APPENDIX C

Biological Resources Report

Biological Resources Report for the North City Project, City of San Diego, California PTS #499621

Prepared for:

City of San Diego – Public Utilities Department
9192 Topaz Way
San Diego, California 92123
Contact: Ms. Keli Balo

Prepared by:

DUDEK
605 Third Street
Encinitas, California 92024
Contact: Brock Ortega

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
AADF	annual average daily flow
ACOE	U.S. Army Corps of Engineers
ADD	Assistant Deputy Director
AMSL	above mean sea level
ASMD	area-specific management directives
BMPs	best management practices
CCA	California Coastal Act
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CDP	coastal development permit
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
City	City of San Diego
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
dB(A)	decibel hourly average
Dechlorination Facility	Pure Water Dechlorination Facility
FEIR	Final Environmental Impact Report
FESA	federal Endangered Species Act
GIS	geographic information system
GPS	Global Positioning System
HDPE	high-density polyethylene
I-	Interstate
LAS	Landscape Architecture Section
LCD	Landscape Construction Document
LCP	Local Coastal Program
LDC	Land Development Code
MA	Management Area
MBC	Metro Biosolids Center
~~MBTA~~	~~Migratory Bird Treaty Act~~
MCAS	Marine Corps Air Station
MGD	million gallons per day
mg/L	milligrams per liter
MHPA	Multi-Habitat Planning Areas
Miramar WTP	Miramar Water Treatment Plant
MM	mitigation measure
MMC	Mitigation Monitoring Coordination
Morena Pipelines	Morena Wastewater Forcemain and Brine/Centrate Line
MSCP	Multiple Species Conservation Program

Acronym/Abbreviation	Definition
MTBS	Mission Trails Booster Station
MW	megawatt
NCPWF	North City Pure Water Facility
NCPWF Influent Pump Station	North City Pure Water Facility Influent Pump Station
NCWRP	North City Water Reclamation Plant
NEPA	National Environmental Policy Act
North City Pipeline	North City Pure Water Pipeline
North City Pump Station	North City Pure Water Pump Station
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OSPF	other seasonally ponded feature
PEIS	Programmatic Environmental Impact Report
PQB	Principal Qualified Biologist
Program	Pure Water Program
PUD	Public Utilities Department
Reclamation	Bureau of Reclamation
RIC	Revegetation Installation Contractor
RMC	Revegetation Maintenance Contractor
RWQCB	Regional Water Quality Control Board
San Vicente Pipeline	San Vicente Pure Water Pipeline
San Vicente Pipeline - Repurposed 36-inch Recycled Water Line	36-inch recycled water pipeline
San Vicente Pipeline – TAT	San Vicente Pipeline – Tunnel Alternative Terminus
San Vicente Pipeline – IRAT	San Vicente Pipeline – In-Reservoir Alternative Terminus
San Vicente Pipeline – MAT	San Vicente Pipeline – Marina Alternative Terminus
SR-	State Route
SSC	Species of Special Concern
Subarea Plan	City of San Diego MSCP Subarea Plan
TSI	trophic state index
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VPHCP	Vernal Pool Habitat Conservation Plan
WTP	Water Treatment Plant

MANAGEMENT SUMMARY/ABSTRACT

The Pure Water Program (Program) initiated by the City of San Diego (City) Public Utilities Department involves the production of 83 million gallons per day (MGD) of purified water through the design and construction of new advanced water purification, pumping, and conveyance facilities, as well as upgrades to existing facilities. The North City Project is the first phase of the Program and involves the production of 30 MGD of purified water for the Miramar Reservoir Alternative or 31.4 MGD for the San Vicente Reservoir Alternative. The City plans to deliver water from the proposed North City Pure Water Facility (NCPWF), to be constructed adjacent to the existing North City Water Reclamation Plant (NCWRP), to either the Miramar Reservoir Alternative located within the City or to the San Vicente Reservoir Alternative located in the community of Lakeside. The alternatives for inlet termination of the pipeline at San Vicente Reservoir are the Tunnel, In-Reservoir, and Marina Terminus Alternatives.

Biological field surveys for the North City Project were conducted in 2015–2017 by Dudek, contracted Marine Corps Air Station (MCAS) Miramar biologists, Balk Biological Inc., HELIX Environmental Planning Inc. (HELIX), and Rocks Biological. Survey areas, and the corresponding appropriate survey buffers, within each Project Alternative's study area were determined based on suitable habitat for the resource for which the survey was conducted. Surveys and/or habitat assessments were conducted for the following sensitive biological resources: vegetation mapping; jurisdictional delineation; focused surveys for sensitive plants; focused protocol surveys for coastal California gnatcatcher (*Polioptila californica californica*), southwestern willow flycatcher (*Empidonax traillii extimus*), and least Bell's vireo (*Vireo bellii pusillus*); a habitat assessment and four-pass focused burrowing owl (*Athene cunicularia*) survey; larval host plant survey and protocol surveys for Quino checkerspot butterfly (*Euphydryas editha quino*); a habitat assessment and focused surveys for Hermes copper butterfly (*Lycaena hermes*); a four-pass focused visual survey and trapping surveys for western pond turtle (*Actinemys marmorata*); and a habitat assessment and protocol-level wet season and dry season surveys for listed large branchiopods (i.e., fairy shrimp).

Each Project Alternative's study area is comprised of survey areas and corresponding appropriate survey buffers. A total of 28 vegetation communities and land covers were observed in the Miramar Reservoir Alternative study area. General vegetation communities include scrub and chaparral, grassland, bog and marsh, riparian and bottomland habitat, and woodland. In addition, the following land covers are located on site: urban/developed, disturbed habitat, extensive agriculture, and open water (freshwater). A total of 32 vegetation communities and land covers were observed in the San Vicente Reservoir Alternative study area. General vegetation communities include scrub and chaparral, grassland, bog and marsh, riparian and bottomland habitat, and woodland. In addition, the following land covers are located on site: urban/developed, disturbed habitat, agriculture (including intensive, general, and extensive), and open water (freshwater).

~~Eleven~~ Seventeen sensitive plant species were directly observed within the Miramar Reservoir Alternative study area. Section 3.3.3 describes all sensitive plant species occurring within the Miramar Reservoir Alternative. ~~Five~~ Six sensitive wildlife species were observed within the Miramar Reservoir Alternative study area. Section 3.3.4 describes all sensitive wildlife species occurring within the Miramar Reservoir Alternative. ~~Fifteen~~ Nineteen sensitive plant species were directly observed within the San Vicente Reservoir Alternative study area. Section 3.5.3 describes all sensitive plant species occurring within the San Vicente Reservoir Alternative. ~~Fourteen~~ Fifteen sensitive wildlife species were observed within the San Vicente Reservoir Alternative study area. Section 3.5.4 describes all sensitive wildlife species occurring within the San Vicente Reservoir Alternative.

A formal jurisdictional delineation in both study areas was completed which determined the extent of jurisdictional aquatic features regulated by applicable resource agencies. The North City Project study area supports wetland/riparian areas and non-wetland waters/streambeds, both of which are regulated by the U.S. Army Corps of Engineers (ACOE), Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife (CDFW), and the City. There are 2.96 acres of wetlands and non-wetland waters in the Miramar Reservoir Alternative study area under the jurisdiction of ACOE/RWQCB, streambeds and/or associated riparian areas under CDFW jurisdiction, and/or wetlands regulated by the City. The total wetlands and non-wetland waters in the San Vicente 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 is 32.31 acres. Portions of both the Miramar and San Vicente Reservoir Alternatives intersect or are adjacent to core biological resource areas identified as the Multi-Habitat Planning Area (MHPA) of the City's Multiple Species Conservation Program (MSCP). Additionally, the MCAS Miramar 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 both Project Alternatives study area. Project components associated with the Miramar Reservoir Alternative are located within Biological Core Area 15 as identified on Figure 2-2, Generalized Core Biological Resource Areas and Linkages, of the County of San Diego MSCP. The San Vicente Reservoir Alternative has similar wildlife corridors to the Miramar Reservoir Alternative with the exception of the San Vicente Reservoir Pure Water Pipeline (San Vicente Pipeline), including impacts associated with air and blow-off valves along an existing 36-inch recycled water pipeline (San Vicente Pipeline-Repurposed 36-inch Pipeline) that would be repurposed to convey purified water. 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 majority of this pipeline (96%; see Table 4-3) is located within urban and developed areas and would not result in

impacts to Biological Core Areas 10 or 11 or Habitat Linkage C. The San Vicente Pipeline - Repurposed 36-inch Recycled Water Line runs through both Rose Canyon and San Clemente Canyon within MCAS Miramar; if the San Vincente Reservoir Alternative is implemented, impacts would occur from air and blow-off valves along its length.

Impacts from both Project Alternatives to sensitive vegetation communities (i.e., Tiers I–III and wetlands) would occur as slivers along the pipeline alignment and Landfill Gas Pipeline (LFG Pipeline). Construction of the Miramar Reservoir Alternative would result in impacts to ~~208.25~~207.96 acres of land, the majority of which is urban/developed land (~~175.93~~175.29 acres). Impacts to sensitive vegetation (excluding jurisdictional resources) total ~~18.30~~18.25 acres, ~~12.50~~ 12.54 acres of which are permanent impacts while the remaining are temporary. Construction of the San Vicente Reservoir Alternative would result in impacts to ~~258.58~~259.32 acres, the majority of which is urban/developed land (~~218.56~~219.00 acres). Impacts to sensitive vegetation (excluding jurisdictional resources) in the San Vicente Reservoir Alternative total ~~24.46~~ 24.38 acres, 12.80 acres of which are permanent impacts while the remaining are temporary.

There are 7 sensitive plant species occurring within the impact limits of the Miramar Reservoir Alternative and 11 sensitive plant species occurring within the impact limits of the San Vicente Reservoir Alternative. There are two sensitive wildlife species (white-tailed kite (*Elanus leucurus*) and coastal California gnatcatcher) that may use areas within the impact limits of the Miramar Reservoir Alternative. Although San Diego fairy shrimp (*Branchinecta sandiegonensi*s) were documented within the Miramar Reservior Alternative survey area, the implementation of the Miramar Reservoir Alternative would have no impacts on San Diego fairy shrimp. There are four sensitive wildlife species (white-tailed kite, coastal California gnatcatcher, San Diego fairy shrimp, and least Bell's vireo) that may use areas within the impact limits of the San Vicente Reservoir Alternative.

There are direct permanent impacts to a total of 0.38 acre of vernal pool wetlands regulated by the City and potentially by RWQCB and temporary impacts to 0.03 acre of ephemeral stream channel (developed – concrete channel) regulated by ACOE, RWQCB, and CDFW in the Miramar Reservoir Alternative. The direct impacts to wetlands and non-wetland waters in the San Vicente Reservoir Alternative footprint under the jurisdiction of ACOE/RWQCB, streambeds and associated riparian areas under CDFW jurisdiction, and/or wetlands (including the 0.38 acre of vernal pools) regulated by the City of San Diego is 3.02 acres.

In order to offset direct and indirect impacts to sensitive resources, mitigation measures would be implemented. The North City Project would include mitigation that is consistent with the MSCP and the MCAS Miramar INRMP, and would therefore require mitigation for impacts to sensitive vegetation communities (i.e., Tier I–III and wetlands). In order to offset the

permanent impacts to sensitive upland vegetation communities, mitigation would be provided at the SANDER Vernal Pool and Upland Mitigation Site and the Native Grassland Creation Mitigation site – Pueblo South. Per the San Diego Municipal Code, Land Development Code—Biology Guidelines, securing comparable habitat at the required ratio would mitigate for the direct impact to most sensitive species (City of San Diego 2012a). Impacts to sensitive plant species would be reduced to less than significant with implementation mitigation for vegetation, which would conserve suitable habitat for these species. Measures to reduce impacts to sensitive wildlife species include mitigation for habitat; and performing preconstruction nesting bird surveys if construction is to occur during the bird-breeding season. Unavoidable impacts to jurisdictional resources would be mitigated in accordance with the ratios defined by the City's Biology Guidelines and by obtaining the required regulatory permits. Impacts to jurisdictional resources, if the San Vicente Reservoir Alternative is implemented, would be mitigated at the SANDER Vernal Pool and Upland Mitigation Site (subject to the satisfaction of ACOE and RWQCB) or through allocation of credit at the San Diego River Mitigation Site subject to ACOE and RWQCB approval. Vernal pool impacts would be mitigated through restoration of vernal pools and adjacent uplands at the SANDER Vernal Pool and Upland Mitigation site, which is within the Vernal Pool Habitat Conservation Plan hard line preserve. The SANDER Vernal Pool and Upland Mitigation site is currently within MHPA lands; an MHPA boundary line adjustment was approved by MSCP, USFWS, and CDFW on July 12, 2017. The site will provide mitigation occurring within the MSCP's MHPA and would be implemented in accordance with City/ACOE/CDFW/RWQCB guidelines. Once construction is completed, all areas temporarily disturbed would be restored to preconstruction contours and conditions, including revegetation of native plant communities. Additionally, to satisfy the INRMP habitat enhancement requirement for temporary impacts to sensitive communities within MCAS Miramar, the City would conduct a total of ~~6.27~~ 6.14 acres of habitat enhancement within MCAS Miramar ~~adjacent to habitat revegetation activities along the LFG Pipeline to the greatest extent feasible~~. The ~~6.27~~ 6.14 acres of enhancement would occur within disturbed habitat types and would include invasive plant control, trash removal, erosion control, and seeding and/or supplemental planting as necessary in accordance with the Conceptual Revegetation Plan.

1 INTRODUCTION

The City of San Diego (City) and its regional partners face significant issues with water supply and wastewater treatment. The City currently relies on imported water for 85% of its water supply, including the California State Water Project and the Colorado River (conveyed via the California Aqueduct and the Colorado River Aqueduct, respectively). The region's reliance on imported water causes San Diego's water supply to be vulnerable to impacts from shortages, vulnerable to disruptions, and susceptible to price increases. In addition, recurring drought conditions further impact water supply availability. The North City Project would create a new, reliable, local source of water while at the same time reducing the City's reliance on imported water, including the energy consumption associated with water importation. The North City Project is the first phase of the Pure Water Program, which would produce 30 million gallons per day (MGD) of purified water for the Miramar Reservoir Alternative or 31.4 MGD for the San Vicente Reservoir Alternative. The North City Project would expand the existing North City Water Reclamation Plant (NCWRP) and construct an adjacent North City Pure Water Facility (NCPWF). Two alternative purified water pipelines are being considered: one to Miramar Reservoir and one to San Vicente Reservoir. Additional project components include (1) a new pump station and forcemain to deliver additional wastewater to the NCWRP, (2) a brine/centrate discharge pipeline, (3) upgrades to the existing Metro Biosolids Center (MBC), (4) a new renewable energy facility at the NCWRP, and (5) and a new Landfill Gas Pipeline (LFG Pipeline) between the Miramar Landfill gas collection system and the NCWRP.

1.1 Purpose of the Report

This biological resources report provides an analysis of potential biological resource impacts associated with implementation of the Project Alternatives (Miramar Reservoir Alternative and San Vicente Reservoir Alternative), in accordance with the current San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a). This survey report includes an introduction; project description; a summary of the applicable federal, state, and local biological resource regulations; survey methods and survey limitations; and description and analysis of existing biological resources, including sensitive biological resources, Project impacts, and Project mitigation.

The Project Alternatives, impacts, avoidance areas, and mitigation measures (MMs) are discussed in accordance with the National Environmental Policy Act (NEPA), federal Endangered Species Act (FESA), California Environmental Quality Act (CEQA), Clean Water Act (CWA), the Porter–Cologne Water Quality Control Act, ~~Migratory Bird Treaty Act (MBTA),~~ Sections 3511 and 4700 of the California Fish and Game Code, California Endangered Species Act (CESA; California Fish and Game Code, Section 2050 et seq.), the

California Coastal Act (CCA), the *City of San Diego Final Multiple Species Conservation Program (MSCP) Subarea Plan* (Subarea Plan; City of San Diego 1997), the ~~*Draft*~~ *Final City of San Diego Vernal Pool Habitat Conservation Plan* (VPHCP~~ 2016~~; City of San Diego ~~2016a~~2017), the *Integrated Natural Resources Management Plan* (INRMP 2011–2015; MCAS Miramar INRMP 2011), and the City's Environmentally Sensitive Lands regulations.

1.2 Project Description and Location

The Project Alternatives include a variety of facilities located throughout the central and coastal areas of San Diego County in the North City geographic area (Figure 1-1, Regional Map; Table 1-1). The majority of proposed facilities in the North City Project occur within developed land and/or along existing paved streets. The facilities were designed and sited to avoid and minimize impacts to biological resources to the fullest extent possible. A new pure water facility and three pump stations would be located within the City. Pipelines would traverse a number of local jurisdictions, including the City of San Diego; the City of Santee; the community of Lakeside and other areas in unincorporated San Diego County; and federal lands within Marine Corps Air Station (MCAS) Miramar (Figure 1-2, Vicinity Map). Specifically, the Miramar Reservoir Alternative is within the Poway, La Jolla, and Del Mar U.S. Geological Survey (USGS) 7.5-minute quadrangle maps, and the San Vicente Reservoir Alternative is within San Vicente Reservoir, El Cajon, La Mesa, La Jolla, and Del Mar USGS 7.5-minute quadrangle maps (Figure 1-2, Vicinity Map). The components for each alternative are included in Table 1-1 and described below.

Table 1-1
North City Project Components for Each Project 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 (air and blow-off valves)	N/A	—	X
San Vicente Pure Water Pipeline	San Vicente Pipeline	—	X

Table 1-1
North City Project Components for Each Project Alternative

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

1.2.1 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 the NCWRP and conveyance pipeline between NCWRP and the NCPWF; (4) construction of the new NCPWF; (5) construction of a new North City Pure Water Pump Station (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 (North City Renewable Energy Facility); (8) a new LFG Pipeline between the Miramar Landfill gas collection system and the NCWRP; (9) upgrades at the MBC; (10) improvements at the Miramar Water Treatment Plant (Miramar WTP); and (11) a new Pure Water Dechlorination Facility (Dechlorination Facility). Figure 1-2 provides an overview of the Miramar Reservoir Alternative.

The Miramar Reservoir Alternative project facilities and components are described in detail below.

Morena Pump Station

The proposed Morena Pump Station would 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. The Morena Pump Station would consist of a junction structure and intake screening facility, which

includes a flow separator and screening structures; pump station building; odor control and chemical storage; an energy dissipater for the 30-inch-diameter brine line; a transformer; and an electrical and motor control center building. In tandem with the wastewater forcemain (described below), the Morena Pump Station would deliver maximum flow of 32 MGD of raw wastewater to the NCWRP, expanding the NCWRP's production capacity from 30 MGD to 52 MGD in dry weather conditions.

Morena Pipelines

The Morena Pipelines, which include a wastewater forcemain and brine/centrate line, alignment would begin in an open-cut section near the north corner of the Morena Pump Station site and end at NCWRP. The Morena Pump Station would convey wastewater approximately 11 miles through a new 48-inch-diameter wastewater forcemain to the existing NCWRP. Approximately 6 MGD annual average daily flow (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) would be conveyed via a new 30-inch gravity flow line from the new NCPWF back to Morena Pump Station. It would then go to a sanitary sewer located in Friars Road where it would ultimately flow to the Point Loma Wastewater Treatment Plant (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.

North City Water Reclamation Plant Expansion

The NCWRP is an existing structure that would need to be expanded to enable production capacity of 30 MGD to 52 MGD AADF and 90 MGD on peak daily flows. Additional wastewater flows would be delivered from the Morena Pump Station and wastewater forcemain. This recommended expansion would provide sufficient capacity to meet the flow and water quality needs and improve energy efficiency. NCWRP Expansion would primarily occur within the existing structure with the exception of the proposed realignment of the existing main access road, Road "B" (near Eastgate Mall). Road "B" would 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. A new maintenance road would be constructed at the perimeter of the new secondary clarifiers. The maintenance road would be 20 feet wide at the south leg, and then narrow 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 NCWRP Influent Pump Station. 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 would 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 feet 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.

Additional sludge generated by the expanded NCWRP may require upgrades at MBC, discussed in more detail below.

North City Pure Water Facility Influent Pump Station

The NCPWF Influent Pump Station would be constructed at the NCWRP and would convey tertiary effluent from the NCWRP to the NCPWF. 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 Pipeline runs in a northwest direction and then continues to the north along the western boundary of the NCWRP site until it passes under Eastgate Mall connecting to the future NCPWF site.

North City Renewable Energy Facility

A new 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 and would incorporate 5 MW of existing power generation capacity already at NCWRP.

The expanded 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 would be impervious once the facility is constructed. The site topography for the new renewable energy facility at NCWRP would necessitate a perimeter retaining wall approximately 300 feet in length with a maximum height of 22 feet. The

retaining wall would be either a mechanically stabilized earth wall or reinforced concrete. The project would include utility relocations, new utilities, equipment, earthwork, retaining wall, paving, and other site-preparation activities.

North City Pure Water Facility

The new NCPWF would be located on the vacant 10-acre City-owned lot across Eastgate Mall to the north of the NCWRP. The NCPWF would produce 30 MGD AADF of purified water through a complex purification process. The purified water would then be pumped to the Miramar Reservoir via the North City Pipeline.

North City Pure Water Pump Station

The North City Pump Station would be located on the southeast corner of the NCPWF site. The North City Pump Station would have three duty pumps and one standby pump. The North City Pump Station would serve as the NCPWF's only effluent pump station and would convey purified water via the approximately 8-mile-long (43,600 linear feet) North City Pipeline to the Miramar Reservoir.

North City Pure Water Pipeline

As noted above, the North City Pipeline would connect from the North City Pump Station and convey purified water approximately 8 miles to the Miramar Reservoir. The pipeline is proposed to travel through the Scripps Miramar Ranch and Mira Mesa communities. The NCPWP would 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 recommended for the North City Pipeline as the most suitable width and material for the design conditions. The North City Pipeline alignment would begin at Eastgate Mall and would head in a northeasterly direction toward the Miramar Reservoir via both open-cut sections and trenchless segments. The final segment of the pipeline would consist of a subaqueous pipeline within Miramar Reservoir. The segment of pipeline would begin at the Miramar WTP site and continue to the far, east bank of Miramar Reservoir. The pipeline would be a submerged, 4,800-foot-long high-density polyethylene (HDPE) pipe ranging in diameter from 8 inches to 54 inches, with 188 subaqueous diffusers along the bottom of Miramar Reservoir.

Landfill Gas Pipeline

The proposed LFG Pipeline would run from the existing Miramar Landfill north along the western end of the MCAS Miramar property to the NCWRP site. The new renewable energy facility would receive landfill gas from the City's Miramar Landfill gas collection system via a new 12-inch-

diameter LFG Pipeline. The new LFG Pipeline would parallel an existing 10-inch-diameter gas pipeline that conveys landfill gas from the landfill to fuel the existing power generation units at NCWRP. The new LFG Pipeline would be constructed within the limits of the City's existing 40-foot-wide utility easement where it crosses the Veteran's Administration (VA) Miramar National Cemetery. An expanded additional 10-foot easement is planned along the remainder of the alignment outside of the ~~VA~~ Miramar National Cemetery to facilitate construction and future maintenance activities. The alignment runs from the existing Miramar Landfill north along the western end of the MCAS Miramar property to the NCWRP site.

A new 5,000-square-foot gas compressor station would be situated 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 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. 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 would increase, while projected flows of digested solids from Point Loma WWTP would remain roughly constant such that the MBC would be required to provide on-site anaerobic digestion for a greater percentage of the system's biosolids output.

Improvements at the MBC would include expanding the existing closed-loop grit removal system and building; replacing the existing thickening centrifuges (a total of six new centrifuges would be installed); upgrading digesters, including replacing the existing digester gas laterals with larger lines and larger gas handling appurtenances, installing one additional flare, 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 expanding existing piping systems.

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 would be pumped via the existing Miramar Reservoir Pump Station to the Miramar WTP for treatment and eventual distribution. 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 would receive approximately 30 MGD of purified water on a more or less continuous basis, meaning that the Miramar Reservoir Pump Station must operate at roughly 30 MGD 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.

Pure Water Dechlorination Facility

A Dechlorination Facility would 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 facility would include an approximately 768-square-foot, above-grade building to house chemical storage tanks, dosing pumps, analyzers, and associated piping valves and appurtenances. The NCPWF purified water would be chlorinated to maintain chlorine residual and prevent regrowth within the North City Pipeline. Prior to blending the purified water with the reservoir water at Miramar Reservoir, the remaining free chlorine residual would be removed from the purified water to protect the aquatic life in the reservoir. The Dechlorination Facility would reduce the residual chlorine concentration to below 0.019 milligrams per liter (mg/L).

1.2.2 San Vicente Reservoir Alternative

The San Vicente Reservoir Alternative shares most of the same components with the Miramar Reservoir Alternative. 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. The following components are shared between the two alternatives and described above: (1) the Morena Pump Station; (2) Morena Pipelines; (3) expansion of the existing NCWRP; (4) construction of a new Influent Pump Station at NCWRP, conveyance pipeline between NCWRP and the NCPWF, and North City Renewable Energy Facility; (5) construction of a new North City Pump Station; (6) a new LFG Pipeline between the Miramar Landfill gas collection system and the NCWRP; and (7) upgrades at the MBC.

However, because of the different sizes of the Miramar Reservoir and San Vicente Reservoir, the design of the NCPWF for each would be slightly different. Similarly, the pipeline alignment would be different depending on to which reservoir purified water would be delivered. Additionally, no improvements at Miramar WTP would be required under the San Vicente Reservoir Alternative. Therefore, details regarding these components which are applicable only to the San Vicente Reservoir Alternative are discussed separately below and include (1) NCPWF; (2) San Vicente Pure Water Pipeline (San Vicente Pipeline) including the three alternative reservoir inlet options: San Vicente Pipeline – Tunnel Alternative Terminus (TAT), San Vicente Pipeline – In-Reservoir Alternative Terminus (IRAT), and San Vicente Pipeline – Marina Alternative Terminus (MAT); and (3) Mission Trails Booster Station (MTBS). Figure 1-2 provides an overview of the San Vicente Reservoir Alternative.

North City Pure Water Facility

The location and the MGD of AADF for the NCPWF would be the same as the NCPWF described above in the Miramar Reservoir Alternative. However, to accommodate the different sizes of the Miramar Reservoir and San Vicente Reservoir, the design of the NCPWF under the San Vicente Reservoir Alternative would be slightly different than what is proposed for the Miramar Reservoir Alternative. Additionally, the purified water from the NCPWF would be pumped to the San Vicente Reservoir via the San Vicente Pipeline.

San Vicente Pure Water Pipeline

The San Vicente Pipeline would connect from the North City Pump Station and convey purified water to the MTBS and eventually to the San Vicente Reservoir. The length of the San Vicente Pipeline is approximately 28 miles or 147,000 linear feet. The San Vicente Pipeline would be designed for an average daily flow of 31.4 MGD, with a minimum daily flow of 27 MGD and a maximum daily flow of 35 MGD. The San Vicente Pipeline includes a segment of existing recycled water pipeline that would be repurposed (San Vicente Pipeline - Repurposed 36-inch Recycled Water Line) for purified water conveyance. A 48-inch-diameter welded steel pipe is recommended width and material for the San Vicente Pipeline as the most suitable width and materials for the design conditions.

The San Vicente Reservoir Alternative proposes three alternative reservoir inlet options: (1) a San Vicente Pipeline – TAT; (2) a subaqueous, San Vicente Pipeline – IRAT; and (3) a "west" San Vicente Pipeline – MAT. The San Vicente Reservoir inlet structure is the ultimate discharge point of the conveyance system. The San Vicente Reservoir inlet structure concept is designed to accommodate a 60-inch pipeline and transition the purified water from pipe to open channel flow. Once full, the water would spill over the weir to a riprap open channel. Once in the open channel, the

water would travel approximately 50 feet to the shore of the reservoir. Steel grating is also proposed on the San Vicente Reservoir inlets structure to prevent unwanted entry into the structure.

Mission Trails Booster Station

The MTBS would receive purified water pumped from the North City Pump Station via the San Vicente Pipeline. The MTBS would be located along Mission Gorge Road and across two privately owned parcels.

1.3 Regulatory Context

1.3.1 Federal

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).

As required under NEPA, a proposed action such as the North City Project requires a statement of the action's purpose and need. The Pure Water Program would make San Diego more water independent and offer increased protection of the ocean environment. Currently, the City pulls water from the Bay Delta and the Colorado River and discharges advanced primary treated water into the ocean. Reducing the need for imported water and reducing the amount of treated water into the ocean would be a beneficial effect of the Project. The City made a commitment to begin implementing the Pure Water Program in their application to renew the Clean Water Act Section 301(h) (SWRCB 2016) modified ocean discharge permit for the Point Loma WWTP (National Pollutant Discharge Elimination System (NPDES) permit no. CA0107409).

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. Section 4 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 resources 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 Resources 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 for details regarding the INRMP analysis for the North City Project components.

~~**Migratory Bird Treaty Act**~~

~~The 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 U.S. Army Corps of Engineers (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, groundwater recharge, and areas for the protection from storm and floodwaters.

1.3.2 State

California Endangered Species Act

The California Department of Fish and Wildlife (CDFW) administers 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 Regional Water Quality Control Boards (RWQCB) 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 CWA Section 401 certification.

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 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 extends approximately ~~200~~ 500 feet within the boundary 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).

1.3.3 Regional

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 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) (Figure 1-2, Vicinity Map).

1.3.4 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 Peñasquitos 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 (PUD) 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 PUD – 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 1-3, Multi-Habitat Planning Area and Figure 1-4, Core Areas and Habitat Linkages). 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 will 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).

City of San Diego Biology Guidelines

The City of San Diego Development Services Department developed the Biology Guidelines presented in 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 2012a). The guidelines also provide standards for the determination of impact and mitigation under CEQA and the CCA. Sensitive biological resources, as defined by the Environmentally Sensitive Lands Regulations, include lands within the MHPA, as discussed in Section 1.3.3 of this report, 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 2012a). 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 2012a). According to the City's Biology 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, and acts to slow flood waters for flood and erosion control, sediment filtration, water purification, and groundwater recharge (City of San Diego 2012a). 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 2012a). 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 proposed 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.

City of San Diego Vernal Pool Habitat Conservation Plan

The purpose of the ~~Draft~~ Final City of San Diego 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 ~~2016a~~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 ~~2016a~~2017). The ~~Draft~~ Final VPHCP encompasses 206,124 acres within the MSCP Subregional Plan area in the southwestern portion of San Diego County (City of San Diego ~~2016a~~2017). 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. 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 ~~2016a~~2017). ~~Currently, the Draft VPHCP is preliminary and has not been finalized.~~

1.4 Project Setting

1.4.1 Topography and Geological Setting

The North City Project Alternatives are located in San Diego County, which is within three geographic regions: Coastal Plain, Peninsular Ranges, and the Salton Trough (Desert Basin) (County of San Diego 2011). The North City Project Alternatives are located within the lower Peninsular Ranges and the coastal plain, and west of the Desert Basin. Elevation ranges from approximately 10 feet to 1,080 feet above mean sea level (AMSL) within the North City Project Alternatives. Much of the site is gently sloping or relatively flat, with steeper areas around the reservoirs. The Coastal Plain region ranges in elevation from 0 feet AMSL to 600 feet AMSL, and includes characteristic features, such as mesa tops, coastal benches, elevated marine terraces, and level floodplains of river valleys. The Peninsular Ranges consist of a lower region, 600 feet AMSL to 2,000 feet AMSL, and an upper region, 2,000 feet AMSL to 6,000 feet AMSL. The lower Peninsular Ranges foothills are characterized by rolling to hilly uplands, frequent narrow and winding valleys, and traversed by several rivers and drainages.

The upper Peninsular Ranges have steep mountains with chaparral vegetation on the western slopes, desert chaparral on the eastern slopes, and evergreen and temperate forests at and near the top. The Salton Trough (Desert Basin) ranges in elevation from 0 feet AMSL to 3,000 feet AMSL, and has characteristic features such as mountains, alluvial fans, and desert floor (County of San Diego 2011). The Cuyamaca Mountain range, a northwest–southeast trending mountain range, is located immediately east, and includes Cuyamaca Peak, the tallest mountain peak within the vicinity, which is approximately 6,500 feet AMSL (1,981 meters) and is 18 miles (29 kilometers) east of the study area.

1.4.2 Hydrology

The North City Project Alternatives lie within the San Diego and Peñasquitos Hydrologic Units. The San Diego Hydrologic Unit (906.00) is a long, triangular area covering approximately 440 square miles; the Peñasquitos Hydrologic Unit (907.00) is a triangular area covering approximately 170 square miles (Figure 1-5, Hydrology) (SDRWQCB 2002). These hydrologic units are bordered by the San Dieguito Hydrologic Unit to the north and Pueblo San Diego and Sweetwater Hydrologic Units to the south. The North City Project Alternatives lie within the Miramar, Miramar Reservoir, Tecolote, Mission San Diego, Santee, and Fernbrook Hydrologic Subareas (Figure 1-5, Hydrology).

The San Diego Hydrologic Unit includes the San Diego River and its tributaries, with the San Vicente, Jennings, Murray, El Capitan, and Cuyamaca reservoirs providing major water storage within the unit. Historically the San Diego River flowed into San Diego Bay and Mission Bay; however, the channelized river now flows directly into the Pacific Ocean (SDRWQCB 2002).

The Peñasquitos Hydrologic Unit includes Tecolote Creek and several other small creeks and Miramar Reservoir. This hydrologic unit drains into Mission Bay or the San Diego River (SDRWQCB 2002).

The National Hydrography Dataset identifies the San Diego River and Tecolote Creek and their tributaries as the drainage features within the North City Project Alternatives. San Vicente Creek is also a prominent creek that flows into San Vicente Reservoir. Although the City does not routinely release water from the San Vicente Reservoir into the downstream portion of San Vicente Creek, the creek connects the reservoir to the San Diego River, which discharges into the Pacific Ocean near Mission Bay (SDCWA and ACOE 2008).

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2 SURVEY METHODS AND LIMITATIONS

Data regarding biological resources present within the Project Alternatives study area were obtained through a review of pertinent literature and field reconnaissance; both of which are described in detail below. 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 survey 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. Some areas containing potential suitable habitat for sensitive biological resources could not be surveyed due to property access issues; these areas are described below in Sections 2.4 and 5, and shown on Figures 2-1A through 2-3C.

2.1 Literature Review

The following data sources were reviewed to assist with the biological resource surveys:

- U.S. Department of Agriculture Web Soil Survey (USDA 2016a)
- CDFW California Natural Diversity Database (CDFW 2016)
- California Native Plant Society Inventory of Rare and Endangered Plants (CNPS 2015, CNPS 2016)
- MSCP Subarea Plan (City of San Diego 1997)
- San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a)
- 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)

- Pure Water San Diego Program North City Water Purification Project, Dry Season Fairy Shrimp Survey and Hatching Report (Appendix C)
- Surveys for Coastal California Gnatcatcher (*Polioptila californica californica*) at Marine Corps Air Station Miramar, California (SDNHM 2016)
- USFWS National Wetlands Inventory (USFWS 2016b)
- USGS 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)

2.2 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, western pond turtle (*Actinemys marmorata*), San Diego fairy shrimp, and Riverside fairy shrimp. Table 2-1 lists the surveys conducted, dates, and location of discussion within the report for each survey performed.

All biological surveys were conducted in accordance with the City's Guidelines for Conducting Biological Surveys (Appendix J in City of San Diego 2012a); state or federal focused survey protocols were followed when appropriate. More recent federal protocols took precedent over stated City protocols where relevant (e.g., southwestern willow flycatcher surveys).

Table 2-1
Focused Surveys Conducted for the North City Project

Focus	Dates	Personnel	Report Section, Appendix
Quino Checkerspot Butterfly Focused Surveys	2/28/2016–5/23/2016	Dudek	Section 2.3.6 Appendix D, 2016 Focused Quino Checkerspot Butterfly Survey Report

Table 2-1
Focused Surveys Conducted for the North City Project

Focus	Dates	Personnel	Report Section, Appendix
Quino Checkerspot Butterfly Habitat Assessment and Host Plant Mapping	4/11/2016–5/9/2016	Dudek	Section 2.3.6 Appendix D, 2016 Focused Quino Checkerspot Butterfly Survey Report
Coastal California Gnatcatcher Surveys	5/18/2016–9/28/2016	Dudek; San Diego Natural History Museum	Section 2.3.2 Appendix E, 2016 Focused Coastal California Gnatcatcher Survey Report Surveys for Coastal California Gnatcatcher (*Poliopitila californica californica*) at Marine Corps Air Station Miramar (2016 DRAFT)
Burrowing Owl Surveys	4/4/2016–6/24/2016	Dudek	Section 2.3.5
Sensitive Plant Surveys	3/29/2016–10/26/2016 3/29/2017–~~Ongoing~~10/12/2017	Balk Biological Dudek	Section 2.3.1
Hermes Copper Butterfly Habitat Assessment Surveys	5/26/2016–6/8/2016	Dudek	Section 2.3.7
Hermes Copper Butterfly Focused Surveys	6/7/2016–6/8/2016	Dudek	Section 2.3.7
Riparian Bird Surveys	4/25/2016–7/31/2016	Dudek	Sections 2.3.3 and 2.3.4 Appendix F, 2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report
Vegetation Mapping	3/28/2016–5/3/2016	Dudek	Section 2.2.1
Fairy Shrimp Surveys	10/7/2015–9/1/2016 12/5/2016–5/19/2017 (Wet Season Survey) 06/9/2017–07/14/2017 (Dry Season Survey)	HELIX and Rocks Biological Consulting Dudek	Section 2.3.9 Appendix B, Existing Conditions Letter Report for the Pure Water San Diego Program North City Water Purifications Project Appendix C, Dry Season Fairy Shrimp Survey and Hatching Report Appendix G, 2016/2017 Wet Season Fairy Shrimp Survey Report Appendix H, 2017 Dry Season Fairy Shrimp Sampling Results
Jurisdictional Delineation	9/2016–10/2016	Dudek	Section 2.2.3 Appendix I, Jurisdictional Delineation Report for the North City Project
Western Pond Turtle Surveys	9/7/2016–10/5/2016 8/28/2017–9/22/2017	Dudek USGS	Section 2.3.8

2.2.1 Resource Mapping

Vegetation communities and land uses on and within the survey area were mapped in the field directly onto a 200-foot-scale (1 inch = 200 feet), aerial photograph–based field map with overlay of the appropriate Project Alternative survey area buffer. Following completion of the fieldwork, all vegetation polygons were transferred to a topographic base and digitized using ArcGIS, and a geographic information system (GIS) coverage was created. Once in ArcGIS, the acreage of each vegetation community and land cover present within the study area was determined.

As adopted in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a) the vegetation community and land cover mapping follows the Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986) as modified by the County and noted in Draft Vegetation Communities of San Diego County (Oberbauer et al. 2008). Areas on site supporting less than 20% native plant species cover were mapped as disturbed land, and areas supporting at least 20% native plant species, but fewer than 50% native cover, were mapped as a disturbed native vegetation community (e.g., disturbed coastal sage scrub-chaparral). Table 2-2 lists the personnel, dates, and conditions for the vegetation mapping.

Table 2-2
Schedule of Vegetation Mapping Surveys

Date	Time	Personnel[1]	Conditions[2]
3/28/2016	8:30 AM–3:30 PM	CF, PS	59°F–63°F; 80%–100% cc; 0–2 to 2–4 mph wind
3/29/2016	8:30 AM–4:00 PM	CF, PS	59°F–65°F; 50%–70% cc; 0 to 2–4 mph wind
4/5/2016	7:00 AM–2:30 PM	DM, MO	53°F–80°F; 0%–100% cc; 1 mph wind
4/8/2016	7:35 AM–2:00 PM	KD, MO	65°F–75°F; 0%–30% cc; 0 to 1–3 mph wind
5/3/2016	6:09 AM–11:48 AM	AH	59°F–71°F; 0%–100% cc; 3 mph wind

Notes:
[1] AH = Anita Hayworth; CF = Callie Ford; DM = Danielle Mullen; KD = Katie Dayton; MO = Monique O'Conner; PS = Patricia Schuyler
[2] °F = degrees Fahrenheit; % cc = percent cloud cover; mph = miles per hour

2.2.2 Flora and Fauna

The plant species encountered during the field survey were identified and recorded directly into a field notebook. Those species that could not be identified immediately were brought into the laboratory for further investigation. A compiled list of plant species observed in the Project Alternatives study area is presented in Appendix J, Plant Compendium. Latin and common names for plant species with a California Rare Plant Rank (CRPR; formerly California Native Plant Society (CNPS) List) follow the CNPS On-Line Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2016). For plant species without a CRPR, Latin names

follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2016) and common names follow the List of Vegetation Alliances and Associations (CDFW 2010) or the U.S. Department of Agriculture Natural Resources Conservation Service Plants Database (USDA 2016b).

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. A list of wildlife species observed in the Project Alternatives study area is presented in Appendix K, Wildlife Compendium.

Latin and common names of animals follow Crother (2012) for reptiles and amphibians, American Ornithologists' Union (AOU 2016) for birds, Wilson and Reeder (2005) for mammals, North American Butterfly Association (NABA 2001) or San Diego Natural History Museum (SDNHM 2002) for butterflies, and Moyle (2002) for fish.

2.2.3 Wetland Delineation

A formal jurisdictional delineation was completed by Dudek biologists in September and October 2016 (Table 2-1) which delineated the extent of jurisdictional aquatic features in the study area.[1] ~~In November 2016, the potential vernal pool areas were refined during the site visit.~~ The riparian vegetation communities mapped by Dudek in 2016, vernal pool mapping (Appendix B, Existing Conditions Letter Report for the Pure Water San Diego Program North City Water Purification Project; Appendix C, Dry Season Fairy Shrimp Survey and Hatching Report), National Wetlands Inventory data (USFWS 2016b), National Hydrography Dataset data (USGS 2016), and focused drone flights were used to identify areas within the study area to focus the jurisdictional delineation and finalize the determinations.

The delineation defined areas under the jurisdiction of the CDFW pursuant to Sections 1600–1603 of the California Fish and Game Code; under the jurisdiction of the ACOE pursuant to Section 404 of the federal CWA; under the jurisdiction of RWQCB pursuant to CWA Section 401 and the Porter–Cologne Act; and wetlands defined under the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

Specifically, the methodology used for each jurisdiction or regulating agency, including the ACOE, CDFW, RWQCB, and the City of San Diego is described as follows. The ACOE

[1] ~~The study area for the wetland delineation is defined in Appendix I.~~

wetlands delineation was performed in accordance with the 1987 ACOE Wetlands Delineation Manual (ACOE 1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (ACOE 2008), Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (ACOE 2010), and guidance provided by the ACOE and U.S. Environmental Protection Agency on the geographic extent of jurisdiction based on the U.S. Supreme Court's interpretation of the CWA (ACOE and EPA 2008). The ACOE and RWQCB, pursuant to the federal CWA, include all areas supporting all three wetlands criteria described in the ACOE manual: hydric soils, hydrology, and hydrophytic vegetation. The RWQCB may also take jurisdiction over surface waters lacking ACOE regulation pursuant to the state Porter–Cologne Water Quality Control Act. These areas generally include areas with at least one of the three wetlands indicators but that are isolated from a tributary of navigable water through lack of evidence of surface water hydrology. Jurisdiction of the RWQCB is coincident with the ACOE in accordance with the federal CWA, except in cases where a resource is determined to be isolated from navigable waters of the United States and where the RWQCB may take jurisdiction under the state Porter–Cologne Water Quality Control Act. A predominance of hydrophytic vegetation, usually associated with a stream channel, was used to determine CDFW-regulated riparian areas. Streambeds under the jurisdiction of CDFW were delineated using the Cowardin method of waters classification, which defines waters boundaries by a single parameter (i.e., hydric soils, hydrophytic vegetation, or hydrology).

Section 114 of the San Diego Municipal Code describes specific development regulations pertaining to sensitive biological resources, including wetlands. The City's definition of wetlands is broader than the definition applied by the ACOE. The City of San Diego regulates jurisdictional aquatic resources, or "wetlands," according to the City's Biology Guidelines (City of San Diego 2012a). The intention of the definition is to differentiate uplands from wetlands. Under the City's definition, wetlands can include vegetation communities such as freshwater marsh, riparian forest, riparian scrub, or vernal pools. They may also include areas that have hydric soil or wetland hydrology, but human activities have resulted in a lack of hydrophytic vegetation (e.g., channelized streambeds) or recurring natural events (City of San Diego 2012a). However, "seasonal drainage patterns that are sufficient enough to etch the landscape (i.e., ephemeral/intermittent drainages) may not be sufficient enough to support wetland dependent vegetation. These types of drainages would not satisfy the City's wetland definition unless wetland dependent vegetation is either present in the drainage or lacking due to past human activities. Seasonal drainage patterns may constitute "waters of the United States," which are regulated by the Army Corps of Engineers and/or the California Department of Fish and Game." (City of San Diego 2012a).The City regulates wetlands ~~within the Coastal Overlay Zone~~through wetland buffers, ~~including within appropriate buffers. Within the Coastal Overlay Zone, wetland~~

~~buffers should be a~~which typically are 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 2012a).

Collectively, areas under the jurisdiction of one or all of the resource agencies (ACOE, RWQCB, and CDFW), and/or the City are termed jurisdictional aquatic resources. The majority of the jurisdictional aquatic resources are considered wetlands under the City's jurisdiction.

To assist in the determination of jurisdictional areas on site, data was collected at 40 locations (i.e., data stations) using wetland determination data forms (Appendix I, Jurisdictional Delineation Report for the North City Project). Hydrology, vegetation, and soils were assessed and data were collected and captured on approved ACOE forms. The location of data stations was collected either using a Trimble GeoXT handheld Global Positioning System (GPS) unit with sub-meter accuracy. Potentially jurisdictional areas were digitized in GIS based on the GPS data collected in the field and data collected directly onto field maps into a project-specific GIS using ArcGIS software.

2.3 Focused Surveys for Sensitive Biological Resources

Sensitive biological resources are those defined by the City of San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a) as follows: (1) lands that have been included in the MHPA as identified in the City of San Diego MSCP Subarea Plan (City of San Diego 1997); (2) wetlands (as defined by the Municipal Code, Section 113.0103); (3) lands outside the MHPA that contain Tier I Habitats, Tier II Habitats, Tier IIIA Habitats, or Tier IIIB Habitats as identified in the Land Development Code—Biology Guidelines (City of San Diego 2012a); (4) lands supporting species or subspecies listed as rare, endangered, or threatened; (5) lands containing habitats with narrow endemic species as listed in the City of San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a); and (6) lands containing habitats of covered species as listed in the City of San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

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 (2016); 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 2012a).

Dudek and/or other qualified biologists conducted surveys and/or habitat assessments for the following sensitive biological resources: sensitive upland and wetland (i.e., jurisdictional) vegetation communities; focused surveys for sensitive plants; focused protocol surveys for coastal California gnatcatcher, southwestern willow flycatcher, and least Bell's vireo; a habitat assessment and four-pass focused burrowing owl survey; a four-pass focused visual survey and trapping surveys for western pond turtle; larval host plant survey and protocol surveys for Quino checkerspot butterfly; a habitat assessment and focused surveys for Hermes copper butterfly; and a habitat assessment and protocol-level wet season and dry season surveys for listed large branchiopods (i.e., fairy shrimp). Incidental detections of other sensitive wildlife species, either through sight, calls, tracks, scat, or other signs, were also recorded. A summary of the dates and site conditions for the field efforts performed as part of this biological report are presented above in Section 2.2, Table 2-1. The following sections provide specific details regarding each survey.

2.3.1 Focused Surveys for Sensitive Plants

Focused surveys for sensitive plant species were conducted in 2016 by Dudek and HELIX subconsultants Balk Biological Inc. (Table 2-3) and Rocks Biological (Appendix B), respectively and in 2017 by Dudek. Three survey passes were conducted by Balk Biological Inc. in March/April, May/June, and October of 2016 to capture species during their respective blooming periods. In addition, Rocks Biological conducted surveys in April, May, August, and September 2016 (Appendix B). Dudek conducted ~~one~~ three survey passes for the Miramar Reservoir Alternative in March/April, June, and October 2017 to capture species during their respective blooming periods. ~~and one pass in June 2017, and another pass is planned for September/October 2017~~. Surveys were conducted during 2017, which was a record rainfall year, to offset the drought conditions present during surveys conducted in 2016. Additional survey areas were included in 2017 such as along the Miramar Reservoir and south of the Morena Pump Station in the San Diego River (Figures 2-1A through 2-1UW, Sensitive Plant Survey Areas and Results). Prior to field surveys, available modeled habitat data and distribution information for sensitive plant species potentially occurring within the Project Alternatives study area was reviewed. After suitable habitat areas were identified and specific survey areas were designated (Figures 2-1A through 2-1~~U~~W, Sensitive Plant Survey Areas and Results), focused sensitive plant surveys were conducted within a 100-foot buffer around Project components subject to direct impacts. ~~Follow-up plant surveys are currently underway for the 2017 season.~~

Field survey methods and mapping of sensitive plants generally conformed to CNPS Botanical Survey Guidelines (CNPS 2001); Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (CDFG 2009); and General Rare Plant Survey Guidelines (Cypher 2002). Sensitive plant observations were mapped in the field to within 1-meter (3.3 feet) accuracy using Trimble™ GPS units or were mapped directly onto an aerial field map to record the location of sensitive plant populations. Other survey information (e.g., survey conditions) was collected using a mobile application. The sensitive plant observations were then digitized into the geodatabase by Dudek GIS technician Andrew Greis, using ArcGIS software.

