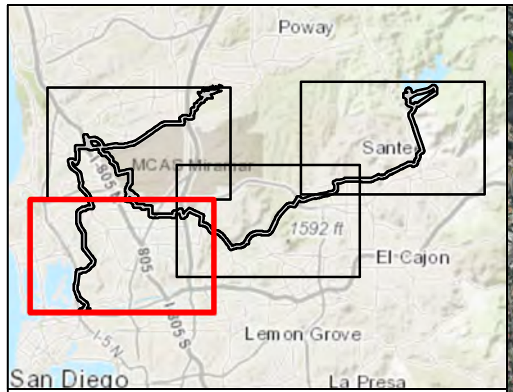


- Project Study Area 0.5-Mile Buffer
- Municipal Boundaries
- MCAS Miramar

Project Pipelines

- San Vicente Pure Water Pipeline
- Morena Wastewater Forcemain and Brine/Centrate Line
- Repurposed Existing 36" Pipeline

Project Facilities

- Metro Biosolids Center Improvements
- Morena Pump Station
- City of San Diego Parks and Recreation Facilities

Community Park

1 - Presidio Park and Recreation
3 - Tecolote Park and Recreation
5 - Clairemont Park and Recreation
6 - N Clairemont Park and Recreation
8 - Standley Park and Recreation

Regional Park

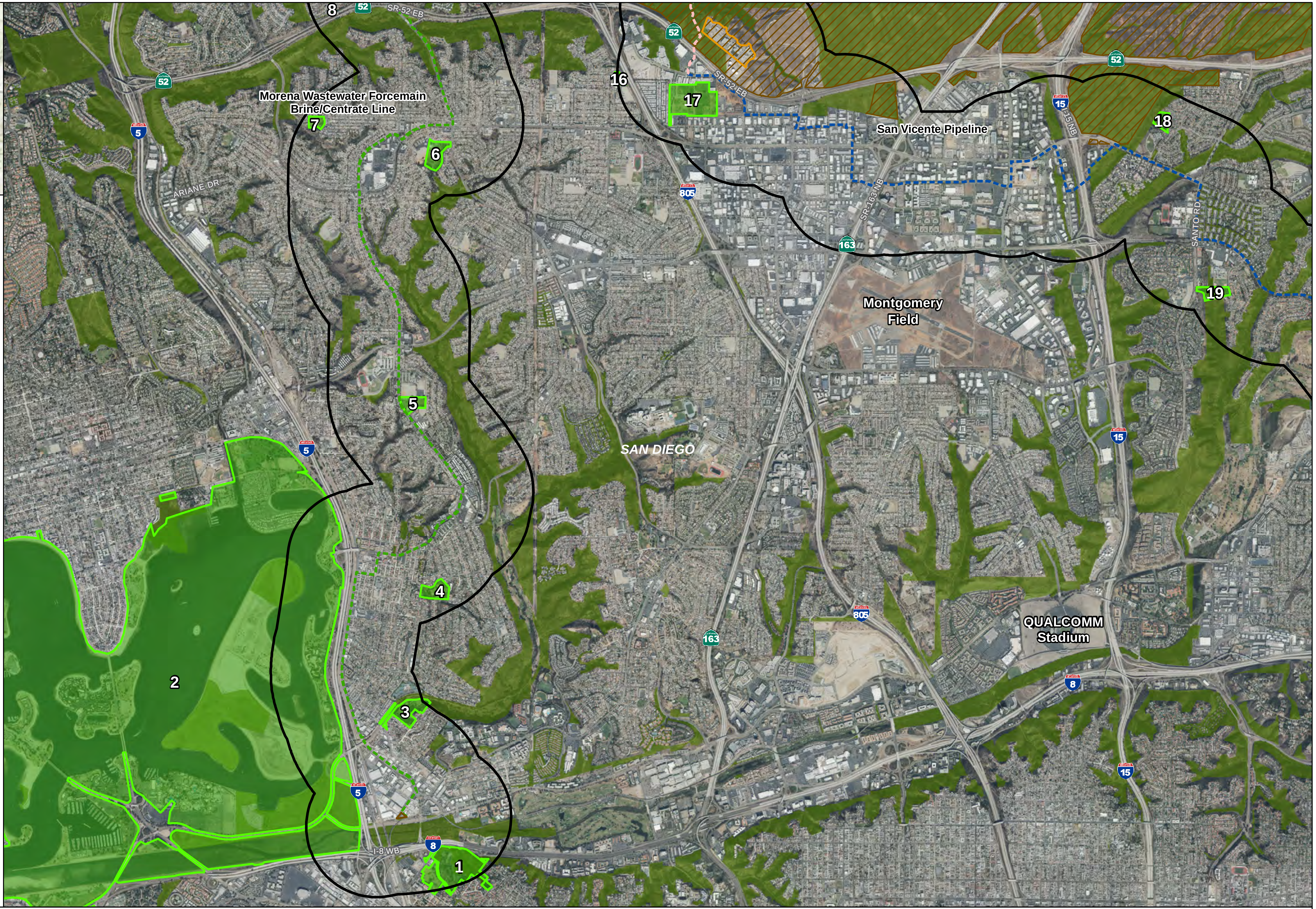
2 - Mission Bay Park
17 - Hickman Field Park