Table 2-3
Schedule of Sensitive Plant Surveys

Survey Pass	Date	Time	Personnel[1]	Conditions[2]
1	3/29/2016	7:45 AM–5:11 PM	KH, TD	58°F–76°F; 40%–50% cc; 1–2 mph wind
1	3/29/2016	8:00 AM–3:40 PM	HR, SL	53°F–70°F; 30%–50% cc; 5–7 to 8–10 mph wind
1	3/30/2016	7:00 AM–4:55 PM	KH, TD	58°F–66°F; 50%–70% cc; 1–2 mph wind
1	3/30/2016	7:15 AM–3:30 PM	HR, SL	48°F–62°F; 10% cc; 0–2 mph wind
1	3/31/2016	6:45 AM–3:31 PM	KH, TD	49°F–77°F; 0% cc; 1 mph wind
1	3/31/2016	7:15 AM–3:40 PM	HR, SL	50°F –73°F; 0% cc; 2–3 to 4–6 mph wind
1	4/1/2016	6:45 AM–4:00 PM	KH, TD	60°F–69°F; 0% cc; 1–2 mph wind
1	4/1/2016	7:20 AM–3:45 PM	HR, SL	54°F–72°F; 60%–100% cc; 0–1 to 2–5 mph wind
1	4/4/2016	7:00 AM–5:05 PM	KH, TD	60°F–72°F; 20%–100% cc; 0–2 mph wind
1	4/4/2016	8:30 AM–5:05 PM	HR, SL	60°F–78°F; 0%–20% cc; 0–2 mph wind
1	4/5/2016	7:00 AM–4:45 PM	KH, TD, HR, SL	68°F–82°F; 30%–70% cc; 1–2 mph wind
1	4/6/2016	7:00 AM–5:15 PM	KH, TD	63°F–67°F; 20%–100% cc; 1–3 mph wind
1	4/6/2016	8:00 AM–4:15 PM	HR, SL	59°F–68°F; 60%–70% cc; 1–3 to 2–6 mph wind
1	4/7/2016	7:05 AM–1:00 PM	KH, TD	67°F–69°F; 100% cc; 1–2 mph wind
1	4/7/2016	7:43 AM–8:30 AM	HR, SL	64°F; 100% cc; 1–3 mph wind
1	4/8/2016	8:30 AM–1:30 PM	HR, SL	59°F–68°F; 80%–100% cc; 0–1 to 2–5 mph wind
2	5/9/2016	7:15 AM–3:12 PM	TD	57°F–69°F; 30%–40% cc; 1–2 mph wind
2	5/9/2016	9:30 AM–5:30 PM	KH, FR	68°F–76°F; 50%–100% cc; 1–2 mph wind
2	5/10/2016	8:00 AM–4:15 PM	KH, TD, FR	60°F–79°F; 10%–100% cc; 1–3 mph wind
2	5/13/2016	6:30 AM–12:31 PM	KH, TD	57°F–75°F; 10%–100% cc; 1–2 mph wind
2	5/16/2016	6:59 AM–3:58 PM	KH, TD, FR	59°F–71°F; 90%–100% cc; 3–4 mph wind
2	5/17/2016	7:01 AM–3:12 PM	KH, TD, FR	60°F–64°F; 100% cc; 3 mph wind
2	5/18/2016	7:00 AM–3:45 PM	KH, TD, FR	61°F–68°F; 100% cc; 3–5 mph wind
2	5/19/2016	6:51 AM–4:30 PM	KH, TD, FR	59°F–79°F; 10%–100% cc; 2–3 mph wind
2	5/20/2016	6:30 AM–11:00 AM	KH, TD	60°F–68°F; 30%–70% cc; 1–3 mph wind
2	6/9/2016	7:30 AM–3:30 PM	KH	66°F–75°F; 20%–100% cc; 1–3 mph wind
2	6/21/2016	8:00 AM–2:00 PM	SL	64°F–72°F; 60%–100% cc; 2–4 to 5–7 mph wind

Table 2-3
Schedule of Sensitive Plant Surveys

Survey Pass	Date	Time	Personnel[1]	Conditions[2]
2	6/22/2016	9:00 AM–2:00 PM	SL	74°F–81°F; 10%–20% cc; 0–1 mph wind
3	10/25/2016	8:00 AM–1:15 PM	SL, FR	60°F–68°F; 70%–90% cc; 1–2 to 3–5 mph wind
3	10/26/2016	8:00 AM–12:30 PM	SL, FR	62°F–74°F; 20% cc; 0–1 mph wind
1	3/29/2017	7:00 AM–3:00 PM	EB, KD	52°F–75°F; 0% cc; 0–4 mph wind
1	3/31/2017	7:00 AM–4:24 PM	EB, KD	60°F–70°F; 0% cc; 0 mph wind
1	4/42017	7:15 AM–3:00 PM	KD, DM	55°F–69°F; 0%–60% cc; 0–10 mph wind
1	4/7/2017	8:00 AM–6:00 PM	KD, DM	57°F–69°F; 0%–10% cc; 0–2 mph wind
2	6/20/2017	7:00 AM–4:00 PM	EB, KD, JW, MO	64°F–80°F; 0%–100% cc; 0–4 mph wind
2	6/21/2017	7:00 AM–3:30 PM	EB, KD, JW, MO	60°F–77°F; 0%–100% cc; 0–8 mph wind
2	6/23/2017	7:15 AM–11:40 PM	EB, KD	63°F–76°F; 0%–100% cc; 0–3 mph wind
3	10/10/2017	1:48 PM–5:37 PM	KD, DM	73°F–79°F; 0% cc; 0–5 mph wind
3	10/12/2017	8:00 AM–1:05 PM	KD, DM	65°F–73°F; 0–90% cc; 0–5 mph wind

Notes:
1 FR = Fred Roberts; HR = Heather Rothbard; KH = Kate Harper; SL = Shelley Lawrence; TD = Tom Dayton; KD = Kathleen Dayton; DM = Danielle Mullen; EB = Erin Bergman; JW = Janice Wondolleck; MO = Monique O'Conner.
2 °F = degrees Fahrenheit; % cc = percent cloud cover; mph = miles per hour

2.3.2 Focused Coastal California Gnatcatcher Surveys

The coastal California gnatcatcher is a federally listed threatened species, CDFW Species of Special Concern (SSC), and an MSCP Covered Species. Focused surveys for coastal California gnatcatcher were conducted by permitted biologists Brian Lohstroh (#TE063608/5), Brenna Ogg (#TE134338/3), Jeff Priest (#TE840619/5), Kamarul Muri (#TE813545/6), and Tricia Wotipka (#TE840619/2). Non-permitted biologists Shelly Lawrence and Johanna Page accompanied coastal California gnatcatcher-permitted biologists as passive observers, which included sitting quietly with little or no movement for prolonged periods while studying coastal California gnatcatcher movements with binoculars and listening carefully to vocalizations.

Dudek conducted a desktop coastal California gnatcatcher habitat suitability assessment of all coastal sage scrub habitat within the Project site. A number of areas were excluded from surveys due to the patch size being too small and/or isolated to support coastal California gnatcatcher, or the patch was buffered from the construction footprint by residential or commercial buildings. A number of areas were also excluded from the surveys as access permission was not provided by the landowner.

Focused protocol surveys for coastal California gnatcatcher in the Project Alternatives study area were conducted by Dudek in May through July 2016 (Appendix E, 2016 Focused Coastal California Gnatcatcher Survey Report). All coastal California gnatcatcher surveys were conducted

pursuant to the accepted protocol of the USFWS's Coastal California Gnatcatcher Presence/Absence Survey Protocol (USFWS 1997a). The Project site overlaps entirely with the Subarea Plan, with the exception of those portions of the alignment on MCAS Miramar, and those within Santee and Lakeside. The survey included three visits at a minimum of 7-day intervals. Survey routes completely covered all accessible areas of coastal scrub and sub-association habitats within a 500-foot buffer around designated survey areas located in the Project Alternatives study area. Survey limitations included those areas where access could not be obtained and within MCAS Miramar where the base was already conducting yearly surveys (see Appendix E, 2016 Focused Coastal California Gnatcatcher Survey Report). Following coordination with USFWS, it was determined that additional surveys as part of the North City Project were not required in suitable habitat areas of the Project site that overlapped with MCAS Miramar. Results of 2016 focused coastal California gnatcatcher surveys on MCAS Miramar will be submitted to USFWS separately by MCAS Miramar biologists as part of their yearly monitoring, but preliminary results are included within the Project Alternatives study area (SDNHM 2016). For surveys conducted by Dudek outside on MCAS Miramar lands, survey conditions (time of day and weather conditions) were within protocol limits specified in the survey protocol (Table 2-1). The biologists played a tape of recorded vocalizations approximately every 50 to 100 feet to elicit a response from any gnatcatcher present within the vicinity. All other avian species detected during surveys were recorded. The results of the surveys are discussed further in Sections 3.3.4 and 3.5.4 of this report and are provided in Appendix E, 2016 Focused Coastal California Gnatcatcher Survey Report.

2.3.3 Focused Southwestern Willow Flycatcher Surveys

The southwestern willow flycatcher is federally and state listed as endangered, and an MSCP Covered Species. Focused protocol presence/absence surveys for southwestern willow flycatcher were conducted by Dudek permitted biologists Brock Ortega (#TE813545-6), Anita Hayworth (#TE781084-8), Paul Lemons (#TE051248), and Jeff Priest (#TE840619-3). All surveys were conducted within suitable habitat located in the 500-foot buffer around the Project Alternatives study area (see Appendix F, 2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report). Prior to surveys, southwestern willow flycatcher habitat was identified, and designated survey areas (i.e., survey areas 1A, 1B, 2, and 3) were mapped (see Appendix F). As described in Appendix F, southwestern willow flycatcher surveys were conducted during April through July 2016 pursuant to the accepted protocol of the USFWS's Southwestern Willow Flycatcher Protocol Revision 2000 (USFWS 2000). The survey included five visits, with one visit between May 15 and May 31, two visits between June 1 and June 24, and two visits between June 25 and July 17, with each survey during the final period being separated by at least 5 days. The majority of surveys were conducted at first light and lasted until about 10:00 a.m. Biologists played a tape of recorded flycatcher vocalizations approximately every 50 to 100 feet within suitable habitat to induce

flycatcher responses. If a flycatcher was detected, playing of the tape was ceased to avoid harassment. All biologists completed a Willow Flycatcher Survey and Detection Form for the survey visits. All other avian species detected during surveys were recorded. The results of the surveys are discussed further in Sections 3.3.4 and 3.5.4 of this report and are provided in Appendix F.

2.3.4 Focused Least Bell's Vireo Surveys

Least Bell's vireo is federally and state listed as endangered, and an MSCP Covered Species. Qualified Dudek biologists Brock Ortega, Anita Hayworth, Paul Lemons, Jeff Priest, Marshall Paymard, Kevin Shaw, Patricia Schuyler, and Callie Ford conducted focused protocol presence/absence surveys for least Bell's vireo within suitable habitat located in the 500-foot buffer around the Project Alternatives study area. Prior to surveys, least Bell's vireo habitat was identified, and designated survey areas (i.e., survey areas 1A, 1B, 2, and 3) were mapped (Appendix F, 2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report). As shown in Appendix F, surveys were conducted between April through July 2016 pursuant to the accepted USFWS's Least Bell's Vireo Survey Guidelines (USFWS 2001). The surveys included eight site visits between April 10 and July 31, conducted with 10-day intervals between each visit. The majority of surveys were conducted between dawn and 11:00 a.m.

It should be noted that per email correspondence with Stacey Love, USFWS Recovery Permit Coordinator, surveys for least Bell's vireo and southwestern willow flycatcher were not conducted concurrently; however, surveys were conducted sequentially (Love, pers. comm. 2016). Surveys for southwestern willow flycatcher were conducted first (i.e., first thing in the morning), and surveys for least Bell's vireo conducted afterwards on the way back to the survey starting point. All other avian species detected during surveys were recorded. The results of the surveys are discussed further in Sections 3.3.4 and 3.5.4 of this report. They are also provided in Appendix F, 2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report.

2.3.5 Focused Burrowing Owl Survey and Habitat Assessment

Burrowing owl is a CDFW SSC and an MSCP Covered Species. Qualified Dudek biologists Marshall Paymard and Shane Valiere conducted a habitat assessment, followed by focused surveys in suitable habitat (open habitat and land covers with suitable burrow resources) within a 500-foot buffer around the Project Alternatives study area. Dudek biologists conducted surveys pursuant to the survey guidelines outlined in Appendix D of the Staff Report on Burrowing Mitigation (CDFG 2012). An initial habitat assessment was conducted throughout all habitat types potentially supporting burrowing owls in the Project Alternatives study area. On average, the biologist walked 15-meter (49.2 feet) transects to detect the presence of burrowing owls and/or suitable burrows or surrogate burrows (>11centimeters in diameter and >150 centimeters in depth). All potential

suitable burrows detected were documented, and suitable habitat was identified (Figures 2-2A through 2-2S, Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results). Following the habitat assessment and initial survey, three subsequent surveys were conducted, at least 3 weeks apart, between April 15 and July 15, with at least one visit after June 15 (Table 2-4). Subsequent surveys focused on determining the presence of burrowing owls and/or owl sign (i.e., owl pellets, molted feathers, abundant insect remains, white wash) within the suitable habitat areas. A total of approximately 1,083 acres were surveyed for suitable burrowing owl habitat (Figures 2-2A through 2-2S). After the habitat assessment, these areas were refined so that follow-up surveys were only conducted in the 150.8 acres of suitable habitat containing appropriate burrow resources (Figures 2-2A through 2-2S).

Table 2-4
Schedule of Focused Burrowing Owl Surveys

Survey Pass	Date	Time	Personnel[1]	Conditions[2]
1	4/4/2016	6:30 AM–7:20 AM	SV	62°F–65°F; 100% cc; 1 mph wind
1	4/4/2016	8:15 AM–10:50 AM	SV	68°F–74°F; 10%–20% cc; 1 mph wind
1	4/5/2016	9:45 AM–11:25 AM	SV	73°F–78°F; 70%–90% cc; 1 mph wind
1	4/5/2016	11:55 AM–1:10 PM	SV	79°F–82°F; 70% cc; 1–2 mph wind
1	4/5/2016	7:10 AM–1:10 PM	MP	60°F–82°F; 70%–80% cc; 1 mph wind
1	4/6/2016	8:30 AM–10:05 AM	SV	71°F–78°F; 10%–30% cc; 1 mph wind
1	4/6/2016	12:45 PM–2:50 PM	SV	72°F–75°F; 90% cc; 2–3 mph wind
1	4/8/2016	1:45 PM–4:45 PM	SV	60°F–62°F; 90% cc; 3 mph wind
1	4/8/2016	8:00 AM–5:05 PM	MP	58°F–65°F; 90% cc; 0-1 to 1-2 mph wind
1	4/12/2016	7:30 AM–2:30 PM	MP	58°F–80°F; 10%–20% cc; 1 mph wind
1	4/13/2016	7:00 AM–1:30 PM	MP	58°F–76°F; 10% cc; 1 mph wind
1	4/14/2016	7:04 AM–1:55 PM	MP	58°F–80°F; 0%–10% cc; 2 mph wind
2	5/13/2016	5:40 AM–10:16 AM	MP	60°F–74°F; 0% cc; 1–2 mph wind
3	6/3/2016	5:50 AM–10:10 AM	MP	58°F–75°F; 0% cc; 1 mph wind
3	6/16/2016	6:45 AM–3:00 PM	MP	60°F–84°F; 0% cc; 1 to 1–3 mph wind
3	6/17/2016	5:45 AM–2:00 PM	MP	63°F–82°F; 0% cc; 1–2 to 2 mph wind
3	6/24/2016	5:40 AM–10:09 AM	MP	56°F–76°F; 0% cc; 1 mph wind

Notes:
[1] MP = Marshall Paymard; SV = Shane Valiere.
[2] °F = degrees Fahrenheit; % cc = percent cloud cover; mph = miles per hour

2.3.6 Focused Quino Checkerspot Butterfly Survey and Host Plant Mapping

The Quino checkerspot butterfly is federally listed as endangered. Quino checkerspot butterfly focused surveys were conducted by permitted biologists Brock Ortega (#TE813545-6), Greg Chatman (#TE075112-2), Dale Powell (#TE006559-6), and Jun Powell (#TE006559-6). Focused surveys occurred throughout suitable habitat (i.e., sage scrub, open chaparral, grasslands, and

communities that are observed in open or sparsely vegetated areas or hilltops and ridgelines) within a 100-foot buffer around the Project Alternatives study area (except 500-foot buffer within MCAS Miramar) and required USFWS survey areas. Survey limitations included areas where access could not be obtained (see Appendix D, 2016 Focused Quino Checkerspot Butterfly Survey Report). The focused surveys were conducted in accordance with the description in the most recent Quino checkerspot butterfly survey guidelines (December 15, 2014; USFWS 2014). According to the USFWS protocol, the first weekly survey shall begin during the third week of February, and the survey season will end the second Saturday in May. Surveys shall be conducted weekly and spaced no closer than 4 days apart (USFWS 2014). Focused Quino checkerspot butterfly surveys were conducted over 122 person days within a 13-week period between February 21, 2016, and May 23, 2016, per the USFWS protocol (see Table 2 of Appendix D).

As shown in Table 2-1, Quino checkerspot butterfly host plant mapping surveys were conducted within a 4-week period between April 11, 2016, and May 11, 2016, by biologist Greg Chatman (#TE075112-2). Prior to initiation of host plant surveys, biologists reviewed reference populations of dotseed plantain (*Plantago erecta*), and purple owl's clover (*Castilleja exserta*) to assess host plant conditions. All surveys were conducted on foot and required approximately 15 person-days to map and/or document hostplant occurrences within a 100-foot buffer around the Project Alternatives study area (except 500-foot buffer within MCAS Miramar). Host plant mapping surveys focused on the identification and location of all seven recognized host plants for Quino checkerspot butterfly: dotseed plantain, purple owl's clover, woolly plantain (*Plantago patagonica*), Coulter's snapdragon (*Antirrhinum coulterianum*), stiffbranch bird's beak (*Cordylanthus rigidus*), Chinese houses (*Collinsia concolor*), and purple Chinese houses (*Collinsia heterophylla*) (USFWS 2014). Quino checkerspot butterfly host plant locations are depicted in and further discussed in Appendix D, 2016 Focused Quino Checkerspot Butterfly Survey Report.

2.3.7 Focused Hermes Copper Butterfly Survey and Habitat Assessment

The Hermes copper butterfly is a USFWS candidate species. In 2016, Dudek mapped Hermes copper butterfly habitat in accordance with the County of San Diego Guidelines for Hermes Copper (Attachment B of County of San Diego 2010). All suitable habitat (i.e., all redberry buckthorn (*Rhamnus crocea*) within 15 feet of California buckwheat) within a 500-foot buffer around the Project Alternatives study area was mapped as potential habitat and was surveyed (Figures 2-2A through 2-2S, Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results). Based on the habitat assessment, approximately 286 acres of the study area was determined to contain potential habitat and was surveyed. Four surveys from May to June were conducted per the County guidelines (Table 2-5).

Table 2-5
Schedule of Hermes Copper Habitat Assessment and Focused Surveys

Survey Type	Survey Pass	Date	Time	Personnel[1]	Conditions[2]
Habitat Assessment; Focused Survey	1	5/26/2016	1:45 PM–3:15 PM	GC	74°F–75°F; 10% cc; 2–4 to 4–6 mph wind
Habitat Assessment; Focused Survey	1	5/27/2016	9:30 AM–4:00 PM	GC	NR
Habitat Assessment; Focused Survey	1	5/28/2016	11:00 AM–3:15 PM	GC	NR
Habitat Assessment; Focused Survey	1	6/7/2016	10:45 AM–2:00 PM	GC	71°F–75°F; 10%–20% cc; 2–4 mph wind
Habitat Assessment; Focused Survey	1[3]	6/8/2016	2:17 PM–3:30 PM	GC	79°F–80°F; 10% cc; 4–6 mph wind
Focused Survey	2	6/7/2016	2:30 PM–3:20 PM	GC	75°F; 10% cc; 4–6 mph wind
Focused Survey	2	6/8/2016	10:30 AM–2:00 PM	GC	76°F–80°F; 0%–20% cc; 2-4 to 3–6 mph wind
Focused Survey	2	6/8/2016	2:30 PM–3:15 PM	GC	79°F–80°F; 10% cc; 4–6 mph wind
Focused Survey	3	6/19/2016	9:30 AM–12:45 PM	DP, JP	84°F–95°F; 0%–10% cc; 1–3 to 4–5 mph wind
Focused Survey	3	6/20/2016	9:00 AM–12:30 PM	DP, JP	89°F; 0%–10% cc; 2-4 to 3–5 mph wind
Focused Survey	4	7/2/2016	12:30 PM–4:00 PM	DP, JP	74°F–78°F; 0%–10% cc; 3–5 to 5–6 mph wind
Focused Survey	4	7/3/2016	11:40 AM–2:45 PM	DP, JP	82°F–84°F; 0% cc; 2–5 to 4–8 mph wind

Notes:
1 DP = Dale Powell; GC = Greg Chatman; JP = Jun Powell
2 °F = degrees Fahrenheit; % cc = percent cloud cover; mph = miles per hour
3 Make-up survey due to weather conditions outside of protocol.

2.3.8 Focused Western Pond Turtle Survey and Habitat Assessment

Western pond turtle is listed as a CDFW SSC and is a MSCP Covered Species. Currently there are no standard survey protocols for western pond turtle; however, diurnal visual surveys were conducted at the Miramar and San Vicente Reservoirs for the western pond turtle based on recommendations in the Holland protocol (1991) (Figures 2-3A through 2-3C, Western Pond Turtle Survey Areas and Results; Table 2-6). Dudek wildlife biologist Paul M. Lemons conducted visual presence/absence surveys along the Miramar and San Vicente Reservoir's approximate 20-foot shoreline in September and October 2016. Boat surveys were necessary to provide visual access to suitable turtle basking sites that were not visible or accessible by land. During all four surveys at the Miramar Reservoir, complete visual coverage was established from

land, as well as by boat. Due to limited access to most all of the shoreline at San Vicente Reservoir, all four surveys were entirely conducted by boat. All surveys were conducted between 9:00 a.m. and 4:00 p.m. over a period of 8 days (4 days at each reservoir). While surveying the perimeter of the reservoirs, several vantage points were used to scan suitable basking sites. Mr. Lemons stayed at each vantage point for 20–30 minutes of survey time to allow complete visual coverage of the water body. Surveys were conducted on sunny or partly cloudy days to the extent possible to maximize the chance of turtles basking above the water surface. All turtles were counted based on a remote visual inspection (i.e., turtles were not handled). Turtles were observed to be active throughout this time period at nearby reference sites.

In addition to the visual surveys conducted by Dudek, USGS conducted three one-week trapping sessions within Miramar Reservoir. Traps were set on August 28, 2017, and ended on September 22, 2017 (Table 2-6). Trapping included 60 to 84 baited hoop traps of different sizes, and different baits, including freshly frozen mackerel and sardines, were used to maximize trapping effectiveness. The traps were open for a total of 12 days or 856 trap nights, or approximately 20,340 trap hours. Three weeks of trapping allowed for increased probability of detecting western pond turtles by allowing for variability in temperature, weather, lunar cycles, and recreational activity at the lake.

Table 2-6
Schedule of Focused Western Pond Turtle Surveys

Survey Area/Pass	Date	Time	Personnel[1]	Conditions[2]
Visual Surveys				
Miramar Reservoir-Pass 1	9/7/2016	10:30 AM-4:00 PM	PL	70°F–73°F, 0% cc, 0–6 mph winds
Miramar Reservoir-Pass 2	9/8/2016	10:00 AM-3:00 PM	PL	68°F–78°F, 0% cc, 1–8 mph winds
Miramar Reservoir-Pass 3	9/12/2016	10:00 AM-3:30 PM	PL	67°F–73°F, 10%-0% cc, 2–7 mph winds
Miramar Reservoir-Pass 4	9/15/2016	09:20 AM-3:00 PM	PL	72°F–77°F, 0% cc, 2–6 mph winds
San Vicente Reservoir-Pass 1	9/27/2016	10:30 AM-4:00 PM	PL	86°F–91°F, 30%-50% cc, 0–7 mph winds
San Vicente Reservoir-Pass 2	9/28/2016	10:00 AM-3:45 PM	PL	84°F–90°F, 20%-40% cc, 0–5 mph winds
San Vicente Reservoir-Pass 3	10/4/2016	09:40 AM-4:00 PM	PL	72°F–81°F, 30%-0% cc, 0–4 mph winds
San Vicente Reservoir-Pass 4	10/5/2016	10:30 AM-4:00 PM	PL	75°F–80°F, 0%- 25% cc, 1–5 mph winds
Trapping Surveys				
Miramar Reservoir	8/28/2017-9/22/2017	Not Recorded	USGS staff	Not Recorded

Notes:
[1] PL = Paul Lemons
[2] °F = degrees Fahrenheit; % cc = percent cloud cover; mph = miles per hour

2.3.9 Focused San Diego and Riverside Fairy Shrimp Survey and Habitat Assessment

San Diego and Riverside fairy shrimp (fairy shrimp) are both an MSCP Covered Species and federally listed as endangered. HELIX conducted protocol-level wet and dry season surveys in 2015/2016 throughout suitable habitat contained within HELIX project areas and potential mitigation sites, which partially overlap the Project Alternatives study area (Appendix B, Existing Conditions Letter Report for the Pure Water San Diego Program North City Water Purifications Project; Appendix C, Dry Season Fairy Shrimp Survey and Hatching Report). The HELIX survey areas did not cover all potential areas within the Project Alternatives; however, areas that did overlap are included in this report (Appendix B). For areas of the Project Alternatives that were not surveyed by HELIX but which have the potential for ponding, Dudek conducted GIS modeling 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 (Appendix G, 2016/2017 Wet Season Fairy Shrimp Survey Report). Additionally, due to record rainfall in the region, additional previously undescribed features were documented on the NCPWF site, which was surveyed by HELIX in 2015/2016. 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 VPHCP) as vernal pools on the NCPWF site. These same rain 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. Dudek conducted a protocol-level dry-season survey on the 2017 vernal pools to confirm that these pools are not occupied by listed fairy shrimp species (Appendix H).

An initial site assessment and mapping of potential features (i.e., vernal pools, ephemeral basins, and road ruts) was conducted by HELIX throughout the study area in September and November of 2015 (Table 2-1). During these efforts, biologists reviewed the specific on-site microhabitats (e.g., flat topography, soil types, and slopes) and the potential vernal pool locations (Appendix B). Following the onset of winter rainstorms in October 2015, wet season surveys were conducted in accordance with USFWS protocol (USFWS 2015) by HELIX subconsultant Rocks Biological biologists Jim Rocks (#TE-063230-4), Melanie Rocks (#TE-082908-2), Lee Ripma (#TE-221290-3), Marty Lewis (authorized individual #TE-221290-3), Brian Lohstroh (#TE-063608-5), and HELIX-supervised individual, Erica Harris. All of the features sampled during the wet-season survey were mapped, including 16 vernal pools, and the presence of fairy shrimp was recorded (Appendix B). The results of these surveys are discussed further in Section 3.3.4 and 3.5.4 of this report and included in Appendix B. The 2016/2017 wet season survey was conducted between December 5, 2016, and May 19, 2017, by Dudek biologist Paul Lemons (#TE-051248-5). Surveys were conducted according to the USFWS

protocol (USFWS 2015). A total of 19 features were identified as suitable habitat for vernal pool branchiopods and were surveyed during the 2016/2017 wet survey season. These 19 features were identified as new in 2016/17 and not previously surveyed.

Dry season sampling was conducted by HELIX permitted biologist Jason Kurnow (#TE-778195-13) and supervised individual, Amy Mattson, in accordance with USFWS protocol (USFWS 2015). Dry season sampling was conducted throughout identified fairy shrimp habitat located within portions of the Project Alternatives study area. According to HELIX (2016), following soil collection, Mr. Kurnow brought the samples to the HELIX lab for analysis. Appendix C, Dry Season Fairy Shrimp Survey and Hatching Report, fully describes the methods utilized for the HELIX dry season surveys. The 2017 protocol-level dry-season survey soil collection was completed by Paul Lemons (#TE-051248-5) and analyzed by Greg Mason (#TE-58862A-1) and is summarized in Appendix H.

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).

2.4 Survey Limitations

Plants and wildlife sign or direct observations of individuals were recorded during vegetation mapping, jurisdictional delineation, sensitive plant surveys, focused wildlife surveys, and habitat assessments. Sensitive species observed during these surveys were recorded. Focused surveys were conducted to document sensitive plants that occur within the Project Alternatives study area.

The majority of the surveys were conducted during the daytime to maximize the detection of most animals. Birds represent the largest component of the vertebrate fauna, and because most birds are active in the daytime, diurnal surveys maximize the number of observations of this portion of the fauna. Daytime surveys may result in fewer observations of animals that are more active at night,

such as mammals. Similarly, many species of reptiles and amphibians are nocturnal or cryptic in their habits and may be difficult to observe using standard meandering transects.

The jurisdictional delineation was conducted during the fall, thereby limiting detection of some annual plant species. However, based on characteristics observed at each of the investigation locations, this limitation is not expected to have affected the jurisdictional determination. Additionally, the ongoing drought in the region may affect the current conditions observed in the field; however, other resources such as Google Earth (2016) and Historical Aerials (2016a–d) were reviewed in combination to the field survey to make the final determinations. Where possible, plants were mapped to genus. It should be noted that there is one area included in the North City Project that is outside of the wetland delineation study area defined in the Jurisdictional Delineation Report (Appendix I). The North City Pipeline slightly changed course and now runs along Hoyt Park Drive, which was not evaluated during the wetland delineation. Hoyt Park Drive is an existing road and does not contain any jurisdictional resources; therefore, impacts are not expected.

Furthermore, several focused sensitive species surveys could not be conducted in various locations of the Project Alternatives study area due to access issues. A total of 193.6 acres of adjacent study area were inaccessible. Access to some federal lands (i.e., flight-line portion of MCAS Miramar and along Miramar Road) was not granted, thus limiting detection; the railroad right-of-way along the Morena Pipelines through Rose Canyon was not accessed; and some private property could not be legally accessed. All impact areas were accessed and surveyed. For restricted access areas, with suitable habitat for sensitive species, outside of the impact footprint presence is assumed, and the mitigation measures described in Section 5.5 would be implemented to reduce all indirect impacts to a less-than-significant level. Property access is shown on Figures 2-1 through 2-3 where applicable. To account for access issues, potentially occurring (based on distribution and habitat preference literature, and recorded off-site observations) sensitive plant and wildlife species were analyzed (Appendix L, Sensitive Plant Species Potential to Occur within the Miramar Reservoir Alternative; Appendix M, Sensitive Plant Species Potential to Occur within the San Vicente Reservoir Alternative; Appendix N, Sensitive Wildlife Species Potential to Occur within the Miramar Reservoir Alternative; Appendix O, Sensitive Wildlife Species Potential to Occur within the San Vicente Reservoir Alternative). Adequate measures to avoid and minimize impacts to potentially occurring sensitive species are provided in this report.

An extension of the overflow pipes associated with the Morena Pipelines was added to the North City Project located within Friars Road, east of the Morena Pump Station. Although impacts are only within an existing roadway and surveys were conducted adjacent to this area, preconstruction surveys would be required within a 500-foot buffer area. This area is adjacent to the San Diego River, and there is potential habitat for southwestern willow flycatcher and least Bell's vireo to occur.

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3 RESULTS

The physical characteristics and quantification of biological resources described herein pertains to both of the proposed Project Alternatives (Miramar Reservoir Alternative and the San Vicente Reservoir Alternative). Within this section, each alternative and the Project components associated with each alternative are analyzed separately to provide a clear picture of both the biological resources present and the potential impacts stemming from the various Project components. As previously mentioned, each Project Alternative study area is comprised of the following survey areas: a 500-foot buffer was designated around the components of the Project Alternatives for vegetation (with exception of the actual Miramar Reservoir), coastal California gnatcatcher, southwestern willow flycatcher, least Bell's vireo, and burrowing owl. A 100-foot buffer was designated for sensitive plants, Quino checkerspot butterfly, Hermes copper butterfly, fairy shrimp, and vegetation surrounding Miramar Reservoir area. A 20-foot buffer was designated around the shoreline of the Miramar and San Vicente Reservoirs for western pond turtle. A 50-foot buffer was designated for the jurisdictional delineation.

3.1 Physical Characteristics – Miramar Reservoir Alternative

The physical characteristics of the individual Project components that make up the Miramar Reservoir Alternative are analyzed in the following sections and included in Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives.

3.1.1 Morena Pump Station

The Morena Pump Station is located at the intersection of Sherman Street and Custer Street. Within the Morena Pump Station site, the topography is generally flat. The site ranges in elevation from approximately 14 feet to 18 feet AMSL. According to the USDA Web Soil Survey, one soil type, Urban land, is mapped within the Morena Pump Station site (USDA 2016a). Existing land use at the Morena Pump Station site 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. There are overflow pipes associated with the Morena Pump Station that run along Friars Road. One of the overflow pipes is approximately ~~200~~ 500 feet within the Coastal Overlay Zone. The San Diego River lies on the south side of Friars Road, approximately 220 feet south of the Morena Pump Station and within 100 feet of the proposed overflow pipes. The San Diego River is within the MHPA of the City's MSCP Subarea Plan. Additionally, the portion of the San Diego River floodplain within the Coastal Overlay Zone would be considered City-regulated wetlands, and therefore would require adherence to the City wetland buffer regulations.

3.1.2 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 NCWRP and run north for approximately 11 miles along the following streets: parallel to Interstate 5 (I-5) along Morena Boulevard where it begins at the Morena Pump Station, north on Clairemont Drive, east along Clairemont Mesa Boulevard, crossing under SR-52, north along Genesee Avenue, and east along La Jolla Village Drive.

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 MHPA lands.

The following soil types are mapped within the Morena Pipelines: Altamont clay (30 to 50 percent slopes); Carlsbad-Urban land complex (2 to 9 percent slopes); Chesterton-Urban land complex (2 to 9 percent slopes); Chesterton fine sandy loam (2 to 5 percent slopes and 5 to 9 percent slopes); Corralitos loamy sand (0 to 5 percent slopes); Gaviota fine sandy loam (30 to 50 percent slopes); Huerhuero-Urban land complex (2 to 9 percent slopes and 9 to 30 percent slopes); Huerhuero loam (15 to 30 percent slopes, eroded, and 9 to 15 percent slopes, eroded); Olivenhain cobbly loam (30 to 50 percent slopes); Redding-Urban land complex (2 to 9 percent slopes); Redding cobbly loam (9 to 30 percent slopes); Redding cobbly loam, dissected, (15 to 50 percent slopes); Redding gravelly loam (2 to 9 percent slopes); Salinas clay loam (2 to 9 percent slopes); Terrace escarpments; and Urban land (USDA 2016a).

3.1.3 North City Water Reclamation Plant Expansion

The NCWRP is located immediately east of 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. According to the USDA Web Soil Survey, three soil types—Altamont clay (15 to 30 percent slopes), Redding cobbly loam (9 to 30 percent slopes), and Redding gravelly loam (2 to 9 percent slopes)—are mapped within the NCWRP (USDA 2016a). Existing land use at the NCWRP is mostly developed land; however, the perimeter of the site contains native habitat. 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 Miramar Road.

3.1.4 North City Pure Water Facility Influent Pump Station

The NCPWF Influent Pump Station is located within the NCWRP footprint along an existing paved road. The NCPWF is located immediately east of I-805. The site is bound by Eastgate Mall to the north and La Jolla Village Drive to the south. The Influent Pump Station is at an elevation of approximately 360 feet AMSL. According to the USDA Web Soil Survey, there is one soil type mapped at the Influent Pump Station: Redding gravelly loam (2 to 9 percent slopes) (USDA 2016a). 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 La Jolla Village Drive.

3.1.5 North City Renewable Energy Facility

The North City Renewable Energy Facility would be located within the NCWRP footprint to provide power to the expanded NCWRP as well as the proposed NCPWF and North City Pump Station, and covers an area of approximately 0.5 acre. The site is bound by Eastgate Mall to the north and La Jolla Village Drive to the south. The North City Renewable Energy Facility ranges in elevation from approximately 352 feet to 376 feet AMSL. According to the USDA Web Soil Survey, there are two soil types—Altamont clay (15 to 30 percent slopes) and Redding gravelly loam (2 to 9 percent slopes)—mapped at the North City Renewable Energy Facility (USDA 2016a). 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 La Jolla Village Drive.

3.1.6 North City Pure Water Facility

The proposed NCPWF is located east of I-805 and immediately north of the NCWRP. The site is bound by Eastgate Mall to the south and Eastgate Drive to the east. Within the proposed NCPWF, the topography is generally flat. The site is approximately 360 feet AMSL in elevation. According to the USDA Web Soil Survey, one soil type, Redding gravelly loam (2 to 9 percent slopes), is mapped within the NCPWF (USDA 2016a). West of the NCPWF, on the west side of I-805, there is open space which is a part of the MHPA lands.

3.1.7 North City Pure Water Pump Station

The proposed North City Pump Station is located within the southeastern portion of the proposed NCPWF. The North City Pump Station lies east of I-805, north of Eastgate Mall, and west of Eastgate Drive. The proposed site occurs at 360 feet AMSL in elevation. According to the USDA Web Soil Survey, one soil type, Redding gravelly loam (2 to 9 percent slopes), is mapped at the proposed North City Pump Station location (USDA 2016a). The proposed site is located

within non-native grassland. Adjacent land uses include a mixture of existing commercial and residential development, flanked by open space. The open space west of the North City Pump Station is entirely located within the MHPA.

3.1.8 North City Pure Water Pipeline

The proposed North City Pipeline would begin at the NCPWF and head northeast until it ends at the Miramar Reservoir. The North City Pipeline also includes a subaqueous discharge pipeline that would be settled to the bottom of the Miramar Reservoir. The proposed pipeline runs for approximately 39,490 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.

The following soil types are mapped within the North City Pipeline: Redding-Urban land complex (2 to 9 percent slopes), Redding cobbly loam (9 to 30 percent slopes), Redding gravelly loam (2 to 9 percent slopes), Riverwash, Terrace escarpments, and Water (USDA 2016a).

3.1.9 Landfill Gas Pipeline

The proposed LFG Pipeline would run from the existing Miramar Landfill north along the western portion of the MCAS Miramar property to the NCWRP 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 following soil types are mapped within the LFG Pipeline: Altamont clay (9 to 15 percent slopes), Altamont clay (15 to 30 percent slopes), Carlsbad gravelly loamy sand (2 to 5 percent slopes), Chesterton fine sandy loam (2 to 5 percent slopes), Chesterton fine sandy loam (9 to 15

percent slopes, eroded), Olivenhain cobbly loam (9 to 30 percent slopes), Redding cobbly loam (9 to 30 percent slopes), Redding gravelly loam (2 to 9 percent slopes), Riverwash, and Terrace escarpments (USDA 2016a).

3.1.10 Metro Biosolids Center Improvements

The MBC is located north of 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.

The following soil types are mapped within the MBC: Chesterton fine sandy loam (2 to 5 percent slopes); Loamy alluvial land-Huerhuero complex (9 to 50 percent slopes), severely eroded; Redding cobbly loam, dissected (15 to 50 percent slopes); Redding gravelly loam (2 to 9 percent slopes); and Terrace escarpments (USDA 2016a).

3.1.11 Miramar Water Treatment Plant Improvements

The Miramar WTP is located directly south of the Miramar Reservoir. Under the Miramar Reservoir Alternative, purified water discharged into the Miramar Reservoir would be pumped to the existing Miramar Reservoir Pump Station to the Miramar WTP for treatment and eventual distribution. Under the Miramar Reservoir Alternative, the Miramar Reservoir would receive approximately 30 MGD of purified water on a more or less continuous basis, meaning that the Miramar Reservoir Pump Station must operate at roughly 30 MGD 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.

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. The following soil type is mapped within the Miramar WTP: Redding-Urban land complex, 2 to 9 percent slopes (USDA 2016a).

3.1.12 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. One soil type,

Redding cobbly loam (9 to 30 percent slopes), is mapped within the Dechlorination Facility (USDA 2016a). 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.

3.1.13 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 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). Total phosphorus 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 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), had a median of 0.26 micrograms per liter (µg/L), and ranged from spring highs of approximately 2.72 µg/L to a winter low 0.21 µg/L (WQS 2017).

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 Secchi depth data for 2012 through 2014). Based on Carlson (1977), Secchi depth data for Miramar Reservoir indicates that the Trophic Status Index for the reservoir is 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 reservoir (i.e., moderate nutrient levels). However, it is important to note that although the reservoir is nutrient limited for the majority of the year, elevated chlorophyll-*a* and TP concentrations have been recorded during brief periods. 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. 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 (WQS 2017).

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 – largemouth bass (*Micropterus salmoides*) and sunfish (*Lepomis* spp.) that are common to recreational fisheries in California. Additional fish species that were not intentionally introduced 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)*. It is also likely 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 (*Lepomis macrochirus*), largemouth bass, and black crappie (*Pomoxis nigromaculatus*). 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.

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. 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*).

3.2 Physical Characteristics - San Vicente Reservoir Alternative

The physical characteristics of the individual project components that make up the San Vicente Reservoir Alternative are analyzed in the following sections. Project components that are also included within the Miramar Reservoir Alternative and analyzed above in Section 3.1 include: (1) the Morena Pump Station; (2) Morena Pipelines; (3) expansion of the existing NCWRP; (4) construction of a new Influent Pump Station at NCWRP, conveyance pipeline between NCWRP and the NCPWF, and North City Renewable Energy Facility at the NCWRP; (5) construction of a new North City Pump Station; (6) a new LFG Pipeline between the Miramar Landfill gas collection system and the NCWRP; and (7) upgrades at the MBC. The physical characteristics are the same for the NCPWF. Features not included within the Miramar Reservoir Alternative include the San Vicente Pipeline (including three inlet alternatives) and the MTBS. These components of the San Vicente Reservoir Alternative are discussed in this section and included in Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives.

3.2.1 San Vicente Pure Water Pipeline

The proposed 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 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 PUD 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).

There are 38 soil types mapped within the San Vicente Pipeline (USDA 2016a). Those soils include:

- acid igneous rock land;
- Altamont clay (9 to 15 percent slopes);
- Carlsbad gravelly loamy sand (2 to 5 percent slopes);
- Chesterton fine sandy loam (2 to 5 percent slopes; 5 to 9 percent slopes; and 9 to 15 percent slopes, eroded);
- Cieneba-Fallbrook rocky sandy loams (30 to 65 percent slopes, eroded);
- Cieneba rocky coarse sandy loam (9 to 30 percent slopes, eroded);
- Cieneba very rocky coarse sandy loam (30 to 75 percent slopes);
- Diablo-Olivenhain complex (9 to 30 percent slopes);
- Diablo clay (15 to 30 percent slopes; and 2 to 9 percent slopes);
- Fallbrook-Vista sandy loams (15 to 30 percent slopes);
- Fallbrook sandy loam (9 to 15 percent slopes, eroded);
- Friant rocky fine sandy loam (30 to 70 percent slopes);
- Grangeville fine sandy loam (0 to 2 percent slopes);
- gravel pits;

- Huerhuero loam (15 to 30 percent slopes, eroded; 2 to 9 percent slopes; and 9 to 15 percent slopes, eroded);
- metamorphic rock land;
- Olivenhain cobbly loam (30 to 50 percent slopes and 9 to 30 percent slopes);
- Placentia sandy loam, thick surface (2 to 9 percent slopes);
- Ramona sandy loam (5 to 9 percent slopes);
- Redding-Urban land complex (2 to 9 percent slopes and 9 to 30 percent slopes);
- Redding cobbly loam (9 to 30 percent slopes, dissected; 15 to 50 percent slopes; and 2 to 9 percent slopes);
- riverwash;
- Salinas clay (0 to 2 percent slopes);
- Stony land; terrace escarpments;
- Tujunga sand (0 to 5 percent slopes);
- Visalia gravelly sandy loam (2 to 5 percent slopes and 5 to 9 percent slopes); and
- Visalia sandy loam (0 to 2 percent slopes) (USDA 2016a).

The San Vicente Reservoir Alternative proposes three alternative reservoir inlet options: (1) San Vicente Pipeline – TAT, (2) San Vicente Pipeline – IRAT, and (3) San Vicente Pipeline – MAT. The San Vicente Reservoir inlet structure is the ultimate discharge point of the conveyance system, and the three alternatives are discussed below.

3.2.1.1 San Vicente Pipeline – Tunnel Alternative Terminus

The San Vicente Pipeline – 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. Three soil types—acid igneous rock land, Cieneba rocky coarse sandy loam (9 to 30 percent slopes, eroded), and Cieneba very rocky coarse sandy loam (30 to 75 percent slopes)—are mapped within the San Vicente Pipeline – TAT area (USDA 2016a). 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 the MHPA. 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.

3.2.1.2 San Vicente Pipeline – In-Reservoir Alternative Terminus

The San Vicente Pipeline – IRAT would connect to the San Vicente Pipeline and would occur 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. Six soil types—acid igneous rock land, Cieneba very rocky coarse sandy loam (30 to 75 percent slopes), Olivenhain cobbly loam (30 to 75 percent slopes), Riverwash, Tujunga sand (0 to 5 percent slopes), and Water—are mapped within the San Vicente Pipeline – IRAT area (USDA 2016a). 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 the MHPA, with the majority occurring within the San Vicente Reservoir.

3.2.1.3 San Vicente Pipeline – Marina Alternative Terminus

The San Vicente Pipeline – 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. Five soil types—acid igneous rock land, Cieneba very rocky coarse sandy loam (30 to 75 percent slopes), Olivenhain cobbly loam (30 to 50 percent slopes), riverwash, and Tujunga sand (0 to 5 percent slopes)—are mapped within the San Vicente Pipeline – MAT (USDA 2016a). 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 the MHPA.

3.2.2 Mission Trails Booster Station

The 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. Four soil types—Diablo clay (15 to 30 percent slopes), Friant rocky fine sandy loam (30 to 70 percent slopes), Huerhuero loam (9 to 15 percent slopes), and Redding cobbly loam (9 to 30 percent slopes)—are mapped within the MTBS (USDA 2016a). 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.

3.3 Biological Resources – Miramar Reservoir Alternative Study Area

The biological resources found within the proposed Miramar Reservoir Alternative study area are discussed below, including a discussion of all biological resources identified within the specific Project-related components. All biological resources identified within the Miramar Reservoir Alternative study area are spatially represented on Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives.

3.3.1 Vegetation Communities, Land Covers, and Floral Diversity

A total of 38 vegetation communities and/or land cover types were observed in the Miramar Reservoir Alternative study area (Table 3-1). Table 3-1 includes all of the vegetation within the 500-foot survey area buffer for the Miramar Reservoir Alternative. All vegetation communities, including sensitive communities (Tier I–III and wetlands), occurring in the study area are defined below and further described in context of their location within the specific Project components.

Table 3-1
Vegetation Communities and Land Cover Types in
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*
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

Table 3-1
Vegetation Communities and Land Cover Types in
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
	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	2.1
	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*
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

Table 3-1
Vegetation Communities and Land Cover Types in
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-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
	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 2012a).
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 2012a).
4 The majority of this total is from the Miramar Reservoir (120.26 acres).

3.3.1.1 Non-native Vegetation (11000), Tier IV

Non-native vegetation includes trees, shrubs, and herbs that are not native to California. Non-native vegetation on the Project site largely consists of ornamental plantings along roadways or as part of fuel modification adjacent to homes that are not typically artificially irrigated and that receive water from precipitation or runoff. One large area of non-native vegetation occurs adjacent to the Miramar landfill and consists of wattle (*Acacia* spp.) plantings.

3.3.1.2 Disturbed Wetland (11200), Wetland

Disturbed wetlands are areas permanently or periodically inundated by water that have been substantially modified by human activity. Disturbed wetland is often unvegetated, but may include some scattered native or non-native vegetation. Some characteristic non-native species that may be associated with disturbed wetlands include giant reed (*Arundo donax*), tamarisk (*Tamarix* spp.), eucalyptus (*Eucalyptus* spp.), palms (*Phoenix* spp., *Washingtonia* spp.), pampas grass (*Cortaderia* spp.), and Bermuda grass (*Cynodon dactylon*).

Native wetland species, such as willows (*Salix* spp.) and cattails (*Typha* spp.), also may be present at low cover. Disturbed wetlands include portions of wetlands with obvious artificial structures, such as concrete lining, barricades, riprap, piers, or gates. Therefore, lined channels, Arizona crossings, detention basins, culverts, and ditches would be considered disturbed wetlands. Disturbed wetlands occur throughout San Diego County (Oberbauer et al., 2008).

3.3.1.3 Disturbed Habitat (11300), Tier IV

Disturbed habitat is a land cover type characterized by a predominance of non-native species, often introduced and established through human action. Oberbauer et al. (2008) describes disturbed land as areas that have been physically disturbed (by previous legal human activity) and are no longer recognizable as a native or naturalized vegetation association but continues to retain a soil substrate. Typically, vegetation, if present, is nearly exclusively composed of non-native plant species such as ornamentals or ruderal exotic species (i.e., weeds).

3.3.1.4 Urban/Developed (12000), Tier IV

According to Oberbauer et al. 2008, urban/developed represents areas that have been constructed upon or otherwise physically altered to an extent that native vegetation communities are not supported. This land cover type generally consists of semi-permanent structures, homes, parking lots, pavement or hardscape, and landscaped areas that require maintenance and irrigation (e.g., ornamental greenbelts). Typically, this land cover type is unvegetated or supports a variety of ornamental plants and landscaping. Urban/developed land is not regulated by the environmental resource agencies and is often considered a disturbed category.

3.3.1.5 Developed – Concrete Channel (12000), Tier IV

Although not recognized in Oberbauer et al. 2008, developed – concrete channel represents concrete-lined channels permanently or periodically inundated by water that have been physically altered to an extent that native wetland vegetation communities are not supported. This land cover is not considered a wetland by the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a) due to the lack of wetland vegetation present. Within the Miramar Reservoir Alternative, developed – concrete channel occurs within the channelized portion of Tecolote Creek, which would be impacted by the Morena Pipelines. However, this land cover is considered an ACOE-, RWQCB-, and CDFW-jurisdictional non-wetland waters or streambed.

3.3.1.6 Extensive Agriculture (18300), Tier IV

Extensive agriculture includes lands that support active agricultural operation (Oberbauer et al. 2008) including fields, pastures, and row crops. Extensive agriculture within the study area includes planting associated with Miramar Wholesale Nurseries in San Diego.

3.3.1.7 Diegan Coastal Sage Scrub (32500), Tier II

Diegan coastal sage scrub is a native vegetation community. According to Oberbauer et al. (2008), coastal sage scrub is composed of a variety of soft, low, aromatic shrubs, characteristically dominated by drought-deciduous species—such as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and sages (*Salvia* spp.)—with scattered evergreen shrubs, including lemonade sumac (*Rhus integrifolia*) and laurel sumac (*Malosma laurina*). Diegan coastal sage scrub occupies 182.81 ~~182.83~~ acres (6.2%) in many patches within undisturbed areas and an additional 0.46 acre (<0.1%) of restored Diegan coastal sage located in two portions on site, including south of the San Vicente Reservoir and a small patch south of Miramar Road. In addition, 91.78 acres (3.1%) of disturbed Diegan coastal sage scrub occur in several areas, with the majority located north of Miramar Road and east of I-805. Diegan coastal sage scrub is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.8 Diegan Coastal Sage Scrub—Baccharis-Dominated (32530), Tier II

Diegan coastal sage scrub—Baccharis-dominated is similar to Diegan coastal sage scrub but dominated by *Baccharis* species (desert broom (*B. sarothroides*) and/or coyote brush (*B. pilularis*)) (Oberbauer et al. 2008). This community typically occurs on disturbed sites or those with nutrient-poor soils and is often found within other forms of Diegan coastal sage scrub and on upper terraces of river valleys. This community is distributed along coastal and foothills areas in San Diego County. Approximately 17.33 acres (0.6%) of Diegan coastal sage scrub—Baccharis-dominated, with an additional 1.51 acres (0.1%) of disturbed, is scattered throughout the study area. Diegan coastal sage scrub—Baccharis-dominated is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines, as a form of coastal sage scrub (City of San Diego 2012a).

3.3.1.9 Flat-Topped Buckwheat (32800), Tier II

Flat-topped buckwheat is a monoculture community usually resulting from a disturbance and transitioning to coastal sage scrub or chaparral (Oberbauer et al. 2008). Dominant species include California buckwheat and deerweed (*Lotus scoparius*).

Approximately 2.40 acres (0.1%) of flat-topped buckwheat occurs in the one patch adjacent to the Miramar Wholesale Nurseries. In addition, 1.74 acres (0.1%) of disturbed flat-topped buckwheat occurs in two small areas: one is adjacent to the Miramar Wholesale Nurseries and just north of the undisturbed path, and the other is located south of the Miramar Landfill along Convoy Street. Flat-topped buckwheat is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines as a form of coastal sage scrub (City of San Diego 2012a).

3.3.1.10 Southern Mixed Chaparral (37120), Tier IIIA

Southern mixed chaparral is a drought- and fire-adapted community of woody shrubs from 5 to 10 feet tall that often forms dense, impenetrable stands. It develops primarily on mesic north-facing slopes and in canyons and is characterized by crown- or stump-sprouting species that regenerate following fire. This association typically contains chamise (*Adenostoma fasciculatum*), mission manzanita (*Xylococcus bicolor*), wild lilac (*Ceanothus* spp.), California scrub oak (*Quercus berberidifolia*), and laurel sumac.

Due to its high-density cover, there is little or no understory in this community, except for in openings. The dominant species in the southern mixed chaparral on site are chamise, laurel sumac, thickleaf yerba santa (*Eriodictyon crassifolium* var. *crassifolium*), dusky willow (*Salix melanopsis*), white sage (*Salvia apiana*), coyote brush, and orange bush monkeyflower (*Mimulus aurantiacus*).

Approximately 52.62 acres (1.8%) of southern mixed chaparral occur in several locations within the study area, primarily along the edges of the San Vicente Reservoir and surrounding the Miramar Landfill facilities. In addition, 0.42 acre (<0.1%) of disturbed southern mixed chaparral occur in a small area along the southern edge of the Miramar Reservoir. Southern mixed chaparral is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines, as a form of mixed chaparral (City of San Diego 2012a).

3.3.1.11 Chamise Chaparral (37200), Tier IIIA

Chamise chaparral is a plant community overwhelmingly dominated by chamise (Oberbauer et al. 2008). Typically, between 1 and 3 meters (3.3 and 9.8 feet) in height, stands of chamise are adapted to repeated fires because the species is capable of stump-sprouting following wildfire. Associated species may include manzanita (*Arctostaphylos* spp.), ceanothus (*Ceanothus* spp.), California buckwheat, deerweed, California scrub oak, lemonadeberry (*Rhus integrifolia*), sages (*Salvia* spp.), ashy spike-moss (*Selaginella cinerascens*), and yucca (*Yucca* spp.). However, associated species do not comprise a significant portion of the overall cover, and mature stands contain very little herbaceous understory or litter.

Approximately 61.24 acres (2.1%) of chamise chaparral occurs in the south of Miramar Road and north of the railroad, adjacent to the ~~VA~~ Miramar National Cemetery in undisturbed areas. Chamise chaparral is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.12 Coastal Sage—Chaparral Transition (37G00), Tier II

Coastal sage—chaparral transition is a mix of sclerophyllous, woody chaparral species and drought-deciduous, malacophyllous sage scrub species (Oberbauer et al. 2008). Dominant species includes chamise and coastal sagebrush. Coastal sage—chaparral transition is primarily a post-fire successional community (Oberbauer et al. 2008). Generally, laurel sumac, black sage (*Salvia mellifera*), and lemonadeberry are more common in coastal sage scrub, while *Ceanothus* spp. and mission manzanita are more common in chaparrals. This vegetation community typically occurs at the edges of Diegan coastal sage scrub and chaparral, where species from each vegetation community intertwine.

Approximately 17.33 ~~17.45~~ acres (0.6%) of coastal sage—chaparral transition is scattered throughout the study area but primarily occurs north of the Miramar Landfill facilities. Coastal sage-chaparral transition is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.13 Native Grassland (42100), Tier I

Native grassland is characterized by a sparse to dense cover of perennial grasses typically up to 2 feet tall, with many annual wildflowers also present in years with favorable rainfall. This vegetation community typically occurs on fine-textured soils that are moist or wet in the winter and very dry during summer and fall. Characteristic plant species typically include native grass species such as needle grass (*Stipa sp.*), wild oat (*Avena* spp.), bromes (*Bromus* spp.), and goldfields (*Lasthenia* spp.) (Oberbauer et al. 2008). Plant species observed within native grassland include purple needle grass (*Stipa pulchra*), with forbs such as common golden stars (*Bloomeria crocea* ssp. *crocea*) and California blue-eyed grass (*Sisyrinchium bellum*). The percentage cover of native species can be quite low, but an area can be designated as native grassland if there is 20% cover of native grassland species. In San Diego County, native grassland often occurs where the native vegetation has been disturbed by grazing, fire, agriculture, or other activities.

A total of 1.31 acres (<0.01%) of native grassland communities occurs in two areas in the study area: north of Clairemont Mesa Boulevard on a hillside along the San Vicente Pipeline and at the NCPWF site. Native grassland is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.14 Non-native Grassland (42200), Tier IIIB

Non-native grassland consists of dense to sparse cover of annual grasses with flowering culms between 0.5 to 3 feet in height (Oberbauer et al. 2008). In San Diego County the presence of wild oat, bromes, stork's bill (*Erodium* spp.), and mustard (*Brassica* spp.) are common indicators. In some areas, depending on past disturbance and annual rainfall, annual forbs may be the dominant species; however, it is presumed that grasses will dominate. Non-native grassland totals 107.89 acres (3.7%) within the study area. Non-native grassland is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.15 Vernal Pool (44000), Wetland

Vernal pools are seasonally flooded wetland communities (Oberbauer et al. 2008). Vernal pools are depressions that support distinctive living communities adapted to seasonally dry and wet hydrologic conditions. Vernal pools are associated with two important physical conditions: a subsurface hardpan or claypan that inhibits the downward percolation of water and a topography characterized by a series of low hummocks called mima mounds and low depressions (the vernal pools), which prevent abovegroundwater runoff. Vernal pools capture and store precipitation on the surface and/or subsurface in low depressions, which prevent above groundwater runoff (Bauder et al. 2009). Water collects in these depressions during the rainy season, and as the rainy season ends and the dry season begins, the water that has collected in these vernal pools gradually evaporates. The chemical composition of the remaining pool water becomes more concentrated as the pool water evaporates, which creates a chemical micro-environmental complex system for unique wetland-dependent vernal pool plant and animal communities to develop (Bauder et al. 2009). Vernal pools retain pooled water for approximately 2 weeks after significant rain events. Indicator species for vernal pools include *Psilocarphus* spp., *Downingia cuspidta*, and crustaceans. The following criteria differentiate vernal pools from other temporary wetlands, including: (1) the basin is at least partially vegetated during the normal growing season or is unvegetated due to heavy clay or hardpan soils that do not support plant growth; and (2) the basin contains at least one vernal pool indicator species (Oberbauer et al. 2008).

Vernal pools (2.42 acres) representing 0.1% of the Miramar Reservoir Alternative study area, occur within four components, including the NCPWF, LFG Pipeline, MBC, and the North City Pipeline. The pools on the NCPWF were found to support indicator plant species; therefore, they are considered to be vernal pools in accordance with the ~~Draft~~ Final VPHCP (City of San Diego ~~2016a~~2017). Vernal pool indicator species within all pools on the NCPWF include water pygmyweed (*Crassula aquatica*), California waterwort (*Elatine californica*), pale spike rush (*Eleocharis macrostachya*), toad rush (*Juncus bufonius*), hyssop loosestrife *(Lythrum*

hyssopifolia), chaffweed *(Centunculus minimus)*, long leaf plantain (*Plantago elongata*), and woolly marbles (*Psilocarphus brevissimus*) (Appendix B, Existing Conditions Letter Report for the Pure Water San Diego North City Water Purifications Project). The pools along the LFG Pipeline and North City Pipeline were mapped by HELIX and MCAS Miramar and verified as vernal pools (Appendix B, Existing Conditions Letter Report for the Pure Water San Diego North City Water Purifications Project). One vernal pool (PW8) occurring within the MBC study area was surveyed during the 2016/2017 wet season and determined to have two vernal pools indicator species: non-listed fairy shrimp and pale spike rush. As a wetlands community, vernal pools are considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.16 Cismontane Alkali Marsh (52310), Wetland

Cismontane alkali marsh is a wetland community dominated by low, perennial, herbaceous plants adapted to places where standing water or saturated soils are present for a considerable portion of the year (Oberbauer et al. 2008). High evaporation and low input of freshwater render these marshes somewhat alkaline, especially during the summer. Plant species composition within this community tends to consist of halophytes such as San Diego marsh-elder (*Iva hayesiana*), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), and certain sedges over the typical cattail-bulrush mix of freshwater marsh.

Cismontane alkali marsh covers 2.32 acres (0.1%) on site and was mapped within the San Diego River just south of Friars Road near I-5. As a wetlands community, cismontane alkali marsh is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.17 Coastal and Valley Freshwater Marsh (52410), Wetland

Coastal and valley freshwater marsh is a wetland habitat that develops at permanently flooded sites by freshwater lacking a significant current (Oberbauer et al. 2008). Because it is permanently flooded by fresh water, there is an accumulation of deep, peaty soils. It typically is dominated by species such as cattail, sedge (*Carex* spp.), yellow nutsedge (*Cyperus esculentus*), and bulrushes (*Scirpus* spp.). Coastal and valley freshwater marsh totals 27.07 acres (0.9%) and 0.01 acre (<0.1%) of disturbed coastal and valley freshwater marsh within the study area. As a wetlands community, coastal and valley freshwater marsh is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.18 Herbaceous Wetland (52510), Wetland

Herbaceous wetlands are seasonal wetlands supporting annual species such as seep monkeyflower (*Mimulus guttatus*) and annual rabbitsfoot grass (*Polypogon monspeliensis*), and typically does not support *Typha* spp., *Scirpus* spp., and *Juncus* spp. associated with freshwater marsh (Oberbauer et al. 2008). In San Diego County, these wetlands occur throughout wet areas, including swale areas or adjacent to drainages (Oberbauer et al. 2008). One occurrence of herbaceous wetlands was mapped within the San Diego River and totals 0.76 acre (<0.1% of the study area). As a wetlands community, herbaceous wetland is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.19 Southern Riparian Forest (61300), Wetland

Southern riparian forest is a dense riparian forest that can be further differentiated into more specific communities recognized by Oberbauer et al., (2008): southern coast live oak riparian forest, southern arroyo willow riparian forest, or southern cottonwood–willow riparian forest. Characteristic species of southern riparian forest include California sycamore (*Platanus racemosa*) and cottonwood (*Populus* spp.), as well as a variety of other wetland plants. Southern riparian forests occur along streams and rivers.

Within the study area, there are two occurrences of this vegetation community within Marian Bear Memorial Park located just south of SR-52 along Genesee Avenue. One other occurrence is located east of Marian Bear Memorial Park between commercial developments. These areas total 5.15 acres, or 0.2% of the study area. Disturbed southern riparian forest includes 0.02 acre, or <0.1% of the study area. Areas mapped as southern riparian forest could not be differentiated into more specific community types due to the varying distribution and abundance of multiple characteristic species, including willows, Fremont cottonwood (*Populus fremontii*), California sycamore, and coast live oak (*Quercus agrifolia*). Where additional distinctions could be made, based on the presence of a clear dominant species, the more specific southern coast live oak riparian forest or southern arroyo willow riparian forest was mapped. As a wetlands community, southern riparian forest is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.20 Southern Coast Live Oak Riparian Forest (61310), Wetland

Southern coast live oak riparian forest is a dense riparian forest dominated by coast live oak, often with an herbaceous understory. This community occurs along the bottom or outer slopes of larger streams (Oberbauer et al. 2008). Areas mapped as oak riparian forest are dominated by coast live oak.

A total of 3.57 acres (0.1%) of southern coast live oak riparian forest occurs in one area east of Genesee Avenue and north of Nobel Drive, and a small patch occurs within Marian Bear Memorial Park. As a wetlands community, southern coast live oak riparian forest is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.21 Southern Arroyo Willow Riparian Forest (61320), Wetland

Southern arroyo willow riparian forest is a winter-deciduous riparian forest dominated by broad-leafed trees and arroyo willow. Typically, it consists of a moderately tall, closed, or nearly closed canopy, with an understory of shrubby willows (Oberbauer et al. 2008). Southern arroyo willow riparian forest is characterized by the presence of several species besides arroyo willow (*Salix lasiolepis*), including Douglas' sagewort (*Artemisia douglasiana*), mulefat (*Baccharis salicifolia*), manroot (*Marah macrocarpus*), California sycamore, Fremont cottonwood, black cottonwood (*Populus trichocarpa*), Goodding's willow (*Salix gooddingii*), narrowleaf willow (*Salix exigua*), yellow willow (*Salix lasiandra*), and stinging nettle (*Urtica dioica* ssp. *holosericea*) (Oberbauer et al. 2008). Southern arroyo willow riparian forest occurs in sub-irrigated and frequently overflowed areas along rivers and streams that are perennially wet (Oberbauer et al. 2008).

Approximately 4.64 acres (0.2%) of southern arroyo willow riparian occurs in the study area. In the study area, southern arroyo willow riparian forest is dominated by arroyo willow. As a wetlands community, southern arroyo willow riparian forest is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.22 Mulefat Scrub (63310), Wetland

Mulefat scrub is a depauperate, tall, herbaceous riparian scrub strongly dominated by mulefat. This early seral community is maintained by frequent flooding. Site factors include intermittent stream channels with fairly coarse substrate and moderate depth to the water table (Oberbauer et al. 2008). This community type is widely scattered along intermittent streams and near larger rivers. Mulefat scrub totals 2.22 acres (0.1%) within the study area. As a wetlands community, mulefat scrub is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.23 Southern Willow Scrub (63320), Wetland

Southern willow scrub is a dense, broad-leafed, winter-deciduous riparian thicket dominated by several willow species, with scattered emergent Fremont cottonwood and California sycamore.

This community was formerly extensive along the major rivers of coastal Southern California, but is now much reduced (Oberbauer et al. 2008).

Approximately 10.59 acres (0.4%) of southern willow scrub occurs in scattered locations throughout the study area with the largest occurrence mapped within the San Diego River, south of Friars Road. This vegetation community primarily occurs within drainages. In addition, 1.76 acres (0.1%) of disturbed southern willow scrub occurs in three small patches throughout the study area, and a larger polygon was mapped within the San Diego River adjacent to the large polygon of undisturbed southern willow scrub. As a wetlands community, southern willow scrub is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.24 Open Water – Freshwater (64140), Wetland

Open water—freshwater is comprised of year-round bodies of fresh water (extremely low salinity) in the form of reservoirs/lakes, streams, ponds, or rivers (Oberbauer et al. 2008). Open water areas are aquatic areas that generally lack emergent vegetation, but typically support hydrophytic vegetation around their margins (e.g., mulefat scrub, southern willow scrub, freshwater marsh, or herbaceous wetland). Open water totals 121.63 acres (4.1% of the study area) within the study area.

3.3.1.25 Non-vegetated Channel or Floodway (64200), Wetland

According to Oberbauer et al. (2008), non-vegetated channel is the sandy, gravelly, or rocky fringe of waterways or flood channels that is unvegetated on a relatively permanent basis. Vegetation may be present but is usually less than 10% total cover and grows on the outer edge of the channel. Within the Miramar Reservoir Alternative, non-vegetated channel occurs within Rose Creek that runs through MCAS Miramar, within a portion of the San Diego River, adjacent to Teocolote Creek, and within San Clememte Creek just south of SR-52.

3.3.1.26 Arundo-Dominated Riparian (65100), Wetland

Arundo-dominated riparian vegetation community is composed of monotypic or nearly monotypic stands of giant reed that are fairly widespread in Southern California. Typically, it occurs on moist soils and in streambeds and may be related directly to soil disturbance or the introduction of propagates by grading or flooding. Mapped occurrences may include surrounding native trees. Giant reed often occupies jurisdictional wetlands.

Approximately 0.55 acre (<0.1%) of arundo-dominated riparian occurs in several small patches on site, including east of I-15 and north of Mission Gorge Road in Mission Trails Regional Park, and south of San Vicente Reservoir. As a wetlands community, arundo-dominated riparian is

considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.3.1.27 Coast Live Oak Woodland (71160), Tier I

Coast live oak woodland is dominated by a single evergreen species: coast live oak with a canopy height reaching 10 to 25 meters (32.8 to 82.0 feet) (Oberbauer et al. 2008). The shrub layer is poorly developed, but may include toyon (*Heteromeles arbutifolia*), gooseberry (*Ribes* spp.), or laurel sumac. The herb component is continuous, dominated by a variety of introduced species (Oberbauer et al. 2008).

In the study area, coast live oak woodland is dominated by coast live oak and comprises 29.76 acres (1.0%) of the study area. Other shrub species include chamise, California buckwheat, California cholla (*Cylindropuntia californica*), and chaparral yucca (*Hesperoyucca whipplei*). Coast live oak woodland occurs primarily within Marian Bear Memorial Park and Tecolote Canyon Natural Park along Clairemont Drive. In addition, 1.22 acres (<0.1%) of disturbed coast live oak woodland occurs in the densely vegetated area within the undisturbed coast live oak woodland located in Marian Bear Memorial Park. Coast live oak woodland is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines as a form of oak woodlands (City of San Diego 2012a).

3.3.1.28 Non-native Woodland (79000), Tier IV

Non-native woodland includes woodlands of exotic trees that are intentionally planted and are not maintained or artificially irrigated (Oberbauer et al. 2008). Non-native species includes *Eucalyptus* spp. or *Tamarix* spp. Those areas which contained pure stand of eucalyptus trees were mapped as eucalyptus woodland (79100, see Section 3.3.1.29).

Approximately 0.29 acres (<0.1%) of non-native woodland occurs in patches along Mission Gorge Road in Mission Trails Regional Park.

3.3.1.29 Eucalyptus Woodland (79100), Tier IV

According to Oberbauer et al. (2008), this "naturalized" vegetation community is fairly widespread in Southern California and is considered a woodland habitat. It typically consists of monotypic stands of introduced Australian eucalyptus trees. The understory is either depauperate or absent due to high leaf litter, which restricts growth in understory as a result of high levels of allelochemicals. Although eucalyptus woodlands are of limited value to most native plants and animals, they frequently provide nesting and perching sites for several raptor species.

Approximately 96.52 acres (3.3%) of eucalyptus woodland occurs within the study area.

3.3.1.30 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.

3.3.2 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 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. The study area supports six sensitive wildlife species, which are addressed in Section 3.3.4.

3.3.3 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 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 2016; 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.

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 (*Adolphia californica*), San Diego sagewort (*Artemisia palmeri*), Orcutt's brodiaea (*Brodiaea orcuttii*), wart-stemmed ceanothus (*Ceanothus verrucosus*), long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*), San Diego barrel cactus (*Ferocactus viridescens*), graceful tarplant (*Holocarpha virgata* ssp. *elongata*), decumbent goldenbush (*Isocoma menziesii* var. *decumbens*), San Diego marsh-elder (*Iva hayesiana*), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), small-flowered microseris (*Microseris douglasii* ssp. *platycarpha*), Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*), golden-rayed pentachaeta (*Pentachaeta aurea* ssp. *aurea*), Nuttall's scrub oak (*Quercus dumosa*), Coulter's matilija poppy (*Romneya coulteri*), ashy spike-moss, and San Diego County viguiera (*Viguiera laciniata*). 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 3-1A through 3-1P, Biological Resources

– Miramar Reservoir and San Vicente Reservoir Alternatives. For species with moderate to high potential to occur within the component's study area, see Sections 3.4.1 through 3.4.11.

California Adolphia (*Adolphia californica*)

California adolphia has a CRPR 2B.1. California adolphia is a perennial deciduous shrub and is distributed along the coast of San Diego County (CNPS 2017). California adolphia is found in chaparral, coastal sage scrub, and valley grassland. This species' blooming period is between December and May. California adolphia occurs on clay soils below 1,310 feet AMSL.

A total of 1,038 California adolphia plants were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area along the Miramar Reservoir (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). This species was not recorded during 2016 surveys because the Miramar Reservoir was not included in the survey area.

San Diego Sagewort (*Artemisia palmeri*)

San Diego sagewort has a CRPR 4.2. San Diego sagewort is a dicot, California native perennial deciduous shrub, and is distributed along the coast of San Diego County (CNPS 2016). San Diego sagewort is found in chaparral; coastal sage scrub; and riparian forest, scrub, and woodland. This species' bloom period is between February and September. San Diego sagewort occurs on sandy, mesic soils at an elevation of 50 to 3,000 feet.

A total of ~~50~~ 255 San Diego sagewort plants was observed in the 100-foot buffer of the Miramar Reservoir Alternative study area ~~including north of the NCWRP and~~ along the Morena Pipelines within Diegan coastal sage scrub (including disturbed), Diegan coastal sage scrub—Baccharis-dominated, southern riparian forest (including disturbed), and coast live oak woodland (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Orcutt's Brodiaea (*Brodiaea orcuttii*)

Orcutt's brodiaea has a CRPR 1B.1 and is an MSCP Covered Species. Orcutt's brodiaea is a monocot, California native perennial herb that occurs in San Diego and Riverside counties (CNPS 2016). This species' habitat includes closed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pools, and almost always occurs under natural conditions in wetlands (USFWS 1997b). The bloom period for Orcutt's brodiaea is between May and July. Orcutt's brodiaea occurs on mesic, clay, and sometimes serpentinite soils at an elevation of 100 to 5,550 feet.

A total of approximately ~~2,210~~430 Orcutt's brodiaea individuals were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area along the LFG Pipeline within chamise chaparral, non-native grassland, disturbed flat-topped buckwheat, and disturbed habitat (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that survey timing is based on blooming periods and several target species are blooming concurrently. Given that this particular species has a short blooming period, which makes it hard to capture all the individuals present in a given year, this could account for a smaller number of individuals observed in 2017 despite it being a better rainfall year. Therefore, the impact analysis will include the individuals observed during the 2016 surveys within the Project's footprint, see Section 4.2.3 for details.

Wart-Stemmed Ceanothus (*Ceanothus verrucosus*)

Wart-stemmed ceanothus has a CRPR 2B.2 and is an MSCP Covered Species. Wart-stemmed ceanothus is a dicot, California native perennial evergreen shrub that occurs in San Diego and Riverside counties (CNPS 2016). This species is found in chaparral. The bloom period for wart-stemmed ceanothus is between December and May. Wart-stemmed ceanothus occurs at an elevation of 3 to 1,245 feet.

A total of approximately ~~55~~ 1,001 wart-stemmed ceanothus shrubs were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area, including along the Morena Pipelines within disturbed habitat; along the LFG Pipeline within chamise chaparral, Diegan coastal sage scrub, southern mixed chaparral, coastal sage-chaparral transition, and disturbed habitat; and south and north of the MBC within Diegan coastal sage scrub, southern mixed chaparral, and coastal sage-chaparral transition (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Long-Spined Spineflower (*Chorizanthe polygonoides* var. *longispina*)

Long-spined spineflower has a CRPR 1B.2. Long-spined spineflower is a dicot, California native annual herb that occurs primarily in San Diego, Riverside, Orange, and Santa Barbara counties (CNPS 2016). This species is found in chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pools. The bloom period for the long-spined spineflower is between April and July. Long-spined spineflower occurs on clay soil at an elevation between 100 to 5,020 feet.

A total of approximately ~~1,050~~ 1,007 long-spined spineflower individuals were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area, including the north end of the

LFG Pipeline within chamise chaparral and disturbed habitat, and north, west, and south of the MBC within coastal sage-chaparral transition and disturbed habitat (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

San Diego Barrel Cactus (*Ferocactus viridescens*)

San Diego barrel cactus has a CRPR 2B.1 and is an MSCP Covered Species. San Diego barrel cactus is a dicot, California native perennial stem succulent that occurs in coastal San Diego County (CNPS 2017). This species is found in chaparral, coastal scrub, valley and foothill grassland, and vernal pools. The blooming period for San Diego barrel cactus is between May and June. San Diego barrel cactus occurs at an elevation of 10 to 1,475 feet AMSL.

A single San Diego barrel cactus individual was observed in the 100-foot buffer of the Miramar Reservoir Alternative survey area north of Miramar Reservoir (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). This species was not recorded during 2016 surveys because the Miramar Reservoir was not included in the survey area.

Graceful Tarplant (*Holocarpha virgata* ssp. *elongata*)

Graceful tarplant has a CRPR 4.2. Graceful tarplant is a dicot, California native annual herb that is endemic to California and occurs in coastal San Diego, Riverside, and Orange counties (CNPS 2016). This species is found in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland. The bloom period for graceful tarplant is between May and November. Graceful tarplant occurs at an elevation between 195 and 3,610 feet.

A total of approximately ~~1,060~~729,911 graceful tarplant individuals were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area within vernal pools, chamise chaparral, Diegan coastal sage scrub (including disturbed), chamise chaparral, coastal sage-chaparral transition, non-native grassland, and disturbed habitat,, including east of the NCWRP, within the NCPWF footprint, along the North City Pipeline, the north end of the LFG Pipeline, and west of the MBC (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). The number of individuals observed during surveys conducted in 2017, which was a record rain year, increased from the total individuals observed during the 2016 surveys. It should be noted that population sizes of this species vary dramatically from year to year, depending on rainfall patterns.

Decumbent Goldenbush (*Isocoma menziesii* var. *decumbens*)

Decumbent goldenbush has a CRPR 1B.2. Decumbent goldenbush is a dicot, California native perennial shrub that occurs along the coast of San Diego, Orange, and Los Angeles counties, and on San Clemente Island and Santa Catalina Island (CNPS 2016). This species is found in chaparral and coastal scrub, often in disturbed areas. The bloom period for decumbent goldenbush is between April and November. Decumbent goldenbush occurs on sandy soil at an elevation between 30 to 440 feet.

A total of approximately ~~400~~ 193 decumbent goldenbush individuals were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area, including east of the MBC within coastal sage-chaparral transition and disturbed habitat~~and east of the NCWRP~~ (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

San Diego Marsh-Elder (*Iva hayesiana*)

San Diego marsh-elder has a CRPR 2B.2. San Diego marsh-elder is a dicot, California native perennial herb, and is distributed along the coast of San Diego County (CNPS 2017). San Diego marsh-elder is found in alkali sink and wetland riparian. This species' bloom period is between April and October. San Diego marsh-elder occurs in wetlands at an elevation of less than 980 feet AMSL.

A total of 49 San Diego marsh-elder plants were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area along the Morena Pipelines within coastal and freshwater marsh, and southern coast live oak riparian forest, and along the North City Pipeline within non-native grassland, southern mixed chaparral, and disturbed habitat (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). This species was not recorded during 2016 surveys.

Southwestern Spiny Rush (*Juncus acutus* ssp. *leopoldii*)

Southwestern spiny rush has a CRPR 4.2. Southwestern spiny rush is a monocot, California native perennial grasslike herb (rhizomatous), and is distributed along the coast ranging between San Luis Obispo and San Diego County, as well as Marin County, and inland Riverside County (CNPS 2017). Southwestern spiny rush is found in coastal strands~~,~~; and in wetland-riparian seeps, meadows, salt-marsh, dunes, and coasts. This species' bloom period is between May and June. Southwestern spiny rush occurs in wetlands at an elevation less than 980 feet AMSL.

A total of 396 southwestern spiny rush plants were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area south of the Morena Pump Station in the San Diego River flood plain within cismontane alkali marsh, southern willow scrub, disturbed habitat, and

urban/developed (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). This species was not recorded during 2016 surveys because the San Diego River was not included in the survey area.

Robinson's Pepper-Grass (*Lepidium virginicum* var. *robinsonii*)

Robinson's pepper-grass has a CRPR 4.3. Robinson's pepper-grass is a dicot, California native annual herb that occurs in San Diego, Orange, Riverside, San Bernardino, Los Angeles, Santa Barbara, and Ventura counties, and on Santa Cruz Island (CNPS 2016). This species is found in chaparral and coastal scrub. The bloom period for Robinson's pepper-grass is between January and July. Robinson's pepper-grass occurs at an elevation between 3 and 2,900 feet.

A total of approximately 360 Robinson's pepper-grass individuals were observed during the 2016 surveys in the 100-foot buffer of the Miramar Reservoir Alternative study area, including along the LFG Pipeline and east and west of the MBC ~~(Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives)~~. Since this species was not observed in 2017 and not observed within the impact limits during the 2016 surveys it is not included on the figures.

Small Flowered Microseris (*Microseris douglasii* ssp. *platycarpha*)

Small flowered microseris has a CRPR 4.2. Small flowered microseris is a dicot, California native annual herb, and is distributed along the coast of San Diego County (CNPS 2017). Small flowered microseris is found in valley grassland, coastal sage scrub, and foothill woodland. This species' bloom period is between March and May. Small flowered microseris occurs in wetlands at an elevation less than 3,600 feet AMSL.

A total of 100 small flowered microseris plants were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area along the LFG Pipelines within vernal pools and chamise chaparral (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). This species was not observed during 2016 surveys. It should be noted that because this species is a small annual herb population sizes can vary dramatically from year to year, depending on rainfall patterns.

Golden-Rayed Pentachaeta (*Pentachaeta aurea* ssp. *aurea*)

Golden-rayed pentachaeta has a CRPR 4.2. Golden-rayed pentachaeta is a dicot, California native annual herb that occurs in San Diego, Los Angeles, Orange, Riverside, and San Bernardino counties (CNPS 2016). This species is found in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland, and valley and foothill

grassland. The bloom period for golden-rayed pentachaeta is between March and July. Golden-rayed pentachaeta occurs at an elevation of 260 to 6,070 feet.

A total of approximately ~~170~~ 6,139 golden-rayed pentachaeta individuals were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area, including the north end of the LFG Pipeline within Diegan coastal sage scrub, chamise chaparral, and disturbed habitat, and along the northern portion of Miramar Reservoir (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that because this species is a small annual herb, population sizes can vary dramatically from year to year, depending on rainfall patterns.

Nuttall's Scrub Oak (*Quercus dumosa*)

Nuttall's scrub oak has a CRPR 1B.1. Nuttall's scrub oak is a dicot, California native perennial evergreen shrub that occurs in San Diego, Orange, Los Angeles, Ventura, and Santa Barbara counties (CNPS 2016). This species is found in closed-cone coniferous forest, chaparral, and coastal sage scrub. The bloom period for Nuttall's scrub oak is between February and August. Nuttall's scrub oak occurs in sandy and clay loam soils at an elevation of 50 to 1,310 feet.

A total of ~~29~~ 21 individual Nuttall's scrub oak shrubs were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area within non-native grassland, Diegan coastal sage scrub (including disturbed), coastal sage-chaparral transition, and southern mixed chaparral, including the north end of the LFG Pipeline, north and east of the MBC, ~~and~~ east of the NCWRP, and along the northern portion of the Miramar Reservoir (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Coulter's Matilija Poppy (*Romneya coulteri*)

Coulter's matilija poppy has a CRPR 4.2. Coulter's matilija poppy is a dicot, California native perennial herb (rhizomatous); is endemic to California; and is distributed in coastal and inland northern and southern California (CNPS 2017). Coulter's matilija poppy is found in chaparral and coastal sage scrub. This species' blooming period is between March and July. Coulter's matilija poppy occurs in dry washes and canyons at elevations less than 3,900 feet AMSL.

A total of 28 Coulter's matilija poppy plants were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area along the Morena Pipelines within southern arroyo willow riparian forest and disturbed habitat (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). This species was not observed in 2016.

Ashy Spike-Moss (*Selaginella cinerascens*)

Ashy spike-moss has a CRPR 4.1. Ashy spike-moss is a pteridophyte, California native fern that occurs in San Diego, Riverside, and Orange counties (CNPS 2016). This species is found in chaparral and coastal sage scrub. Ashy spike-moss occurs at an elevation of 65 to 2,100 feet.

A total of ~~27~~ 60 ashy spike-moss polygons[2] were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area within chamise chaparral, Diegan coastal sage scrub (including disturbed), southern mixed chaparral, non-native grassland, disturbed habitat, and urban/developed, including along the LFG Pipeline, north and west of the MBC, ~~and near~~east of the NCWRP Expansion, west of the NCPWF, and along the northern portion of the Miramar Reservoir (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

San Diego County Viguiera (*Viguiera laciniata*)

San Diego County viguiera has a CRPR 4.2. San Diego County viguiera is a dicot, California native perennial shrub that occurs in San Diego and Orange counties (CNPS 2016). This species is found in chaparral and coastal sage scrub. The bloom period for San Diego County viguiera is between February and August. San Diego County viguiera occurs at an elevation of 195 to 2,460 feet.

A total of about ~~100~~ 138 San Diego County viguiera shrubs were observed in the Miramar Reservoir Alternative study area within Diegan coastal sage scrub (including disturbed), and urban/developed along the LFG Pipeline, NCWRP Expansion, and NCPW Pipeline (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

3.3.4 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 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: larval host plant surveys for Quino checkerspot butterfly, four-passes for Quino checkerspot butterfly, protocol-level wet and dry season surveys for San

[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.

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. 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 (*Accipiter cooperii*), coastal California gnatcatcher, yellow warbler (*Setophaga petechia*), 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 below, and sightings are shown in Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives. For species with moderate to high potential to occur within each component's study area, but which were not observed during surveys, see Sections 3.4.1 through 3.4.11.

Coastal California Gnatcatcher (*Polioptila californica californica*), FT/SSC/MSCP Covered

The coastal California gnatcatcher is federally listed as threatened (FT), and is a CDFW SSC and an MSCP Covered Species. This species occurs in coastal Southern California and Baja California year round, where it depends on a variety of arid scrub habitats. The coastal California gnatcatcher occurs mainly on cismontane slopes (coastal side of the mountains) in Southern California, ranging from Ventura and northern Los Angeles counties south through the Palos Verdes Peninsula to Orange, Riverside, San Bernardino, and San Diego counties. The species' range continues south to El Rosario, Mexico.

Coastal California gnatcatcher typically occurs in or near coastal scrub vegetation that is composed of relatively low growing, dry season- deciduous and succulent plants. Characteristic plants of this community include coastal sagebrush, various species of sage, California buckwheat, lemonade sumac, California brittlebush (*Encelia californica*), and cactus (e.g., *Opuntia* spp.).

Coastal California gnatcatchers were observed within the Miramar Reservoir Alternative study area adjacent to three Project components: LFG Pipeline, MBC, and the NCWRP. A total of nine individuals or transients, five pairs, and seven nests were observed within the Miramar Reservoir Alternative study area during focused surveys (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). Of that total, four of the nine individual observations were made by Dudek, one individual observation was made by HELIX, and the remaining individuals, pairs, and nest observations were made by MCAS Miramar (SDNHM 2016). Appendix E, 2016 Focused Coastal California Gnatcatcher Survey Report, summarizes the coastal California gnatcatcher observations outside of MCAS Miramar per the Dudek survey area.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*), FE/SE/MSCP Covered

The southwestern willow flycatcher is federally listed as endangered (FE), state listed as endangered (SE), and an MSCP Covered Species. The breeding range of the southwestern willow flycatcher includes Southern California, Arizona, New Mexico, southwestern Colorado, and extreme southern portions of Nevada and Utah (Sogge et al. 2010). Breeding southwestern willow flycatchers are riparian obligates, typically nesting in relatively dense riparian vegetation where surface water is present or soil moisture is high enough to maintain the appropriate vegetation characteristics (Sogge et al. 2010).

No southwestern willow flycatchers were observed within the Miramar Reservoir Alternative during the 2016 focused surveys.

Least Bell's Vireo (*Vireo bellii pusillus*), FE/SE/MSCP Covered

Least Bell's vireo is federally listed as endangered (FE), state listed as endangered, and an MSCP Covered Species. The breeding range of least Bell's vireo includes coastal and inland Southern California (including the western edge of Southern California's southern deserts), a small area within California's Central Valley, and extreme northern Baja California, Mexico. Least Bell's vireo overwinters primarily along southern Baja California (Kus 2002). Least Bell's vireo primarily occupy riverine riparian habitats along water, including dry portions of intermittent streams that typically provide dense cover within 1 to 2 meters (3.3 to 6.6 feet) off the ground, often adjacent to a complex, stratified canopy. Least Bell's vireo nesting habitats in cismontane and coastal areas include southern willow scrub; mulefat scrub; arroyo willow riparian forest edge; wild blackberry thickets; and more rarely, cottonwood forest, sycamore alluvial woodland, and southern coast live oak riparian forest.

No least Bell's vireo were observed within the Miramar Reservoir Alternative during the 2016 focused surveys.

Burrowing Owl (*Athene cunicularia*), SSC/MSCP Covered

The burrowing owl is a CDFW SSC and an MSCP Covered Species. It occurs throughout North and Central America west of the eastern edge of the Great Plains south to Panama (County of Riverside 2008). In California, burrowing owls are yearlong residents of flat, open, dry grassland and desert habitats at lower elevations (Bates 2006). They can inhabit annual and perennial grasslands and scrublands characterized by low growing vegetation. They may be found in areas that include trees and shrubs if the cover is less than 30% (Bates 2006); however, they prefer treeless grasslands. Although burrowing owls prefer large, contiguous areas of treeless grasslands, they have also been known to occupy fallow agriculture fields, golf courses, cemeteries, road allowances, airports, vacant lots in residential areas and university campuses, and fairgrounds when nest burrows are present (Bates 2006; County of Riverside 2008). They typically require burrows made by fossorial mammals, such as California ground squirrels (*Spermophilus (Otospermophilus) beecheyi*).

Focused surveys for burrowing owl were conducted in 2016 following Staff Report on Burrowing Owl Mitigation (CDFG 2012) guidelines (see Section 2.3.5 for methods). No burrowing owls were observed during 2016 focused surveys.

White-Tailed Kite (*Elanus leucurus*), FP

The white-tailed kite is a California fully protected (FP) species. The core of the white-tailed kite's breeding range in the United States is in California, with nearly all areas up to the western Sierra Nevada foothills and southeast deserts occupied, including documented breeding in eastern San Diego County (Dunk 1995; Unitt et al. 2004). The white-tailed kite is commonly associated with certain types of agriculture areas (Grinnell and Miller 1944). It also generally occurs in low-elevation grassland, wetland, oak woodland, low shrub, open woodlands, or savannah habitats. This species also uses fence rows and irrigation ditches (with residual vegetation). Riparian areas adjacent to open space areas are typically used for nesting (County of Riverside 2003), where kites prefer dense, broadleafed deciduous trees for nesting and night roosting (Brown and Amadon 1968). Small mammals (prey falling within the 20–70-gram [0.71–2.47 ounces] range) comprise over 95% of white-tailed kite prey. However, they occasionally take birds, insects, reptiles, and amphibians (County of Riverside 2003). White-tailed kites build a platform of sticks in the fork of a tree or tall bush to nest. Egg laying begins in February and probably peaks in March and April. Peak fledging probably occurs in May and June (Erichsen 1995). The white-tailed kite is a primarily non-migratory resident through most of its breeding range (Erichsen et al. 1996).

One white-tailed kite was observed foraging within the NCPWF during multiple site visits conducted by HELIX (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir

and San Vicente Reservoir Alternatives). This species is not expected to nest on site due to lack of suitable nesting habitat.

Quino Checkerspot Butterfly (*Euphydryas editha quino*), FE

The Quino checkerspot butterfly is federally endangered. This species is found only in western Riverside County, southern San Diego County, and northern Baja California, Mexico (USFWS 2003). This species is found on sparsely vegetated hilltops, ridgelines, and occasionally on rocky outcrops in open chaparral and coastal sage scrub habitat (typically at less than 3,000 feet AMSL). This species requires host plants within these vegetation communities for feeding and reproduction. The primary larval host plant is dotseed plantain; however, several other species have been documented as important larval host plants, including desert plantain, sometimes called woolly plantain; stiffbranch bird's beak; white snapdragon (*Antirrhinum coulter)*; purple owl's clover; and Chinese houses (*Collinsia* spp.) (USFWS 2003). USFWS-required survey areas for Quino checkerspot butterfly overlaps all of the survey areas within the study area (Appendix D, 2016 Focused Quino Checkerspot Butterfly Survey Report).

A habitat assessment and focused surveys were conducted for Quino checkerspot butterfly throughout the Miramar Reservoir Alternative study area. A total of 373 acres of Quino checkerspot butterfly habitat was documented during the habitat assessment and surveyed within the Miramar Reservoir Alternative (Appendix D, 2016 Focused Quino Checkerspot Butterfly Survey Report). No Quino checkerspot butterflies were observed during the 2016 focused surveys.

Hermes Copper Butterfly (*Lycaena hermes*), USFWS Candidate Species

The Hermes copper butterfly is a USFWS candidate species. Prior to focused Hermes cooper butterfly surveys, Dudek mapped Hermes copper butterfly habitat in accordance with the County of San Diego Guidelines for Hermes Copper (Attachment B of County of San Diego 2010). The guidelines state that habitat within 150 meters (492 feet) of a Hermes copper butterfly observation should be mapped as occupied habitat; therefore, a 500-foot buffer was created around the components of the North City Project to create a study area. Within this study area, all redberry buckthorn within 15 feet of California buckwheat was mapped as potential habitat and that potential habitat was surveyed (Figures 2-2A through 2-2S, Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results). Based on the habitat assessment, approximately 286 acres of the study area was determined to contain potential habitat and was surveyed. Four surveys from May to July were conducted per the County guidelines. No Hermes copper butterflies were observed during the 2016 focused surveys within the 286 acres of potential habitat (Figures 2-2A through 2-2S, Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results).

Western Pond Turtle (*Actinemys marmorata*), SSC/MSCP Covered

Western pond turtle is a CDFW SSC and an MSCP Covered Species. Western pond turtles occur throughout California west of the Sierra Nevada and Cascade ranges; they do not occur in deserts. This species needs permanent or semi-permanent water sources that support suitable basking sites, including logs, rocks, mats of floating vegetation, or mud banks (Zeiner et al. 1988). Western pond turtles occur along ponds, lakes, streams, irrigation ditches, and intermittent streams.

~~Focused~~ No western pond turtles were detected during trapping surveys conducted by USGS ~~along the shoreline of~~within the Miramar Reservoir ~~within basking sites approximately 20 feet from the open water, resulted in the observation of four western pond turtles~~ (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). Several non-native species of turtles were captured, including 409 red-eared sliders. All non-native species were removed from the Miramar Reservoir.

~~Although the Miramar Reservoir contains western pond turtles, it is not optimal habitat due to the presence of non-native species (i.e., red-eared sliders (*Trachemys scripta elegans*) that compete for resources, and American bullfrogs (*Lithobates catesbeianus*) and largemouth bass, which prey on the hatchlings), quagga mussels that affect the existing trophic regime, human presence which could affect the use of basking and refuge sites (Holland 1994), and the isolated nature of the reservoir from other populations could indicate that the turtles were introduced by humans (Holland 1994). Furthermore, USGS (2005) assessed pond turtle occurrence and habitat suitability within the San Diego County MSCP, and part of that assessment included the development of a habitat quality ranking system. The assessment showed that pond turtle presence was negatively correlated with human access and positively correlated with naturalness of a site. Although the Miramar Reservoir was not evaluated during the assessment, based on the ranking criteria, the level of human access at the reservoir would most likely be ranked as "High: Sites with few restrictions to access, usually designated recreational areas (e.g., fishing/boating reservoirs, parks imbedded in high density housing, designated recreational areas)" (USGS 2005). The level of site naturalness at the Miramar Reservoir would most likely be ranked as "Artificial: Sites that were completely artificial and occur outside of a natural channel or wetland (e.g., artificial ponds in park setting, agricultural ponds)" (USGS 2005). Additionally, the USGS assessment only detected one pond turtle at a site characterized as a high access and artificial, and it is thought that this individual was released by a wildlife rescue organization (USGS 2005).~~

~~Four western pond turtles were observed within the Miramar Reservoir during the surveys; however, they were all the same general size. Based on the apparent lack of multiple life stages and the site characterization (high access and artificial) within the Miramar Reservoir, there does not appear to be a reproducing population within the reservoir, and the observed individuals may have~~

~~been released into the reservoir.~~ Two incidental observations occurred during the jurisdictional delineation and riparian bird surveys within the Miramar Reservoir Alternative. One individual was found within Evan's Pond, south of the Miramar Reservoir and west of the North City Pipeline, basking within the freshwater marsh. Another individual was observed, south of SR-52 and east of where the Morena Pipelines run along Genesee Avenue, within southern riparian forest. It should be noted that the individual oberseved within southern riparian forest near Genesee Avenue was only observed briefly, and it is very difficult to distinguish western pond turtles from red-eared sliders without examining the individual up close.

San Diego and Riverside Fairy Shrimp Surveys (*Branchinecta sandiegonensis; Streptocephalus woottoni*), FE/MSCP Covered

San Diego and Riverside fairy shrimp are both federally endangered and MSCP Covered Species. Both species typically occur in road ruts, ephemeral basins, or vernal pools. Road ruts are depressions that are typically formed by vehicular traffic within or immediately adjacent to roadways, generally lack aquatic vegetation, and are heavily disturbed by vehicular traffic. Ephemeral basins are surface depressions that retain sufficient water level, support aquatic vegetation, and generally lack vehicle disturbance. Vernal pools are depressions that retain sufficient water level, support vernal pool indicator plant species, and likely support vernal pool branchiopods.