Neighborhood Park

4 - Western Hills Park
7 - Gershwin Park
16 - MacDowell Park
18 - Villa Monserate Park
19 - Roadrunner Park

- Landscape Open Space/Park/Preserve

0 0.5 1 Miles



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SOURCE: SanGIS 2017; SANDAG 2014, 2016

FIGURE 5.18-1A

Parks and Recreation Facilities

Pure Water San Diego Program North City Project EIR/EIS

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SOURCE: SanGIS 2017; SANDAG 2014, 2016

FIGURE 5.18-1B

Parks and Recreation Facilities

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Pure Water San Diego Program North City Project EIR/EIS

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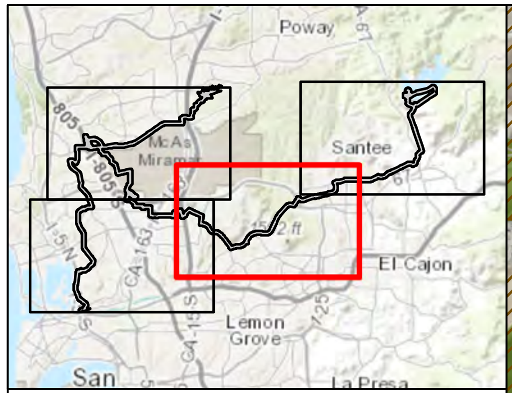


- Project Study Area 0.5-Mile Buffer
- Municipal Boundaries
- MCAS Miramar

Project Pipelines

- San Vicente Pure Water Pipeline

Project Facilities

- Mission Trails Booster Station
- City of San Diego Parks and Recreation Facilities

Neighborhood Park

18 - Villa Monserate Park
19 - Roadrunner Park
20 - Rho Mission Canyon Park
21 - Tuxedo Park