HELIX mapped features within suitable habitat areas and conducted wet season surveys for San Diego and Riverside fairy shrimp in 2015–2016 within their project areas and potential mitigation sites (Appendix B, Existing Conditions Letter Report for the Pure Water San Diego Program North City Water Purifications Project). The HELIX survey areas did not cover all potential areas within the Miramar Reservoir Alternative; however, areas that did overlap are included in this report (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). San Diego fairy shrimp were observed during surveys conducted by HELIX and MCAS Miramar within two components of the Miramar Reservoir Alternative study area: North City Pipeline and the LFG Pipeline. HELIX mapped vernal pools or road ruts (not assigned identifiers) within MCAS Miramar, south of the proposed location for the North City Pipeline along Miramar Road. Only a portion of these were found to be occupied with San Diego Fairy shrimp. HELIX also mapped a vernal pool (PW36) containing San Diego fairy shrimp along the LFG Pipeline within MCAS Miramar. MCAS Miramar mapped three occupied other seasonally ponded features (VP653, VP656, and VP654) and three basins (VP657, VP1859, and VP2480) adjacent to the area mapped as extensive agriculture-field/pasture, row crops along the LFG Pipeline (MCAS Miramar 2016). Other seasonally ponded features (OSPFs) are not classified as "pools" because they are the result of human disturbance (i.e., road ruts, puddles or impoundments).

It should be noted that although there are vernal pools on the NCPWF, protocol-level wet and dry season surveys conducted in 2015/2016 and 2017 on the NCPWF determined that only five pools were occupied by non-listed species. 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.

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.

No Riverside fairy shrimp were documented during the 2015–2016 or 2017 protocol-level surveys within the Miramar Reservoir Alternative study area.

Yellow Warbler (*Setophaga petechia*), SSC

Yellow warbler is a CDFW SSC. Yellow warbler breeds in Southern California mountain ranges and throughout most of San Diego County (Zeiner et al. 1988-1990). This species breeds in coastal and desert lowland riparian woodlands, montane chaparral, and ponderosa pine and mixed conifer habitats. In summer months, the yellow warbler usually inhabits riparian deciduous habitats, including cottonwoods, willows, alders, and other small trees and shrubs of low, open-canopy riparian woodland. During migration, this species finds cover within woodlands, forests, and shrub habitats.

One yellow warbler individual was observed within the Miramar Reservoir Alternative study area during surveys (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). One yellow warbler was observed within the 500-foot survey buffer around the Morena Pipelines in southern arroyo willow riparian forest, east of Genesee Avenue and south of Nobel Drive.

Cooper's Hawk (*Accipiter cooperii*), State WL/MSCP Covered

Cooper's hawk is a state Watch List and a MSCP Covered Species. Cooper's hawk inhabits live oak, riparian deciduous, and other forest habitats near water. Nesting and foraging usually occur near open water or riparian vegetation. Nests are built in dense stands with moderate crown depths, usually in second-growth conifer or deciduous riparian areas. Nests in deciduous trees are typically located in crotches 20 to 50 feet above the ground; in conifers, nests are in horizontal branches or the main crotch. Cooper's hawks use patchy woodlands and edges with snags for perching and hunting small birds, small mammals, reptiles, and amphibians (Zeiner et al. 1990). Cooper's hawks are diurnally active and year-round residents. Breeding occurs from March through August, with peak activity in May through July. Males defend an area about 330 feet around potential nest sites (Zeiner et al. 1990).

Cooper's hawk was observed within the Miramar Reservoir Alternative study area (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). One individual was observed within the 500-foot survey buffer of the Morena Pipelines at the corner of Towne Centre Drive and Renaissance Avenue within southern coast live oak riparian forest.

3.3.5 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 will be maintained. The Miramar Reservoir Alternative intersects both core areas and habitat linkages identified within the MSCP (Figure 1-4, 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 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. Rose Canyon contains coastal sage scrub and chaparral with documented use by mule deer (*Odocoileus hemionus*), bobcat (*Lynx rufus*), and occasionally cougar (*Puma concolor*). 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.

3.3.6 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 Miramar Reservoir Alternative study area are shown on Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives, and Table 3-2 provides a summary of these resources under the jurisdiction of the ACOE, RWQCB, CDFW, and/or City of San Diego.

Table 3-2
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 also 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 acres 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 of four components including 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 MBC, and one vernal pool along the North City Pipeline are small, isolated, and do not support listed species (Appendices B, C, G, and H). 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 2012a).

The portion of the Miramar Reservoir Alternative jurisdictional delineation study area that extends into the Coastal Overlay Zone includes 0.03 acre of ACOE, RWQCB, CDFW, and City-regulated wetlands.

3.4 Biological Resources – Miramar Reservoir Alternative Project Components

The biological resources occurring within each of the Miramar Reservoir Alternative components are discussed below. It should be noted that because some of the components are connected or within close proximity to one another, they may have overlapping survey buffers. The biological resources found in these overlapping areas are 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.

3.4.1 Morena Pump Station

3.4.1.1 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 3-3; Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). Urban/developed land cover type is not considered a sensitive community by the City's MSCP and is described in detail above in Section 3.3.1.4. See Section 3.3.1 for a detailed description of these communities.

Table 3-3
Vegetation Communities and Land Cover Types in 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*
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 2012a).
2 Totals may not sum due to rounding.

3.4.1.2 Sensitive Plant Species

Southwestern spiny rush (396 individuals) is the only sensitive plant species observed in the Morena Pump Station survey area (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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.

3.4.1.3 Sensitive Wildlife Species

No sensitive wildlife species were observed in the Morena Pump Station study area. Five sensitive wildlife species have moderate potential to occur—Yuma myotis (*Myotis yumanensis*), yellow warbler, 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 (Appendix N, Special-Status Wildlife Species Potential to Occur within the Miramar Reservoir Alternative). No USFWS Critical Habitat occurs within or immediately adjacent to the Morena Pump Station.

3.4.1.4 Jurisdictional Aquatic Resources

ACOE-, 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 2012a). 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 (see Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). Additionally, the impacts within Friars Road may be subject to ACOE jurisdiction if they affect the San Diego River Levee system. Table 3-4 includes the riparian habitats part of the San Diego River floodplain that are within the 50-foot jurisdictional delineation study area.

Table 3-4
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, and City of San Diego Wetlands columns overlap and should not be summed together.
2 Acreage may not total due to rounding.

3.4.2 Morena Pipelines

3.4.2.1 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 3-5; Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). See Section 3.3.1 for a detailed description of these communities.

Table 3-5
Vegetation Communities and Land Cover Types in 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	~~0.20~~<0.01	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~~1,06 9.09~~
	Developed – Concrete Channel (12000)	IV	0.03	0.60
Disturbed and Developed Areas Total[2]			*43.66~~47.97~~*	*1,140.94~~1,14 3.47~~*
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*
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*

Table 3-5
Vegetation Communities and Land Cover Types in 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
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 2012a).
2 Totals may not sum due to rounding.

3.4.2.2 Sensitive Plant Species

Four sensitive plant species, San Diego sagewort (~~39~~ 255 individuals), Coulter's matilija poppy (28 individuals), wart-stemmed ceanothus (1 individual), and San Diego marsh elder (31 individuals), ~~is the only sensitive plant species~~were observed in the Morena Pipelines survey area (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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). See Section 3.3.3 for a general description regarding species observed within the Miramar Reservoir Alternative. No USFWS Critical Habitat occurs within or immediately adjacent to the Morena Pipelines study area.

3.4.2.3 Sensitive Wildlife Species

The following sensitive wildlife species were observed in Morena Pipelines survey area: Cooper's hawk, yellow warbler, and western pond turtle (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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, 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, and western spadefoot (*Spea hammondii*) (Appendix N, Sensitive Wildlife Species Potential to Occur within the Miramar Reservoir Alternative). See Section 3.3.4 for general descriptions and locations for species surveyed for and species observed within the Miramar Reservoir Alternative. No USFWS Critical Habitat occurs within or immediately adjacent to the Morena Pipelines.

3.4.2.4 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 3-6 summarizes these features.

Table 3-6
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*

Table 3-6
Jurisdictional Aquatic Resources in the Morena Pipelines Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[1]	City of San Diego Wetlands[1]
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.

3.4.3 North City Water Reclamation Plant Expansion

3.4.3.1 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 3-7; Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). See Section 3.3.1 for a detailed description of these communities. The Influent Pump Station and North City Renewable Energy Facility are included within the NCWRP Expansion footprint.

Table 3-7
Vegetation Communities and Land Cover Types in the
North City Water Reclamation Plant Expansion, Influent Pump Station,
and North City Renewable Energy Facility Study Areas

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	Influent Pump Station Footprint Acres	North City Renewable Energy 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*

Table 3-7
Vegetation Communities and Land Cover Types in the
North City Water Reclamation Plant Expansion, Influent Pump Station,
and North City Renewable Energy Facility Study Areas

General Vegetation Community/Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	Influent Pump Station Footprint Acres	North City Renewable Energy Facility Footprint Acres	NCWRP Expansion Footprint Acres	Total Acres in Study Area
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*
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 2012a).
2 Totals may not sum due to rounding.

3.4.3.2 Sensitive Plant Species

The following sensitive plant species were observed in the NCWRP Expansion survey area: graceful tarplant (~~240~~ 11,043 individuals), Nuttall's scrub oak (~~2~~ 3 individuals), ~~decumbent goldenbush (1 individual),~~ ashy spike-moss (~~3~~ 6 polygons[3]), and San Diego County viguiera (~~40~~ 118 individuals) (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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). See Section 3.3.3 for a general description regarding species observed within the

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.

Miramar Reservoir Alternative. No USFWS Critical Habitat occurs within or immediately adjacent to the NCWRP study area.

3.4.3.3 Sensitive Wildlife Species

One sensitive wildlife species, the coastal California gnatcatcher, was observed in the NCWRP Expansion study area (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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). See Section 3.3.4 for general descriptions and locations for species surveyed for and species observed within the Miramar Reservoir Alternative. No USFWS Critical Habitat occurs within or immediately adjacent to the NCWRP Expansion study area.

3.4.3.4 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 3-8 summarizes these features.

Table 3-8
Jurisdictional Aquatic Resources in the North City Water Reclamation Plant Expansion Study Area (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]	CDFW[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.

3.4.4 North City Influent Pump Station

The NCPWF Influent Pump Station is located within the footprint of the NCWRP Expansion. As such, all biological resource data for the Influent Pump Station is discussed above in the NCWRP Expansion (Section 3.4.3). The NCPWF Influent Pump Station occurs on 0.30 acre of developed land within the footprint of the NCWRP Expansion (Table 3-7).

Refer to Sections 3.4.3.2 and 3.4.3.3 for a discussion of the sensitive species that have a potential to occur within the NCWRP Expansion study area.

3.4.5 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 (Section 3.4.3). The North City Renewable Energy Facility occurs on 0.36 acre of developed land within the footprint of the NCWRP Expansion (Table 3-7).

Refer to Sections 3.4.3.2 and 3.4.3.3 for a discussion of the sensitive species that have a potential to occur within the NCWRP Expansion study area.

3.4.6 North City Pure Water Facility

3.4.6.1 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 3-9; Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). See Section 3.3.1 for a detailed description of these communities. The North City Pump Station is included within the NCPWF footprint.

Table 3-9
Vegetation Communities and Land Cover Types in 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	NCPWF 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 2012a).
2 Totals may not sum due to rounding.

3.4.6.2 Sensitive Plant Species

~~One~~ Two sensitive plant species, graceful tarplant (~~60~~ 992 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). No USFWS Critical Habitat occurs within or immediately adjacent to the NCPWF study area.

3.4.6.3 Sensitive Wildlife Species

The following sensitive wildlife species was observed in NCPWF study area: white-tailed kite (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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).

It should be noted that although there are vernal pools on the NCPWF, protocol-level surveys in 2015/2016 and 2017 were negative for San Diego fairy shrimp. 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. However, 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 currently occurring within the NCPWF site. Further discussion on the historical presence of San Diego fairy shrimp on the NCPWF site is included in Section 3.3.5.

See Section 3.3.4 for general descriptions and locations for species surveyed for and species observed within the Miramar Reservoir Alternative. No USFWS Critical Habitat occurs within or immediately adjacent to the NCPWF study area.

3.4.6.4 Jurisdictional Aquatic Resources

City-jurisdictional areas within the NCPWF study area total 0.38 acre of vernal pools (Table 3-10). 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 2015/16 wet season for sampling to occur. 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 acres) 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. 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 2015/16 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 2012a).

Table 3-10
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.

3.4.7 North City Pure Water Pump Station

The North City Pump Station is located within the footprint of the NCPWF. As such, all biological resource data for the North City Pump Station is discussed above in the NCPWF (Section 3.4.5). Table 3-9 above describes the four vegetation communities and land covers for the North City Pump Station within the footprint of the NCPWF.

Refer to Section 3.4.5.2 and 3.4.5.3 for a discussion of the sensitive species that have a potential to occur at this location.

3.4.8 North City Pure Water Pipeline

3.4.8.1 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 3-11; Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). See Section 3.3.1 for a detailed description of these communities.

Table 3-11
Vegetation Communities and Land Cover Types in the
North City Pure Water 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	~~34.43~~33.35	651.50
	Developed – Concrete Channel (12000)	IV	—	0.70
Disturbed and Developed Areas Total[2]			*~~36.20~~35.12*	*669.86*
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	~~0.10~~0.13	57.78
	Vernal Pool (44000)	Wetland	—	0.39
Grasslands, Vernal Pools, Meadows, and Other Herb Communities Total[2]			*~~0.10~~0.13*	*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	Mulefat Scrub (63310)	Wetland	—	0.51

Table 3-11
Vegetation Communities and Land Cover Types in the
North City Pure Water 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
(60000)	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*
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]		**~~38.25~~37.21**	**1,031.79**

Notes:
1 City Subarea Plan tiers from San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).
2 Totals may not sum due to rounding.
3 The majority of this total is from the Miramar Reservoir (120.26 acres).

3.4.8.2 Sensitive Plant Species

Eight sensitive plant species—San Diego County viguiera (three individuals), California adolphia (1,038 indivduals), ashy spike-moss (4 polygons), San Diego barrel cactus (1 individual), San Diego marsh-elder (18 individuals), Nuttall's scrub oak (1 individual), golden-rayed pentachaeta (3,150 individuals) and graceful tarplant (1,295 individuals) ~~is the only sensitive plant species~~were observed within the North City Pipeline survey area (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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). See Section 3.3.3 for a general description regarding species observed within the Miramar Reservoir Alternative. No USFWS Critical Habitat occurs within or immediately adjacent to the North City Pipeline study area.

3.4.8.3 Sensitive Wildlife Species

The following sensitive wildlife species were observed or previously documented within the North City Pipeline study area: San Diego fairy shrimp and western pond turtle (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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). See Section 3.3.4 for general descriptions and locations for species surveyed for and species observed within the Miramar Reservoir Alternative. No USFWS Critical Habitat occurs within or immediately adjacent to the North City Pipeline study area.

3.4.8.4 Jurisdictional Aquatic Resources

ACOE-, 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. Therefore, this pool meets the criteria outlined in the ~~Draft~~ Final VPHCP (City of San Diego ~~2016a~~2017) to be designated as a vernal pool under City jurisdiction. Table 3-12 summarizes these features.

Table 3-12
Jurisdictional Aquatic Resources in the
North City Pure Water 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

3.4.9 Landfill Gas Pipeline

3.4.9.1 Vegetation Communities/Land Cover Types

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 3-13; Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). See Section 3.3.1 for a detailed description of these communities.

Table 3-13
Vegetation Communities and Land Cover Types in 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	~~4.96~~4.90	22.47~~22.33~~
	Urban/Developed (12000)	IV	3.63	27.62
	Extensive Agriculture – Field/Pasture, Row Crops (18300)	IV	~~0.45~~0.33	33.20~~33.32~~
Disturbed and Developed Areas Total[2]			*~~9.07~~8.89*	*89.50~~89.48~~*
Scrub and Chaparral (30000)	Diegan Coastal Sage Scrub (32500)	II	~~3.97~~3.88	77.28~~77.30~~
	Diegan Coastal Sage Scrub (disturbed) (32500)	II	0.68	26.01
	Diegan Coastal Sage Scrub (restored) (32500)	II	—	0.46
	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]			*~~5.32~~5.23*	*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*

Table 3-13
Vegetation Communities and Land Cover Types in 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
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]			**~~14.42~~14.15**	**307.46**

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

3.4.9.2 Sensitive Plant Species

The following sensitive plant species were observed in the LFG Pipeline survey area: Orcutt's brodiaea (~~2,209~~430 individuals), wart-stemmed ceanothus (~~34~~ 353 individuals), long-spined spineflower (~~326~~ 300 individuals), graceful tarplant (~~659~~ 716,191 individuals), small-flowered microseris (100 individuals), Robinson's pepper-grass (151 individuals), golden-rayed pentachaeta (~~167~~ 2,989 individuals), ashy spike-moss (~~17~~ 43 polygons[4]), Nuttall's scrub oak (4 individuals), ~~San Diego sagewort (11 individuals),~~ and San Diego County viguiera (~~56~~ 13 individuals) (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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). See Section 3.3.3 for a general description regarding species observed within the Miramar Reservoir Alternative. No USFWS Critical Habitat occurs within or immediately adjacent to the LFG Pipeline study area.

3.4.9.3 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 (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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

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.

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 N, Sensitive Wildlife Species Potential to Occur within the Miramar Reservoir Alternative). See Section 3.3.4 for general descriptions and locations for species surveyed for and species observed within the Miramar Reservoir Alternative. No USFWS Critical Habitat occurs within or immediately adjacent to the LFG Pipeline study area.

3.4.9.4 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 the ~~VA~~ Miramar National Cemetery (basins were unoccupied and not assigned identifiers). Table 3-14 summarizes these features.

Table 3-14
Jurisdictional Aquatic Resources in the LFG 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.

3.4.10 Metro Biosolids Center

3.4.10.1 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 3-15; Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). See Section 3.3.1 for a detailed description of these communities.

Table 3-15
Vegetation Communities and Land Cover Types in 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 2012a).
2 Totals may not sum due to rounding.

3.4.10.2 Sensitive Plant Species

The following sensitive plant species were observed in MBC survey area: wart-stemmed ceanothus (~~21~~ 647 individuals), long-spined spineflower (~~724~~ 707 individuals), graceful tarplant (~~105~~ 390 individuals), decumbent goldenbush (~~399~~ 193 individuals), Robinson's pepper-grass (206

individuals), Nuttall's scrub oak (~~29~~ 13 individuals), and ashy spike-moss (~~7~~ 4 polygons[5]) (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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 Alternative). See Section 3.3.3 for a general description regarding species observed within the Miramar Reservoir Alternative. No USFWS Critical Habitat occurs within or immediately adjacent to the MBC study area.

3.4.10.3 Sensitive Wildlife Species

One sensitive wildlife species, coastal California gnatcatcher, was observed in the MBC study area (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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). See Section 3.3.4 for general descriptions and locations for species surveyed for and species observed within the Miramar Reservoir Alternative. No USFWS Critical Habitat occurs within or immediately adjacent to the MBC study area.

3.4.10.4 Jurisdictional Aquatic Resources

City-jurisdictional areas within the MBC study area total 0.03 acre of vernal pools (Table 3-16). 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 VPHCP (City of San Diego ~~2016a~~2017) to be designated as a vernal pool under City jurisdiction.

Table 3-16
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.

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.

3.4.11 Miramar Water Treatment Plant Improvements

3.4.11.1 Vegetation Communities/Land Cover Types

The Miramar WTP and Miramar Reservoir Pump Station supports four vegetation communities and/or land cover types (Table 3-17; Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). Resources were only evaluated within the Miramar WTP footprint. See Section 3.3.1 for a detailed description of these communities.

Table 3-17
Vegetation Communities and Land Cover Types in the
Miramar Water Treatment Plant Footprint

General Vegetation Community/ Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	Miramar WTP Pump Station Footprint Acres	Miramar WTP 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 2012a).
2 Totals may not sum due to rounding.

3.4.11.2 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). No USFWS Critical Habitat occurs within or immediately adjacent to the Miramar WTP.

3.4.11.3 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). See Section 3.3.4 for general descriptions and locations for species surveyed for and species observed within the Miramar Reservoir Alternative. No USFWS Critical Habitat occurs within or immediately adjacent to the Miramar WTP.

3.4.11.4 Jurisdictional Aquatic Resources

There are no jurisdictional aquatic resources within the Miramar WTP footprint.

3.4.12 Pure Water Dechlorination Facility

3.4.12.1 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 3-18; Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). See Section 3.3.1 for a detailed description of these communities.

Table 3-18
Vegetation Communities and Land Cover Types in 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*~~
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 2012a).
2 Totals may not sum due to rounding.

3.4.12.2 Sensitive Plant Species

No sensitive plant species were observed or have moderate to high potential to occur in the Dechlorination Facility study area (Appendix L, Sensitive Plant Species Potential to Occur

within the Miramar Reservoir Alternative). No USFWS Critical Habitat occurs within or immediately adjacent to the Dechlorination Facility study area.

3.4.12.3 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). No USFWS Critical Habitat occurs within the Dechlorination Facility study area.

3.4.12.4 Jurisdictional Aquatic Resources

There are no jurisdictional aquatic resources within the Dechlorination Facility study area.

3.5 Biological Resources – San Vicente Reservoir Alternative Study Area

The biological resources found within the entire proposed San Vicente Reservoir Alternative study areas are discussed below, including a discussion of all biological resources identified within the specific project-related components. All biological resources identified within the San Vicente Reservoir Alternative study area are spatially represented on Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives.

3.5.1 Vegetation Communities, Land Covers, and Flora Diversity

A total of 42 vegetation communities and/or land cover types were observed in the San Vicente Reservoir Alternative study area (Table 3-19). Table 3-19 includes all of the vegetation within the 500-foot survey 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 2012a), 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 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives, and descriptions are provided in Section 3.3.1 and below.

Table 3-19
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
	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*

Table 3-19
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
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
	Southern Cottonwood—Willow Riparian Forest (61330)	Wetland	25.63	0.5
	Southern Sycamore—Alder 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~~55~~, ~~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 2012a).

2 Totals may not sum due to rounding.

The following vegetation communities and land covers descriptions are provided in Section 3.3.1: non-native vegetation, disturbed wetland, disturbed habitat, urban/developed, developed – concrete channel, extensive agriculture (field/pasture, row crops), Diegan coastal sage scrub (including disturbed and restored), Diegan coastal sage scrub—Baccharis-dominated (including disturbed), flat-topped buckwheat (including disturbed), southern mixed chaparral, chamise chaparral, coastal sage-chaparral transition, native grassland, non-native grassland, vernal pool, cismontane alkali marsh, coastal and valley freshwater marsh, herbaceous wetland, southern riparian forest (including disturbed), southern coast live oak riparian forest, southern arroyo willow riparian forest, mulefat scrub (including disturbed), southern willow scrub (including disturbed), open water–freshwater, non-vegetated channel or floodway, arundo-dominated riparian, coast live oak woodland (including disturbed), non-native woodland, and eucalyptus woodland. Additional vegetation communities observed within the San Vicente Reservoir Alternative include general and intensive agriculture, scrub oak chaparral, and southern cottonwood–willow riparian forest.

3.5.1.1 General Agriculture (18000), Tier IV

Agriculture includes lands that support an active agricultural operation (Oberbauer et al. 2008). A total of 9.68 acres (0.2% of the study area) of general agriculture occurs in the one area on site south of the San Vicente Reservoir, along Moreno Avenue in Lakeside.

3.5.1.2 Intensive Agriculture (18200), Tier IV

Intensive agriculture includes lands that support active agriculture operation (Oberbauer et al. 2008) including dairies, nurseries, and chicken ranches. Intensive agriculture also includes open spaces for livestock. There are two areas of intensive agriculture along Moreno Avenue, which contain horse corrals. These two areas total 12.74 acres (0.2% of the study area).

3.5.1.3 Scrub Oak Chaparral (37900), Tier I

Scrub oak chaparral is a dense evergreen chaparral that can reach 20 feet tall and is dominated by scrub oak and is found on north-facing or otherwise mesic slopes (Oberbauer et al. 2008). On site, scrub oak chaparral is dominated by scrub oak. Other shrub species present include desertbroom (*Baccharis sarothroides*), dusky willow, and thickleaf yerba santa. Scrub oak chaparral occurs in two patches area, totaling 1.37 acres (<0.1% of the study area), within the open area at the southeastern corner of SR-52 and Convoy Street. Scrub oak chaparral is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines, as a form of mixed chaparral (City of San Diego 2012a).

3.5.1.4 Southern Cottonwood—Willow Riparian Forest (61330), Wetland

Southern cottonwood—willow riparian forest is dominated by deciduous trees species: Fremont cottonwood or black cottonwood, and various willow trees (Oberbauer et al. 2008). The shrub layer typically includes various willow species (Oberbauer et al. 2008).

Within the study area, 25.63 acres (0.5% of the study area) of southern cottonwood—willow riparian occurs in three locations, with the majority occurring within the portion of the San Diego River located in Lakeside west of SR-67. As a wetlands community, southern cottonwood—willow riparian forest is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.5.1.5 Southern Sycamore–Alder Riparian Woodland (62400), Wetland

Southern sycamore–alder riparian woodland is described by Oberbauer et al. (2008) as a tall, open, broad-leaved, winter-deciduous streamside woodland dominated by well-spaced California sycamore and often also white alder (*Alnus rhombifolia*). Seldom forming closed canopy forests, these stands may appear as trees scattered in a shrubby thicket of sclerophyllous and deciduous species and are subject to seasonally high-intensity flooding. Characteristic species of this habitat type include Douglas' sagewort, coast live oak, California blackberry (*Rubus ursinus*), California laurel (*Umbellularia californica*), and giant stinging nettle (*Urtica holosericea*).

Within the study area, approximately 7.7 acres (0.1%) of southern sycamore–alder riparian woodland occurs in one drainage north of the Miramar Landfill facilities. As a wetlands community, southern sycamore–alder riparian forest is considered a sensitive vegetation community in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a).

3.5.1.6 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 this report.

3.5.2 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 the total species observed, 14 (10.4%) of these are considered special status (8 of which are MSCP Covered Species). These species are addressed in Section 3.5.4. 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.

3.5.3 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 rank 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 2016; 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.

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 (*Clarkia delicata*), San Diego barrel cactus, graceful tarplant, decumbent goldenbush, San Diego marsh-elder, Southern California black walnut (*Juglans californica*), southwestern spiny rush, Robinson's pepper-grass, small-flowered microseris, golden-rayed pentachaeta, white rabbit-tobacco (*Pseudognaphalium leucocephalum*), Nuttall's scrub oak, Coulter's matilija poppy, ashy spike-moss, and San Diego County viguiera. Sensitive plant species observed are described in detail below and are shown on Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives. For species with moderate to high potential to occur within the component's survey area, see Sections 3.4.1 through 3.4.11.

San Diego Sagewort (*Artemisia palmeri*)

See Section 3.3.3 for general description of San Diego sagewort.

A total of approximately ~~50~~ 255 San Diego sagewort individuals were observed in the 100-foot buffer of the San Vicente Reservoir Alternative survey area (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that all of these individuals (~~50~~ 255 total) were described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.

Orcutt's Brodiaea (*Brodiaea orcuttii*)

See Section 3.3.3 for general description of Orcutt's brodiaea.

A total of approximately ~~2,210~~430 Orcutt's brodiaea individuals were observed in the 100-foot buffer of the San Vicente Reservoir Alternative survey area (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that all of these individuals were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives. It should be noted that survey timing is based on blooming periods and several target species are blooming concurrently. Given that this particular species has a short blooming period, which makes it hard to capture all the individuals present in a given year, this could account for a smaller number of individuals observed in 2017 despite it being a better rainfall year. Therefore, the impact analysis will include the individuals observed during the 2016 surveys within the Project's footprint, see Section 4.4.3 for details.

Wart-Stemmed Ceanothus (*Ceanothus verrucosus*)

See Section 3.3.3 for general description of wart-stemmed ceanothus.

A total of approximately ~~55~~ 1,001 wart-stemmed ceanothus shrubs were observed in the 100-foot buffer of the San Vicente Reservoir Alternative survey area (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that all of these individuals were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.

Long-Spined Spineflower (*Chorizanthe polygonoides* var. *longispina*)

See Section 3.3.3 for general description of long-spined spineflower.

A total of ~~1,050~~1,007 long-spined spineflower individuals were observed in the 100-foot buffer of the San Vicente Reservoir Alternative survey area (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that these individuals were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.

Delicate Clarkia (*Clarkia delicata*)

The delicate clarkia is a CRPR 1B.2 species. Delicate clarkia is a dicot, California native annual herb that occurs primarily in San Diego County (CNPS 2016). This species is found in chaparral and cismontane woodland. The bloom period for delicate clarkia is between April and June. Delicate clarkia occurs on gabbroic soil at an elevation between 770 to 3,280 feet.

A total of 10 delicate clarkia individuals were observed only in the 100-foot buffer of the San Vicente Reservoir Alternative survey area south of the San Vicente Reservoir (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

San Diego Barrel Cactus (*Ferocactus viridescens*)

See Section 3.3.3 for general description of San Diego barrel cactus. ~~has a CRPR 2B.1 and is an MSCP Covered Species. San Diego barrel cactus is a dicot, California native perennial stem succulent that occurs in coastal San Diego County (CNPS 2016). This species is found in chaparral, coastal scrub, valley and foothill grassland, and vernal pools. The bloom period for San Diego barrel cactus is between May and June. San Diego barrel cactus occurs at an elevation of 10 to 1,475 feet.~~

A total of 23 San Diego barrel cactus individuals were observed in the 100-foot buffer of the San Vicente Reservoir Alternative survey area including along the San Vicente ~~Reservoir Purified Water~~ Pipeline (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Graceful Tarplant (*Holocarpha virgata* ssp. *elongata*)

See Section 3.3.3 for general description of graceful tarplant.

A total of approximately ~~1,060~~729,911 graceful tarplant individuals were observed in the 100-foot buffer of the San Vicente Reservoir Pipeline survey area (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that all of these individuals were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.

Decumbent Goldenbush (*Isocoma menziesii* var. *decumbens*)

See Section 3.3.3 for general description of decumbent goldenbush.

A total of approximately ~~400~~ 193 decumbent goldenbush individuals were observed in the 100-foot buffer of the San Vicente Reservoir Alternative study area, including east of the MBC and east of the NCWRP (Figures 3-1A through 3-1P, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that all of these individuals were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.

San Diego Marsh-Elder (*Iva hayesiana*)

See Section 3.3.3 for general description of San Diego marsh-elder.

A total of 31 San Diego marsh-elder plants were observed in the 100-foot buffer of the San Vicente Reservoir Alternative study area along the Morena Pipelines within coastal and freshwater marsh, and southern coast live oak riparian forest (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that all of these individuals were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.

Southern California Black Walnut (*Juglans californica*)

The Southern California black walnut has a CRPR 4.2. Southern California black walnut is a dicot, California native perennial deciduous tree that is endemic to California and occurs in San Diego, Orange, Riverside, San Bernardino, Los Angeles, Ventura, and Santa Barbara counties (CNPS 2016). This species is found in chaparral, cismontane woodland, coastal scrub, and riparian woodland. The blooming period for Southern California black walnut is between March and August. Southern California black walnut occurs in alluvial soil at an elevation between 165 to 2,950 feet.

Four individual Southern California black walnut trees were observed only in the 100-foot buffer of the San Vicente Reservoir Alternative survey area along the San Vicente ~~Reservoir Purified Water~~ Pipeline (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Southwestern Spiny Rush (*Juncus acutus* ssp. *leopoldii*)

See Section 3.3.3 for general description of southwestern spiny rush.

A total of 396 southwestern spiny rush plants were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area south of the Morena Pump Station in the San Diego River floodplain within cismontane alkali marsh, southern willow scrub, disturbed habitat, and urban/developed (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that all of these individuals were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.

Robinson's Pepper-Grass (*Lepidium virginicum* var. *robinsonii*)

~~See Section 3.3.3 for general description of Robinson's pepper-grass.~~Robinson's pepper-grass has a CRPR 4.3. Robinson's pepper-grass is a dicot, California native annual herb that occurs in San Diego, Orange, Riverside, San Bernardino, Los Angeles, Santa Barbara, and Ventura counties, and on Santa Cruz Island (CNPS 2016). This species is found in chaparral and coastal scrub. The bloom period for Robinson's pepper-grass is between January and July. Robinson's pepper-grass occurs at an elevation between 3 and 2,900 feet AMSL.

A total of approximately ~~15,490~~ 15,130 Robinson's pepper-grass individuals were observed in the 100-foot buffer of the San Vicente Reservoir Alternative survey area, including along the San Vicente Pipeline (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). ~~It should be noted that approximately 360 of these individuals were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.~~

Small Flowered Microseris (*Microseris douglasii* ssp. *platycarpha*)

See Section 3.3.3 for general description of small flowered microseris.

A total of 100 small flowered microseris plants were observed in the 100-foot buffer of the Miramar Reservoir Alternative study area along the LFG Pipeline within vernal pool and chamise chaparral (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir

Alternatives). It should be noted that all of these individuals were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.

Golden-Rayed Pentachaeta (*Pentachaeta aurea* ssp. *aurea*)

See Section 3.3.3 for general description of golden-rayed pentachaeta.

A total of approximately ~~167~~ 2,989 golden-rayed pentachaeta individuals were observed in the 100-foot buffer of the San Vicente Reservoir Alternative survey area (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that all of these individuals were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.

White Rabbit-Tobacco (*Pseudognaphalium leucocephalum*)

White rabbit-tobacco has a CRPR 2B.2. White rabbit-tobacco is a dicot, California native perennial herb that occurs in San Diego, Orange, Riverside, San Bernardino, Los Angeles, and Ventura counties (CNPS 2016). This species is found in chaparral, cismontane woodland, coastal scrub, and riparian woodland. The blooming period for white rabbit-tobacco is between July and December. White rabbit-tobacco occurs on sandy, gravelly soil at an elevation between sea level and 6,890 feet.

A total of 770 white rabbit-tobacco individuals were observed only in the 100-foot buffer of the San Vicente Reservoir Alternative survey area south of the San Vicente Reservoir (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Nuttall's Scrub Oak (*Quercus dumosa*)

See Section 3.3.3 for general descriptions of Nuttall's scrub oak.

A total of ~~29~~ 20 individual Nuttall's scrub oak shrubs were observed in the 100-foot buffer of the San Vicente Reservoir Alternative study area including north and east of the MBC and east of the NCWRP (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that these individuals were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.

Coulter's Matilija Poppy (*Romneya coulteri*)

See Section 3.3.3 for general descriptions of Coulter's matilija poppy.

A total of 28 Coulter's matilija poppy plants were observed in the 100-foot buffer of the San Vicente Reservoir Alternative study area along the Morena Pipelines within southern arroyo willow riparian forest and disturbed habitat (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that these individuals were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.

Ashy Spike-Moss (*Selaginella cinerascens*)

See Section 3.3.3 for general description of ashy spike-moss.

A total of approximately ~~37~~ 67 ashy spike-moss polygons[6] were observed in the 100-foot buffer of the San Vicente Reservoir Alternative survey area including the LFG Pipeline, north and west of the MBC, near the NCWRP Expansion, and along the San Vicente Pipeline (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that a portion ~~of these 27~~ of these polygons, 58 of the 67 total, were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.

San Diego County Viguiera (*Viguiera laciniata*)

See Section 3.3.3 for general description of San Diego County viguiera.

A total of approximately 5,~~890~~ 928 San Diego County viguiera shrubs were observed in the 100-foot buffer of the San Vicente Reservoir Alternative survey area along the San Vicente Pipeline (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). It should be noted that about ~~100~~ 138 of these individuals were previously described in the Miramar Reservoir Alternative due to shared components of the Project Alternatives.

3.5.4 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.

[6] 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 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. 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 below and sightings are shown in Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives. For species with moderate to high potential to occur within each component's study area, but which were not observed during surveys, see Sections 3.6.1 through 3.6.5.

Coastal California Gnatcatcher (*Polioptila californica californica*), FT/SSC/MSCP Covered

See Section 3.3.4 for general description of coastal California gnatcatcher.

Coastal California gnatcatcher was observed in several locations within the San Vicente Reservoir Alternative (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). During focused surveys approximately 16 coastal California gnatcatcher pairs, 2 pairs with juveniles, 9 nests, and 40 individuals or transients were observed within the San Vicente Reservoir Alternative study area. Coastal California gnatcatchers were observed in several locations within the 500-foot buffer of San Vicente Pipeline, with the highest concentration occurring in the coastal sage scrub along Mission Gorge Road through Mission Trails Regional Park. One juvenile was observed within the 500-foot buffer around the San Vicente Pipeline – IRAT and – MAT inlet alternatives. Appendix E, 2016 Focused Coastal California Gnatcatcher Survey Report, summarizes the gnatcatcher observations per Dudek survey area. Surveys conducted within MCAS Miramar resulted in a total of four individuals or transients,

five pairs, and seven nests within coastal sage scrub and southern mixed chaparral habitat in the 500-buffer around the LFG Pipeline and MBC (SDNHM 2016).

Southwestern Willow Flycatcher (*Empidonax traillii extimus*), FE/SE/MSCP Covered

See Section 3.3.4 for general description of southwestern willow flycatcher and Appendix F for the 2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report.

No southwestern willow flycatchers were observed within the San Vicente Reservoir Alternative during the 2016 focused surveys. A single migratory willow flycatcher was observed; a description is included below.

Willow Flycatcher (*Empidonax traillii*), SE

Willow flycatcher is state listed as endangered (SE). Willow flycatcher inhabits Sierra Nevada and Cascade Range wet meadow and montane riparian habitats 600 meters (2,000 feet) to 2,500 meters (8,000 feet) in elevation (Zeiner et al. 1988–1990). This species commonly occurs in open river valleys or large mountain meadows with shrubby willows (Serena 1982). According to California Wildlife Habitat Relationships, willow flycatchers have been observed breeding along the Santa Ynez River in Santa Barbara County and along Santa Clara River in Ventura County (Zeiner et al. 1988-1990). Biologist Brock Ortega made a one-time observation of a single willow flycatcher on May 19, 2016. The flycatcher was vocal, responding to taped playback, but with no breeding behavior observed during this observation. According to the official USFWS survey protocol (Sogge et al. 2010), because this flycatcher was only observed during Period 1 (May 15 to 31), it is not expected to be a breeding southwestern willow flycatcher. Instead, it should be analyzed as a migratory or transient willow flycatcher. Willow flycatchers migrate through lower elevations in spring on their way to their northern breeding grounds (Remsen 1978, McCaskie et al. 1979, Garrett and Dunn 1981), oftentimes showing up in abnormal or unsuitable habitat. The willow flycatcher was observed within in southern riparian forest, south of SR-52 and east of I-805, in the 500-foot survey buffer of the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Least Bell's Vireo (*Vireo bellii pusillus*), FE/SE/MSCP Covered

See Section 3.3.4 for general description of least Bell's vireo and Appendix F for the 2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report.

Least Bell's vireo was observed in several locations along San Vicente Pipeline, including within southern arroyo willow riparian forest north of Mission Gorge Road west of SR-52 and southern

willow scrub north and south of Carlton Oaks Drive east of SR-52 (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). A total of ten least Bell's vireo use areas were observed on several occasions during the 2016 survey effort. Observed least Bell's vireo use areas are defined as the specific areas of habitat that each vireo was observed utilizing throughout the 2016 survey effort. All vireos detected within the study area were adult males, either singing or directly observed. Due to the long linear project alignment and fragmented suitable habitat areas to be accessed throughout the alignment, observers did not spend long periods of time at each location to determine behavior (i.e., paired, unpaired, breeding status) of each individual vireo.

Burrowing Owl (*Athene cunicularia*), SSC/MSCP Covered

See Section 3.3.4 for general description of burrowing owl.

Focused surveys for burrowing owl were conducted in 2016 following Staff Report on Burrowing Owl Mitigation (CDFG 2012) guidelines (see Section 2.3.5 for methods). No burrowing owls were observed during 2016 focused surveys.

White-Tailed Kite (*Elanus leucurus*), FP

See Section 3.3.4 for general description of white-tailed kite.

One white-tailed kite was observed foraging within the NCPWF during multiple site visits conducted by HELIX (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). This species is not expected to nest on site due to lack of suitable nesting habitat.

Quino Checkerspot Butterfly (*Euphydryas editha quino*), FE

See Section 3.3.4 for general description of Quino checkerspot butterfly and Appendix D for the 2016 Focused Quino Checkerspot Butterfly Survey Report.

USFWS-required survey areas for Quino checkerspot butterfly overlaps all of the survey areas within the study area (see Appendix D, 2016 Focused Quino Checkerspot Butterfly Survey Report).

A habitat assessment and focused surveys were conducted for Quino checkerspot butterfly throughout the San Vicente Reservoir Alternative study area. The primary larval host plant mapped during Quino checkerspot butterfly host plant mapping surveys is dotseed plantain; however, several other species have been documented as important larval host plants, including desert plantain, sometimes called woolly plantain; stiffbranch bird's beak; white snapdragon;

owl's clover; and Chinese houses (USFWS 2003). A total of approximately 373 acres of Quino checkerspot butterfly habitat was documented during the habitat assessment and surveyed within the San Vicente Reservoir Alternative (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). No Quino checkerspot butterflies were observed during the 2016 focused surveys.

Hermes Copper Butterfly (*Lycaena hermes*), USFWS Candidate Species

See Section 3.3.3.2 for general description of Hermes copper butterfly.

Based on the habitat assessment, approximately 286 acres of the study area was determined to contain potential habitat and was surveyed. Four surveys from May to July were conducted per the County guidelines (Figures 2-2A through 2-2S, Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results). No Hermes copper butterflies were observed during the 2016 focused surveys.

Western Pond Turtle (*Actinemys marmorata*), SSC/MSCP Covered

See Section 3.3.4 for general description of western pond turtle.

Focused surveys were conducted along the shoreline of the San Vicente Reservoir within basking sites approximately 20 feet from the open water, and no western pond turtles were observed. One incidental observation of western pond turtle occurred during the riparian bird surveys within the San Vicente Reservoir Alternative study area (Figures 2-3A through 2-3C, Western Pond Turtle Survey Areas and Results). The individual was observed south of SR-52 and east of where the Morena Pipelines run along Genesee Avenue, within southern riparian forest.

San Diego and Riverside Fairy Shrimp Surveys (*Branchinecta sandiegonensis; Streptocephalus woottoni*), FE/MSCP Covered

See Section 3.3.4 for general description of San Diego and Riverside fairy shrimp.

HELIX mapped features within suitable habitat areas and conducted wet season surveys for San Diego and Riverside fairy shrimp in 2015–2016 within their project areas and potential mitigation sites, which partially overlap the Project Alternatives study area (Appendix B, Existing Conditions Letter Report for the Pure Water San Diego Program North City Water Purifications Project). The HELIX survey areas did not cover all potential areas within the San Vicente Reservoir Alternative; however, areas that did overlap are included in this report (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). San Diego fairy shrimp were observed during surveys conducted by

HELIX and MCAS Miramar within two components of the San Vicente Reservoir Alternative study area: the LFG Pipeline and impacts from air and blow-off valves occurring along the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line. HELIX mapped vernal pool (PW36) containing San Diego fairy shrimp along the LFG Pipeline within MCAS Miramar. MCAS Miramar mapped three occupied OSPFs (VP653, VP654, and VP656) and three basins (VP657, VP1859, and VP2480) adjacent to the area mapped as extensive agriculture-field/pasture, row crops along the LFG Pipeline (MCAS Miramar 2016). MCAS Miramar also mapped two occupied OSPFs (VP697 and VP699) along the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line (MCAS Miramar 2016). It should be noted that although there are vernal pools on the NCPWF, protocol-level wet and dry season surveys conducted in 2015/2016 and 2017 on the NCPWF determined that only three five pools were occupied by non-listed species. No Riverside fairy shrimp were documented during the 2015–2016 or 2017 protocol-level surveys within the San Vicente Reservoir Alternative study area.

Yellow Warbler (*Setophaga petechia*), SSC

See Section 3.3.4 for general description yellow warbler.

Yellow warbler was observed in several locations within the San Vicente Reservoir Alternative study area (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). Twenty-five yellow warblers were observed in several locations within the 500-foot buffer of San Vicente Pipeline, with the majority and highest concentration occurring in southern cottonwood—willow riparian forest along the San Diego River, south of the corner of SR-67 and Willow Road. Two yellow warbler individuals were observed within the 500-foot survey buffer around the Morena Pipelines.

Cooper's Hawk (*Accipiter cooperii*), State WL/MSCP Covered

See Section 3.3.4 for general description of Cooper's hawk.

A total of seven Cooper's hawks were observed within the San Vicente Reservoir Alternative study area (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). Five individuals were observed in several locations within the 500-foot buffer of San Vicente Pipeline, primarily in southern cottonwood—willow riparian forest east of Channel Road and west of SR-67. One Cooper's hawk was observed within the 500-foot survey buffer of the Morena Pipelines at the corner of Towne Centre Drive and Renaissance Avenue within southern coast live oak riparian forest. Another Cooper's hawk was observed flying above southern mixed chaparral within the 500-foot buffer around the San Vicente Pipeline – TAT inlet alternative.

Orangethroat Whiptail (*Aspidoscelis hyperythra*), State WL/MSCP Covered

Orangethroat whiptail inhabits coastal scrub, chamise-redshank chaparral, mixed chaparral, and valley-foothill hardwood habitats (Zeiner et al. 1988-1990). In California, its range extends in Orange, Riverside, and San Diego counties west of the crest of the Peninsular Ranges in elevations from sea level to 1,040 meters (3,412 feet) (Jennings and Hayes 1994). Individuals seek cover in dense vegetation, rocks, logs, and decaying vegetation.

A total of eight orangethroat whiptails were observed within the San Vicente Reservoir Alternative (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). Seven individuals were observed within the 500-foot survey buffer of the San Vicente Pipeline in coastal sage scrub north of Mission Gorge Road within Mission Trails Regional Park. In addition, one orangethroat whiptail was observed within the 500-foot buffer around the San Vicente Pipeline – TAT and – IRAT inlet alternatives within coastal sage scrub southeast of San Vicente Reservoir.

San Diegan Tiger Whiptail (*Aspidoscelis tigris stejnegeri*), SSC

San Diegan tiger whiptail inhabits chaparral, woodland, and riparian areas in coastal Southern California, west of the Peninsular Ranges, south of the Transverse Ranges, and north into Baja California (CaliforniaHerps 2016). This species' elevation range is sea level to 2,130 meters (7,000 feet). San Diegan tiger whiptail uses dense vegetation or holes for cover.

One San Diegan tiger whiptail was observed within the San Vicente Reservoir Alternative study area. The one individual was observed within the 500-foot survey buffer around the San Vicente Pipeline – TAT and – IRAT inlet alternatives in coastal sage scrub southeast of San Vicente Reservoir (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Two-Striped Gartersnake (*Thamnophis hammondii),* SSC

Two-striped gartersnake's distribution extends from the southeastern slope of the Diablo Range and the Salinas Valley south along South Coast and Transverse ranges to the Mexican border (Jennings and Hayes 1994). This species is associated with permanent or semi-permanent bodies of water in habitats from sea level to 2,400 meters (7,874 feet). During the day, the two-striped gartersnake often basks on streamside rocks or on densely vegetated stream banks. This nocturnal species inhabits holes, including mammal burrows, crevices, and surface objects (Rathburn et al. 1993).

Two-striped gartersnake was observed within the 500-foot buffer of San Vicente Pipeline in coastal sage scrub north of the intersection of Mission Gorge Road and Golfcrest Drive (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Yellow-Breasted Chat (*Icteria virens*), SSC

Yellow-breasted chat is a CDFW SSC. Yellow-breasted chat inhabits valley foothill riparian habitats 1,450 meters (4,757 feet) in elevation and desert riparian habitats 2,050 meters (6,726 feet) in elevation (Zeiner et al. 1988-1990). The yellow-breasted chat is a summer resident and migrant in coastal California and in the foothills of the Sierra Nevada. This species occurs along the coast of Northern California east to Cascades and locally south of Mendocino County (McCaskie et al. 1979). In Southern California, the yellow-breasted chat breeds on the coast and inland (Garrett and Dunn 1981). The yellow-breasted chat requires riparian thickets of willow and other brush near water for cover.

A total of seven yellow-breasted chats were observed within the San Vicente Reservoir Alternative study area (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). Seven yellow-breasted chats were observed within the 500-foot buffer of the San Vicente Pipeline, within southern willow scrub of the San Diego River.

Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*), State WL/MSCP Covered

Southern California rufous-crowned sparrow is a state Watch List species and MSCP Covered Species. The species inhabits mixed chaparral and coastal sage scrub. In California, its range extends southward from Mendocino and Tehama counties; this species is most numerous in the western part of this range (Zeiner et al. 1990). Southern California rufous-crowned sparrows breed and forage on dry grass and/or forbs on hillsides with scattered shrubs and rock outcrops. Nests are usually made on the ground, at the base of grass tussock or shrubs. It is a year-round resident and diurnally active, eating mostly insects and spiders during the breeding season, and seeds, grass, and forb shoots throughout the year. It breeds from mid-March to mid-June with a peak in May. In Southern California coastal sage scrub, the average sized territory is about 2 acres (Zeiner et al. 1990).

A total of 13 southern California rufous-crowned sparrow were observed within the San Vicente Reservoir Alternative study area (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). Ten individuals were observed within the 500-foot survey buffer of San Vicente Pipeline in coastal sage scrub along Mission Gorge Road

in Mission Trails Regional Park. Three individuals were observed around San Vicente Reservoir in coastal sage scrub and southern mixed chaparral.

Western Bluebird (*Sialia mexicana*), MSCP Covered

The western bluebird is a MSCP Covered Species. This species occurs year round and breeds in open oak, riparian, or conifer woodlands. This species inhabits more open woodlands in the winter and becomes more widespread in lowlands. The western bluebird breeds from the Panamint Mountains to the Clark Mountains and winters in the Colorado River Valley. In addition, this species breeds east of the Sierra Nevada crest. Typical nesting locations include old woodpecker holes in snags, trees, or stumps.

One western bluebird was observed within the 500-foot survey buffer of San Vicente Pipeline in southern willow scrub near open water in east of SR-67 and south of Willow Road near San Vicente Creek (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Mule Deer (*Odocoileus hemionus*), MSCP Covered

Mule deer is a common species with a widespread distribution throughout the western United States and Canada and south into mainland and Baja California, Mexico (Hall 1981). It occurs throughout most of California, except in deserts and intensively farmed areas without cover (Zeiner et al. 1990b). Throughout its range, mule deer uses coniferous and deciduous forests, riparian habitats, desert shrub, coastal scrub, chaparral, and grasslands with shrubs. It is often associated with successional vegetation, especially near agricultural lands (NatureServe 2015). It uses forested cover for protection from the elements and open areas for feeding (Wilson and Ruff 1999). Mule deer fawn in a variety of habitats that have available water and abundant forage, including moderately dense shrubs and forests, dense herbaceous stands, and higher-elevation riparian and mountain shrub vegetation.

Two mule deer individuals were observed within the 500-foot survey buffer of San Vicente Pipeline in coastal sage scrub north of Mission Gorge Road within Mission Trails Regional Park (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). The species has a moderate potential to occur in coastal sage scrub throughout the San Vicente Reservoir Alternative.

3.5.5 Wildlife Corridors and Habitat Linkages

As discussed fully in Section 3.3.5, 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. The wildlife corridors for the San Vicente Reservoir Alternative are similar to those discussed for the Miramar Reservoir Alternative with the exception of the San Vicente Pipeline and the impacts associated with 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; 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 1-4, Core Areas and Habitat Linkages).

3.5.6 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 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 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives. Table 3-20 provides a summary of these resources under the jurisdiction of the ACOE, RWQCB, CDFW, and/or City of San Diego.

Table 3-20
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 3-20
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 acre. 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). 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 jurisdictional delineation study area that extends into the Coastal Overlay Zone includes 0.03 acre of ACOE, RWQCB, CDFW, and City-regulated wetlands.

3.6 Biological Resources – San Vicente Reservoir Alternative Project Components

The following Project components are identical for both Project Alternatives: Morena Pump Station (see Section 3.4.1), Morena Pipelines (see Section 3.4.2), NCWRP Expansion (see Section 3.4.3), NCPWF Influent Pump Station (see Section 3.4.4), North City Renewable Energy Facility (see Section 3.4.5), NCPWF (see Section 3.4.6), North City Pump Station (see Section 3.4.7), LFG Pipeline (see Section 3.4.9), and the MBC (see Section 3.4.10). The Project components which are unique to the San Vicente Reservoir Alternative include the San Vicente Pipeline; the San Vicente Pipeline – TAT, – IRAT, and – MAT inlet alternatives; and the MTBS. These components are discussed in this section.

The biological resources occurring within each of the unique San Vicente Reservoir Alternative components is discussed below. It should be noted that because some of the components are connected or within close proximity to one another they may have overlapping survey buffers. The biological resources 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 San Vicente Reservoir Alternative study area.

3.6.1 San Vicente Pure Water Pipeline

3.6.1.1 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 3-21; Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Table 3-21
Vegetation Communities and Land Cover Types in the
San Vicente Pure Water 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~~*
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

Table 3-21
Vegetation Communities and Land Cover Types in the
San Vicente Pure Water 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
	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 2012a).
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.

3.6.1.2 Sensitive Plant Species

The following sensitive plant species were observed in San Vicente Pipeline survey area: San Diego barrel cactus (23 individuals), Robinson's pepper-grass (approximately 7,680 individuals), ashy spike-moss (4 polygons[7]), Southern California black walnut (4 individuals), white rabbit-tobacco (5 individuals), and San Diego County viguiera (approximately 4,320 individuals) (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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). See Sections 3.3.3 and 3.5.3 for a general description of the observed sensitive plant species. 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.

7 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.

3.6.1.3 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 (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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, and monarch (Appendix O, Sensitive Wildlife Species Potential to Occur within the San Vicente Reservoir Alternative). See Sections 3.3.4 and 3.5.4 for general descriptions and locations for the observed sensitive wildlife species. 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.

3.6.1.4 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 3-22 summarizes these features.

Table 3-22
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

Table 3-22
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]
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.

3.6.2 San Vicente Pipeline – Tunnel Alternative Terminus

3.6.2.1 Vegetation Communities and Land Cover Types

The San Vicente Pipeline – TAT study area supports eight vegetation communities and/or land cover types (Table 3-23; Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Table 3-23
Vegetation Communities and Land Cover Types in the San Vicente Pipeline –
Tunnel Alternative Terminus 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

Table 3-23
Vegetation Communities and Land Cover Types in the San Vicente Pipeline – Tunnel Alternative Terminus Study Area

General Vegetation Community/ Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	TAT Footprint Acres*	Total Acres in Study Area
	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*
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 2012a).
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.

3.6.2.2 Sensitive Plants

One sensitive plant species, Robinson's pepper-grass (about 1,450 individuals) was observed in San Vicente Pipeline – TAT survey area (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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). See Sections 3.3.3 and 3.5.3 for a general description of the observed sensitive plant species. No USFWS Critical Habitat occurs within or immediately adjacent to the San Vicente Pipeline – TAT study area.

3.6.2.3 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). No USFWS Critical Habitat occurs within or immediately adjacent to the San Vicente Pipeline – TAT study area.

3.6.2.4 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 3-24 summarizes these features.

Table 3-24
Jurisdictional Aquatic Resources in the San Vicente Pipeline – Tunnel Alternative Terminus 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.

3.6.3 San Vicente Pipeline – In-Reservoir Alternative Terminus

3.6.3.1 Vegetation Communities and Land Cover Types

The San Vicente Pipeline – IRAT study area supports seven vegetation communities and/or land cover types (Table 3-25; Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Table 3-25
Vegetation Communities and Land Cover Types in the San Vicente Reservoir – In-Reservoir Alternative Terminus 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*

Table 3-25
Vegetation Communities and Land Cover Types in the San Vicente Reservoir – In-Reservoir Alternative Terminus Study Area

General Vegetation Community/ Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	IRAT Footprint Acres*	Total Acres in Study Area
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 2012a).
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.

3.6.3.2 Sensitive Plants

The following sensitive plant species were observed in San Vicente Pipeline – IRAT survey area: delicate clarkia (10 individuals), San Diego County viguiera (approximately 1,570 individuals), and white rabbit-tobacco (approximately 760 individuals) (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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). See Sections 3.3.3 and 3.5.3 for a general description of the observed sensitive plant species. No USFWS Critical Habitat occurs within or immediately adjacent to the San Vicente Pipeline – IRAT study area.

3.6.3.3 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 (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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). See Sections 3.3.4 and 3.5.4 for general

descriptions and locations for the observed sensitive wildlife species. No USFWS Critical Habitat occurs within or immediately adjacent to the San Vicente Pipeline – IRAT study area.

3.6.3.4 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 3-26 summarizes these features.

Table 3-26
Jurisdictional Aquatic Resources in the San Vicente Reservoir –
In-Reservoir Alternative Terminus 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 San Vicente Pipeline – MAT Study Area, but only one of these inlet alternatives would be selected.

3.6.4 San Vicente Pipeline – Marina Alternative Terminus

3.6.4.1 Vegetation Communities and Land Cover Types

The San Vicente Pipeline – MAT study area supports seven vegetation communities and/or land cover types (Table 3-27; Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Table 3-27
Vegetation Communities and Land Cover Types in the San Vicente Pipeline –
Marina Alternative Terminus 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

Table 3-27
Vegetation Communities and Land Cover Types in the San Vicente Pipeline – Marina Alternative Terminus Study Area

General Vegetation Community/ Land Cover Category	General Vegetation Type (Holland/Oberbauer Code)	Tier[1]	MAT Footprint Acres*	Total Acres in Study Area
	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*
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 2012a).
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.

3.6.4.2 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[8]), San Diego County viguiera (approximately 1,500 individuals), and white rabbit-tobacco (approximately 760 individuals) (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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). See Sections 3.3.3 and 3.5.3 for a general description of the observed sensitive plant species. No USFWS Critical Habitat occurs within or immediately adjacent to the San Vicente Pipeline – MAT study area.

3.6.4.3 Sensitive Wildlife Species

The following sensitive wildlife species was observed in San Vicente Pipeline – MAT study area: southern California rufous-crowned sparrow (Figures 3-1A through 3-1AD, Biological Resources

[8] 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.

– Miramar Reservoir and San Vicente Reservoir Alternatives). 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 Species Potential to Occur within the San Vicente Reservoir Alternative). See Sections 3.3.4 and 3.5.4 for general descriptions and locations for the observed sensitive wildlife species. No USFWS Critical Habitat occurs within or immediately adjacent to the San Vicente Pipeline – MAT study area.

3.6.4.4 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 3-28 summarizes these features.

Table 3-28
Jurisdictional Aquatic Resources in the San Vicente Pipeline –
Marina Alternative Terminus 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.

3.6.5 Mission Trails Booster Station

3.6.5.1 Vegetation Communities and Land Cover Types

The MTBS study area supports five vegetation communities and/or land cover types (Table 3-29; Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives).

Table 3-29
Vegetation Communities and Land Cover Types in 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 2012a).
2 Totals may not sum due to rounding.

3.6.5.2 Sensitive Plant Species

One sensitive plant species, San Diego County viguiera (~~one~~ 200 individuals) was observed in the MTBS survey area (Figures 3-1A through 3-1AD, Biological Resources – Miramar Reservoir and San Vicente Reservoir Alternatives). 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). See Sections 3.3.3 and 3.5.3 for a general description regarding the observed sensitive plant species. No USFWS Critical Habitat, or MHPA occurs within or immediately adjacent to the MTBS study area.

3.6.5.3 Sensitive Wildlife Species

There are no sensitive wildlife species were observed or have moderate to high potential to occur within the MTBS study area. See Sections 3.3.4 and 3.5.4 for general descriptions and locations for the observed sensitive wildlife species. No USFWS Critical Habitat, or MHPA occurs within or immediately adjacent to the MTBS study area.

3.6.5.4 Jurisdictional Aquatic Resources

There are no jurisdictional aquatic resources within the MTBS study area.

4 IMPACTS ANALYSIS

Projects can result in either beneficial or adverse impacts to the environment. Both NEPA and CEQA require an evaluation of the Project impacts. The analysis presented in this report uses several different approaches to identify the potential impacts of the North City Project. Together, these approaches provide an accurate disclosure of the North City Project impacts in compliance with NEPA and CEQA requirements.

National Environmental Policy Act

NEPA (42 U.S.C. 4321 et seq.) requires an evaluation of potential impacts to federally listed threatened or endangered species, the ecological importance and distribution of affected species, and the intensity of potential impacts from the alternatives. The NEPA process is considered the framework for compliance with federal laws for the protection of endangered species and biological resources, such as the FESA. The terms "effects" and "impacts" as used in these regulations are synonymous. Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial. According to NEPA Council on Environmental Quality guidance Section 1508.8, "Effects" include:

a. Direct effects, which are caused by the action and occur at the same time and place.

b. Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems.

California Environmental Quality Act

Based on the CEQA Environmental Checklist (Appendix G of the CEQA Guidelines), direct or primary effects are those that are caused by a project and occur at the same time and place; indirect or secondary effects are those that are reasonably foreseeable and caused by a project, but occur at a different time or place; and cumulative effects refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

The North City Project has been designed to occur primarily within developed or previously disturbed areas. Access to Project components would be through existing roads, and only one new access road would be constructed as a part of the San Vicente Reservoir Alternative. In order to avoid and/or minimize impacts to sensitive biological resources to the furthest extent possible, project refinements were made where Project components overlapped those resources. In areas where the pipeline alignment crosses sensitive resources, the pipeline would be constructed using trenchless construction methods such as auger boring/auger jack and bore, micro-tunneling, or horizontal directional drilling. These methods are applied to areas where sensitive biological resources occur, as well as to heavily congested areas or to cross-controlled access freeway and railroad crossings where open cut is not allowed. For the Miramar Reservoir Alternative, the "float-and-sink" method is recommended to install of the subaqueous discharge pipeline at the bottom of the reservoir. Once constructed, the pipeline would be towed into position along the Miramar Reservoir surface. As the pipe is floated, pre-cast concrete ballast blocks would be connected to the positively buoyant pipeline at regular intervals to hold the pipeline in place. 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. It is anticipated that construction of these in-water components would cause temporary displacement of sediment, which would resettle after placement of the pipeline. Since the pipeline would be a structure placed within the reservoir, and trenching and backfilling~~, other than at the shoreline and reservoir entry,~~ are not anticipated for construction, placement of the pipe is not considered an impact. Shoreline impacts would be avoided by tunneling into the reservoir versus open trenching. In addition, placement of pipes at the bottom of the reservoir would not result in the net loss of aquatic resources function or services, nor would it reduce habitat for wildlife; including invertebrates and micro biota. The pipeline and joints would result in any measurable change in elevation of reservoir bottom.

This section addresses both permanent and temporary direct and indirect impacts, as well as cumulative impacts that would result from implementation of the North City Project after all feasible avoidance and minimization of sensitive biological resources has occurred. The San Vicente Pipeline includes three alternatives, all of which are included in the overall impact quantification.

Direct Impacts, which are caused by the action and occur at the same time and place, include both the permanent loss of on-site habitat and the plant and wildlife species that it contains and the temporary loss of on-site habitat. Direct impacts were quantified by overlaying the proposed Project alignment and various components onto the biological resources map. Direct impacts include utility trenching, project component upgrades, and construction of new Project components as described in Section 1.2. Areas of trenching would be recontoured and revegetated with native species following Project completion, and therefore these impacts are considered temporary direct impacts.

Indirect Impacts, which are caused by the action and are later in time or farther removed in distance, include off-site and on-site effects that are short-term impacts (i.e., temporary) due to the construction or long-term (i.e., permanent) design of the North City Project and the effects it may have to adjacent resources. For the North City Project, it is assumed that the potential indirect impacts resulting from construction activities may include dust, noise, and general human presence that may temporarily disrupt species and habitat vitality, construction-related soil erosion and runoff, and changes to limnology features. With respect to these latter factors, however, grading would be subject to the typical restrictions (e.g., best management practices (BMPs)) and requirements that address erosion and runoff, including the federal CWA, NPDES, and preparation of a Water Pollution Control Plan.

Cumulative Impacts refer to incremental individual environmental effects of two or more projects when considered together. These impacts taken individually may be minor, but collectively significant as they occur over a period of time.

4.1 Regional Resource Planning

4.1.1 MSCP Consistency Analysis

The study area is located in the Northern (Miramar Reservoir Alternative only), Urban, and Eastern (San Vicente Reservoir Alternative only) areas of the Subarea Plan as well as MCAS Miramar and Cornerstone lands. The City's Subarea Plan contributes to the regional MSCP for preservation and mitigation for impacts to sensitive biological resources within southwestern San Diego County. The Subarea Plan is intended to provide cumulative mitigation for impacts to covered biological resources within the City's jurisdiction and to ensure sufficient resources are preserved to avoid jeopardizing the continued presence of Covered Species under the MSCP.

Based on the North City Project design and associated mitigation, the North City Project is consistent with the requirements of the City of San Diego MSCP Subarea Plan and San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a) (see Table 4-1). Portions of the Project occur within the MHPA, and therefore the Project is required to document compliance with the MSCP Land Use Adjacency Guidelines, provided in a matrix below (see Table 4-2). In addition, the Project must comply with General Management Directives outlined in Section 1.5.2 of the MSCP Subarea Plan (see Table 4-3). The majority of the Project is located outside of the MHPA of the City's Subarea Plan. However, portions of the Project area are within or immediately adjacent to the MHPA. As an Essential Public Project, the North City Project is considered compatible with the biological objectives of the MSCP and thus would be allowed within the City's MHPA. All impacts within MHPA lands under the Miramar Reservoir Alternative are located within an existing roadway

(0.01 acre of urban/developed) or have been previously mitigated (0.04 acre of disturbed coastal sage scrub at the Miramar WTP) and therefore would not require mitigation (Table 4-4). The San Vicente Reservoir Alternative would impact 18.62 acres within the MHPA, but 15.67 acres would be to urban/developed land (Tier IV) and would not require mitigation. Portions of the San Vicente Reservoir Alternative (2.71 acres) that do occur within the MHPA would result in the long-term loss of wetlands and Tier II through III communities (Table 4-19). Impacts to these resources would require mitigation as discussed in Section 5.1. Therefore, with mitigation, impacts to regional resource planning efforts would not be adverse under NEPA.

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 and 1.5.2 of the City of San Diego's Subarea Plan (see Table 4-1). 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 will 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 will 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 will 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 will 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.
9. Fencing or other barriers will be used where it is determined to be the best method to achieve conservation goals and adjacent to land uses incompatible with the MHPA. For example, use chain link or cattle wire to direct wildlife to appropriate corridor crossings, natural rocks/boulders or split rail fencing to direct public access to appropriate locations, and chain link to provide added protection of certain sensitive species or habitats (e.g., vernal pools).
10. Lighting shall be designed to avoid intrusion into the MHPA and effects on wildlife. Lighting in areas of wildlife crossings should be of low-sodium or similar lighting. Signage will be limited to access and litter control and educational purposes.
11. Prohibit storage of materials (e.g. hazardous or toxic chemicals, equipment, etc.) within the MHPA and ensure appropriate storage per applicable regulations in any areas that may impact the MHPA, especially due to potential leakage.

Table 4-1
Multiple Species Conservation Program Consistency Analysis

Siting Criteria		Analysis
1	Minimize intrusion into the MHPA	Both alternatives have been designed to follow existing developed and disturbed areas and the existing City utility corridor in order to minimize intrusion into the MHPA to the greatest extent possible. Impacts to MHPA areas largely occur along slivers of the alignment from the San Vicente Reservoir Alternative and would not result in large losses of habitat. Impacts to MHPA from the Miramar Reservoir Alternative include 0.01 acre of an existing developed roadway and 0.04 acre of previously mitigated disturbed coastal sage scrub, both of which do not require mitigation.

Table 4-1
Multiple Species Conservation Program Consistency Analysis

Siting Criteria		Analysis
2	Minimize environmental impacts (avoid MSCP covered species and wetlands)	Both alternatives have been designed to follow existing developed and disturbed areas and the existing City utility corridor but would result in impacts to wetland resources as discussed in Sections 4.1.5 and 4.3.5. Wetlands would be avoided, to the extent practical, during construction by using trenchless construction methods such as auger boring/auger jack and bore, micro-tunneling, or horizontal directional drilling. Standard best management practices (BMPs) specifically related to reducing impacts from dust, erosion, and runoff generated by construction activities would be implemented (MM-BIO-9~~10~~(j)). The Miramar Reservoir Alternative would result in impacts to ~~3~~ 7 wart-stemmed ceanothus individuals and 12 Orcutt's brodiaea individuals, while the San Vicente Reservoir Alternative would result in impacts to those same populations as well as 6 barrel cactus.
3	Avoid disturbance of existing habitat	Both alternatives have been designed to follow existing developed and disturbed areas and the existing City utility corridor in order to minimize intrusion into the MHPA to the greatest extent possible. Impacts to MHPA areas largely occur along slivers of the alignment from the San Vicente Reservoir Alternative and would not result in large losses of habitat. Impacts to MHPA from the Miramar Reservoir Alternative include 0.01 acre of an existing developed roadway, and therefore would not disturb existing habitat and 0.04 acre of disturbed coastal sage scrub, which has been previously mitigated. In areas where there are temporary impacts, habitat restoration and erosion control treatments will be installed in accordance with the San Diego Municipal Code, Land Development Code—Biology Guidelines and Landscape Regulations (City of San Diego 2012a) and the San Diego Municipal Code, Land Development Code—Landscape Standards (City of San Diego 2016~~b~~) (MM-BIO-2).
4	Avoid significant disruption of corridor usage	Since both alternatives consist largely of long linear features which would, for the most part, be placed underground, neither alternative is expected to disrupt corridor usages over the long-term. Short-term construction-related impacts would occur on a minor scale, and would mostly affect smaller wildlife, and the appropriate measures would be taken to reduce those impacts. Biological monitoring would include verifying that the contractor has covered all steep-walled trenches or excavations over night or after shift or installed ramps (as a means of escape) to prevent entrapment of wildlife (e.g., reptiles and mammals) (MM-BIO-9~~10~~(h)). In addition, the biological monitor would provide training to construction personnel to increase awareness of the possible presence of wildlife beneath vehicles and equipment and to use best judgment to avoid killing or injuring wildlife (MM-BIO-9~~10~~(f)).
5	Roads in the MHPA will be limited to those identified in Community Plan Circulation Elements, collector streets essential for area circulation, and necessary maintenance/ emergency access roads	Not applicable
6	Avoid development of roads in canyon bottoms	Not applicable
7	Road widths are narrowed and in lower quality habitat	Not applicable

Table 4-1
Multiple Species Conservation Program Consistency Analysis

Siting Criteria		Analysis
8	Maintenance of existing roads/utility line	Not applicable
9	Appropriate fencing or barriers	Prior to construction activities, the Qualified Biologist shall supervise the placement of orange construction fencing or equivalent along the limits of disturbance adjacent to sensitive biological habitats and verify compliance with any other Project conditions as shown on the Biological Construction Mitigation/Monitoring Exhibit (BCME). This phase shall include flagging plant specimens and delineating buffers to protect sensitive biological resources (e.g., habitats/flora & fauna species, including nesting birds) during construction. Appropriate steps/care should be taken to minimize attraction of nest predators to the site (MM-BIO-9~~10~~(e)).
10	Minimize intrusive lighting into the MHPA	To reduce impacts to nocturnal species in those areas where they have a potential to occur, nighttime construction activity within undeveloped areas containing sensitive biological resources would be minimized whenever feasible and shielded lights would be utilized when necessary. Construction nighttime lighting would be subject to City Outdoor Lighting Regulations per LDC Section 142.0740 (MM-BIO-9~~10~~(i)).
11	Prohibit storage of materials within the MHPA	During construction activities, the Qualified Biologist shall verify in writing on the Consultant Site Visit Record Forms' (CSVRs) that no trash stockpiling or oil dumping, fueling of equipment, storage of hazardous wastes or construction equipment/material, parking or other construction related activities shall occur adjacent to sensitive habitat. These activities shall occur only within the designated staging area located outside the area defined as biological sensitive area (MM-BIO-9~~10~~(k)).

Implementation of the North City Project's Miramar Reservoir Alternative would result in 0.05 acre of impacts to lands within the MHPA, while 18.62 acres of MHPA impacts would result from the San Vicente Reservoir Alternative. The Project is a compatible land use within the MHPA and follows the siting criteria outlined in Subsection 1.4.2 of the MSCP. Because a portion of the Project occurs within the MHPA, the Project is required to document compliance with the MSCP Land Use Adjacency Guidelines. A matrix has been prepared documenting the Project's compliance with the MSCP (Table 4-2).

Table 4-2
Project Consistency Determination with MSCP Land Use Adjacency Guidelines

MHPA Adjacency Guidelines Section 1.4.3 of the MSCP Subarea Plan	Applicability	Implementation
Drainage: All new and proposed parking lots and developed areas in and adjacent to the preserve must not drain directly into the MHPA. All developed and paved areas must prevent the release of toxins, chemicals, petroleum products, exotic plant materials and other elements that might degrade or	Ground disturbance for the Project would largely consist of utility trenching, which would create no runoff potential. Consistent with the City Storm Water Standards, existing previously legal	The MHPA boundary and the limits of ground disturbance shall be clearly delineated on the construction documents and surveyed by the contractor (MM-BIO-2~~9~~). At the conclusion of the Project, the existing grade would be restored, and the current

Table 4-2
Project Consistency Determination with MSCP Land Use Adjacency Guidelines

MHPA Adjacency Guidelines Section 1.4.3 of the MSCP Subarea Plan	Applicability	Implementation
harm the natural environment or ecosystem processes within the MHPA.	drainage which flows toward the MHPA shall be minimized.	drainage patterns would be unchanged.
Toxics: Land uses, such as recreation and agriculture, that use chemicals or generate by-products such as manure, that are potentially toxic or impactive to wildlife, sensitive species, habitat, or water quality need to incorporate measures to reduce impacts caused by the application and/or drainage of such materials into the MHPA.	No hazardous construction materials storage would be allowed that could impact the adjacent MHPA (including fuel or sediment), and any drainage from the construction site must be clear of such materials. Consistent with the City Storm Water Standards, existing previously legal drainage that flows toward the MHPA shall be minimized.	The contractor shall ensure all areas for staging, storage of equipment and materials, trash, equipment maintenance, and other construction related activities are within the limits of the Project Area of Potential Effect (MM-BIO-9~~10~~(k)).
Lighting: Lighting of all developed areas adjacent to the MHPA should be directed away from the MHPA. Where necessary, development should provide adequate shielding with non-invasive plant materials (preferably native), berming, and/or other methods to protect the MHPA and sensitive species from night lighting.	No additional permanent lighting is proposed for this Project. If night work is required adjacent to the MHPA, all lighting would be shielded away from the preserve.	If night work is required adjacent to the MHPA, all lighting would be shielded away from the preserve (MM-BIO-9~~10~~(d) and MM-BIO-9~~10~~(i)).
Noise: Uses in or adjacent to the MHPA should be designed to minimize noise impacts. Berms or walls should be constructed adjacent to commercial areas, recreational areas, and any other use that may introduce noises that could impact or interfere with wildlife utilization of the MHPA. Excessively noisy uses or activities adjacent to breeding areas must incorporate noise reduction measures and be curtailed during the breeding season of sensitive species. Adequate noise reduction measures should also be incorporated for the remainder of the year.	Construction within and adjacent to suitable habitat for coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher during the breeding season would be avoided to the extent feasible. However, should construction need to occur during the breeding season, noise monitoring would be conducted, and if necessary, temporary sound walls or other sound attenuating devices or techniques would be erected in areas of concern in order to reduce noise related impacts.	Protocol surveys may be required for potential impacts to certain avian species during their breeding season: coastal California gnatcatcher (March 1 through August 15) least Bell's vireo (March 15 through September 15) southwestern willow flycatcher (May 1 through August 30) (MM-BIO-3, MM-BIO-4a, MM-BIO-6, and MM-BIO-9~~10~~(d))
Barriers: New development adjacent to the MHPA may be required to provide barriers (e.g., non-invasive vegetation, rocks/boulders, fences, walls, and/or signage) along the MHPA boundaries to direct public access to appropriate locations and reduce domestic animal predation.	The North City Project primarily involves the extension of a new utility pipeline in developed and undeveloped areas with minor impacts occurring in native habitat. However, the pipeline would be installed below ground and all areas temporarily disturbed by	N/A

Table 4-2
Project Consistency Determination with MSCP Land Use Adjacency Guidelines

MHPA Adjacency Guidelines Section 1.4.3 of the MSCP Subarea Plan	Applicability	Implementation
	construction would be restored to preconstruction contours and conditions. No permanent barriers are required or proposed.	
Invasives: No invasive non-native plant species shall be introduced into areas adjacent to the MHPA.	Plant species within 100 feet of the MHPA shall comply with the Landscape Regulations (LDC142.0400 and per table 142-04F, Revegetation and Irrigation Requirements) and be non-invasive.	The contractor shall permanently revegetate all graded, disturbed, or eroded native habitat areas that would not be permanently paved or covered by structures (MM-BIO-2).
Brush Management: New residential development located adjacent to and topographically above the MHPA (e.g., along canyon edges) must be set back from slope edges to incorporate Zone 1 brush management areas on the development pad and outside of the MHPA.	The project is not a residential development and would not create any new brush management zones.	N/A
Grading/Land Development: Manufactured slopes associated with site development shall be included within the development footprint for projects within or adjacent to the MHPA.	No manufactures slopes are associated with the North City Project.	N/A

In addition, each project must comply with the General Management Directives (Table 4-3) outlined in Section 1.5.2 of the MSCP Subarea Plan.

Table 4-3
Project Consistency Determination with MSCP General Management Directives

General Management Directives Section 1.5.2 of the MSCP Subarea Plan	Applicability	Implementation
Mitigation: Mitigation, when required as part of project approvals, shall be performed in accordance with the City of San Diego Environmentally Sensitive Lands Ordinance and Biology Guidelines.	Mitigation is required for impacts to sensitive vegetation, sensitive species and jurisdictional aquatic resources. Direct and indirect impacts to these resources are described in detail in Sections 4.1 to 4.5.	Section 5 describes potential mitigation measures that would mitigate adverse impacts to biological resources resulting from proposed North City Project. With implementation of the proposed mitigation described in Section 5, the identified impacts would be reduced to less than significant.

Table 4-3
Project Consistency Determination with MSCP General Management Directives

General Management Directives Section 1.5.2 of the MSCP Subarea Plan	Applicability	Implementation
Restoration: Restoration or revegetation undertaken in the MHPA shall be performed in a manner acceptable to the City. Where covered species status identifies the need for reintroduction and/or increasing the population, the covered species will be included in restoration/revegetation plans, as appropriate. Restoration or revegetation proposals will be required to prepare a plan that includes elements addressing financial responsibility, site preparation, planting specifications, maintenance, monitoring and success criteria, and remediation and contingency measures. Wetland restoration/revegetation proposals are subject to permit authorization by federal and state agencies.	All temporary construction areas in native habitat would require revegetation following the completion of construction. Construction may result in the recruitment of non-native plant species within the temporary disturbance areas and the removal of native plant species.	In areas where there are temporary impacts, habitat restoration and erosion control treatments will be installed in accordance with the San Diego Municipal Code, Land Development Code—Biology Guidelines and Landscape Regulations (City of San Diego 2012a) and the San Diego Municipal Code, Land Development Code—Landscape Standards (City of San Diego 2016~~b~~). The Conceptual Revegetation Plan (Appendix P) was prepared by a Restoration Specialist (MM-BIO-2).
Public Access, Trails, and Recreation	N/A	N/A
Litter/Trash and Materials Storage - Priority 1.3: Prohibit permanent storage of materials (e.g., hazardous and toxic chemicals, equipment, etc.) within the MHPA and ensure appropriate storage per applicable regulations in any areas that may impact the MHPA, due to potential leakage.	No hazardous construction materials storage would be allowed which could impact the adjacent MHPA (including fuel or sediment) and any drainage from the construction site must be clear of such materials.	The contractor shall ensure all areas for staging, storage of equipment and materials, trash, equipment maintenance, and other construction related activities are within the limits of the Project Area of Potential Effect. Typical BMPs, such as having trash containers on site, a demarcated limit of work, and contractor education, will limit the potential for trash and other human disturbance (MM-BIO-9~~10~~(e) and MM-BIO-9~~10~~(f)). During construction activities, the Qualified Biologist shall verify in writing on the Consultant Site Visit Record Forms (CSVRs) that no trash stockpiling or oil dumping, fueling of equipment, storage of hazardous wastes or construction equipment/material, parking or other construction-related activities shall occur adjacent to sensitive habitat. These activities shall occur only within the designated staging area located outside the area defined as biological sensitive area (MM-BIO-9~~10~~(k)).
Adjacency Management Issues	N/A	N/A

Table 4-3
Project Consistency Determination with MSCP General Management Directives

General Management Directives Section 1.5.2 of the MSCP Subarea Plan	Applicability	Implementation
Invasive Exotics Control and Removal: Do not introduce invasive non-native species into the MHPA. Provide information on invasive plants and animals harmful to the MHPA, and prevention methods, to visitors and adjacent residents. Encourage residents to voluntarily remove invasive exotics from their landscaping.	Plant species within 100 feet of the MHPA shall comply with the Landscape Regulations (LDC142.0400 and per table 142-04F, Revegetation and Irrigation Requirements) and be non-invasive.	The contractor shall permanently revegetate all graded, disturbed, or eroded native habitat areas that would not be permanently paved or covered by structures (MM-BIO-2).
Flood Control	N/A	N/A

Additionally, adherence to Section 1.1.1 of the MSCP Subarea (City of San Diego 1997), which requires disclosure of the MHPA boundary line adjustment in the environmental document prepared for the Project, would be required. Although the SANDER Vernal Pool and Upland Mitigation site is included in the MSCP Subarea Plan (City of San Diego 1997), it was not included within MHPA lands. Therefore, an MHPA boundary line adjustment was proposed to ensure that all mitigation from the North City Project occurs within the MHPA. The SANDER Vernal Pool and Upland Mitigation site MHPA boundary line adjustment was approved by MSCP, USFWS, and CDFW on July 12, 2017, and therefore all habitat would be managed in accordance with MHPA requirements. Appendix Q includes the MHPA Boundary Line Adjustment Equivalency Analysis, and Figure 4-1, SANDER Mitigation Site, shows the SANDER site within MHPA lands.

4.1.2 Essential Public Project

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 serve the community at large and is 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.~~Because 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 that 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, 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.

4.2 Direct Impacts—Miramar Reservoir Alternative

The Miramar Reservoir Alternative footprint is partially within MCAS Miramar lands and is therefore subject to the 2011–2015 INRMP. Components that are within MCAS Miramar include the portion of the North City Pipeline that runs along Miramar Road, the LFG Pipeline, and the entire MBC footprint. Appendix A analyzes the impacts that would occur from these components within each Management Area (MA; Levels I through IV) and proposes mitigation that would keep the Project within compliance.

4.2.1 Direct Impacts to Vegetation Communities and Land Cover Types

The Miramar Reservoir Alternative footprint supports 17 vegetation communities and/or land cover types (Table 4-4; Figures 4-2A through 4-2-M3, Biological Resources Impacts). Construction of the Miramar Reservoir Alternative would result in impacts to ~~208.25~~207.96

acres of land, the majority of which is urban/developed land (~~175.93~~175.29 acres). Three components (NCWRP, MBC, and Miramar WTP) have previously mitigated a total of 3.38 acres of impacts to sensitive vegetation within their respective footprints. Direct impacts to 1.16 acres of sensitive upland vegetation communities (coastal sage scrub, including disturbed, and non-native grassland) at the NCWRP have been adequately addressed and mitigated during the North City Water Reclamation Project for the Clean Water Program (City of San Diego 1991). Direct impacts to 0.91 acre of sensitive upland vegetation communities (including coastal sage scrub and chaparral) at the MBC have been adequately addressed and mitigated in the MBC Programmatic Environmental Impact Statement (PEIS) (City of San Diego 1994). Direct impacts to 1.32 acres of sensitive vegetation communities (disturbed Diegan coastal sage scrub) at the Miramar WTP have been adequately addressed and mitigated during the Miramar WTP Upgrade/Expansion Project Final EIR (FEIR; City of San Diego 2001). All previous mitigation occurred within the MHPA and is consistent with MSCP, which identifies monitoring and management activities. Management activities include signage, fencing, trash removal, and habitat restoration.

There is 0.05 acre of impacts to lands located within the MHPA boundary; however, impacts would be located within an existing roadway (0.01 acre of urban/developed) or have been previously mitigated (0.04 acre of disturbed Diegan coastal sage scrub at the Miramar WTP) and therefore would not require mitigation.

Overall, impacts to sensitive vegetation or jurisdictional resources, as well as sensitive plant and wildlife species, would be minimal as the majority of the alignment and related components would remain within existing developed lands. Impacts to sensitive vegetation (excluding wetlands) total ~~18.30~~ 18.25 acres, 12.54 acres of which are permanent impacts while the remaining are temporary. Impacts to these resources would largely occur as slivers along the pipeline alignment. Impacts to jurisdictional resources include 0.03 acre of developed – concrete channel from the Morena Pipelines that occurs within a channelized portion of Tecolote Creek. Additional impacts would occur within the NCPWF to 0.38 acre of vernal pool City-wetlands. Impacts to jurisdictional resources are discussed further in Section 4.2.5. Impacts to sensitive upland vegetation communities would be mitigated at the SANDER Vernal Pool and Upland Mitigation site. Vernal pool impacts would be mitigated through restoration of vernal pools and adjacent uplands at the SANDER Vernal Pool and Upland Mitigation site. The SANDER Vernal Pool and Upland Mitigation Plan (Appendix R) would be implemented at the SANDER site. All mitigation at the SANDER site would occur within the MSCP's MHPA and implemented in accordance with City/ACOE/CDFW/RWQCB guidelines. Additionally, a Native Grassland Creation Mitigation Plan – Pueblo South (Appendix S) would be implemented for mitigation of impacts to native grassland. Direct impacts to vegetation communities would be reduced to a

less-than-significant level through the biological mitigation measures provided in Sections 5.1 and 5.4 (MM-BIO-1a, MM-BIO-1b, MM-BIO-2, and MM-BIO-8~~9~~).

Table 4-4
Summary of Impacts to Vegetation Communities and Land Cover Types within the Miramar Reservoir Alternative Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Miramar Reservoir Alternative Impacts				
		Within MHPA		*Outside MHPA*		
		Temp	*Perm*	*Temp*	*Perm*	*Total*
Tier I – Rare Uplands						
Native Grassland	I	0	0	0	1.30	1.30
Uplands Tier II – Uncommon Uplands						
Coastal Sage-Chaparral Transition	II	0	0	0.14	0.30	0.44 (0.14)*
Diegan Coastal Sage Scrub	II	0	0	~~4.15~~4.06	3.49	~~7.64~~ 7.56 (~~6.95~~6.79)*
Diegan Coastal Sage Scrub (disturbed)	II	0	0.04	~~0.80~~0.81	1.31	2.16 (0.85)*
Diegan Coastal Sage Scrub—Baccharis-Dominated	II	0	0	0.03	0	0.03
Flat-Topped Buckwheat	II	0	0	<0.01	0	<0.01
Flat-Topped Buckwheat (disturbed)	II	0	0	0.01	0	0.01
Tier III – Common Uplands						
Chamise Chaparral	IIIA	0	0	0.50	0	0.50
Southern Mixed Chaparral	IIIA	0	0	<0.01	0	<0.01
Non-native Grassland	IIIB	0	0	~~0.13~~0.16	6.09	~~6.22~~ 6.26 (~~5.24~~5.26)*
Sensitive Vegetation (Tier I-III) Subtotal		*0*	*0.04*	*~~5.75~~5.70*	*12.50*	*~~18.30~~ 18.25 (~~15.04~~14.86)*
Tier IV – Other Uplands						
Urban/Developed	IV	0.01	0	~~85.84~~85.38	~~90.07~~89.89	~~175.93~~175.29
Developed – Concrete Channel**	IV	0	0	0.03	0	0.03
Non-native Vegetation	IV	0	0	~~0.23~~0.96	0.56	~~0.80~~1.52
Eucalyptus Woodland	IV	0	0	1.98	0.38	2.36
Extensive Agriculture – Field/Pasture, Row Crops	IV	0	0	~~0.45~~0.33	0	~~0.45~~0.33
Disturbed Habitat	IV	0	0	~~7.85~~7.63	2.16	~~10.01~~9.79
Other Uplands (Tier IV) Subtotal		*0.01*	*0*	*~~96.39~~96.32*	*~~93.18~~93.00*	*~~189.58~~189.33*
Wetlands						
Vernal Pool	Wetland	0	0	0	0.38	0.38
Wetland Vegetation Subtotal		*0*	*0*	*0*	*0.38*	*0.38*
Total		**0.01**	**0.04**	**~~102.14~~102.03**	**~~106.06~~105.88**	**~~208.25~~207.96**

Notes:
* This total accounts for the acreage previously mitigated at the MBC (0.91 acre), Miramar WTP (1.32 acres) and/or the NCWRP (1.16 acres).
** This land cover is not considered a wetlands according to the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a) due to the lack of wetland vegetation present. However, impacts to this land cover would require agency permits.

4.2.2 Direct Impacts to Sensitive Plant Species

There are seven sensitive plant species occurring within the impact limits of the Miramar Reservoir Alternative (Table 4-5; Figures 4-2A through 4-2-M3, Biological Resources Impacts). There are no impacts to sensitive plant species within the Miramar Reservoir Alternative in the MHPA. Table 4-5 provides the Project component where a direct impact to the plant species is expected to occur. The total individuals in Table 4-5 includes both mapped points and polygons. The polygons have been clipped to only include the portion that overlaps the impact area, thus giving a more accurate representation of the actual number of plants impacted. The exact location of each impact is described under the Project component impact descriptions provided in Section 4.2~~2~~3.

Table 4-5
Impacts to Sensitive Plant Species within the Miramar Reservoir Alternative Footprint

Common Name (Scientific Name)	Status (Federal/State/CRPR/MSCP)	Project Component(s)	Total Individuals
San Diego County viguiera *(Viguiera laciniata)*	None/None/4.2/None	~~North City Pipeline,~~ North City Water Reclamation Plant	~~12~~58
Orcutt's brodiaea *(Brodiaea orcuttii)*	None/None/1B.1/Covered	LFG Pipeline	12*
wart-stemmed ceanothus *(Ceanothus verrucosus)*	None/None/2B.2/Covered	LFG Pipeline	~~3~~7
long-spined spineflower *(Chorizanthe polygonoides* var. *longispina)*	None/None/1B.2/None	Metro Biosolids Center	6*
graceful tarplant *(Holocarpha virgata* ssp. *elongata*)	None/None/4.2/None	LFG Pipeline, North City Pure Water Facility, MBC	~~87~~9,307
decumbent goldenbush *(Isocoma menziesii* var. *decumbens*)	None/None/1B.2/None	Metro Biosolids Center	2*
ashy spike-moss *(Selaginella cinerascens)*	None/None/4.1/None	LFG Pipeline, Metro Biosolids Center	~~8~~15**

Notes:
* This species was not observed within the impact limits in 2017; however, since it was observed during the 2016 surveys within the impact footprint it is included in the Project's impact analysis.
** 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.

Direct impacts to CRPR 1B.1, 1B.2, and 2B.2 species, including Orcutt's brodiaea, long-spined spineflower, decumbent goldenbush, and wart-stemmed ceanothus, would be considered significant because these species are considered rare, threatened, or endangered in California. Impacts to these species would be reduced to less than significant with implementation of MM-BIO-1a, MM-BIO-1b, and MM-BIO-2, which would conserve or restore suitable habitat for these species. Implementation of the North City Project would have no adverse effects on species listed or proposed as federally threatened or endangered, as evaluated under NEPA.

In addition to Project-specific mitigation, the Project is required to implement the area-specific management directives (ASMDs), as stated in Appendix A, Species Evaluated for Coverage Under the MSCP, of the City's MSCP Subarea Plan (City of San Diego 1997), for each covered species proposed to be impacted. The Project must demonstrate how ASMDs (or Conditions of Coverage) would be implemented in order for the species to be considered "covered" by the MSCP and issue take authority under the City Incidental Take Permit. According to Appendix A (City of San Diego 1997), the ASMD for wart-stemmed ceanothus states:

> Revegetation efforts within appropriate habitats must include restoration of this species. Area specific management directives for the protected populations must include specific measures to increase populations. Area specific management directives must include specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire. Management measures to accomplish this may include prescribed fire. Any newly found populations should be evaluated for inclusion in the preserve strategy through acquisition, like exchange, etc.

These ASMDs are specifically related to the management of preserved populations and therefore do not apply to the North City Project. The ASMDs for Orcutt's brodiaea states, "The San Vincente population is identified as a critical population in the County's Subarea Plan and must be 100 percent conserved. ASMDs must include specific measures to protect against detrimental edge effects." Mitigation measures MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(k) (biological monitoring, construction fencing, environmental awareness training, BMP implementation, and hazardous material storage) would be implemented to reduce the potential impacts of edge effects. No impacts to Orcutt's brodiaea would occur to the San Vicente population with implementation of the North City Project; therefore, this ASMD does not apply.

Direct impacts to CRPR 4 species, including San Diego County viguiera, graceful tarplant, and ashy spike-moss, are not considered significant because these species are of low sensitivity, and the on-site populations are not significant in terms of the ability for this species to persist (i.e., CRPR 4 species are not considered "rare" from a statewide perspective). In addition, the species do not occur within the impact area in a population that is considered regionally significant and/or are common in the study area. Although impacts to these species are not considered significant, MM-BIO-1a, MM-BIO-1b, and MM-BIO-2, which provide mitigation and restoration for sensitive vegetation communities, would preserve or restore suitable habitat for this species.

4.2.3 Direct Impacts to Sensitive Wildlife Species

There are two sensitive wildlife species occurring within the Miramar Reservoir Alternative that could use areas within the impact limits: white-tailed kite, and coastal California gnatcatcher (Figures 4-2A through 4-2-M3, Biological Resources Impacts). Additionally, one species, San Diego fairy shrimp, occurs within the Project area. However, impacts to vernal pools occupied by listed species would be avoided through use of trenchless construction. No direct impacts to individuals are expected; however, impacts to suitable habitat for these species would occur with Project implementation.

One white-tailed kite individual was observed foraging during multiple surveys conducted by HELIX, within non-native grassland on the NCPWF. The individual was outside of the MCAS Miramar and MHPA. Since the NCPWF does not contain any nesting habitat for white-tailed kites, no direct impacts are expected to this species. Direct impacts to vegetation communities used by the white-tailed kite for foraging would be conserved through the biological mitigation measures provided in Section 5.1 (MM-BIO-1a).

Vernal pools deemed both occupied and unoccupied by San Diego fairy shrimp were observed within or adjacent to four components: North City Pipeline, MBC, LFG Pipeline and the NCPWF. No direct impacts to vernal pools would occur along the North City Pipeline corridor or within the MBC. There are four features (PW36, VP653, VP654, and VP656) containing San Diego fairy shrimp within the LFG Pipeline corridor; however, there would be no direct impacts from the LFG Pipeline to these features due to the use of trenchless construction methods. All vernal pools within the NCPWF were surveyed either during 2015/2016 or 2017 and deemed unoccupied by San Diego fairy shrimp. Therefore, there would be no direct impacts to federally listed fairy shrimp species on the NCPWF; however, all vernal pools within the NCPWF would be permanently impacted with project implementation and mitigated through MM-BIO-1b. Mitigation measures to avoid indirect impacts to vernal pools are discussed in Section 4.6.4.1 and Appendix T.

All coastal California gnatcatcher observations within the Miramar Reservoir Alternative study area occurred within MCAS Miramar. No direct or indirect impacts to coastal California gnatcatchers are anticipated with implementation of MM-BIO-4a, which requires preconstruction surveys in areas of suitable habitat adjacent to or within the MHPA and MM-BIO-4b, which applies to suitable habitat areas within MCAS Miramar. Permanent and temporary impacts to suitable habitat for coastal California gnatcatcher would be mitigated through MM-BIO-1a and MM-BIO-2. Potential impacts to any active nests or the young of nesting coastal California gnatcatcher through direct grading of suitable habitat within MCAS Miramar would be mitigated through MM-BIO-4b, which requires preconstruction surveys for coastal California gnatcatcher within designated MCAS Miramar lands. The City would satisfy mitigation requirements outlined in the Appendix A through implementation

of MM-BIO-4b, which states that if surveys determine presence of occupied habitat, no habitat-disturbing activities would occur between February 15 and August 31.

Burrowing owl, southwestern willow flycatcher, least Bell's vireo, Hermes copper butterfly, and Quino checkerspot butterfly were not observed during focused surveys within the Miramar Reservoir Alternative study area; therefore, no direct impacts are expected. No direct impacts would occur to suitable habitat for southwestern willow flycatcher or least Bell's vireo under the Miramar Reservoir Alternative. Although the Miramar Reservoir Alternative would impact suitable habitat for burrowing owl, Hermes copper butterfly, and Quino checkerspot butterfly, this impact is less than significant due to lack of species observations. Direct impacts to suitable habitat for sensitive species would be mitigated through MM-BIO-1a and MM-BIO-2. In addition, preconstruction surveys for burrowing owl, southwestern willow flycatcher, and least Bell's vireo would be conducted only in areas of suitable habitat within a 500-foot buffer around the impact limits of the Miramar Reservoir Alternative prior to construction (MM-BIO-5 and MM-BIO-6).