- County of San Diego Parks and Recreation Facilities

Regional Park

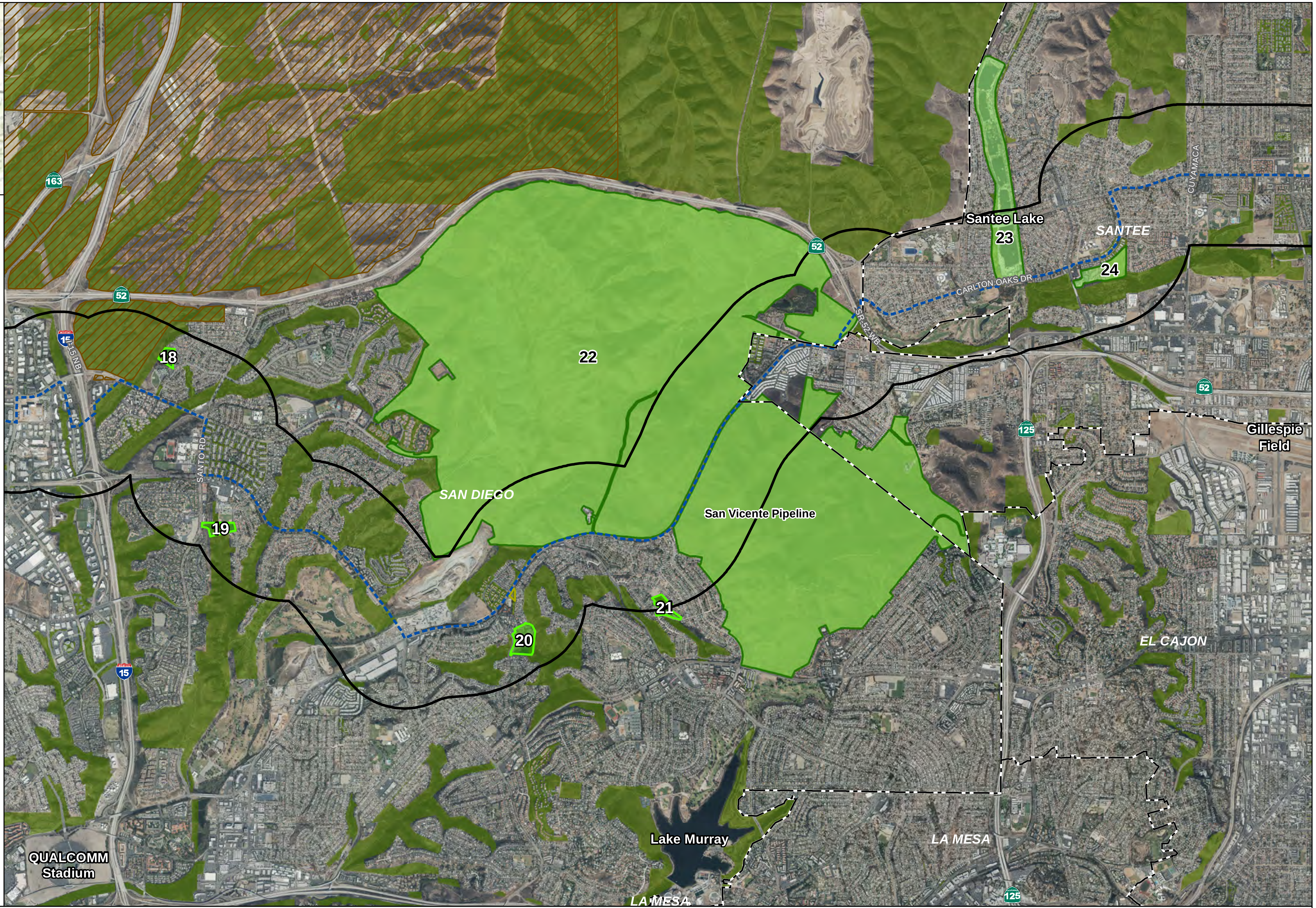
22 - Mission Trails Regional Park
24 - Mast Park