The large majority of the pipelines and facilities associated with the Miramar Reservoir Alternative would be placed within existing roadways and developed areas, with very little habitat being impacted. Three species (Cooper's hawk, yellow warbler, and yellow-breasted chat) were observed or have moderate potential to occur within the component's study area but are unlikely to occur within the footprint. Direct impacts to suitable habitat for these species would be mitigated through MM-BIO-1a and MM-BIO-2, and through surveys for nesting birds (MM-BIO-3). There is also a potential for vegetated areas within the Miramar Reservoir Alternative footprint to support nesting bird species. The California Fish and Game Code~~MBTA~~ prohibits the take of any ~~migratory~~ bird or any part, nest, or eggs of any such bird. Potential impacts to any active nests or the young of nesting bird species through direct grading would be mitigated through MM-BIO-3, which requires preconstruction nesting bird surveys.

The SANDER Vernal Pool and Upland Mitigation Site would mitigate impacts to the above-listed species by providing suitable habitat in a configuration that preserves genetic exchange and species viability. Thus, direct impacts to sensitive wildlife species would be reduced to a less-than-significant level by virtue of the biological mitigation measures provided in Section 5. Implementation of the Miramar Reservoir Alternative would have no adverse effects on species listed or proposed as federally threatened or endangered, as evaluated under NEPA.

In addition to Project-specific mitigation, the Project is required to implement the ASMDs, as stated in Appendix A of the City's MSCP Subarea for MSCP Covered Species, for each covered species proposed to be impacted. The Project must demonstrate how ASMDs (or Conditions of Coverage) would be implemented in order for the species to be considered "covered" by the MSCP and issue take authority under the City Incidental Take Permit. Table 4-6 provides the ASMDs for

each covered species that has a potential to be impacted by the Miramar Reserve Alternative and outlines the Project compliance with the applicable ASMDs.

Table 4-6
Compliance with ASMD for Impacts to Covered Wildlife Species

Covered Species	ASMD	Project Compliance
Least Bell's vireo (*Vireo bellii pusillus*)	Jurisdictions will require survey (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with the 404(b)1 guidelines into the project. Participating jurisdictions guidelines and ordinances, and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. Jurisdictions must require new developments adjacent to preserve areas that create conditions attractive to brown-headed cowbirds to monitor and control cowbirds. Area specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. Any clearing of occupied habitat must occur between September 15 and March 15 (i.e., outside of the nesting period).	Protocol surveys were conducted in all areas of suitable habitat, and no least Bell's vireo were observed within the Miramar Reservoir Alternative. However, preconstruction surveys would be conducted within suitable habitat prior to Project construction to ensure that indirect impacts to this species would be avoided (MM-BIO-6). If the species is observed, noise restrictions would be implemented. The proposed Project is not anticipated to create conditions to attract brown-headed cowbirds (*Molothrus ater*). Mitigation measures MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(k) (biological monitoring, construction fencing, environmental awareness training, BMP implementation, and hazardous material storage) would be implemented to reduce the potential impacts of edge effects. No clearing of suitable habitat will occur under the Miramar Reservoir Alternative.
Burrowing owl (*Athene cunicularia*)	During the environmental analysis of proposed projects, burrowing owl surveys (using appropriate protocols) must be conducted in suitable habitat to determine if this species is present and the location of active burrows. If burrowing owls are detected, the following mitigation measures must be implemented: within the MHPA, impacts must be avoided; outside of the MHPA, impacts to the species must be avoided to the maximum extent practicable; any impacted individuals must be relocated out of the impact area using passive or active methodologies approved by the wildlife agencies; mitigation for impacts to occupied habitat (at the Subarea Plan specified ratio) must be through the conservation of occupied burrowing owl habitat or conservation of lands appropriate for restoration, management and enhancement of burrowing owl nesting and foraging requirements. Management plans/directives must include: enhancement of known, historical and potential burrowing owl habitat; and management for ground squirrels (the primary excavator of burrowing owl	Burrowing owl surveys were conducted in areas of suitable habitat and no observations were recorded. However, since there is habitat within the Project area that has burrowing owl occupation potential, a burrowing owl construction impact avoidance program will be implemented in accordance with MM-BIO-5. If burrowing owls are identified within the Project area and have a potential to be impacted, the measures outlined in this ASMD will be applied.

Table 4-6
Compliance with ASMD for Impacts to Covered Wildlife Species

Covered Species	ASMD	Project Compliance
	burrows). Enhancement measures may include creation of artificial burrows and vegetation management to enhance foraging habitat. Management plans must also include: monitoring of burrowing owl nest sites to determine use and nesting success; predator control; establishing a 300 foot-wide impact avoidance area (within the preserve) around occupied burrows. Eight known burrowing owl locations occur within major amendment areas of the South County Segment of the County Subarea Plan and the conservation of occupied burrowing owl habitat must be one of the primary factors of preserve design during the permit amendment process.	
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Jurisdictions must require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with the 404(b)1 guidelines into the project. Participating jurisdictions' guidelines and ordinances, and state and federal wetlands regulations will provide additional habitat protection resulting in no net loss of wetlands. For new developments adjacent to preserve areas that create conditions attractive to brown-headed cowbirds, jurisdictions must require monitoring and control of cowbirds. Area specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. Any clearing of occupied habitat must occur between September 1 and May 1 (i.e., outside of the nesting period).	Protocol surveys were conducted in all areas of suitable habitat. In addition, preconstruction surveys will be conducted prior to Project construction to ensure that direct impacts to this species would be avoided (MM-BIO-6). If the species is observed, noise restrictions would be implemented. The proposed Project is not anticipated to create conditions to attract brown-headed cowbirds. Mitigation measures MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(k) (biological monitoring, construction fencing, environmental awareness training, BMP implementation, and hazardous material storage) would be implemented to reduce the potential impacts of edge effects. No clearing of suitable habitat will occur under the Miramar Reservoir Alternative.
western pond turtle (*Actinemys marmorata*)	Maintain and manage a 1,500-foot area around known locations within the preserve lands for the species. Within this impact avoidance area, human impacts will be minimized, non-native species detrimental to pond turtles controlled/removed and habitat restoration/enhancement measures implemented.	Focused trapping surveys for this species were conducted, and no western pond turtles were detected ~~species was observed~~ within the Miramar Reservoir. No other direct or indirect impacts are anticipated to this species within preserve lands; therefore, this ASMD is not applicable. ~~A trapping and relocation plan (Appendix U) for this species would be applied, as outlined in MM-BIO-7, since an adaptive management program cannot be implemented as it would be contradictory to the drinking water supply, warm water fishery maintenance, and other human related recreational objectives.~~

Table 4-6
Compliance with ASMD for Impacts to Covered Wildlife Species

Covered Species	ASMD	Project Compliance
Cooper's hawk (*Accipiter cooperii*)	In the design of future projects within the Metro-Lakeside-Jamul segment, design of preserve areas shall conserve patches of oak woodland and oak riparian forest of adequate size for nesting and foraging habitat. Area specific management directives must include 300-foot impact avoidance areas around the active nests, and minimization of disturbance in oak woodlands and oak riparian forests.	The proposed Project will not result in the design of preserve areas. Active nests, if detected during nesting bird surveys, will be subject to a 300-foot buffer (MM-BIO-3).
western bluebird (*Sialia mexicana*)	None	Not applicable
southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	Area specific management directives must include maintenance of dynamic processes, such as fire, to perpetuate some open phases of coastal sage scrub with herbaceous components.	This ASMD is directed at preserve management and does not apply to the proposed Project.
mule deer (*Odocoileus hemionus*)	None	Not applicable
orangethroat whiptail (*Aspidoscelis hyperythra*)	Area specific management directives must address edge effects.	All temporary construction areas in native habitat would require revegetation following the completion of construction (MM-BIO-2). Habitat restoration and erosion control treatments will be installed within temporary disturbance areas in native habitat, in accordance with the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a) and the San Diego Municipal Code, Land Development Code—Landscape Standards (City of San Diego 2016~~b~~). The Conceptual Revegetation Plan (Appendix P) was prepared by a Restoration Specialist. Habitat restoration will feature native species that are typical of the area, and erosion control features will include silt fence and straw fiber rolls, where appropriate. In addition, mitigation measures MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(k) (biological monitoring, construction fencing, environmental awareness training, BMP implementation, and hazardous material storage) would be implemented to reduce the potential impacts of edge effects.

4.2.4 Direct Impacts to Wildlife Corridors and Habitat Linkages

As stated in Section 3.3.5, Project components associated with the Miramar Reservoir Alternative are located within Biological Core Area 15 as identified on Figure 2-2, Generalized Core

Biological Resource Areas and Linkages of the County of San Diego MSCP, and Figure 1-4, Core Areas and Habitat Linkages, of this report. Additionally, wildlife corridor areas that are applicable to the Miramar Reservoir Alternative components within MCAS Miramar are identified on Figure 4.5a of the INRMP (MCAS Miramar INRMP 2011).

Biological Core Area 15

The Morena Pipelines cross Marian Bear Memorial Park (San Clemente Canyon) and Rose Canyon Open Space Park, which are a part of Biological Core Area 15. As described in Section 4.2.2, the large majority of the pipeline would be placed within existing roadways with very little habitat being impacted. There would be temporary impacts from the Morena Pipelines to disturbed habitat within San Clemente Canyon, just south of the SR-52 and east of Genesee Avenue. The Morena Pipelines would temporarily impact ~~0.28~~ 0.31 acre of Diegan coastal sage scrub (including disturbed) at the intersection of Genesee Road and Rose Canyon, just north of the railroad. Trenchless construction below Genesee Road and the railroad was not possible in this area due to engineering constraints. All impacts along the Morena Pipelines are temporary, and no structures would be placed within the footprint of the pipeline, which would impede existing wildlife movement within the area.

The NCWRP Expansion would all occur within existing development and would not result in impacts to wildlife movement. The NCPWF and associated components, which are located just north of the expansion, would impact native habitat within Biological Core Area 15. This area is highly constrained by surrounding development such as I-805, a small substation, commercial facilities, and the existing reclamation plant. The entire site is currently fenced, creating a barrier for wildlife movement. The site itself supports limited movement and live-in habitat for smaller wildlife species. Habitat to the north of the proposed NCPWF would remain for such species to utilize. The area immediately south of the NCPWF site, within MCAS Miramar, would still be accessible after the development of the NCPWF through the use of the utility corridor to the east of the NCPWF (Figure 1-4A, Core Areas and Habitat Linkages). However, the Veteran's Administration (VA) Miramar National Cemetery currently contains an 8-foot-tall chain-link fence topped with barbed wire along Miramar Road, preventing connectivity to the NCPWF site. Therefore, construction of the NCPWF would not result in any changes to the existing corridor usage of Biological Core Area 15. Furthermore, the core and linkages map was established by the San Diego County MSCP and as stated in Section 2.2 of the County MSCP:

> The core and linkages map was developed as an analytical tool to assist in testing preserve design criteria and levels of species conservation. It is not a regulatory map …While the entire acreage within a core area may not be important for preservation, the core and linkage configuration assists in visualizing a framework for a regional preserve network. Jurisdictions and other agencies prepared subarea

> plans with specific preserve boundaries by maximizing inclusion of unfragmented core resource areas and linkages in their preserve designs, given other parameters and objectives … Although this map was used to identify important biological areas and linkages, the habitat evaluation map is not intended to replace site-specific field survey data and evaluations.

Therefore, since the City of San Diego has developed the City Subarea Plan with specific preserve boundaries and the NCPWF site is outside these MHPA preserve areas, and construction of the NCPWF would not result in any changes to the existing corridor usage, no significant impacts to Biological Core Area 15 are expected from the development of the NCPWF.

The LFG Pipeline, which is proposed to run north from the LFG compressor station to the NCWRP and NCPWF, crosses through vegetated areas from north of the Miramar Landfill to the Miramar Wholesale Nurseries, across the train tracks, up to the ~~VA~~ Miramar National Cemetery, ending at Miramar Road. The LFG Pipeline crosses over Rose Canyon as it runs through MCAS Miramar. The LFG Pipeline would consist of the construction of an underground pipeline with trenchless construction methods used in areas that contain jurisdictional resources, such as Rose Canyon. The new LFG Pipeline would parallel an existing 10-inch-diameter gas pipeline within existing disturbed lands and would generally follow the existing City utility corridor. Since the LFG Pipeline would be constructed within mostly disturbed habitat, the impacts to native habitat are temporary and minimized by implementation of trenchless construction methods, and no structures would be placed within the footprint of the pipeline, the placement of the LFG Pipeline would not have an impact on wildlife movement within Biological Core Area 15.

No impacts would occur from the MBC within San Clemente Canyon, which is part of Biological Core Area 15. All impacts at the MBC, which sits just south of the western end of San Clemente Canyon, would occur within existing development and would not result in impacts to wildlife movement.

Habitat Linkage C

In addition, a small portion of the Project, an overflow pipeline associated with the Morena Pump Station, is within Habitat Linkage C, which is associated with the San Diego River. This portion of the Project is located entirely within existing development (Friars Road) and would not result in impacts to this habitat linkage.

4.2.5 Direct Impacts to Jurisdictional Aquatic Resources

The results of the jurisdictional delineation conducted by Dudek in 2016 shows that there are direct permanent impacts to a total of 0.38 acre of wetlands under the jurisdiction of the City of

San Diego and potentially the RWQCB and temporary impacts to 0.03 acre of non-wetland waters under ACOE, RWQCB, and CDFW in the Miramar Reservoir Alternative. Impacts to jurisdictional aquatic resources within the Miramar Reservoir Alternative are shown on Figures 4-2A through 4-2-M3, Biological Resources Impacts; Table 4-7 provides a summary of these resources under the jurisdiction of the City of San Diego.

Table 4-7
Impacts to Jurisdictional Aquatic Resources in the
Miramar Reservoir Alternative Footprint (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]		CDFW[1]		City of San Diego Wetlands[1]	
	Temp	*Perm*	*Temp*	*Perm*	*Temp*	*Perm*
Wetland or Riparian Areas						
Vernal Pool	—	—	—	—	—	*0.38*[2]
Non-wetland Waters/Streambed						
Ephemeral Stream Channel (Developed – Concrete Channel)	0.03	—	0.03	—	—	—
Total jurisdictional area	**0.03**	**—**	**0.03**	**—**	**—**	**0.38**

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 0.38 acre of vernal pool is also potentially regulated by the RWQCB.

City-jurisdictional areas within the Miramar Reservoir Alternative footprint total 0.38 acre of permanent impacts to vernal pools within the NCPWF. 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. 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 2017 vernal pools (0.14 acre) have indicator species present; therefore, all vernal pools on the NCPWF (0.38 acres) 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. However, 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. HELIX and Rocks Biological evaluated the

NCPWF for potential jurisdictional drainages, and none were identified. 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 CWA (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 2015/16 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 2012a).

There are temporary impacts to 0.03 acre of ephemeral stream channel (developed – concrete channel) under ACOE-, RWQCB-, and CDFW-jurisdiction within the Morena Pipelines footprint. The impact area is within a concrete-lined channel portion of Tecolote Creek, which flows to directly into Mission Bay. This area is not considered a wetland according to the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a) due to the lack of wetland vegetation present.

There are no direct impacts to wetlands within the Coastal Overlay Zone regulated by the City. Direct impacts to jurisdictional resources would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections 5.1 and 5.4 (MM-BIO-1b~~, MM-BIO-2~~ and MM-BIO-8~~9~~), which would require mitigation for permanent impacts to vernal pools~~, reconstruction of the channel to pre-impact conditions,~~ and obtaining the required agency permits. Temporary impacts to the concrete-lined portion of Tecolote Creek would comply with the San Diego Municipal Code, Land Development Code—Landscape Standards (City of San Diego 2016), which would require reconstruction of the channel to pre-impact conditions. Vernal pool impacts would be mitigated through restoration of vernal pools and adjacent uplands at the SANDER Vernal Pool and Upland Mitigation site. The SANDER Vernal Pool and Upland Mitigation Plan (Appendix R) would be implemented at the SANDER site. The SANDER Vernal Pool and Upland Mitigation site, is within the Vernal Pool Habitat Conservation Plan hard line preserve and within MHPA lands. Therefore, the SANDER site will provide mitigation occurring within the MSCP's MHPA and would be implemented in accordance with City/ACOE/CDFW/RWQCB guidelines.

4.3 Direct Impacts—Miramar Reservoir Alternative Project Components

4.3.1 Morena Pump Station

4.3.1.1 Direct Impacts to Vegetation Communities and Land Cover Types

The Morena Pump Station~~, footprint~~ which includes the influent sewers and overflow pipes, supports ~~one~~ two land cover types~~:~~; Non-native Vegetation and Urban/Developed (Table 4-8; Figures 4-2A through 4-2-M3, Biological Resources Impacts). Direct impacts include the construction of a new pump station. Construction of the Morena Pump Station would involve excavation and grading of the entire site. Once constructed, the site would be developed with a new pump station and associated facilities. No direct impacts to botanical resources would occur as result of the construction of the Morena Pump Station. Urban/developed land and non-native vegetation provides little native habitat value and foraging opportunities for wildlife, particularly when they occur in densely urban environments such as the Morena Pump Station; impacts to this land cover would not be considered significant. The Morena Pump Station is not located within designated MHPA lands (Figures 4-2A through 4-2-M3, Biological Resources Impacts).

Table 4-8
Impacts to Vegetation Communities and Land Cover Types within the Morena Pump Station ~~Footprint~~ (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Non-native Vegetation	IV	0	0	0.93	0	0.93
Urban/Developed	IV	0	0	~~0.72~~5.30	~~1.01~~0.83	~~1.73~~6.12
Total		**0**	**0**	**~~0.72~~6.22**	**~~1.01~~0.83**	**~~1.73~~7.05**

4.3.1.2 Direct Impacts to Sensitive Plant Species

No sensitive plant species were observed or have a moderate to high potential to occur in the Morena Pump Station footprint. As such, no direct impacts are anticipated to sensitive plant species.

4.3.1.3 Direct Impacts to Sensitive Wildlife Species

No sensitive wildlife species were observed within the Morena Pump Station footprint. As such, no direct impacts are anticipated to sensitive wildlife species. Four sensitive wildlife species have moderate potential to occur within the San Diego River that overlaps the Morena Pump Station

study area, including yellow warbler, least Bell's vireo, southwestern willow flycatcher, and yellow-breasted chat; see Section 4.6.3 for a discussion on indirect impacts to these species.

4.3.1.4 Direct Impacts to Jurisdictional Aquatic Resources

There are no direct impacts to jurisdictional aquatic resources associated with the Morena Pump Station footprint. However, 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 City's Coastal Overlay Zone, and therefore would require adherence to the City's wetland buffer regulations. The San Diego River is also within the MHPA of the City's MSCP Subarea Plan. See Section 4.6.4.1 for a detailed description of the indirect impacts to jurisdictional resources. Additionally, the impacts within Friars Road may be subject to ACOE jurisdiction if it affects the San Diego River Levee system.

4.3.2 Morena Pipelines

4.3.2.1 Direct Impacts to Vegetation Communities and Land Cover Types

The Morena Pipelines footprint supports seven vegetation communities and/or land cover types: Diegan coastal sage scrub (including disturbed), developed – concrete channel, eucalyptus woodland, urban/developed, non-native vegetation, and disturbed habitat (Table 4-9; Figures 4-2A through 4-2-M3, Biological Resources Impacts). Direct impacts are all temporary and would primarily be constructed in roadway right-of-way. Where the Morena Pipelines cross sensitive resources, to the greatest extent possible, the pipelines will be constructed using trenchless construction methods such as auger boring/auger jack and bore, micro-tunneling, or horizontal directional drilling. These methods are applied to areas where sensitive biological resources occur, as well as to heavily congested areas or to cross-controlled access freeway and railroad crossings where open cut is not allowed. There are no direct permanent impacts to sensitive vegetation communities as result of the construction of the Morena Pipelines. There would be temporary impacts to Diegan coastal sage scrub (including disturbed) at the intersection of Genesee Road and Rose Canyon, just north of the railroad. Trenchless construction below Genesee Road and the railroad was not possible in this area due to engineering constraints. Temporary impacts would occur within the concrete-lined channel portion of Tecolote Creek, mapped as ephemeral stream channel (developed – concrete channel). Trenchless construction at this location would result in maintenance and emergency-situation challenges, and therefore was not possible. Impacts to sensitive vegetation communities (i.e., coastal sage scrub communities (including disturbed)) and jurisdictional resources (developed – concrete channel) would be considered significant and would require mitigation per the City of San Diego Biology Guidelines or permits from regulatory agencies. Direct temporary impacts to vegetation communities and jurisdictional resources would be reduced to a less-than-significant level through

the biological mitigation measures provided in Sections 5.1 and 5.4 (MM-BIO-2 and MM-BIO-~~8~~9). The concrete-lined channel in Tecolote Creek is considered by the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a), to be a Tier IV land cover, which does not require mitigation. However, since this area is a jurisdictional resource, temporary impacts would require agency permits and comply with the San Diego Municipal Code, Land Development Code—Landscape Standards (City of San Diego 2016), which would require reconstruction of the channel to pre-impact conditions. Since urban/developed lands, non-native vegetation, and disturbed habitat provide little habitat value and foraging opportunities for wildlife, particularly when they occur in densely urban environments such as the Morena Pipelines, impacts to these land covers would not be considered significant. The Morena Pipelines would impact 0.01 acre of designated MHPA lands; however, impacts would be located within an existing roadway (urban/developed) and therefore would not require mitigation (Figures 4-2A through 4-2-M3, Biological Resources Impacts).

Table 4-9
Impacts to Vegetation Communities and Land Cover Types
within the Morena Pipelines Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Diegan Coastal Sage Scrub	II	0	0	0.18	0	0.18
Diegan Coastal Sage Scrub (disturbed)	II	0	0	~~0.12~~0.13	0	~~0.12~~0.13
Developed – Concrete Channel~~**~~	IV	0	0	0.03	0	0.03
Eucalyptus Woodland	IV	0	0	0.08	0	0.08
Urban/Developed	IV	0.01	0	~~46.67~~42.71	0	~~46.68~~42.72
Non-native Vegetation	IV	0	0	~~0.20~~<0.01	0	~~0.20~~<0.01
Disturbed Habitat	IV	0	0	~~1.06~~0.91	0	~~1.06~~0.91
Total		**0.01**	**0**	**~~48.35~~44.04**	**0**	**~~48.36~~44.05**

Note:
~~**~~ This land cover is not considered a wetlands according to the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a) due to the lack of wetland vegetation present. However, impacts to this land cover would require agency permits.

4.3.2.2 Direct Impacts to Sensitive Plant Species

No sensitive plant species were observed in the Morena Pipelines footprint. Although there are several species with a moderate potential to occur within the 100-foot buffer of the Project component, the Project component impacted areas are primarily urban/developed with minimal impacts to native vegetation. Therefore, no sensitive plant species have potential to occur within the Morena Pipelines footprint. As such, no direct impacts are anticipated to sensitive plant species.

4.3.2.3 Direct Impacts to Sensitive Wildlife Species

Only one sensitive wildlife species, coastal California gnatcatcher, has moderate potential to occur in the Morena Pipelines footprint. There are temporary impacts proposed to Diegan coastal sage scrub where the Morena Pipeline crosses over Rose Canyon where the pipeline deviates from Genesee Avenue. The Diegan coastal sage scrub (including disturbed) along the Morena Pipelines was surveyed for coastal California gnatcatchers during the 2016 Dudek focused surveys (Appendix E). There were no coastal California gnatcatcher observations within this intersection of Rose Canyon and Genesee Avenue. Therefore, direct impacts to coastal California gnatcatcher at this intersection are not anticipated. However, this area is adjacent to the MHPA, and indirect impacts to coastal California gnatcatcher are discussed in Section 4.6.3. Temporary impacts to suitable habitat for coastal California gnatcatcher would be mitigated through MM-BIO-2.

Additionally, because there are impacts within coastal sage scrub communities, a nesting bird survey should be completed within this area prior to construction to reduce impacts to nesting birds to less than significant (MM-BIO-3).

Although eucalyptus woodlands provide little native habitat value and foraging opportunities for wildlife, particularly when they occur in densely urban environments such as along the Morena Pipelines, they could provide nesting bird habitat. A nesting bird survey should be completed within the eucalyptus woodland prior to construction to reduce impacts to nesting birds to less than significant (MM-BIO-3). However, work occurring along the Morena Pipelines is not expected to affect nesting birds within surrounding eucalyptus trees.

No other sensitive wildlife species were observed or have a moderate to high potential to occur in the Morena Pipelines footprint.

4.3.2.4 Direct Impacts to Jurisdictional Aquatic Resources

There are temporary impacts to 0.03 acre under ACOE-, RWQCB-, and CDFW-jurisdiction within the Morena Pipelines footprint. This area is not considered a wetland by the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a) due to the lack of wetland vegetation present. The impact area is within a concrete-lined portion of Tecolote Creek, which flows to directly into Mission Bay. Direct impacts to this jurisdictional resource would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections ~~5.1 and~~ 5.4 (~~MM-BIO-2 and~~ MM-BIO-8~~9~~), which would require ~~reconstruction of the channel to pre-impact conditions and~~ obtaining the required agency permits before work occurs within the channel. Temporary impacts to the concrete-lined portion of Tecolote Creek would comply with the San Diego Municipal Code, Land Development Code—Landscape Standards

(City of San Diego 2016), which would require reconstruction of the channel to pre-impact conditions. Table 4-10 summarizes impacts to this feature.

Table 4-10
Impacts to Jurisdictional Aquatic Resources within the Morena Pipelines Footprint (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]		CDFW[1]		City of San Diego Wetlands[1]	
	Temp	*Perm*	*Temp*	*Perm*	**Temp**	**Perm**
Non-wetland Waters/Streambed						
Ephemeral Stream Channel (Developed – Concrete Channel)	0.03	—	0.03	—	—	—
Total jurisdictional area	**0.03**	**—**	**0.03**	**—**	**—**	**—**

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

4.3.3 North City Water Reclamation Plant Expansion

4.3.3.1 Direct Impacts to Vegetation Communities and Land Cover Types

The NCWRP Expansion footprint supports five vegetation communities and/or land cover types: Diegan coastal sage scrub, non-native grassland, urban/developed, disturbed habitat, and non-native vegetation (Table 4-11; Figures 4-2A through 4-2-M3, Biological Resources Impacts). Direct impacts include a tunnel access for the Morena Pipelines, the NCPWF Influent Pump Station, and the North City Renewable Energy Facility. There would be direct permanent impacts to sensitive vegetation communities including Diegan coastal sage scrub and non-native grassland as a result of the construction of the NCWRP Expansion. Impacts to these sensitive vegetation communities would be considered significant and would require mitigation per the City of San Diego Biology Guidelines. However, impacts to 1.16 acres of sensitive vegetation communities (Diegan coastal sage scrub and non-native grassland) have been adequately addressed and mitigated during the North City Water Reclamation Project for the Clean Water Program (City of San Diego 1991). The Del Mar Mesa property (30 acres) was purchased to offset impacts to uplands, and additional acreage was applied at Marron Valley Cornerstone Lands (City of San Diego 1993). The Del Mar Mesa property, which is within the MHPA, is managed in accordance with the City's MSCP Subarea Plan directives (City of San Diego 1997). The purchase of credits at the Marron Valley Cornerstone Lands Bank are placed in a special account used to fund maintenance and restoration activities. Since urban/developed lands, non-native vegetation and disturbed habitat provide little native habitat value and foraging opportunities for wildlife, particularly when they occur in urban environments such as the NCWRP Expansion, impacts to these land covers would not be considered significant. The NCWRP Expansion is not located in MHPA lands (Figures 4-2A through 4-2-M3, Biological Resources Impacts).

Table 4-11
Impacts to Vegetation Communities and Land Cover Types within the North City Water Reclamation Plant Expansion Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Diegan Coastal Sage Scrub	II	0	0	0	0.17	0.17*
Urban/Developed	IV	0	0	0	~~32.55~~31.89	~~32.55~~31.89
Non-native Grassland	IIIB	0	0	0	0.99	0.99*
Non-native Vegetation	IV	0	0	0	0.56	0.56
Disturbed Habitat	IV	0	0	0	0.81	0.81
North City Pure Water Facility Influent Pump Station						
Urban/Developed	IV	0	0	0	0.30	0.30
North City Renewable Energy Facility						
Urban/Developed	IV	0	0	0	0.36	0.36
	Total	**0**	**0**	**0**	**35.08**	**35.08**

Note:
* These impacts have been previously mitigated through the purchase of the Del Mar Mesa property and additional acreage was applied at the Marron Valley Cornerstone Lands (City of San Diego 1993).

4.3.3.2 Direct Impacts to Sensitive Plant Species

One sensitive plant species was observed within the NCWRP footprint: San Diego County viguiera (Figures 4-2A through 4-2-M3, Biological Resources Impacts). All ~~11~~ 58 individuals are mapped at the southern end of the NCWRP on either side of the entrance driveway. ~~Three~~ All individuals occur within either disturbed habitat or within Diegan coastal sage scrub. There are no additional sensitive species that have a moderate to high potential to occur in the NCWRP Expansion footprint.

Impacts to CRPR 4 San Diego County viguiera are not considered significant because this species is of low sensitivity, and the on-site populations are not significant in terms of the ability for this species to persist (i.e., CRPR 4 species are not considered "rare" from a statewide perspective). The species does not occur within the impact area in a population that is considered regionally significant and is common in the study area. Additionally, previous mitigation at the NCWRP has preserved suitable habitat for this species.

4.3.3.3 Direct Impacts to Sensitive Wildlife Species

Impacts to Diegan coastal sage scrub (which provides suitable habitat for coastal California gnatcatchers) would occur within the NCWRP Expansion footprint as a thin sliver along the southern boundary. This area was surveyed for coastal California gnatcatchers during the 2016 Dudek focused surveys, and there were no coastal California gnatcatcher observations within this

area (Appendix E). However, two individuals or transient coastal California gnatcatcher were observed adjacent to the eastern boundary of the NCWRP within MCAS Miramar and Diegan coastal sage scrub within the MHPA occurs just south of the NCWRP Expansion footprint. Therefore, indirect impacts to coastal California gnatcatcher would need to be addressed, and those are discussed in Section 4.6.3. Previous mitigation at the NCWRP has preserved suitable habitat for this species.

Additionally, because the NCWRP supports suitable nesting bird habitat (coastal sage scrub communities and non-native grassland), a nesting bird survey should be completed prior to construction to reduce impacts to nesting birds to less than significant (MM-BIO-3).

No other sensitive wildlife species were observed or have a moderate to high potential to occur in the NCWRP Expansion footprint. As such, no direct impacts are anticipated to sensitive wildlife species.

4.3.3.4 Direct Impacts to Jurisdictional Aquatic Resources

There are no direct impacts to jurisdictional aquatic resources associated with the NCWRP Expansion footprint.

4.3.4 North City Pure Water Facility Influent Pump Station

The NCPWF Influent Pump Station is located within the confines of the NCWRP Expansion. As such, all direct impacts for the Influent Pump Station are discussed above in the NCWRP Expansion (Section 4.3.3). Table 4-11 above describes the vegetation communities and land cover types for Influent Pump Station within the footprint of the NCWRP Expansion.

4.3.5 North City Renewable Energy Facility

The North City Renewable Energy Facility is located within the confines of the NCWRP Expansion. As such, all direct impacts for the North City Renewable Energy Facility are discussed above in the NCWRP Expansion (Section 4.3.3). Table 4-11 above describes the vegetation communities and land cover types for North City Renewable Energy Facility within the footprint of the NCWRP Expansion.

4.3.6 North City Pure Water Facility

4.3.6.1 Direct Impacts to Vegetation Communities and Land Cover Types

The approximate 11.0-acre North City Pure Water Facility site supports eight vegetation communities and/or land cover types: Diegan coastal sage scrub (including disturbed), native grassland, non-native grassland, vernal pools, urban/developed, disturbed habitat, and non-native vegetation (Table 4-12; Figures 4-2A through 4-2-M3, Biological Resources Impacts). The entire

NCPWF site would be developed with the various structures that comprise the treatment facility. The entire site would be cleared and graded. Major structures would include the process building, operations and maintenance building, product water tank, electrical building, chemical systems building, and the North City Pump Station. Portions of the site that are not occupied with buildings would be paved with asphalt or concrete, or landscaped. A biofiltration basin would be located at the northern end of the site.

Impacts to sensitive vegetation communities, as defined by the City of San Diego Biology Guidelines, include Diegan coastal sage scrub, native and non-native grasslands, and vernal pools. Impacts to these vegetation communities would be considered significant and would require mitigation per the City of San Diego Biology Guidelines. Direct impacts to vegetation communities would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections 5.1 and 5.4 (MM-BIO-1a, MM-BIO-1b, ~~MM-BIO-2,~~ and MM-BIO-8~~9~~). Urban/developed lands, non-native vegetation, and disturbed habitat provide little native habitat value and foraging opportunities for wildlife, particularly when they occur in densely urban environments such as the NCPWF; as such, impacts to these land covers would not be considered significant. The NCPWF is not located in MHPA lands (Figures 4-2A through 4-2-M3, Biological Resources Impacts).

Table 4-12
Impacts to Vegetation Communities and Land Cover Types
within the North City Pure Water Facility (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
North City Water Pure Water Facility and Pump Station Footprint						
Diegan Coastal Sage Scrub	II	0	0	0	2.72	2.72
Diegan Coastal Sage Scrub (disturbed)	II	0	0	0	0.03	0.03
Native Grassland	I	0	0	0	1.30	1.30
Vernal Pool	Wetland	0	0	0	0.38	0.38
Urban/Developed	IV	0	0	0.52	<0.01	0.52
Non-native Grassland	IIIB	0	0	<0.01	5.10	5.10
Non-native Vegetation	IV	0	0	<0.01	0	<0.01
Disturbed Habitat	IV	0	0	0.06	0.87	0.93
Total		**0**	**0**	**0.59**	**10.41**	**10.99**

4.3.6.2 Direct Impacts to Sensitive Plant Species

One sensitive plant species was observed within the NCPWF footprint: graceful tarplant (Figures 4-2A through 4-2-M3, Biological Resources Impacts). All ~~60~~ 992 individuals are located in the ~~southern~~ central portion of the NCPWF within Diegan coastal sage scrub. It should be noted that

the number of individuals observed during surveys conducted in 2017, which was a record rain year, increased from the total individuals observed during the 2016 surveys. Population sizes of this species can vary dramatically from year to year, depending on rainfall patterns. There are no other species that have a moderate to high potential to occur in the NCPWF footprint.

Direct impacts to CRPR 4 species, graceful tarplant, within the NCPWF are not considered significant because this species is of low sensitivity, and the on-site populations are not significant in terms of the ability for this species to persist (i.e., as CRPR 4 species they are not considered rare). In addition, the species does not occur within the impact area in a population that is considered regionally significant and/or are common in the study area. However, MM-BIO-1a ~~and MM-BIO-2~~, which provides mitigation ~~or restoration~~ for sensitive vegetation communities, would preserve or restore suitable habitat for this species.

4.3.6.3 Direct Impacts to Sensitive Wildlife Species

There is one sensitive wildlife species occurring within the impact limits of the NCPWF: white-tailed kite (Figures 4-2A through 4-2-M3, Biological Resources Impacts). This one individual was observed foraging during multiple surveys conducted by HELIX. The individual was outside of the MCAS Miramar and MHPA. Since the NCPWF does not contain any nesting habitat for white-tailed kite, no impacts are expected to this species. Direct impacts to vegetation communities used by white-tailed kite for foraging would be conserved through biological mitigation measures provided in Section 5.1 (MM-BIO-1a).

The Diegan coastal sage scrub (including disturbed) on the NCPWF was surveyed for coastal California gnatcatchers during the 2016 Dudek focused surveys (Appendix E). There were no coastal California gnatcatcher observations within the NCPWF or within suitable habitat surrounding the NCPWF. Therefore, impacts to coastal California gnatcatcher at the NCPWF are not anticipated. However because the NCPWF supports coastal sage scrub communities and other sensitive habitats, a nesting bird survey would be completed prior to construction to reduce impacts to nesting birds to less than significant (MM-BIO-3). Permanent impacts to suitable habitat for nesting birds would be mitigated through MM-BIO-1a.

Direct permanent impacts would occur to vernal pools within the NCPWF; however, protocol-level surveys in 2015/2016 and 2017 determined the vernal pools were not occupied by San Diego fairy shrimp or any other listed species. Permanent impacts to vernal pools would be mitigated through MM-BIO-1b.

4.3.6.4 Direct Impacts to Jurisdictional Aquatic Resources

There are permanent impacts to 0.38 acre of wetlands regulated by the City of San Diego and potentially RWQCB within the NCPWF footprint. The vernal pools mapped at NCPWF are considered isolated from navigable waters with no federal nexus that would allow these pools to be considered jurisdictional wetlands by the ACOE. Additionally, these pools are small, isolated, and contain limited biological value given that they do not support listed species. 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 2015/16 wet season for sampling to occur. 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 2017 vernal pools (0.14 acre) have indicator species present; therefore, all vernal pools on the NCPWF (0.38 acres) 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. Direct impacts to jurisdictional resources would be reduced to a less-than-significant level through the biological mitigation measures provided in 5.4 (MM-BIO-1b and MM-BIO-8~~9~~), which would require mitigation for permanent impacts to vernal pools, and obtaining the required agency permits. Table 4-13 summarizes impacts to these features.

Table 4-13
Impacts to Jurisdictional Aquatic Resources in the
North City Pure Water Facility Footprint (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]		CDFW[1]		City of San Diego Wetlands[1]	
	Temp	*Perm*	*Temp*	*Perm*	*Temp*	*Perm*
Wetland or Riparian Areas						
Vernal Pool	—	—	—	—	—	0.38[2]
Total jurisdictional area	**—**	**—**	**—**	**—**	**—**	**0.38**

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 0.38 acre of vernal pool is also potentially regulated by the RWQCB.

4.3.7 North City Pure Water Pump Station

The North City Pump Station is located within the footprint of the NCPWF. As such, all direct impacts for the North City Pump Station are discussed above in the NCPWF (Section 4.3.6). Table 4-12 above describes the vegetation communities and land cover types for North City Pump Station within the footprint of the NCPWF.

4.3.8 North City Pure Water Pipeline

4.3.8.1 Direct Impacts to Vegetation Communities and Land Cover Types

The North City Pipeline footprint supports four vegetation communities and/or land cover types: urban/developed, eucalyptus woodland, disturbed habitat, and non-native grassland (Table 4-14; Figures 4-2A through 4-2-M3, Biological Resources Impacts). Direct impacts include construction in roadway right-of-way. Where the North City Pipeline crosses 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. These methods are applied to areas where sensitive biological resources occur, as well as to heavily congested areas or to cross-controlled access freeway and railroad crossings where open cut is not allowed. Impacts to sensitive vegetation communities as defined by the City's Biology Guidelines (i.e., grassland communities) would be considered significant and would require mitigation per the City of San Diego Biology Guidelines. The portion of the North City Pipeline within MCAS Miramar lands and therefore subject to the 2011–2015 INRMP is within Miramar Road. Appendix A analyzes the impacts that would occur from the North City Pipeline within the Level V MA. Although the North City Pipeline impacts 1.83 acres, all impacts would occur within Miramar Road in the Level 5 MA. Therefore, no mitigation is proposed for these direct impacts.

Direct impacts to vegetation communities would be reduced to a less-than-significant level through the biological mitigation measures provided in Section 5.1 (MM-BIO-2). Direct impacts are not expected to occur to wetland vegetation occurring around the Miramar Reservoir due to placement of the North City Pipeline within the reservoir. Wetlands would also be avoided by implementing trenchless construction methods. Urban/developed lands and disturbed habitat provide little native habitat value and foraging opportunities for wildlife, particularly when they occur in densely urban environments such as the North City Pipeline; therefore, impacts to these land covers would not be considered significant. The North City Pipeline is not located within MHPA lands (Figures 4-2A through 4-2-M3, Biological Resources Impacts).

Table 4-14
Impacts to Vegetation Communities and Land Cover Types within the North City Pure Water Pipeline Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Urban/Developed	IV	0	0	~~34.42~~33.34	0.01	~~34.43~~33.35
Non-native Grassland	IIIB	0	0	~~0.10~~0.13	0	~~0.10~~0.13
Eucalyptus Woodland	IV	0	0	1.90	0.05	1.95
Disturbed Habitat	IV	0	0	1.77	0	1.77
	Total	0	**0**	**~~38.19~~37.14**	**0.06**	**~~38.25~~37.21**

4.3.8.2 Direct Impacts to Sensitive Plant Species

No sensitive plant species were observed in the North City Pipeline footprint. ~~One sensitive plant species was observed within the North City Pipeline footprint: San Diego County viguiera (Figures 4-1A through 4-1-M3, Biological Resources Impacts – Miramar Reservoir Alternative). One individual was mapped northwest of the intersection of Eastgate Mall and Miramar Road.~~ There are no other species that have a moderate to high potential to occur in the North City Pipeline footprint. As such, no direct impacts are anticipated to sensitive plant species. ~~Impacts to CRPR 4 San Diego County viguiera are not considered significant because this species is of low sensitivity, and impacts would not be significant in terms of the ability for this species to persist (i.e., CRPR 4 species are not considered "rare" from a statewide perspective). In addition, the species does not occur within the impact area in a population that is considered regionally significant and is common in the study area. However, MM-BIO-2, which provides restoration for sensitive vegetation communities, would restore suitable habitat for this species.~~

4.3.8.3 Direct Impacts to Sensitive Wildlife Species

~~Although western pond turtles were observed within the Miramar Reservoir, the subaqueous pipeline would not directly affect basking sites. Direct impacts to western pond turtle habitat from trenchless construction and placement of the North City Pipelines are not anticipated.~~ The placement of the North City Pipeline in Miramar Reservoir would not directly reduce habitat for wildlife and would not replace any amount of open water with dry land or result in any direct impacts on Miramar Reservoir fringe vegetation. No direct impacts to vernal pools would occur along the North City Pipeline corridor. Mitigation measures to avoid indirect impacts to vernal pools are discussed in Section 4.6.4.1 and Appendix T. No ~~other~~ sensitive wildlife species were observed or have a moderate to high potential to occur in the North City Pipeline footprint. As such, no direct impacts are anticipated to sensitive wildlife species. Although eucalyptus woodlands provide little native habitat value and foraging opportunities for wildlife, particularly

when they occur in urban environments such as the North City Pipeline, they could provide nesting bird habitat. A nesting bird survey should be completed within the eucalyptus woodland prior to construction to reduce impacts to nesting birds to less than significant (MM-BIO-3). However, work occurring along the North City Pipeline is not expected to affect nesting birds within surrounding eucalyptus trees.

4.3.8.4 Direct Impacts to Jurisdictional Aquatic Resources

The design of the North City Pipeline has taken into careful consideration the location of jurisdictional aquatic resources and has been designed to avoid these resources through the use of trenchless construction methods; therefore, there are no direct impacts to jurisdictional aquatic resources associated with the construction and installation of the North City Pipeline footprint. However, placement of the pipeline would require agency permits (MM-BIO-8). The "float-and-sink" method is recommended to install the subaqueous discharge pipeline at the bottom of the Miramar Reservoir. Once constructed, the pipeline 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 to hold the pipeline in place. Once the pipeline 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. Construction of these in-water components may cause temporary displacement of sediment, which would resettle after placement of the pipeline. Since the pipeline would be a structure settled on the reservoir bottom, and no trenching or backfilling~~, other than at the shoreline and reservoir entry,~~ is anticipated, placement of pipe is not considered an impact. Shoreline impacts would be avoided by tunneling into the reservoir versus open trenching. In addition, placement of pipes at the bottom of the reservoir will not result in the net loss of aquatic resources function or services, nor would it reduce habitat for wildlife; including invertebrates and micro biota. The pipeline and joints will not result in any measurable change in elevation of the reservoir bottom.

4.3.9 Landfill Gas Pipeline

4.3.9.1 Direct Impacts to Vegetation Communities and Land Cover Types

The LFG Pipeline footprint supports 13 vegetation communities and/or land cover types: Diegan coastal sage scrub (including disturbed), Diegan coastal sage scrub: Baccharis-dominated, disturbed habitat, chamise chaparral, coastal sage-chaparral transition, flat-topped buckwheat (including disturbed), extensive agriculture (field/pasture, row crops), southern mixed chaparral, urban/developed, non-native grassland, non-native vegetation (Table 4-15; Figures 4-1A through 4-1-M3, Biological Resources Impacts – Miramar Reservoir Alternative).

The LFG Pipeline would primarily be constructed within the City's existing utility easement in the ~~VA~~ Miramar National Cemetery and MCAS Miramar or within roadway right-of-way. Direct impacts include the construction of an open-cut trench, excavation of launching and receiving pits, the LFG compressor station, and work areas. All impacts are temporary with the exception of the LFG compressor station, which would have permanent impacts to urban/developed land. Impacts to sensitive vegetation communities as defined by the City's Biology Guidelines (i.e., coastal sage scrub (including subtypes), non-native grassland, and chaparral (including subtypes)) would be considered significant and would require mitigation per the City of San Diego Biology Guidelines. The majority of the LFG Pipeline is within MCAS Miramar lands and is therefore subject to the 2011–2015 INRMP. The LFG Pipeline would impact ~~5.34~~ 5.25 acres of sensitive upland vegetation communities within Level I-V MAs. Appendix A analyzes the impacts that would occur from the LFG Pipeline within each MA and proposes mitigation that would keep the Project within compliance. Direct impacts to vegetation communities would be reduced to a less-than-significant level through the biological mitigation measures provided in Section 5.1 (MM-BIO-2). Additionally, to satisfy the INRMP habitat enhancement requirement for temporary impacts to sensitive communities within MCAS Miramar, the City would conduct a total of ~~6.27~~ 6.14 acres of habitat enhancement within MCAS Miramar ~~adjacent to habitat revegetation activities along the LFG Pipeline, to the greatest extent feasible~~. The ~~6.27~~ 6.14 acres of enhancement would occur within disturbed habitat types and would include invasive plant control, trash removal, erosion control, and seeding and/or supplemental planting as necessary in accordance with the Conceptual Revegetation Plan (Appendix P). Urban/developed lands, non-native vegetation, and disturbed habitat provide little native habitat value and foraging opportunities for wildlife, particularly when they occur in densely urban environments such as the LFG Pipeline; therefore, impacts to this land covers would not be considered significant. The LFG Pipeline is not located in MHPA lands (Figures 4-1A through 4-1-M3, Biological Resources Impacts – Miramar Reservoir Alternative).

Table 4-15
Impacts to Vegetation Communities and Land Cover Types
within the Landfill Gas Pipeline Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Diegan Coastal Sage Scrub	II	0	0	~~3.97~~3.88	0	~~3.97~~3.88
Diegan Coastal Sage Scrub (disturbed)	II	0	0	0.68	0	0.68
Diegan Coastal Sage Scrub: Baccharis-Dominated	II	0	0	0.03	0	0.03
Chamise Chaparral	IIIA	0	0	0.50	0	0.50
Coastal Sage-Chaparral Transition	II	0	0	0.14	0	0.14
Flat-Topped Buckwheat	II	0	0	<0.01	0	<0.01

Table 4-15
Impacts to Vegetation Communities and Land Cover Types
within the Landfill Gas Pipeline Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Flat-Topped Buckwheat (disturbed)	II	0	0	0.01	0	0.01
Extensive Agriculture – Field/Pasture, Row Crops	IV	0	0	~~0.45~~0.33	0	~~0.45~~0.33
Southern Mixed Chaparral	IIIA	0	0	<0.01	0	<0.01
Non-native Grassland	IIIB	0	0	<0.01	0	<0.01
Non-native Vegetation	IV	0	0	0.04	0	0.04
Disturbed Habitat	IV	0	0	~~3.80~~3.73	0	~~3.80~~3.73
Urban/Developed	IV	0	0	3.23	0	3.23
LFG Compressor Station						
Non-native Grassland	IIIB	0	0	0.02	0	0.02
Disturbed Habitat	IV	0	0	1.16	0	1.16
Urban/Developed	IV	0	0	0.28	0.12	0.40
	Total	**0**	**0**	**~~14.30~~14.04**	**0.12**	**~~14.42~~14.15**

4.3.9.2 Direct Impacts to Sensitive Plant Species

There are four sensitive plant species occurring within the impact limits of the LFG Pipeline, which is located within MCAS Miramar (Table 4-16; Figures 4-1A through 4-1-M3, Biological Resources Impacts – Miramar Reservoir Alternative). ~~The LFG Pipeline is located within MCAS Miramar.~~ Orcutt's brodiaea occurs in two locations along the LFG Pipeline during 2016 surveys. This species was not observed in 2017 within the impact limits despite being a better rainfall year compared to 2016. However, the impact analysis includes the individuals observed during the 2016 surveys within the Project's footprint. Wart-stemmed ceanothus individuals occur at three locations along the LFG Pipeline. Graceful tarplant is located in ~~one~~ multiple polygons within disturbed flat-topped buckwheat, non-native grassland, and disturbed habitat. It should be noted that the number of graceful tarplant individuals observed during surveys conducted in 2017, which was a record rain year, increased from the total individuals observed during the 2016 surveys. Population sizes of this species can vary dramatically from year to year, depending on rainfall patterns. Ashy spike-moss occurs in multiple locations throughout the impact limits, including within southern mixed chaparral, Diegan coastal sage scrub, and disturbed habitat. There are no other species that have a moderate to high potential to occur in the LFG Pipeline footprint.

Table 4-16
Impacts to Sensitive Plant Species within the Landfill Gas Pipeline Footprint

Common Name (Scientific Name)	Status (Federal/State/CRPR/MSCP)	Total Individuals
Orcutt's brodiaea *(Brodiaea orcuttii)*	None/None/1B.1/ Covered	12*~~1~~
wart-stemmed ceanothus *(Ceanothus verrucosus)*	None/None/2B.2/None	~~3~~7
graceful tarplant *(Holocarpha virgata* ssp. *elongata*)	None/None/4.2/None	~~27~~8,314
ashy spike-moss *(Selaginella cinerascens)*	None/None/4.1/None	15~~5~~**

Notes:
*~~1~~ This species was not observed within the impact limits in 2017; however, since it was observed during the 2016 surveys within the impact footprint it is included in the Project's impact analysis.
** 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.

Direct impacts from open-cut trench areas to CRPR 1B.1 and 2B.2 species within the LFG Pipeline, including Orcutt's brodiaea and wart-stemmed ceanothus, would be considered significant because these species are considered rare, threatened, or endangered in California. Impacts to these species would be reduced to less than significant with implementation of MM-BIO-2, which would restore the impact areas to pre-impact conditions. An additional ~~6.27~~ 6.14 acres of habitat enhancement would occur within MCAS Miramar ~~adjacent to habitat revegetation activities along the LFG Pipeline, to the greatest extent feasible,~~ and would provide suitable habitat for these species.

Direct impacts to CRPR 4 species within the LFG Pipeline footprint, including graceful tarplant and ashy spike-moss, are not considered significant because these species are of low sensitivity, and the on-site populations are not significant in terms of the ability for this species to persist (i.e., as CRPR 4 species they are not considered "rare" from a statewide perspective). In addition, the species do not occur within the impact area in a population that is considered regionally significant and/or are common in the study area. However, MM-BIO-2, which provides restoration for sensitive vegetation communities, would restore impacts areas to pre-impact conditions. An additional ~~6.27~~ 6.14 acres of habitat enhancement would occur within MCAS Miramar ~~adjacent to habitat revegetation activities along the LFG Pipeline, to the greatest extent feasible,~~ and would provide suitable habitat for these species.

4.3.9.3 Direct Impacts to Sensitive Wildlife Species

There are four features (PW36, VP653, VP654, and VP656) containing San Diego fairy shrimp along the LFG Pipeline; however, there would be no direct or indirect impacts from the LFG Pipeline to these features due to the use of trenchless construction methods.

A total of six individuals or transients, five nests, and four pairs of coastal California gnatcatcher were observed along the LFG Pipeline within MCAS Miramar. Since this species is capable of

movement, no direct impacts to adult coastal California gnatcatchers would occur; however, there would be direct impacts to suitable habitat. Temporary impacts to suitable habitat for coastal California gnatcatcher would be mitigated through MM-BIO-2. Potential impacts to any active nests or the young of nesting coastal California gnatcatcher through direct grading of suitable habitat within MCAS Miramar would be mitigated through MM-BIO-4b, which requires preconstruction surveys for coastal California gnatcatcher. The City would satisfy mitigation requirements outlined in Appendix A through implementation of MM-BIO-4b, which states that if surveys determine presence of occupied habitat, no habitat-disturbing activities would occur between February 15 and August 31.

There are temporary impacts proposed along the LFG Pipeline to suitable nesting bird habitat including coastal sage scrub communities, chaparral, and non-native grassland. Therefore, a nesting bird survey would be completed within suitable nesting habitat prior to construction to reduce impacts to nesting birds to less than significant (MM-BIO-3).

No other sensitive wildlife species have a moderate to high potential to occur in the LFG Pipeline footprint. Mitigation measures implemented to avoid indirect impacts to sensitive wildlife and vernal pools, are discussed in Sections 4.6.3 and 4.6.4.1, and Appendix T.

4.3.9.4 Direct Impacts to Jurisdictional Aquatic Resources

The design of the LFG Pipeline has taken into careful consideration the location of jurisdictional aquatic resources and has been designed to avoid these resources through the use of trenchless construction methods; therefore, there are no direct impacts to jurisdictional aquatic resources associated with the construction and installation of the LFG Pipeline footprint.

4.3.10 Metro Biosolids Center

4.3.10.1 Direct Impacts to Vegetation Communities and Land Cover Types

The MBC footprint supports four vegetation communities and/or land cover types (Diegan coastal sage scrub, coastal sage-chaparral transition, disturbed habitat, and urban/developed) (Table 4-17; Figures 4-3A through 4-3-R1, Biological Resources Impacts).

Direct impacts include Project component upgrades and construction of new Project components. Impacts to sensitive vegetation communities as defined by the City's Biology Guidelines (i.e., coastal sage scrub and subtypes, and chaparral) would be considered significant and would require mitigation per the City of San Diego Biology Guidelines. However, direct impacts to sensitive vegetation communities (including Diegan coastal sage scrub and chaparral) at the MBC have been adequately addressed and mitigated in the MBC

PEIS (City of San Diego 1994). The Goat Mesa parcel was purchased for impacts to uplands at the MBC, and therefore the previous mitigation would reduce impacts to coastal sage scrub and coastal sage-chaparral transition at the MBC to a less-than-significant level (City of San Diego 1996). The Goat Mesa property, which is within the MHPA, is managed in accordance with the City's MSCP Subarea Plan directives (City of San Diego 1997). The entire MBC is within MCAS Miramar lands and is therefore subject to the 2011–2015 INRMP. The MBC would impact 0.91 acre of sensitive upland vegetation communities within Levels II, IV, and V MAs. Appendix A analyzes the impacts that would occur from the MBC within each MA and proposes mitigation that would keep the Project within compliance. Disturbed habitat provides little native habitat value and foraging opportunities for wildlife, particularly when they occur in urban environments such as the MBC, impacts to this land covers would not be considered significant. The MBC is not located in MHPA lands (Figures 4-3A through 4-3-R1, Biological Resources Impacts).

Table 4-17
Impacts to Vegetation Communities and Land Cover Types
within the Metro Biosolids Center Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Diegan Coastal Sage Scrub	II	0	0	0	0.60	0.60*
Coastal Sage-Chaparral Transition	II	0	0	0	0.30	0.30*
Urban/Developed	IV	0	0	0	29.22	29.22
Disturbed Habitat	IV	0	0	0	0.09	0.09
Total		**0**	**0**	**0**	**30.22**	**30.22**

Note:
* These impacts have been previously mitigated through the purchase of the Goat Mesa parcel (City of San Diego 1996).

4.3.10.2 Direct Impacts to Sensitive Plant Species

There are ~~three~~ four sensitive plant species occurring within the impact limits of the MBC (Table 4-18; Figures 4-3A through 4-3-R1, Biological Resources Impacts). The long-spined spineflower and graceful tarplant both occur~~s~~ in one polygon within coastal sage-chaparral transition in the impact limits. The decumbent goldenbush occurs in multiple locations within the impact limits, including within coastal sage-chaparral transition, urban/developed, and disturbed habitat. In addition, ashy spike-moss occurs in multiple polygons within the impact limits, including coastal sage-chaparral transition and urban/developed. It should be noted that only the graceful tarplant was observed within the impact limits during the 2017 surveys. However, since population sizes can vary dramatically from year to year, species observed within the impact limits in 2016 are

included in this analysis. There are no additional species that have a moderate to high potential to occur in the MBC footprint.

Table 4-18
Impacts to Sensitive Plant Species within the Metro Biosolids Center Footprint

Scientific Name	Status (Federal/State/CRPR/MSCP)	Total Individuals
graceful tarplant *(Holocarpha virgata* ssp. *elongata)*	None/None/4.2/None	1
long-spined spineflower *(Chorizanthe polygonoides* var. *longispina)**	None/None/1B.2/None	6*
decumbent goldenbush *(Isocoma menziesii* var. *decumbens*)	None/None/CRPR 1B.2/None	2*
ashy spike-moss *(Selaginella cinerascens)*	None/None/CRPR 4.1/None	3* and **

Notes:
* This species was not observed within the impact limits in 2017; however, since it was observed during the 2016 surveys within the impact footprint it is included in the Project's impact analysis.
** 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.

Direct impacts to CRPR 1B.2 species, including long-spined spineflower and decumbent goldenbush, would be considered significant because these species are considered rare, threatened, or endangered in California. However, the impacts to the sensitive vegetation communities where these sensitive plant species occur have been adequately addressed and mitigated to offset permanent loss of habitat with the purchase of the Goat Mesa parcel. Therefore, due to previous mitigation at the MBC, impacts to sensitive plants would be reduced to a less than significant level.

Direct impacts to CRPR 4 species, including ashy spike-moss and graceful tarplant, are not considered significant because these species are of low sensitivity, and the on-site populations are not significant in terms of the ability for these species to persist (i.e., they are CRPR 4 species and therefore not considered rare). In addition, the species do not occur within the impact area in a population that is considered regionally significant and/or are common in the study area. Additionally, the previous mitigation at the MBC has preserved suitable habitat for this species.

4.3.10.3 Direct Impacts to Sensitive Wildlife Species

A total of two individuals or transients, two nests, and one pair of coastal California gnatcatcher were observed adjacent to the MBC within MCAS Miramar. Although impacts to Diegan coastal sage scrub within the boundaries of the MBC footprint would occur, the loss of these slivers of habitat is not expected to affect any coastal California gnatcatchers.

Additionally, the previous mitigation at the MBC has preserved suitable habitat for this species. Potential impacts to any active nests or the young of nesting coastal California gnatcatcher through direct grading of suitable habitat within MCAS Miramar would be mitigated through MM-BIO-4b, which requires preconstruction surveys for coastal California gnatcatcher. The City would satisfy mitigation requirements outlined in the INRMP through implementation of MM-BIO-4b. If surveys determine presence of occupied habitat, no habitat-disturbing activities would occur between February 15 and August 31.

Additionally, because the MBC supports suitable nesting bird habitat (Diegan coastal sage scrub and coastal sage-chaparral transition), a nesting bird survey would be completed prior to construction to reduce impacts to nesting birds to less than significant (MM-BIO-3).

No other sensitive wildlife species were observed or have a moderate to high potential to occur in the MBC footprint. As such, no direct impacts are anticipated to sensitive wildlife species.

4.3.10.4 Direct Impacts to Jurisdictional Aquatic Resources

There are no direct impacts to jurisdictional aquatic resources associated with the MBC footprint.

4.3.11 Miramar Water Treatment Plant Improvements

4.3.11.1 Direct Impacts to Vegetation Communities and Land Cover Types

The Miramar WTP supports four vegetation communities and/or land cover types (Diegan coastal sage scrub (disturbed), eucalyptus woodland, disturbed habitat, and urban/developed) (Table 4-19; Figures 4-1A through 4-1-M3, Biological Resources Impacts – Miramar Reservoir Alternative). Direct impacts include Project component upgrades and replacement of pumps at the existing pump station. Impacts to sensitive vegetation communities as defined by the City's Biology Guidelines (i.e., disturbed Diegan coastal sage scrub) would be considered significant and would require mitigation per the City of San Diego Biology Guidelines. However, direct impacts to 1.32 acres of sensitive vegetation communities (disturbed Diegan coastal sage scrub) at the Miramar WTP have been adequately addressed and mitigated during the Miramar WTP Upgrade/Expansion Project FEIR (City of San Diego 2001). The previous mitigation included the allocation of credits at Marron Valley Cornerstone Lands for uplands (including coastal sage scrub) to offset impacts at the Miramar WTP to a less-than-significant level (City of San Diego 2002). The purchase of credits at the Marron Valley Cornerstone Lands Bank are placed in a special account used to fund maintenance and restoration activities. Disturbed habitat provides little native habitat value and foraging opportunities for wildlife, particularly when they occur in urban environments; therefore, impacts to this land cover would not be considered significant. The Miramar WTP Improvements is located on 0.04 acre of MHPA lands, but these impacts were previously mitigated

as stated in the Miramar WTP Upgrade/Expansion Project FEIR (City of San Diego 2001) (Figures 4-1A through 4-1-M3, Biological Resources Impacts – Miramar Reservoir Alternative).

Table 4-19
Impacts to Vegetation Communities and Land Cover Types
within the Miramar Water Treatment Plant

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Miramar Water Treatment Plant Footprint						
Diegan Coastal Sage Scrub (disturbed)	II	0	0.04	0	1.28	1.32*
Urban/Developed	IV	0	0	0	26.49	26.49
Disturbed Habitat	IV	0	0	0	0.01	0.01
Miramar Water Treatment Plant Pump Station						
Eucalyptus Woodland	IV	0	0	0	0.27	0.27
Urban/Developed	IV	0	0	0	0.66	0.66
Disturbed Habitat	IV	0	0	0	0.39	0.39
	Total	**0**	**0.04**	**0**	**29.09**	**29.13**

Note:
* These impacts have been previously mitigated through the allocation of credits at Marron Valley Cornerstone Lands (City of San Diego 2002).

4.3.11.2 Direct Impacts to Sensitive Plant Species

No sensitive plant species were observed or have a moderate to high potential to occur in the Miramar WTP footprint. As such, no direct impacts are anticipated to sensitive plant species.

4.3.11.3 Direct Impacts to Sensitive Wildlife Species

No sensitive wildlife species were observed or have a moderate to high potential to occur in the Miramar WTP footprint. While there is coastal sage scrub within the confines of the treatment plant, the patch of vegetation is in close proximity to the WTP, is small and isolated, and would not support coastal California gnatcatcher. However, it could provide nesting bird habitat, and a nesting bird survey should be completed within the coastal sage scrub prior to construction to reduce impacts to nesting birds to less than significant (MM-BIO-3). As such, no direct impacts are anticipated to sensitive wildlife species. Although eucalyptus woodlands provide little native habitat value and foraging opportunities for wildlife, particularly when they occur in urban environments such as the Miramar WTP, they could provide nesting bird habitat. A nesting bird survey should be completed within the eucalyptus woodland prior to construction to reduce impacts to nesting birds to less than significant (MM-BIO-3). However, work occurring at the Miramar WTP is not expected to affect nesting birds within surrounding eucalyptus trees.

4.3.11.4 Direct Impacts to Jurisdictional Aquatic Resources

There are no direct impacts to jurisdictional aquatic resources associated with the Miramar WTP Improvementsfootprint.

4.3.12 Pure Water Dechlorination Facility

4.3.12.1 Direct Impacts to Vegetation Communities and Land Cover Types

The Dechlorination Facility footprint supports two vegetation communities and/or land cover types (eucalyptus woodland, and urban/developed) (Table 4-20; Figures 4-1A through 4-1-M3, Biological Resources Impacts – Miramar Reservoir Alternative). Direct impacts include of excavation and grading of the facility site. No direct permanent impacts to sensitive resources would occur as result of the construction of the Dechlorination Facility. The Dechlorination Facility is not located in MHPA lands; however, portions of the facility do occur adjacent to MHPA lands (Figures 4-1A through 4-1-M3, Biological Resources Impacts – Miramar Reservoir Alternative). See Section 4.7 for discussion on MHPA land use adjacency guidelines.

Table 4-20
Impacts to Vegetation Communities and Land Cover Types
within the Pure Water Dechlorination Facility Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Urban/Developed	IV	0	0	0	0.01	0.01
Eucalyptus Woodland	IV	0	0	0	0.06	0.06
Total		**0**	**0**	**0**	**0.07**	**0.07**

4.3.12.2 Direct Impacts to Sensitive Plant Species

No sensitive plant species were observed or have a moderate to high potential to occur in the Dechlorination Facility footprint. As such, no direct impacts are anticipated to sensitive plant species.

4.3.12.3 Direct Impacts to Sensitive Wildlife Species

No sensitive wildlife species were observed or have a moderate to high potential to occur in the Dechlorination Facility footprint. As such, no direct impacts are anticipated to sensitive wildlife species. Although eucalyptus woodlands provide little native habitat value and foraging opportunities for wildlife, particularly when they occur in densely urban environments such as the

Dechlorination Facility, they could provide nesting bird habitat. A nesting bird survey should be completed within the eucalyptus woodland prior to construction to reduce impacts to nesting birds to less than significant (MM-BIO-3). However, work occurring at the Dechlorination Facility is not expected to affect nesting birds within surrounding eucalyptus trees.

4.3.12.4 Direct Impacts to Jurisdictional Aquatic Resources

There are no direct impacts to jurisdictional aquatic resources associated with the Dechlorination Facility footprint.

4.4 Direct Impacts—San Vicente Reservoir Alternative

The San Vicente Reservoir Alternative footprint is partially within MCAS Miramar lands and is therefore subject to the 2011–2015 INRMP. Components that are within MCAS Miramar include the LFG Pipeline, impacts from air and blow-off valves occurring along the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line, and the entire MBC footprint. Appendix A analyzes the impacts that would occur from these components within each MA (Levels I through IV) and proposes mitigation that would keep the Project within compliance.

4.4.1 Direct Impacts to Vegetation Communities and Land Cover Types

The San Vicente Reservoir Alternative footprint supports 25 vegetation communities and/or land cover types (Table 4-21; Figures 4-3A through 4-3-R1, Biological Resources Impacts). Construction of the San Vicente Reservoir Alternative would result in impacts to ~~258.58~~259.32 acres, the majority of which is urban/developed land (~~218.56~~219.00 acres).

As mentioned above in Section 4.2.1, two components (NCWRP and MBC) have previously mitigated a total of 2.07 acres of impacts to sensitive vegetation within their respective footprints. Direct impacts to 1.16 acres of sensitive upland vegetation communities (Diegan coastal sage scrub (including disturbed) and non-native grassland) at the NCWRP have been adequately addressed and mitigated during the North City Water Reclamation Project for the Clean Water Program (City of San Diego 1991). Direct impacts to 0.91 acre of sensitive upland vegetation communities (including coastal sage scrub and chaparral) at the MBC have been adequately addressed and mitigated in the MBC PEIS (City of San Diego 1994). All previous mitigation occurred within the MHPA and is consistent with MSCP, which identifies monitoring and management activities. Management activities include signage, fencing, trash removal, and habitat restoration.

The acreages represented in Table 4-21 include all three alternatives for San Vicente Pipeline inlet. Overall, impacts to sensitive vegetation or jurisdictional resources, as well as sensitive plant and wildlife species, would be minimal as the majority of the alignment and related components would

remain within existing developed lands. Impacts to sensitive vegetation total ~~24.46~~ 24.38 acres, 12.80 acres of which are permanent impacts while the remaining are temporary. Impacts to wetland vegetation total 3.00 acres,[9] 0.93 acre of which are permanent impacts while the remaining are temporary. Impacts to these resources would largely occur as slivers along the pipeline alignment. A total of 0.55 acre of impacts to open water within the San Vicente Reservoir would be considered permanent; however, this acreage is inflated because it includes all three inlet alternatives. Impacts to sensitive upland vegetation communities would be mitigated at the SANDER Vernal Pool and Upland Mitigation site. Additionally, a Native Grassland Creation Mitigation Plan – Pueblo South (Appendix S) would be implemented for mitigation of impacts to native grassland. Impacts to jurisdictional wetlands would be mitigated through allocation of credit at the San Diego River Mitigation Site (subject to ACOE and RWQCB approval) or at the SANDER site (subject to the satisfaction of ACOE and RWQCB). Vernal pool impacts would be mitigated through restoration of vernal pools and adjacent uplands at the SANDER Vernal Pool and Upland Mitigation site. The SANDER Vernal Pool and Upland Mitigation Plan (Appendix R) would be implemented at the SANDER site. All mitigation at the SANDER or the San Diego River sites would occur within the MSCP's MHPA and implemented in accordance with City/ACOE/CDFW/RWQCB guidelines. Direct impacts to vegetation communities would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections 5.1 and 5.4 (MM-BIO-1a–c, MM-BIO-2, and MM-BIO-8~~9~~).

Table 4-21
Summary of Impacts to Vegetation Communities and Land Cover Types within the San Vicente Reservoir Alternative Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	San Vicente Reservoir Alternative Impacts				
		Within MHPA		*Outside MHPA*		
		Temp	*Perm*	*Temp*	*Perm*	*Total*
Tier I – Rare Uplands						
Native Grassland	I	0	0	0	1.30	1.30
Coast Live Oak Woodland	I	0	0	0.01	0.07	0.08
Uplands Tier II – Uncommon Uplands						
Coastal Sage-Chaparral Transition	II	0	0	0.14	0.31	0.44 (0.14)[1]
Diegan Coastal Sage Scrub	II	1.99	0	~~4.53~~4.44	~~3.50~~3.51	~~10.02~~9.93 (~~9.33~~9.16)[1]

[9] Wetlands total to 3.00 acres in Table 4-21; however, this total does not include an ephemeral channel that is within coastal sage scrub. Since the ephemeral channel overlaps the coastal sage scrub vegetation and is not considered a City wetlands, it is included in the coastal sage scrub total in Table 4-21. All jurisdictional resource impacts from the San Vicente Reservoir Alternative total 3.02 acres and are presented in Table 4-24.

Table 4-21
Summary of Impacts to Vegetation Communities and Land Cover Types within the San Vicente Reservoir Alternative Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	San Vicente Reservoir Alternative Impacts				
		Within MHPA		*Outside MHPA*		
		Temp	*Perm*	*Temp*	*Perm*	*Total*
Diegan Coastal Sage Scrub (disturbed)	II	0.01	0	~~2.37~~2.38	1.25	3.64
Diegan Coastal Sage Scrub – Restored	II	0.07	0	0.37	0	0.43
Diegan Coastal Sage Scrub: Baccharis-Dominated	II	0	0	0.03	<0.01	0.03
Flat-Topped Buckwheat	II	0	0	<0.01	0	<0.01
Flat-Topped Buckwheat (disturbed)	II	0	0	0.01	0	0.01
Tier III – Common Uplands						
Chamise Chaparral	IIIA	0	0	0.50	<0.01	0.50
Southern Mixed Chaparral	IIIA	0.03	0	0.34	0.26	0.63
Non-native Grassland	IIIB	0.43	0	0.86	6.09	7.38 (6.39)[1]
Sensitive Vegetation (Tier I-III) Subtotal[1]		*2.53*	*0*	*~~9.14~~9.06*	*12.80*	*~~24.46~~24.38 (22.31)*
Tier IV – Other Uplands						
Urban/Developed	IV	15.65	0.02	~~139.92~~140.54	62.~~96~~78	~~218.56~~219.00
Developed – Concrete Channel[2]	IV	0	0	0.03	0	0.03
Non-native Vegetation	IV	0	0	~~0.23~~0.96	0.57	~~0.80~~1.53
Non-native Woodland	IV	0	0	0.15	0	0.15
Eucalyptus Woodland	IV	0	0	0.18	0	0.18
Extensive Agriculture – Field/Pasture, Row Crops	IV	0	0	~~0.45~~0.33	0	~~0.45~~0.33
Intensive Agriculture – Dairies, Nurseries, Chicken	IV	0	0	0.05	0	0.05
Disturbed Habitat	IV	0.23	0	~~8.77~~8.55	1.89	~~10.90~~10.67
Other Uplands (Tier IV) Subtotal[1]		15.89	0.02	149.78	65.42	231.11
Wetlands						
Non-vegetated Channel or Floodway	Wetland	0.02	0	0.06	<0.01	0.08
Open Water – Freshwater	Wetland	0	0	1.49	0.55	2.04
Southern Arroyo Willow Riparian Forest	Wetland	0	0	0.11	0	0.11

Table 4-21
Summary of Impacts to Vegetation Communities and Land Cover Types within the San Vicente Reservoir Alternative Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	San Vicente Reservoir Alternative Impacts				
		Within MHPA		*Outside MHPA*		
		Temp	*Perm*	*Temp*	*Perm*	*Total*
Southern Willow Scrub	Wetland	0.17	0	0.22	<0.01	0.40
Vernal Pool	Wetland	0	0	0	0.38	0.38
Wetland Vegetation Subtotal		*0.19*	*0*	*1.88*	*0.93*	*3.00*
Total[1]		**18.60**	**0.02**	**~~160.81~~161.73**	**~~79.15~~78.97**	**~~258.58~~259.32**

Notes:
1 This total accounts for the acreage previously mitigated at the MBC and/or the NCWRP.
2 This land cover is not considered a wetlands according to the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a) due to the lack of wetland vegetation present. However, impacts to this land cover would require agency permits.
3 Total includes impact acreage from all three San Vicente Pipeline inlet alternatives (0.54 acre from the Tunnel Alternative Terminus; 8.24 acres from the In-Reservoir Alternative Terminus; and 14.14 acres from the Marina Alternative Terminus). The final total will only include acreage from one of these alternatives. It also includes the impacts from air and blow off-valves associated with the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line.

4.4.2 Direct Impacts to Sensitive Plant Species

There are 11 sensitive plant species occurring within the impact limits of the San Vicente Reservoir Alternative (Table 4-22; Figures 4-3A through 4-3-R1, Biological Resources Impacts). There are impacts to five sensitive plant species within the San Vicente Reservoir Alternative in the MHPA. Table 4-22 provides the Project component that would have a direct impact on the plant species. The total individuals in Table 4-22 includes both mapped points and polygons. The polygons have been clipped to only include the portion that overlaps the impact area, thus giving a more accurate representation of the number of plants expected to be impacted with project implementation. The exact location of each impact is described under the Project component impact descriptions provided in Sections 4.2 and 4.4.

Table 4-22
Impacts to Sensitive Plant Species within the San Vicente Reservoir Alternative

Common Name (Scientific Name)	Status (Federal/State/CRPR/MSCP)	Project Component	Total Individuals
San Diego sagewort *(Artemesia palmeri)*	None/None/4.2/None	San Vicente Pipeline – IRAT	10
San Diego County viguiera *(Viguiera laciniata)*	None/None/4.2/None	San Vicente Pure Water Pipeline, San Vicente Pipeline – IRAT and – MAT, MTBS, North City Water Reclamation Plant	~~925~~972

Table 4-22
Impacts to Sensitive Plant Species within the San Vicente Reservoir Alternative

Common Name (Scientific Name)	Status (Federal/State/CRPR/MSCP)	Project Component	Total Individuals
Orcutt's brodiaea *(Brodiaea orcuttii)*	None/None/1B.1/Covered	LFG Pipeline	12[1]
wart-stemmed ceanothus *(Ceanothus verrucosus)*	None/None/2B.2/Covered	LFG Pipeline	~~3~~7
long-spined spineflower *(Chorizanthe polygonoides* var. *longispina)*	None/None/1B.2/None	MBC	6[1]
San Diego barrel cactus *(Ferocactus viridescens)*	None/None/2B.1/Covered	San Vicente Pipeline	6
graceful tarplant *(Holocarpha virgata* ssp. *elongata*)	None/None/4.2/None	LFG Pipeline, North City Pure Water Facility, MBC	~~87~~9,307
Decumbent goldenbush *(Isocoma menziesii* var. *decumbens*)	None/None/1B.2/None	MBC	2[1]
Robinson's pepper-grass *(Lepidium virginicum* var. *robinsonii)*	None/None/4.3/None	San Vicente Pipeline, San Vicente Pipeline – MAT	4,606
white rabbit-tobacco *(Pseudognaphalium leucocephalum)*	None/None/2B.2/None	San Vicente Pipeline – IRAT and – MAT	213
ashy spike-moss *(Selaginella cinerascens)*	None/None/4.1/None	San Vicente Pipeline – IRAT and – MAT, San Vicente Pipeline - Repurposed 36-inch Recycled Water Line, LFG Pipeline, MBC	~~11~~20*

Note:
[1] This species was not observed within the impact limits in 2017; however, since it was observed during the 2016 surveys within the impact footprint it is included in the Project's impact analysis.
* 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.

Direct impacts to CRPR 1B.1, 1B.2, 2B.1, and 2B.2 species, including Orcutt's brodiaea, wart-stemmed ceanothus, San Diego barrel cactus, long-spined spineflower, decumbent goldenbush, and white rabbit-tobacco, would be considered significant because these species are considered rare, threatened, or endangered in California. Impacts to these species would be reduced to less than significant with implementation of MM-BIO-1a–c and MM-BIO-2, which would conserve or restore suitable habitat for these species. Implementation of the Project would have no adverse effects on species listed or proposed as federally threatened or endangered, as evaluated under NEPA. In addition to Project-specific mitigation, the Project is required to implement the ASMDs, as stated in Appendix A, Species Evaluated for Coverage Under the MSCP, of the City's MSCP Subarea Plan (City of San Diego 1997), for each covered species proposed to be impacted. The Project must demonstrate how ASMDs (or Conditions of Coverage) would be implemented in order for the species to be considered "covered" by the

MSCP and issue take authority under the City Incidental Take Permit. According to Appendix A (City of San Diego 1997), the ASMD for wart-stemmed ceanothus states:

> Revegetation efforts within appropriate habitats must include restoration of this species. Area specific management directives for the protected populations must include specific measures to increase populations. Area specific management directives must include specific management measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire. Management measures to accomplish this may include prescribed fire. Any newly found populations should be evaluated for inclusion in the preserve strategy through acquisition, like exchange, etc.

These ASMDs are specifically related to the management of preserved populations and therefore do not apply to the North City Project. The ASMDs for San Diego barrel cactus include "measures to protect this species from edge effects, unauthorized collection, and include appropriate fire management/control practices to protect against a too frequent fire cycle." Mitigation measures MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(k) (biological monitoring, construction fencing, environmental awareness training, BMP implementation, and hazardous material storage) would be implemented to reduce the potential impacts of edge effects. Unauthorized collecting is not anticipated to occur as a result of the North City Project, and fire management is a preserve-specific ASMD that does not apply to the Project. The ASMDs for Orcutt's brodiaea states, "The San Vincente population is identified as a critical population in the County's Subarea Plan and must be 100 percent conserved. ASMDs must include specific measures to protect against detrimental edge effects." Mitigation measures MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(k) (biological monitoring, construction fencing, environmental awareness training, BMP implementation, and hazardous material storage) would be implemented to reduce the potential impacts of edge effects. No impacts to Orcutt's brodiaea would occur to the San Vicente population with implementation of the North City Project so this ASMD does not apply.

Direct impacts to CRPR 4 species, including San Diego sagewort, San Diego County viguiera, graceful tarplant, Robinson's pepper-grass, and ashy spike-moss, are not considered significant because these species are of low sensitivity, and the on-site populations are not significant in terms of the ability for this species to persist (i.e., CRPR 4 species are not considered "rare" from a statewide perspective). In addition, the species do not occur within the impact area in a population that is considered regionally significant and/or are common in the study area. However, MM-BIO-1a–c and MM-BIO-2, which provides mitigation and restoration for sensitive vegetation communities, would preserve or restore suitable habitat for these species.

4.4.3 Direct Impacts to Sensitive Wildlife Species

There are three sensitive wildlife species occurring within the San Vicente Reservoir Alternative that could use areas within the impact limits: white-tailed kite, coastal California gnatcatcher, and least Bell's vireo (Figures 4-3A through 4-3-R1, Biological Resources Impacts). Additionally, one species, San Diego fairy shrimp, occurs within the Project area. However, impacts to vernal pools occupied by listed species would be avoided through use of trenchless construction. No direct impacts to individuals is expected; however, impacts to suitable habitat for these species would occur with Project implementation.

The white-tailed kite was observed foraging during multiple surveys conducted by HELIX, within non-native grassland on the NCPWF (Figures 4-3A through 4-3-R1, Biological Resources Impacts). The individual was outside of the MCAS Miramar and MHPA. Since the NCPWF does not contain any nesting habitat for white-tailed kite, no direct impacts are expected to this species. Direct impacts to vegetation communities used by white-tailed kite for foraging would be conserved through the biological mitigation measures provided in Section 5.1 (MM-BIO-1a).

The least Bell's vireo individual was observed during focused surveys within southern willow scrub. The individual was observed along the San Vicente Pipeline, just east of where the pipeline crosses I-15 and south of Clairemont Mesa Boulevard. This area is located within the MHPA (Figures 4-3A through 4-3-R1, Biological Resources Impacts). Direct impacts to least Bell's vireo would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections 5.1 and 5.3 (MM-BIO-1c and MM-BIO-6).

Vernal pools deemed both occupied and unoccupied by San Diego fairy shrimp were observed within or adjacent to four components: MBC, LFG Pipeline, San Vicente Pipeline - Repurposed 36-inch Recycled Water Line, and the NCPWF. No direct impacts to vernal pools would occur within the MBC or along the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line. There are four features (PW36, VP653, VP654, and VP656) containing San Diego fairy shrimp along the LFG Pipeline corridor; however, there would be no direct impacts from the LFG Pipeline to these features due to the use of trenchless construction methods. All vernal pools within the NCPWF were surveyed either during 2015/2016 or 2017 and deemed unoccupied by San Diego fairy shrimp. Therefore, there would be no direct impacts to federally listed fairy shrimp species on the NCPWF; however all vernal pools within the NCPWF would be permanently impacted with Project implementation and mitigated through MM-BIO-1b. Mtigation measures to avoid indirect impacts vernal pools are discussed in Section 4.6.4.1 and Appendix T.

The coastal California gnatcatcher observations within the San Vicente Reservoir Alternative occurring within MCAS Miramar are the same individuals described in the Miramar Reservoir

Alternative due to shared components of the Project Alternatives. No direct impacts to adult coastal California gnatcatchers are expected to occur; however, there would be direct permanent and temporary impacts to suitable habitat, and mitigation would occur through implementation of MM-BIO-1a and MM-BIO-2. Potential impacts to any active nests or the young of nesting coastal California gnatcatcher through direct grading of suitable habitat within MCAS Miramar would be mitigated through MM-BIO-4b, which requires preconstruction surveys for coastal California gnatcatcher.The City would satisfy mitigation requirements outlined in Appendix A through implementation of MM-BIO-4b, which states that if surveys determine presence of occupied habitat, no habitat-disturbing activities would occur between February 15 and August 31. Additional observations of coastal California gnatcatchers outside of MCAS Miramar along the San Vicente Pipeline corridor within designated MHPA lands would also be mitigated through implementation of MM-BIO-4a. If surveys determine presence of MHPA occupied habitat, no habitat-disturbing activities would occur between March 1 and August 15.

Burrowing owl, southwestern willow flycatcher, Hermes copper butterfly, and Quino checkerspot butterfly were not observed during focused surveys. Therefore, although the San Vicente Reservoir Alternative would impact suitable habitat, this impact is less than significant due to lack of species observations. Direct impacts to suitable habitat for sensitive species would be mitigated through MM-BIO-1a, MM-BIO-1c, and MM-BIO-2. In addition, preconstruction surveys for burrowing owl and southwestern flycatcher would be conducted only in areas of suitable habitat within a 500-foot buffer around the impact limits of the San Vicente Reservoir Alternative prior to construction (MM-BIO-5 and MM-BIO-6).

The large majority of the pipelines and facilities associated with the San Vicente Reservoir Alternative would be placed within existing roadways and developed areas, with very little habitat being impacted. There are 11 species (Cooper’s hawk, yellow warbler, yellow-breasted chat, orangethroat whiptail, San Diegan tiger whiptail, western pond turtle, two-striped gartersnake, willow flycatcher, southern California rufous-crowed sparrow, western bluebird, and mule deer) that were observed within the component’s study area and may occur within the footprint. Direct impacts to suitable habitat for these species would be mitigated through MM-BIO-1a and MM-BIO-1c, and through surveys for nesting birds (MM-BIO-3).

Therefore, mitigation at the SANDER Vernal Pool and Upland Mitigation site (subject to the satisfaction of ACOE and RWQCB) or through allocation of credit at at the San Diego River Mitigation Site subject to ACOE and RWQCB approval, would provide mitigation for the above-listed species by providing suitable habitat in a configuration that preserves genetic exchange and species viability. Thus, direct impacts to sensitive wildlife species would be reduced to a less-than-significant level by virtue of the biological mitigation measures provided in Section 5.

Implementation of the Project would have no adverse effects on species listed or proposed as federally threatened or endangered, as evaluated under NEPA.

In addition to Project-specific mitigation, the Project is required to implement the ASMDs, as stated in Appendix A of the City's MSCP Subarea for MSCP Covered Species, for each covered species proposed to be impacted. The Project must demonstrate how ASMDs (or Conditions of Coverage) would be implemented in order for the species to be considered "covered" by the MSCP and issue take authority under the City Incidental Take Permit. Table 4-23 provides the ASMDs for each covered species that has a potential to be impacted by the San Vicente Reserve Alternative and outlines the Project compliance with the applicable ASMDs.

Table 4-23
Compliance with ASMD for Impacts to Covered Wildlife Species

Covered Species	ASMD	Project Compliance
Least Bell's vireo (*Vireo bellii pusillus*)	Jurisdictions will require survey (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with the 404(b)1 guidelines into the project. Participating jurisdictions guidelines and ordinances, and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. Jurisdictions must require new developments adjacent to preserve areas that create conditions attractive to brown-headed cowbirds to monitor and control cowbirds. Area specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. Any clearing of occupied habitat must occur between September 15 and March 15 (i.e. outside of the nesting period).	Protocol surveys were conducted in all areas of suitable habitat. In addition, preconstruction surveys will be conducted prior to Project construction to ensure that direct impacts to this species would be avoided (MM-BIO-6). If the species is observed, noise restrictions would be implemented. Impacts to suitable habitat would be mitigated through allocation of credit at the San Diego River Mitigation Site subject to ACOE and RWQCB approval or at the SANDER Vernal Pool and Upland Mitigation site (subject to the satisfaction of ACOE and RWQCB). The proposed Project is not anticipated to create conditions to attract brown-headed cowbirds (*Molothrus ater*). Mitigation measures MM-BIO-9(a) through MM-BIO-9(k) (biological monitoring, construction fencing, environmental awareness training, BMP implementation, and hazardous material storage) would be implemented to reduce the potential impacts of edge effects. All clearing of suitable habitat will be outside of the nesting period as identified in the ASMD.
Burrowing owl (*Athene cunicularia*)	During the environmental analysis of proposed projects, burrowing owl surveys (using appropriate protocols) must be conducted in suitable habitat to determine if this species is present and the location of active burrows. If burrowing owls are detected, the following mitigation measures must be implemented: within the MHPA, impacts must be avoided; outside of the MHPA, impacts to the species must be avoided to the maximum extent practicable; any impacted individuals must be relocated out of the impact area using passive	Burrowing owl surveys were conducted in areas of suitable habitat and no observations were recorded. However, since there is habitat within the Project area that has burrowing owl occupation potential, a burrowing owl construction impact avoidance program will be implemented in accordance with MM-BIO-5. If burrowing owls are identified within the Project area and have a potential to be impacted, the measures outlined in this ASMD will be applied.

Table 4-23
Compliance with ASMD for Impacts to Covered Wildlife Species

Covered Species	ASMD	Project Compliance
	or active methodologies approved by the wildlife agencies; mitigation for impacts to occupied habitat (at the Subarea Plan specified ratio) must be through the conservation of occupied burrowing owl habitat or conservation of lands appropriate for restoration, management and enhancement of burrowing owl nesting and foraging requirements. Management plans/directives must include: enhancement of known, historical and potential burrowing owl habitat; and management for ground squirrels (the primary excavator of burrowing owl burrows). Enhancement measures may include creation of artificial burrows and vegetation management to enhance foraging habitat. Management plans must also include: monitoring of burrowing owl nest sites to determine use and nesting success; predator control; establishing a 300 foot-wide impact avoidance area (within the preserve) around occupied burrows. Eight known burrowing owl locations occur within major amendment areas of the South County Segment of the County Subarea Plan and the conservation of occupied burrowing owl habitat must be one of the primary factors preserve design during the permit amendment process.	
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Jurisdictions must require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with the 404(b)1 guidelines into the project. Participating jurisdictions' guidelines and ordinances, and state and federal wetlands regulations will provide additional habitat protection resulting in no net loss of wetlands. For new developments adjacent to preserve areas that create conditions attractive to brown-headed cowbirds, jurisdictions must require monitoring and control of cowbirds. Area specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. Any clearing of occupied habitat must occur between September 1 and May 1 (i.e., outside of the nesting period).	Protocol surveys were conducted in all areas of suitable habitat. In addition, preconstruction surveys will be conducted prior to Project construction to ensure that direct impacts to this species would be avoided (MM-BIO-6). If the species is observed, noise restrictions would be implemented. Impacts to suitable habitat would be mitigated through allocation of credit at at the San Diego River Mitigation Site subject to ACOE and RWQCB approval or at the SANDER Vernal Pool and Upland Mitigation site (subject to the satisfaction of ACOE and RWQCB). The proposed Project is not anticipated to create conditions to attract brown-headed cowbirds. Mitigation measures MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(k) (biological monitoring, construction fencing, environmental awareness training, BMP implementation, and hazardous material storage) would be implemented to reduce the potential impacts of edge effects. All clearing of suitable habitat will be outside of the nesting period as identified in the ASMD.

Table 4-23
Compliance with ASMD for Impacts to Covered Wildlife Species

Covered Species	ASMD	Project Compliance
western pond turtle (*Actinemys marmorata*)	Maintain and manage a 1,500-foot area around known locations within the preserve lands for the species. Within this impact avoidance area, human impacts will be minimized, non-native species detrimental to pond turtles controlled/removed and habitat restoration/enhancement measures implemented.	Focused surveys for this species were conducted, and none were recorded within the San Vicente Reservoir. No other direct or indirect impacts are anticipated to this species within preserve lands; therefore, this ASMD is not applicable.~~Therefore, this ASMD does not apply.~~
Cooper's hawk (*Accipiter cooperii*)	In the design of future projects within the Metro-Lakeside-Jamul segment, design of preserve areas shall conserve patches of oak woodland and oak riparian forest of adequate size for nesting and foraging habitat. Area specific management directives must include 300-foot impact avoidance areas around the active nests, and minimization of disturbance in oak woodlands and oak riparian forests.	The proposed Project will not result in the design of preserve areas. Active nests, if detected during nesting bird surveys, will be subject to a 300-foot buffer (MM-BIO-3).
western bluebird (*Sialia mexicana*)	None	Not applicable
southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	Area specific management directives must include maintenance of dynamic processes, such as fire, to perpetuate some open phases of coastal sage scrub with herbaceous components.	This ASMD is directed at preserve management and does not apply to the proposed Project.
mule deer (*Odocoileus hemionus*)	None	Not applicable
orangethroat whiptail (*Aspidoscelis hyperythra*)	Area specific management directives must address edge effects.	All temporary construction areas in native habitat would require revegetation following the completion of construction (MM-BIO-2). Habitat restoration and erosion control treatments will be installed within temporary disturbance areas in native habitat, in accordance with the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a) and the San Diego Municipal Code, Land Development Code—Landscape Standards (City of San Diego 2016~~b~~).The Conceptual Revegetation Plan (Appendix P) was prepared by a Restoration Specialist. Habitat restoration will feature native species that are typical of the area, and erosion control features will include silt fence and straw fiber rolls, where appropriate. In addition, mitigation measures MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(k) (biological monitoring, construction fencing, environmental awareness training, BMP implementation, and hazardous material storage) would be implemented to reduce the potential impacts of edge effects.

4.4.4 Direct Impacts to Wildlife Corridors and Habitat Linkages

As discussed in Section 3.5.5, 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, which runs through a habitat linkage surrounding the San Diego River; core areas associated with Mission Trails Regional Park (Biological Core Area 10); the San Diego River (Habitat Linkage C); and open space surrounding the San Vicente Reservoir (Biological Core Area 11) (Figure 1-4, Core Areas and Habitat Linkages). The majority of this pipeline (95%, Table 4-25) is located within urban and developed areas, and therefore would not result in impacts to Biological Core Area 10, Biological Core Area 11, or Habitat Linkage C. Additionally, wildlife corridor areas that are applicable to the San Vicente Reservoir Alternative components within MCAS Miramar are identified on Figure 4.5a of the INRMP (MCAS Miramar INRMP 2011) and are described below.

Biological Core Area 15

Rose Canyon

There would be permanent impacts to <0.01 acre of Diegan coastal sage scrub: Baccharis-dominated on the slope above the portion of Rose Canyon within Level I MA, from an air and blow-off valve along the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line, that would only occur if the San Vicente Reservoir Alternative was implemented. These impacts are minimal and would not affect wildlife movement through the canyon.

San Clemente Canyon

There would be permanent impacts to <0.01 acre of southern willow scrub within San Clemente Canyon (Level II MA) from an air and blow-off valve that would only occur if the San Vicente Reservoir Alternative was implemented. These impacts are minimal and would not affect wildlife movement through the canyon.

4.4.5 Direct Impacts to Jurisdictional Aquatic Resources

The direct impacts to wetlands and non-wetland waters in the San Vicente Reservoir Alternative footprint under the jurisdiction of ACOE/RWQCB, streambeds and associated riparian areas under CDFW jurisdiction, and/or wetlands regulated by the City of San Diego is 3.02 acres. Jurisdictional aquatic resources, including both wetlands/riparian areas and non-wetland waters/streambeds, mapped in the study area are shown on Figures 4-3A through 4-3-R1, Biological Resources Impacts. Table 4-24 provides a summary of these resources under the jurisdiction of the ACOE, RWQCB, CDFW, and/or City of San Diego.

Table 4-24
Impacts to Jurisdictional Aquatic Resources in the
San Vicente Reservoir Alternative Footprint (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]		CDFW[1]		City of San Diego Wetlands[1]	
	Temp	*Perm*	*Temp*	*Perm*	*Temp*	*Perm*
Wetland or Riparian Areas						
Southern Arroyo Willow Riparian Forest	—	—	0.11	—	0.11	—
Southern Willow Scrub	0.04	<0.01	0.39	<0.01	0.39	<0.01
Vernal Pool	—	—	—	—	—	0.38[2]
Total Riparian/Wetlands	*0.04*	*<0.01*	*0.50*	*<0.01*	*0.50*	*0.38*
Non-wetland Waters/Streambed						
Ephemeral Stream Channel (Developed – Concrete Channel)	0.03	—	0.03	—	—	—
Ephemeral Stream Channel (Non-vegetated Channel)	0.19	<0.01	0.14	<0.01	0.10	—
Perennial Stream Channel/Open Water	1.49	0.55	1.49	0.55	1.49	0.55
Total Non-wetland Waters/Streambed	*1.71*	*0.55*	*1.62*	*0.55*	*1.59*	*0.55*
Total jurisdictional area[3]	**1.76**	**0.56**	**2.12**	**0.56**	**2.09**	**0.93**

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 0.38 acre of vernal pool is also potentially regulated by the RWQCB.
3 Acreages may not total due to rounding. Totals include impact acreage from all three San Vicente Pipeline inlet alternatives (0.03 acre from the Tunnel Alternative Terminus; 0.52 acre from the In-Reservoir Alternative Terminus; and 1.66 acres from the Marina Alternative Terminus). The final total will only include acreage from one of these alternatives.

ACOE- and RWQCB-jurisdictional areas within the San Vicente Reservoir Alternative footprint total 2.32 acre to both jurisdictional wetlands and non-wetland stream channels/open water, including 1.76 acre of temporary impacts and 0.56 acre of permanent impacts.

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 within the footprint total 2.68 acres to both riparian habitat and streambed/open water, including 2.12 acres of temporary impacts and 0.56 acre of permanent impacts.

The majority of the jurisdictional aquatic resources are considered wetlands by the City of San Diego, with the exception of 0.13 acre of ephemeral stream channel (developed – concrete channel and non-vegetated channel) that do not meet the City's criteria for a wetland. There are no direct impacts to wetlands within the Coastal Overlay Zone regulated by the City. Direct impacts to jurisdictional resources would be reduced to a less-than-significant level through the biological mitigation measures provided in Section 5.4 (MM-BIO-1b, MM-BIO-1c, and MM-BIO-8~~9~~).

Impacts to riparian wetlands and/or jurisdictional resources would be mitigated through allocation of credit at the San Diego River Mitigation Site subject to ACOE and RWQCB approval or at the SANDER site (subject to the satisfication of ACOE and RWQCB). Vernal pool impacts would be mitigated through restoration of vernal pools and adjacent uplands at the SANDER Vernal Pool and Upland Mitigation site. The SANDER Vernal Pool and Upland Mitigation Plan (Appendix R) would be implemented at the SANDER site. The SANDER Vernal Pool and Upland Mitigation site is within the Vernal Pool Habitat Conservation Plan hard line preserve and within MHPA lands. Therefore, the SANDER site will provide mitigation occurring within the MSCP's MHPA and would be implemented in accordance with City/ACOE/CDFW/RWQCB guidelines.

4.5 Direct Impacts—San Vicente Reservoir Alternative Project Components

The following Project components are identical for both Project Alternatives: Morena Pump Station (see Section 4.3.1), Morena Pipelines (see Section 4.3.2), NCWRP Expansion (see Section 4.3.3), NCPWF Influent Pump Station (see Section 4.3.4), North City Renewable Energy Facility (see Section 4.3.5), NCPWF (see Section 4.3.6), North City Pump Station (see Section 4.3.7), LFG Pipeline (see Section 4.3.9), and MBC (see Section 4.3.10). The Project components which are unique to the San Vicente Reservoir Alternative include the San Vicente Pipeline (including the three inlet alternatives) and the MTBS. These components are discussed in this section.