Preserve

23 - Santee Lakes Recreation Preserve

- Landscape Open Space/Park/Preserve

0 0.5 1 Miles



SOURCE: SanGIS 2017; SANDAG 2014, 2016

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FIGURE 5.18-1C

Parks and Recreation Facilities

Pure Water San Diego Program North City Project EIR/EIS

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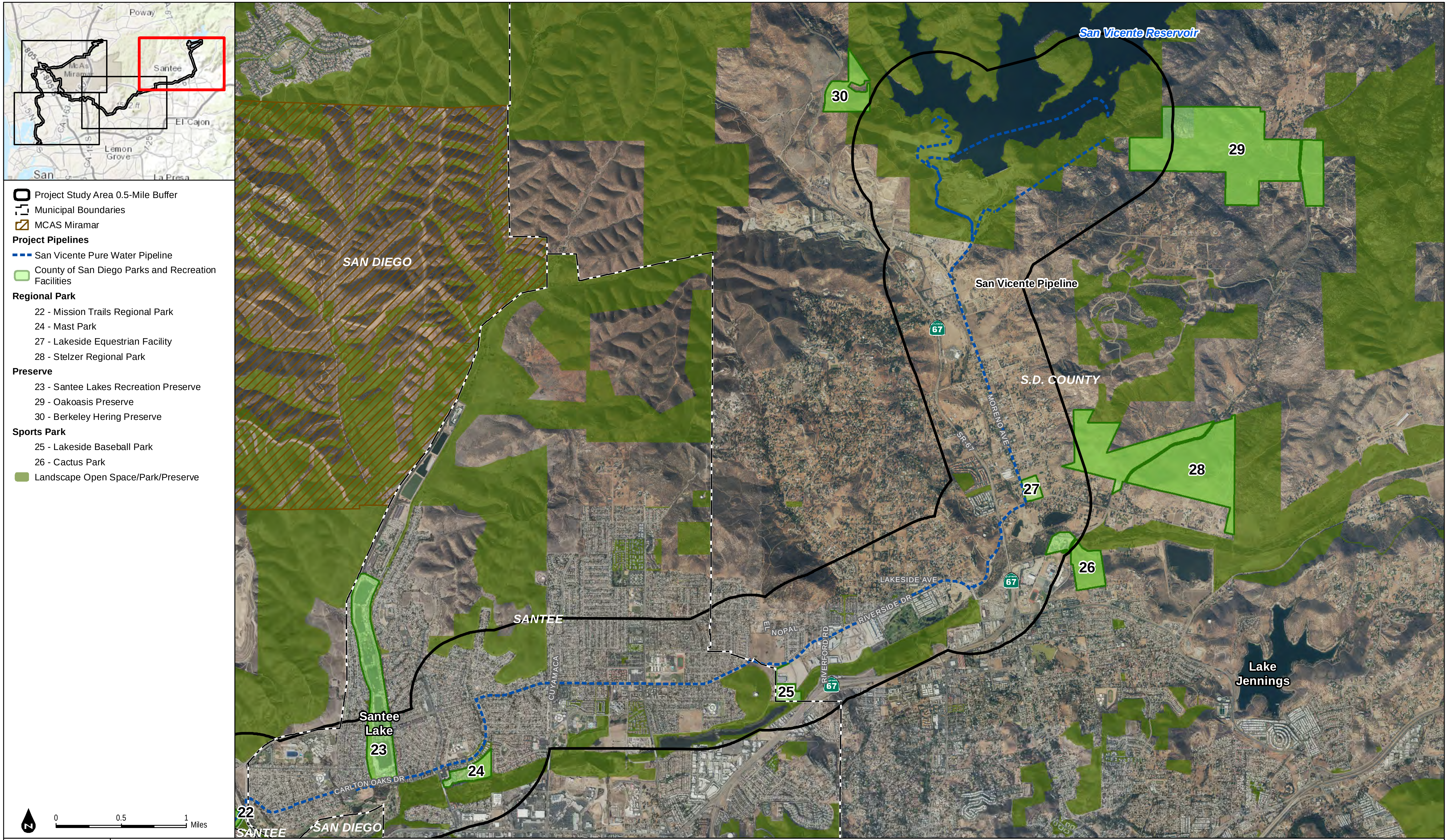

SOURCE: SanGIS 2017; SANDAG 2014, 2016

FIGURE 5.18-1D

Parks and Recreation Facilities

Pure Water San Diego Program North City Project EIR/EIS

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