4.5.1 San Vicente Pure Water Pipeline

4.5.1.1 Direct Impacts to Vegetation Communities and Land Cover Types

The San Vicente Pipeline footprint supports 18 vegetation communities and land cover types including Diegan coastal sage scrub (including disturbed and restored), coast live oak woodland, southern mixed chaparral, southern arroyo willow riparian woodland, southern willow scrub, non-native grassland, disturbed habitat, urban/developed, non-vegetated channel, intensive agriculture, non-native woodland, and eucalyptus woodland (Table 4-25; Figures 4-3A through 4-3-R1, Biological Resources Impacts). The San Vicente Pipeline would primarily be constructed in roadway right-of-way. Where the San Vicente Pipeline alignment crosses MCAS Miramar, the alignment has been designed to repurpose and utilize the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line, an existing 36-inch recycled water pipeline that would be repurposed to convey purified water if the San Vicente Reservoir Alternative is implemented. Impacts from air and blow-off valves associated with the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line within MCAS Miramar lands are subject to the 2011–2015 INRMP. The air and blow-off valves associated with the San Vicente Pipeline - Repurposed 36-inch Recycled Water

Line would impact 0.03 acre of sensitive upland vegetation communities within Level I-V MAs. Appendix A analyzes the impacts within each MA and proposes mitigation that would keep the Project within compliance. Where the San Vicente Pipeline crosses 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. These methods are applied to areas where sensitive biological resources occur, to the greatest extent practicable, as well as to heavily congested areas or to cross-controlled access freeway and railroad crossings where open cut is not allowed.

Direct impacts from construction of the San Vicente Pipeline include open-cut trenching, excavation of jacking and receiving pits, and staging areas. Direct impacts would also occur from establishment of work areas to make improvements to existing air and blow-off valves, which occur along the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line.

Impacts to sensitive vegetation communities as defined by the City's Biology Guidelines (i.e., coastal sage scrub and subtypes, chaparral, oak woodland, grasses, and wetland communities) would be considered significant and would require mitigation. Direct impacts to vegetation communities are all temporary and would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections 5.1 and 5.4 (MM-BIO-2 and MM-BIO-8~~9~~). Urban/developed lands, non-native vegetation and disturbed habitat provide little native habitat value and foraging opportunities for wildlife, particularly when they occur in densely urban environments such as the San Vicente Pipeline; therefore, impacts to these land covers would not be considered significant. The San Vicente Pipeline would impact 12.43 acres of MHPA lands; this total takes into account 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, including 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) (Figures 4-3A through 4-3-R1, Biological Resources Impacts).

Table 4-25
Impacts to Vegetation Communities and Land Cover Types
within the San Vicente Pure Water Pipeline Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Coast Live Oak Woodland	I	0	0	0.01	0	0.01
Coastal Sage-Chaparral Transition	II	0	0	0	<0.01	<0.01
Diegan Coastal Sage Scrub	II	0.38	0	0.24	0.01	0.63

Table 4-25
Impacts to Vegetation Communities and Land Cover Types
within the San Vicente Pure Water Pipeline Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Diegan Coastal Sage Scrub (disturbed)	II	0.01	0	1.57	0	1.58
Diegan Coastal Sage Scrub – Restored	II	0.07	0	0	0	0.07
Diegan Coastal Sage Scrub: Baccharis-Dominated	II	0	0	0	<0.01	<0.01
Chamise Chaparral	IIIA	0	0	0	<0.01	<0.01
Southern Mixed Chaparral	IIIA	0.03	0	0	0	0.03
Non-native Grassland	IIIB	0.42	0	0.82	<0.01	1.24
Intensive Agriculture – Dairies, Nurseries, Chicken	IV	0	0	0.05	0	0.05
Non-native Vegetation	IV	0	0	0	0.01	0.01
Non-native Woodland	IV	0	0	0.15	0	0.15
Eucalyptus Woodland	IV	0	0	0.09	0	0.09
Disturbed Habitat	IV	<0.01	0	0.76	0.01	0.77
Urban/Developed	IV	11.33	0	84.93	0.02	96.27
Southern Arroyo Willow Riparian Woodland	Wetland	0	0	0.11	0	0.11
Southern Willow Scrub	Wetland	0.17	0	0.22	<0.01	0.40
Non-vegetated Channel or Floodway	Wetland	0.02	0	0.06	0	0.08
	Total	**12.43***	**0**	**89.02**	**0.06****	**101.51**

Notes:
* This total accounts for the areas excluded from the MHPA for current and future requirements of the Public Utilities Department (~~MSCP Subarea Plan~~City of San Diego 1997).
** This total includes the impacts from air and blow off-valves associated with the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line.

4.5.1.2 Direct Impacts to Sensitive Plant Species

There are ~~three~~ four sensitive plant species occurring within the impact limits of the San Vicente Pipeline, including impacts to one sensitive plant species within the San Vicente Pipeline in the MHPA (Table 4-26; Figures 4-3A through 4-3-R1, Biological Resources Impacts). San Diego County viguiera occurs in multiple locations within the impact limits, including urban/developed, Diegan coastal sage scrub (including disturbed), and disturbed habitat. San Diego barrel cactus occurs in one location within disturbed Diegan coastal sage scrub. Robinson's pepper-grass occurs in multiple polygons all located within disturbed Diegan coastal sage scrub.

Table 4-26
Impacts to Sensitive Plant Species within the San Vicente Pure Water Pipeline Footprint

Common Name (Scientific Name)	Status (Federal/State/CRPR/MSCP)	Within MHPA	Outside MHPA	Total Individuals
San Diego County viguiera *(Viguiera laciniata)*	None/None/4.2/None	15	142	157
San Diego barrel cactus *(Ferocactus viridescens)*	None/None/2B.1/Covered	0	6	6
Robinson's pepper-grass *(Lepidium virginicum* var. *robinsonii)*	None/None/4.3/None	0	1,344	1,344
ashy spike-moss *(Selaginella cinerascens)*	None/None/4.1/None	0	2*	2*

Note:
* 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.

Direct impacts to CRPR 2B.1 species, including San Diego barrel cactus, would be considered significant because this species is considered rare, threatened, or endangered in California. Impacts to this species would be reduced to less than significant with implementation of MM-BIO-2, which would restore suitable habitat for this species.

Direct impacts to CRPR 4 species, including San Diego County viguiera, ashy spike-moss, and Robinson's pepper-grass, are not considered significant because these species are of low sensitivity, and the on-site populations are not significant in terms of the ability for this species to persist (i.e., CRPR 4 species are not considered "rare" from a statewide perspective). In addition, the species do not occur within the impact area in a population that is considered regionally significant and/or are common in the study area. However, MM-BIO-2, which provides restoration for sensitive vegetation communities, would restore suitable habitat for this species.

The San Vicente Pipeline would temporarily impact 0.47 acre of Critical Habitat for San Diego ambrosia. Impacts would occur within non-native grassland adjacent to the San Diego River, where the pipeline crosses under SR-52. Although impacts would occur to Critical Habitat, focused sensitive plant surveys conducted in this area concluded that San Diego ambrosia does not occur along the pipeline corridor and would be further avoided by using trenchless construction methods. Additionally, the impacts are temporary and would not result in a permanent structure or change in habitat type within the Critical Habitat area. No other sensitive plant species were observed or have a moderate to high potential to occur in the San Vicente Pipeline footprint. As such, no direct impacts to sensitive plant species within Critical Habitat areas are anticipated.

4.5.1.3 Direct Impacts to Sensitive Wildlife Species

There are two sensitive wildlife species occurring or have potential to occur within the impact limits of the San Vicente Pipeline: least Bell's vireo and coastal California gnatcatcher (Figures 4-3A through 4-3-R1, Biological Resources Impacts). The least Bell's vireo was observed within southern willow scrub east of I-15 and south of Clairemont Mesa Boulevard. This species occurs in the MHPA. Impacts to suitable habitat for this species total approximately 0.5 acre and would be considered significant absent mitigation. Direct impacts to suitable habitat for sensitive species would be mitigated through MM-BIO-2. In addition, preconstruction surveys for least Bell's vireo would be conducted in areas of suitable habitat prior to construction (MM-BIO-6).

There were 43 coastal California gnatcatcher individuals, including pairs and pairs with juveniles, observed within designated MHPA lands around the San Vicente Pipeline, with the highest concentration occurring in the coastal sage scrub along Mission Gorge Road through Mission Trails Regional Park. Although direct impacts are not expected to this species, there would be direct impacts to suitable habitat. Temporary impacts to suitable habitat for coastal California gnatcatcher would be mitigated through MM-BIO-2. Potential impacts to any active nests or the young of nesting coastal California gnatcatcher through direct grading of suitable habitat within designated MHPA lands would be mitigated through MM-BIO-4a, which requires preconstruction surveys for coastal California gnatcatcher. If surveys determine presence of occupied habitat, no habitat-disturbing activities would occur between March 1 through August 15.

Although eucalyptus and non-native woodlands provide little native habitat value and foraging opportunities for wildlife, particularly when they occur in urban environments such as the San Vicente Pipeline, they could provide nesting bird habitat. Implementation of MM-BIO-3 would reduce impacts to nesting birds to less than significant. In addition, preconstruction surveys for burrowing owl would be conducted in areas of suitable habitat within a 500-foot buffer around the impact limits of the San Vicente Pipeline prior to construction (MM-BIO-5).

The San Vicente Pipeline would temporarily impact 6.15 acres of Critical Habitat for least Bell's vireo. The majority of impacts would occur within developed land (5.35 acres) due to the Critical Habitat overlapping a residential area. The remaining impacts are within Diegan coastal sage scrub (<0.01 acre), non-native grassland (0.51 acre), southern arroyo willow riparian forest (0.11 acre), southern willow scrub (0.04 acre), and non-native woodland (0.15). This Critical Habitat area is located within the San Diego River, where the pipeline crosses under SR-52. Although impacts would occur within Critical Habitat and two observations of least Bell's vireo were made within this area, the pipeline is not expected to directly affect this species and would be further minimized by using trenchless construction methods. Additionally, the impacts are temporary and would not result in a permanent structure or change in habitat type within the

Critical Habitat area. No other sensitive wildlife species were observed or have a moderate to high potential to occur in the San Vicente Pipeline footprint.

4.5.1.4 Direct Impacts to Jurisdictional Aquatic Resources

There are temporary impacts to 0.21 acre of ACOE- and RWQCB-jurisdictional areas and temporary impacts to 0.58 acre of CDFW- and City-jurisdictional areas within the San Vicente Pipeline footprint. Permanent impacts would occur to <0.01 acre of southern willow scrub, under ACOE, RWQCB, CDFW, and City jurisdiction, from air and blow-off valves associated with the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line. Direct impacts to jurisdictional resources would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections 5.1 and 5.4 (MM-BIO-2 and MM-BIO-8~~9~~). Table 4-27 summarizes impacts to these features.

Table 4-27
Impacts to Jurisdictional Aquatic Resources in the
San Vicente Pure Water Pipeline Footprint (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]		CDFW[1]		City of San Diego Wetlands[1]	
	Temp	*Perm*	*Temp*	*Perm*	*Temp*	*Perm*
Wetland or Riparian Areas						
Southern Arroyo Willow Riparian Forest	—	—	0.11	—	0.11	—
Southern Willow Scrub	0.04	<0.01	0.39	<0.01	0.39	<0.01
Total Riparian/Wetlands	*0.04*	*<0.01*	*0.50*	*<0.01*	*0.50*	*<0.01*
Non-wetland Waters/Streambed						
Ephemeral Stream Channel (Non-vegetated Channel)	0.17	—	0.08	—	0.08	—
Total Non-wetland Waters/Streambed	*0.17*	—	*0.08*	—	*0.08*	—
Total jurisdictional area[2]	**0.21**	**<0.01[3]**	**0.58**	**<0.01[3]**	**0.58**	**<0.01[3]**

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 This impact is from air and blow off-valves associated with the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line.

4.5.2 San Vicente Pipeline – Tunnel Alternative Terminus

4.5.2.1 Direct Impacts to Vegetation Communities and Land Cover Types

The San Vicente Pipeline – TAT footprint supports six vegetation communities and/or land cover types: coast live oak woodland, southern mixed chaparral, disturbed habitat, urban/developed, non-vegetated channel or floodway, and open water – freshwater (Table 4-28; Figures 4-3A through 4-3-R1, Biological Resources Impacts). Direct impacts include construction

of a new access road, the tunnel entrance and exit, and road widening improvements. Impacts to sensitive vegetation communities as defined by the City's Biology Guidelines (i.e., coast live oak woodlands, chaparral and wetland communities) would be considered significant and would require mitigation per the City of San Diego Biology Guidelines. Direct impacts to vegetation communities would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections 5.1 and 5.4 (MM-BIO-1a, MM-BIO-1c, and MM-BIO-~~8~~9). Urban/developed lands, non-native vegetation, and disturbed habitat provide little native habitat value and foraging opportunities for wildlife, particularly when they occur in densely urban environments such as the San Vicente Pipeline – TAT; therefore, impacts to these land covers would not be considered significant. The San Vicente Pipeline – TAT would impact 0.05 acre of MHPA lands; this total takes into account 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, including 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) (Figures 4-3A through 4-3-R1, Biological Resources Impacts).

Table 4-28
Impacts to Vegetation Communities and Land Cover Types within the San Vicente Pipeline – Tunnel Alternative Terminus Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Coast Live Oak Woodland	I	0	0	0	0.07	0.07
Southern Mixed Chaparral	IIIA	0	0	0	0.26	0.26
Urban/Developed	IV	0	0.02	0	0.05	0.07
Non-vegetated Channel or Floodway	Wetland	0	0	0	<0.01	<0.01
Open Water – Freshwater	Wetland	0	0	0	0.02	0.02
Disturbed Habitat	IV	0	0	0	0.11	0.11
	Total	**0**	**0.02***	**0**	**0.51**	**0.54****

Notes:
* This total accounts for the areas excluded from the MHPA for current and future requirements of the Public Utilities Department (~~MSCP Subarea Plan~~City of San Diego 1997).
** The total acreage is based off the Project alignment with a 30-foot buffer, for a total of a 60-foot impact corridor.

4.5.2.2 Direct Impacts to Sensitive Plant Species

No sensitive plant species were observed or have a moderate to high potential to occur in the San Vicente Pipeline – TAT footprint. As such, no direct impacts are anticipated to sensitive plant species.

4.5.2.3 Direct Impacts to Sensitive Wildlife Species

No sensitive wildlife species were observed or have a moderate to high potential to occur in the San Vicente Pipeline – TAT footprint. As such, no direct impacts are anticipated to sensitive wildlife species. Coast live oak woodland and southern mixed chaparral within the San Vicente Pipeline – TAT could provide nesting bird habitat. Implementation of MM-BIO-3 would reduce impacts to nesting birds to less than significant.

4.5.2.4 Direct Impacts to Jurisdictional Aquatic Resources

There are direct permanent impacts to 0.03 acre of ACOE-, RWQCB-, and CDFW-jurisdictional areas within the San Vicente Pipeline – TAT footprint. The majority of the jurisdictional aquatic resources are considered wetlands by the City of San Diego. Direct impacts to jurisdictional resources would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections 5.1 and 5.4 (MM-BIO-1c, and MM-BIO-8~~9~~). Table 4-29 summarizes impacts to these features.

Table 4-29
Impacts to Jurisdictional Aquatic Resources in the San Vicente Pipeline – Tunnel Alternative Terminus Footprint (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]		CDFW[1]		City of San Diego Wetlands[1]	
	Temp	*Perm*	*Temp*	*Perm*	*Temp*	*Perm*
Non-wetland Waters/Streambed						
Ephemeral Stream Channel (Non-vegetated Channel)	—	<0.01	—	<0.01	—	—
Perennial Stream Channel/Open Water	—	0.02	—	0.02	—	0.02
Total jurisdictional area[2]	**—**	**0.03**	**—**	**0.03**	**—**	**0.02**

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.

4.5.3 San Vicente Pipeline – In-Reservoir Alternative Terminus

4.5.3.1 Direct Impacts to Vegetation Communities and Land Cover Types

The San Vicente Pipeline – IRAT footprint supports five vegetation communities and/or land cover types including: coast live oak woodland, Diegan coastal sage scrub, urban/developed, non-native grassland, and open water – freshwater (Table 4-30; Figures 4-3A through 4-3-R1, Biological Resources Impacts). Direct impacts include construction of an open-cut trench, staging area, and riprap. Impacts to sensitive vegetation communities as defined by the City's Biology Guidelines (i.e., Diegan coastal sage scrub, coast live oak woodland, non-native grassland, and open water)

would be considered significant and would require mitigation per the City of San Diego Biology Guidelines. Direct impacts to vegetation communities would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections 5.1 and 5.4 (MM-BIO-1a, MM-BIO-1c, MM-BIO-2, and MM-BIO-89). Urban/developed lands provide little native habitat value and foraging opportunities for wildlife, particularly when they occur in densely urban environments such as the San Vicente Pipeline – IRAT; therefore, impacts to these land covers would not be considered significant. The San Vicente Pipeline – IRAT would impact 5.15 acres of MHPA lands, this total takes into account 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, including 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) (Figures 4-3A through 4-3-R1, Biological Resources Impacts).

Table 4-30
Impacts to Vegetation Communities and Land Cover Types within the San Vicente Pipeline – In-Reservoir Alternative Terminus Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Coast Live Oak Woodland	I	0	0	0	<0.01	<0.01
Diegan Coastal Sage Scrub	II	1.60	0	0.14	0	1.74
Urban/Developed	IV	3.46	0	2.53	0	5.99
Non-native Grassland	IIIB	0.01	0	0	0	0.01
Open Water – Freshwater	Wetland	0	0	0.12	0.37	0.50
	Total	**5.08***	**0**	**2.79**	**0.38***	**8.24****

Notes:
* This total accounts for the areas excluded from the MHPA for current and future requirements of the Public Utilities Department (~~MSCP Subarea Plan~~City of San Diego 1997).
** The total acreage is based off the Project alignment with a 30-foot buffer, for a total of a 60-foot impact corridor.

4.5.3.2 Direct Impacts to Sensitive Plant Species

There are four sensitive plant species occurring within the impact limits of the San Vicente Pipeline – IRAT. All four sensitive plant species within the San Vicente Pipeline – IRAT occur in the MHPA (Table 4-31; Figures 4-3A through 4-3-R1, Biological Resources Impacts). San Diego sagewort occurs in one location within coast live oak woodland in the impact limit. San Diego County viguiera occurs in multiple polygons with the impact limit, including in urban/developed, Diegan coastal sage scrub, and non-native grassland. White rabbit-tobacco occurs in one polygon located within Diegan coastal sage scrub and urban/developed in the impact limit. Ashy spike-moss occurs in one polygon located within southern mixed chaparral in the impact limit.

Table 4-31
Impacts to Sensitive Plant Species within the San Vicente Pipeline –
In-Reservoir Alternative Terminus Footprint

Common Name (Scientific Name)	Status (Federal/State/CRPR/MSCP)	Within MHPA	Outside MHPA	Total Individuals
San Diego sagewort *(Artemesia palmeri)*	None/None/4.2/None	10	0	10
San Diego County viguiera *(Viguiera laciniata)*	None/None/4.2/None	463	0	463
white rabbit-tobacco *(Pseudognaphalium leucocephalum)*	None/None/2B.2/None	213	0	213
ashy spike-moss *(Selaginella cinerascens)*	None/None/4.1/None	1*	0	1*

Note:
* 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.

Direct impacts to 2B.2 species, including white rabbit-tobacco, would be considered significant because this species is considered rare, threatened, or endangered in California. Impacts to this species would be reduced to less than significant with implementation of MM-BIO-2, which would restore suitable habitat for this species.

Direct impacts to CRPR 4 species, including San Diego sagewort, San Diego County viguiera, and ashy spike-moss are not considered significant because these species are of low sensitivity, and the on-site populations are not significant in terms of the ability for this species to persist (i.e., CRPR 4 species are not considered "rare" from a statewide perspective). In addition, the species do not occur within the impact area in a population that is considered regionally significant and/or are common in the study area. However, MM-BIO-2, which provides restoration for sensitive vegetation communities, would restore suitable habitat for this species.

4.5.3.3 Direct Impacts to Sensitive Wildlife Species

One juvenile coastal California gnatcatcher was observed within designated MHPA lands around the San Vicente Pipeline – IRAT inlet alternative. Although direct impacts are not expected to this species, there would be direct impacts to suitable habitat. Temporary impacts to suitable habitat for coastal California gnatcatcher would be mitigated through MM-BIO-2. Potential impacts to any active nests or the young of nesting coastal California gnatcatcher through direct grading of suitable habitat within designated MHPA lands would be mitigated through MM-BIO-4a, which requires preconstruction surveys for coastal California gnatcatcher. If surveys determine presence of occupied habitat, no habitat-disturbing activities would occur between March 1 and August 15.

No other sensitive wildlife species were observed or have a moderate to high potential to occur in the San Vicente Pipeline – IRAT footprint. As such, no direct impacts are anticipated to sensitive wildlife species. Coast live oak woodland and Diegan coastal sage scrub within the San Vicente Pipeline – IRAT could provide nesting bird habitat. Implementation of MM-BIO-3 would reduce impacts to nesting birds to less than significant.

4.5.3.4 Direct Impacts to Jurisdictional Aquatic Resources

There are temporary impacts to 0.15 acre of ACOE, RWQCB, CDFW, and City jurisdictional areas and permanent impacts to 0.37 acre of ACOE, RWQCB, CDFW, and City jurisdictional areas within the San Vicente Pipeline – IRAT footprint. Direct impacts to jurisdictional resources would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections 5.1 and 5.4 (MM-BIO-1c and MM-BIO-8~~9~~). Table 4-32 summarizes impacts to these features.

Table 4-32
Impacts to Jurisdictional Aquatic Resources in the San Vicente Pipeline – In-Reservoir Alternative Terminus Footprint (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]		CDFW[1]		City of San Diego Wetlands[1]	
	Temp	*Perm*	*Temp*	*Perm*	*Temp*	*Perm*
Non-wetland Waters/Streambed						
Ephemeral Stream Channel (Non-vegetated Channel)	0.02	—	0.02	—	0.02	—
Perennial Stream Channel/Open Water	0.12	0.37	0.12	0.37	0.12	0.37
Total jurisdictional area[2]	**0.15**	**0.37**	**0.15**	**0.37**	**0.15**	**0.37**

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.

4.5.4 San Vicente Pipeline – Marina Alternative Terminus

4.5.4.1 Direct Impacts to Vegetation Communities and Land Cover Types

The San Vicente Pipeline – MAT footprint supports seven vegetation communities and/or land cover types: Diegan coastal sage scrub (including restored), disturbed habitat, southern mixed chaparral, urban/developed, non-native grassland, and open water – freshwater (Table 4-33; Figures 4-3A through 4-3-R1, Biological Resources Impacts). Direct impacts include construction of an open-cut trench, staging area, riprap, and a new structure at the end of the pipeline. Impacts to sensitive vegetation communities as defined by the City's Biology Guidelines (i.e., coastal sage scrub and subtypes, chaparral and wetland communities) would be considered significant and would require mitigation per the City of San Diego Biology Guidelines. Urban/developed

lands, non-native vegetation, and disturbed habitat provide little native habitat value and foraging opportunities for wildlife, particularly when they occur in densely urban environments such as the San Vicente Pipeline – MAT; therefore, impacts to these land covers would not be considered significant. Direct impacts to vegetation communities would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections 5.1 and 5.4 (MM-BIO-1a, MM-BIO-1c, MM-BIO-2, and MM-BIO-8~~9~~). The San Vicente Pipeline – MAT would impact 6.30 acres of MHPA lands; this total takes into account 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, including 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) (Figures 4-3A through 4-3-R1, Biological Resources Impacts).

Table 4-33
Impacts to Vegetation Communities and Land Cover Types within the San Vicente Pipeline – Marina Alternative Terminus Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Diegan Coastal Sage Scrub	II	1.60	0	0.14	0	1.74
Diegan Coastal Sage Scrub – Restored	II	0	0	0.37	0	0.37
Southern Mixed Chaparral	IIIA	0	0	0.34	0	0.34
Urban/Developed	IV	4.31	0	3.58	0	7.89
Non-native Grassland	IIIB	0.01	0	0	0	0.01
Open Water – Freshwater	Wetland	0	0	1.49	0.15	1.64
Disturbed Habitat	IV	0.23	0	1.93	0	2.16
	Total	**6.16***	**0**	**7.83**	**0.15***	**14.14****

Notes:
* This total accounts for the areas excluded from the MHPA for current and future requirements of the Public Utilities Department (~~MSCP Subarea Plan~~City of San Diego 1997).
** The total acreage is based off the Project alignment with a 30-foot buffer, for a total of a 60-foot impact corridor.

4.5.4.2 Direct Impacts to Sensitive Plant Species

There are four sensitive plant species occurring within the impact limits of the San Vicente Pipeline – MAT. All four sensitive plant species within the San Vicente Pipeline – MAT occur in the MHPA (Table 4-34; Figures 4-3A through 4-3-R1, Biological Resources Impacts). San Diego County viguiera occurs in multiple polygons with the impact limit, including in urban/developed, Diegan coastal sage scrub, and non-native grassland. Robinson's pepper-grass occurs in multiple polygons all located within restored Diegan coastal sage scrub. White rabbit-tobacco occurs in one polygon located within Diegan coastal sage scrub and urban/developed in the impact limit. Ashy spike-moss occurs in multiple polygons all located within restored Diegan coastal sage scrub.

Table 4-34
Impacts to Sensitive Plant Species within the San Vicente Pipeline – Marina Alternative Terminus Footprint

Scientific Name	Status (Federal/State/CRPR/MSCP)	Within MHPA	Outside MHPA	Total Individuals
San Diego County viguiera *(Viguiera laciniata)*	None/None/4.2/None	274	0	274
Robinson's pepper-grass *(Lepidium virginicum* var. *robinsonii)*	None/None/4.3/None	3,261	0	3,261
white rabbit-tobacco *(Pseudognaphalium leucocephalum)*	None/None/2B.2/None	213	0	213
ashy spike-moss *(Selaginella cinerascens)*	None/None/4.1/None	2*	0	2*

Note:
* 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.

Direct impacts to CRPR 2B.2 species, including white rabbit-tobacco, would be considered significant because this species is considered rare, threatened, or endangered in California. Impacts to this species would be reduced to less than significant with implementation of MM-BIO-2, which would restore suitable habitat for this species.

Direct impacts to CRPR 4 species, including San Diego County viguiera, Robinson's pepper-grass, and ashy spike-moss are not considered significant because these species are of low sensitivity, and the on-site populations are not significant in terms of the ability for this species to persist (i.e., they are CRPR 4 species and therefore not considered rare). In addition, the species do not occur within the impact area in a population that is considered regionally significant and/or are common in the study area. However, MM-BIO-2, which provides restoration for sensitive vegetation communities, would restore suitable habitat for this species.

4.5.4.3 Direct Impacts to Sensitive Wildlife Species

One juvenile coastal California gnatcatcher (same individual as described in Section 4.5.3.3) was observed within designated MHPA lands around the San Vicente Pipeline – MAT inlet alternative. Although direct impacts are not expected to this species, there would be direct impacts to suitable habitat. Temporary impacts to suitable habitat for coastal California gnatcatcher would be mitigated through MM-BIO-2. Potential impacts to any active nests or the young of nesting coastal California gnatcatcher through direct grading of suitable habitat within designated MHPA lands would be mitigated through MM-BIO-4a, which requires

preconstruction surveys for coastal California gnatcatcher, and if surveys determine presence of occupied habitat, no habitat-disturbing activities would occur between March 1 and August 15.

No other sensitive wildlife species were observed or have a moderate to high potential to occur in the San Vicente Pipeline – MAT footprint. As such, no direct impacts are anticipated to sensitive wildlife species. Diegan coastal sage scrub and southern mixed chaparral within the San Vicente Pipeline – MAT could provide nesting bird habitat. Implementation of MM-BIO-3 would reduce impacts to nesting birds to less than significant.

4.5.4.4 Direct Impacts to Jurisdictional Aquatic Resources

There are temporary impacts to 1.51 acres and permanent impacts to 0.15 acre of ACOE-, RWQCB-, and CDFW-jurisdictional areas within the San Vicente Pipeline – MAT footprint. All of the jurisdictional aquatic resources are considered wetlands by the City of San Diego. Direct impacts to jurisdictional resources would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections 5.1 and 5.4 (MM-BIO-1c and MM-BIO-8~~9~~). Table 4-35 summarizes impacts to these features.

Table 4-35
Impacts to Jurisdictional Aquatic Resources within the San Vicente Pipeline – Marina Alternative Terminus Footprint (Acres)

Jurisdictional Aquatic Resource	ACOE/RWQCB[1]		CDFW[1]		City of San Diego Wetlands[1]	
	Temp	*Perm*	*Temp*	*Perm*	*Temp*	*Perm*
Non-Wetland Waters/Streambed						
Ephemeral Stream Channel (Non-vegetated Channel)	0.02	—	0.02	—	0.02	—
Perennial Stream Channel/Open Water	1.49	0.15	1.49	0.15	1.49	0.15
Total jurisdictional area[2]	**1.51**	**0.15**	**1.51**	**0.15**	**1.51**	**0.15**

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.

4.5.5 Mission Trails Booster Station

4.5.5.1 Direct Impacts to Vegetation Communities and Land Cover Types

The MTBS footprint supports two vegetation communities and/or land cover types: disturbed Diegan coastal sage scrub and urban/developed (Table 4-36; Figures 4-3A through 4-3-R1, Biological Resources Impacts). Direct impacts include the construction of a new Project component. Impacts to sensitive vegetation communities as defined by the City's Biology Guidelines (i.e., coastal sage scrub and subtypes) would be considered significant and would

require mitigation per the City of San Diego Biology Guidelines. Direct impacts to vegetation communities would be reduced to a less-than-significant level through the biological mitigation measures provided in Section 5.1 (MM-BIO-1a). Urban/developed lands provides little native habitat value and foraging opportunities for wildlife, particularly when they occur in densely urban environments such as the MTBS; therefore, impacts to this land cover would not be considered significant. The MTBS is not located in MHPA lands (Figures 4-3A through 4-3-R1, Biological Resources Impacts).

Table 4-36
Impacts to Vegetation Communities and Land Cover Types within the Mission Trails Booster Station Footprint (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Within MHPA (acres)		Outside MHPA (acres)		Total Acreage
		Temp	*Perm*	*Temp*	*Perm*	
Diegan Coastal Sage Scrub (disturbed)	II	0	0	0	1.22	1.22
Urban/Developed	IV	0	0	0	<0.01	<0.01
Total		**0**	**0**	**0**	**1.22**	**1.22**

4.5.5.2 Direct Impacts to Sensitive Plant Species

There is one sensitive plant species occurring. There is one location of San Diego County viguiera individuals, totaling 200 individuals, within the impact limits of the MTBS. These plants are located within disturbed Diegan coastal sage scrub and are outside of the MHPA (Figures 4-3A through 4-3-R1, Biological Resources Impacts).

Impacts to CRPR 4 San Diego County viguiera are not considered significant because this species is of low sensitivity, and the on-site populations are not significant in terms of the ability for this species to persist (i.e., CRPR 4 species are not considered "rare" from a statewide perspective). In addition, the species does not occur within the impact area in a population that is considered regionally significant and is common in the study area. However, MM-BIO-1a, which provides mitigation for sensitive vegetation communities, would preserve suitable habitat for this species.

4.5.5.3 Direct Impacts to Sensitive Wildlife Species

No sensitive wildlife species were observed or have a moderate to high potential to occur in the MTBS footprint. As such, no direct impacts are anticipated to sensitive wildlife species. Diegan coastal sage scrub within the MTBS could provide nesting bird habitat. Implementation of MM-BIO-3 would reduce impacts to nesting birds to less than significant.

4.5.5.4 Direct Impacts to Jurisdictional Aquatic Resources

There are no direct impacts to jurisdictional aquatic resources associated with the MTBS footprint.

4.6 Indirect Impacts

Potential short-term indirect impacts to biological resources as a result of the current North City Project are related to overall project construction activities and may include dust, construction-related noise, general human presence, changes within the Miramar Reservoir that affect forage, and construction-related soil erosion and runoff. Potential long-term indirect impacts to biological resources may also occur as a result of the North City Project through introduction of non-native species, increased human presence during construction, and increased noise from pump stations.

In accordance with the City's Subarea Plan and pursuant to the San Diego RWQCB Municipal Permit and the City's Stormwater Standards Manual (City of San Diego 2012b), projects are required to implement site design, source control, and treatment control BMPs. Development projects will be required to meet NPDES regulations and incorporate BMPs during construction and permanent BMPs as defined by the City's Stormwater Standards Manual as part of the project development.

4.6.1 Indirect Impacts to Vegetation Communities

Fifteen sensitive vegetation communities (including wetlands) were mapped within the North City Project footprint (including both alternatives), and 24 sensitive vegetation communities (including wetlands) were mapped within the North City Project study area (including both alternatives). The drainage features within the North City Project study area include San Diego River, San Vicente Creek, San Clemente Creek, and Tecolote Creek and their tributaries. Potential short-term indirect impacts on these vegetation communities include dust, construction-related soil erosion and runoff, invasive plant species, and increased human presence. Indirect impacts to vegetation communities would be avoided with the implementation of the following mitigation measures provided in Section 5.5: MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(g), MM-BIO-9~~10~~(j) and MM-BIO-9~~10~~(k). In addition, MM-BIO-2 which requires the restoration of temporarily disturbed areas (see Section 5.1), would be implemented to further reduce indirect impacts to sensitive vegetation communities. Project components that would require the implementation of mitigation measures to reduce indirect impacts to sensitive vegetation communities include the following: Morena Pump Station, Morena Pipelines, NCWRP Expansion (including NCPWF Influent Pump Station and North City Renewable Energy Facility), NCPWF (including the North City Pure Water Pump Station), LFG Pipeline, MBC, North City Pipeline, Miramar WTP, Dechlorination Facility, San Vicente Pipeline, San Vicente Pipeline – TAT, San Vicente Pipeline – IRAT, San Vicente Pipeline – MAT, MTBS,

and air and blow-off valves impacted along the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line (see Appendix T).

A biological monitor will be present during construction within or adjacent to sensitive resources. Through the mitigation measures described in MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(g), the biological monitor would ensure that project adheres to and implements the appropriate measures to protect sensitive resources. The temporary removal of vegetation could result in a change in the velocity and/or volume of runoff during construction and could potentially affect off-site sensitive vegetation communities associated with the San Diego River, Tecolote Creek, San Clemente Creek, San Vicente Creek, Miramar Reservoir and San Vicente Reservoir. Under these conditions, the City will incorporate methods to control runoff, including a Storm Water Pollution Prevention Plan (SWPPP) to meet NPDES regulations. Implementation of stormwater regulations are expected to substantially control adverse edge effects (e.g., erosion, sedimentation, habitat conversion) during and following construction both adjacent and downstream from the study area. Typical construction BMPs will limit the spread of dust and runoff, which would be significant absent the mitigation provided in MM-BIO-9~~10~~(j). For areas that are adjacent to the MHPA, toxic chemicals, trash, staging areas, and equipment storage would be contained and remain inside the limits of construction. Through implementation of MM-BIO-9~~10~~(k), no impacts occur within the MHPA. The Conceptual Revegetation Plan (Appendix P) will establish a native plant community within any temporarily disturbed areas of native habitat, thus minimizing the potential for invasive plant species (MM-BIO-2). Therefore, indirect impacts to off-site vegetation communities, including jurisdictional areas, are not expected to be significant and would not be adverse under NEPA.

4.6.2 Indirect Impacts to Sensitive Plants

Most of the indirect impacts to vegetation communities cited above can also affect sensitive plants. During construction of the Project, indirect effects may include dust, which could disrupt plant vitality in the short term, or construction-related soil erosion and runoff. Long-term edge effects could include intrusions by humans and domestic pets and possible trampling of individual plants, invasion by exotic plant and wildlife species, exposure to urban pollutants (fertilizers, pesticides, herbicides, and other hazardous materials), soil erosion, litter, fire, and hydrologic changes (e.g., surface and groundwater level and quality). Indirect impacts to sensitive plants would be avoided with the implementation of the following mitigation measures provided in Section 5.5: MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(g), MM-BIO-9~~10~~(j) and MM-BIO-9~~10~~(k). Project components that would require the implementation of mitigation measures to reduce indirect impacts to sensitive plants include the following: Morena Pump Station, Morena Pipelines, NCWRP Expansion (including NCPWF Influent Pump Station and North City Renewable Energy Facility), NCPWF (including the North City Pure Water Pump Station), LFG Pipeline, MBC, North City Pipeline, Miramar WTP, Dechlorination Facility, San Vicente

Pipeline, San Vicente Pipeline – TAT, San Vicente Pipeline – IRAT, San Vicente Pipeline – MAT, MTBS, and air and blow-off valves impacted along the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line (see Appendix T).

A biological monitor will be present during construction within or adjacent to sensitive resources. Through the mitigation measures described in MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(g), the biological monitor would ensure that the Project adheres to and implements the appropriate measures to protect sensitive plant resources. Typical construction BMPs will limit the spread of dust and runoff, which would be significant absent the mitigation provided in MM-BIO-9~~10~~(j). For areas that are adjacent to the MHPA, toxic chemicals, trash, staging areas, and equipment storage would be contained and remain inside the limits of construction. Through implementation of MM-BIO-9~~10~~(k), no impacts occur within the MHPA. The Conceptual Revegetation Plan (Appendix P) will establish a native plant community within any temporarily disturbed areas of native habitat, thus minimizing the potential for invasive plant species (MM-BIO-2). Therefore, indirect impacts to sensitive plants are not expected to be significant and would not be adverse under NEPA.

4.6.3 Indirect Impacts to Sensitive Wildlife

Most of the indirect impacts to vegetation communities and sensitive plants previously described can also affect sensitive wildlife. Wildlife may also be indirectly affected in the short term and long term by construction-related noise, which can disrupt normal activities, cause lasting stress, and subject wildlife to higher predation risks. Indirect impacts to sensitive wildlife would be avoided with the implementation of the following mitigation measures provided in Section 5.5: MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(i), and MM-BIO-9~~10~~(k). In addition, the following mitigation measures will be implemented to further reduce indirect impacts to sensitive wildlife species: MM-BIO-2, MM-BIO-4a, MM-BIO-4b, MM-BIO-5, and MM-BIO-6~~, and MM-BIO-7~~ (see Section 5.3).

A biological monitor will be present during construction within or adjacent to sensitive resources. Through the mitigation measures described in MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(g), the biological monitor would ensure that the Project adheres to and implements the appropriate measures to protect sensitive resources. All areas that contain steep-walled trenches or excavations left open overnight could entrap wildlife moving through the site, which would be significant but would be reduced with implementation of MM-BIO-9~~10~~(h). Project components that would require the implementation of mitigation measures to reduce indirect impacts protecting sensitive wildlife from trenches include the following: Morena Pipelines, LFG Pipeline, North City Pipeline, San Vicente Pipeline, San Vicente Pipeline – TAT, San Vicente Pipeline – IRAT, and San Vicente Pipeline – MAT (see Appendix T). Additionally, construction-related nighttime lighting could

affect nocturnal species but would be reduced to less than significant with implementation of MM-BIO-9~~10~~(i). Through implementation of MM-BIO-9~~10~~(k), no impacts occur within the MHPA.

~~As required by the City's MSCP ASMDs for MSCP Covered Species, the Project must maintain and manage a 1,500-foot area around known locations within the preserve lands for this species. Although the Miramar Reservoir Alternative would not have direct impacts to western pond turtle habitat (including basking sites) from construction, placement of the North City Pipeline would occur within 1,500 feet of known locations within the MHPA. Since a monitoring and adaptive management plan within the reservoir would be contradictory to the drinking water supply, warm water fishery maintenance, and other human related recreational objectives, mitigation is proposed. To reduce impacts to a less-than-significant level through the biological mitigation measure provided in Section 5.3 (MM-BIO-7; Appendix U), which would require trapping and relocation for this species. The USGS-advocated trapping and relocation program, which can successfully establish new populations or maintain extant populations (Harmsworth Associates & Goodman 2002, 2003), would help increase and expand western pond turtle populations into areas that have higher habitat quality than the Miramar Reservoir, which has high human access and is an artificial reservoir within a park setting (USGS 2005). The North City Pipeline is the only component that would require implementation of MM-BIO-7 (see Appendix T).~~

The San Vicente Reservoir has a moderate potential for western pond turtle; however, the addition of purified water into the reservoir ~~Alternative~~ is not expected to have ~~the same~~ limnological effects or potential effects on western pond turtle ~~as the Miramar Reservoir Alternative~~, due to the comparatively small amount of purified water being added to the San Vicente Reservoir when compared to the San Vicente Reservoir itself.

Adverse edge effects, from temporary impacts, can cause degradation of habitat quality through the invasion of pest species, which would be significant absent mitigation from MM-BIO-2. Although most of the impacts associated with the North City Project are within developed areas or existing roads, there is suitable habitat within the study area that could provide nesting habitat for breeding birds. Breeding birds can be affected by short-term construction-related noise, which can result in the disruption of foraging, nesting, and reproductive activities. Construction or operational noise levels exceeding a 60-decibel [dB(A)] hourly-average within 500 feet of adjacent suitable habitat for coastal California gnatcatcher, least Bell's vireo, southern willow flycatcher, or burrowing owl, during nesting bird season (i.e., February 1 through September 15)(excluding coastal California gnatcatcher if construction occurs outside the MHPA) would be significant and require mitigation (MM-BIO-4a, MM-BIO-5, and MM-BIO-6). Potential impacts to any active nests or the young of nesting coastal California gnatcatcher through direct grading of suitable habitat within designated MHPA lands would be mitigated through MM-BIO-4a, which requires preconstruction surveys for coastal California gnatcatcher. Mitigation requirements outlined in the Section 6.2.2.3 of the

INRMP, for construction noise on MCAS Miramar, would be satisfied through implementation of MM-BIO-4b (Appendix A). If surveys determine presence of occupied habitat, no habitat-disturbing activities would occur between March 1 and August 15 for MHPA lands or February 15 and August 31 for MCAS Miramar lands. Indirect impacts to San Diego fairy shrimp from the San Vicente Reservoir Alternative within MCAS Miramar would be reduced to a less-than-significant level through MM-BIO-7~~8~~, which would require enhancement of remaining portions of the watershed and no work during the rainy season or when the ground is wet (approximately November 1 to June 1) and MM-BIO-9(l) through MM-BIO-9(q), which are avoidance measures from the Final VPHCP. Impacts occurring adjacent to vernal pools would be reduced by requiring silt fencing around construction zones (MM-BIO-9(l)), minimization of dust through watering (MM-BIO-9(m)), on-site vernal pool biological monitor (MM-BIO-9(n)), construction activities and equipment must be contained within the limits of work (MM-BIO-9(o) and MM-BIO-9(p)), and the timing of grading activities will not occur if the ground is wet (MM-BIO-9(q)). MM-BIO-7~~8~~ and MM-BIO-9(l) through MM-BIO-9(q) ~~is~~ are discussed further in Section 4.6.4. Therefore, with implementation of the above-listed mitigation measures, indirect impacts to sensitive wildlife species are not expected to be significant and would not be adverse under NEPA. Table 4-37 provides a summary of sensitive species within each component's study area and the proposed mitigation measures that reduce the indirect impact.

Table 4-37
Indirect Impacts to Sensitive Wildlife within the North City Project Study Area

Scientific Name	Indirect Impact	Project Component(s)*	Proposed Mitigation Measures (MM)
Coastal California Gnatcatcher (*Polioptila californica californica*)	Revegetation, Lighting, Noise (only applies to occupied habitat within the MHPA or MCAS Miramar)	MCAS Miramar: NCWRP, LFG Pipeline, MBC, North City Pipeline MHPA Lands: Morena Pipelines, LFG Pipeline, North City Pipeline, NCWRP, San Vicente Pipeline (most individuals occur in habitat adjacent to Mission Gorge Road), San Vicente Pipeline – IRAT and San Vicente Pipeline – MAT	MM-BIO-2; MM-BIO-4a; MM-BIO-4b; MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(k)
Burrowing Owl (*Athene cunicularia*)	Revegetation, Noise, Lighting	Morena Pipelines, NCPWF, North City Pump Station, NCWRP Expansion, North City Pipeline, LFG Pipeline, MBC, MTBS, San Vicente Pipeline, San Vicente Pipeline – TAT, and San Vicente Pipeline – MAT	MM-BIO-2; MM-BIO-5; MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(k)
Least Bell's Vireo (*Vireo bellii pusillus)*	Revegetation, Noise, Lighting	Morena Pump Station, Morena Pipelines, LFG Pipeline, MBC, San Vicente Pipeline	MM-BIO-2; MM-BIO-6; MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(k)

Table 4-37
Indirect Impacts to Sensitive Wildlife within the North City Project Study Area

Scientific Name	Indirect Impact	Project Component(s)*	Proposed Mitigation Measures (MM)
Southwestern Willow Flycatcher (*Empidonax traillii extimus*)	Revegetation, Noise, Lighting	Morena Pump Station, Morena Pipelines, LFG Pipeline, MBC, San Vicente Pipeline	MM-BIO-2; MM-BIO-6; MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(k)
~~Western Pond Turtle** (*Actinemys marmorata)*~~	~~Construction occurring within 1,500 feet of known locations within the MHPA~~	~~North City Pipeline (Miramar Reservoir)~~	~~MM-BIO-7~~
San Diego Fairy Shrimp	Watershed (Vernal Pool Wetland Buffer)	San Vicente Pipeline - Repurposed 36-inch Recycled Water Line	MM-BIO-7~~8~~; MM-BIO-9(l) through MM-BIO-9(q)

Notes:

* Project components only included those containing suitable habitat within their respective study area for the species listed. The mitigation measure would only apply to the areas containing suitable habitat and not the entire component.

~~** One individual was observed below the SR-52 on-ramp within the Morena Pipelines study area and another individual was observed within Evan's Pond within the North City Pipeline study area. However, it is not expected that these individuals would be indirectly affected by Project implementation.~~

4.6.4 Indirect Impacts to Jurisdictional Aquatic Resources

The North City Project study area supports jurisdictional aquatic resources, which are regulated by the ACOE, RWQCB, CDFW, and/or the City. 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. According to the City's Biology 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; and acts to slow flood waters for flood and erosion control, sediment filtration, water purification, and groundwater recharge (City of San Diego 2012a). 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 2012a). Indirect impacts to jurisdictional resources would be avoided with the implementation of the following mitigation measures provided in Section 5.5: MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(g), MM-BIO-9~~10~~(j), ~~and~~ MM-BIO-9~~10~~(k), and MM-BIO-9(l) through MM-BIO-9(q). Direct impacts to jurisdictional resources would be reduced to a less-than-significant level through the biological mitigation measures provided in Sections 5.1, 5.3, and 5.4 (MM-BIO-1c, MM-BIO-2, MM-BIO-7~~8~~ and MM-BIO-8~~9~~). See Appendix T for Project components that would require the implementation of mitigation measures to reduce indirect impacts to jurisdictional aquatic resources.

A biological monitor will be present during construction within or adjacent to sensitive resources. Through the mitigation measures described in MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(g), the biological monitor would ensure that the Project adheres to and implements the appropriate measures to protect sensitive resources. Jurisdictional aquatic resources are typically affected in the short-term by dust, invasive plant species, and increased human presence and long-term changes in the velocity of runoff or volume of flow during and following construction could result from the removal of vegetation, which could adversely affect the integrity of downstream resources causing erosion and sedimentation. However, as stated above, the City will incorporate methods to control runoff, in accordance with NPDES regulations by incorporating BMPs during construction and designing the Project in accordance with City's Stormwater Standards Manual (MM-BIO-9~~10~~(j)). Through implementation of MM-BIO-9~~10~~(k), no impacts would occur within the MHPA. Impacts occurring adjacent to vernal pools would be reduced by requiring silt fencing around construction zones (MM-BIO-9(l)), minimization of dust through watering (MM-BIO-9(m)), on-site vernal pool biological monitor (MM-BIO-9(n)), construction activities and equipment must be contained within the limits of work (MM-BIO-9(o) and MM-BIO-9(p)), and the timing of grading activities will not occur if the ground is wet (MM-BIO-9(q)). Impacts occurring from the San Vicente Reservoir Alternative within MCAS Miramar to vernal pool watersheds (i.e., within the 100-foot wetland buffer) would be reduced to a less-than-significant level through MM-BIO-7~~8~~, which would require enhancement of remaining portions of the watershed and no work during the rainy season or when the ground is wet (approximately November 1 to June 1). During construction, typical BMPs, such as having trash containers on site, a demarcated limit of work, and contractor education, will limit the potential for trash and other human disturbance (MM-BIO-9~~10~~(e) and MM-BIO-9~~10~~(f)). The Conceptual Revegetation Plan (Appendix P) will establish a native plant community within any temporarily disturbed areas of native habitat, thus minimizing the potential for invasive plant species and reducing erosion and sedimentation (MM-BIO-2). Therefore, short- and long-term indirect impacts to off-site, adjacent jurisdictional waters and wetlands are not considered significant and would not be adverse under NEPA.

4.6.4.1 Wetland Buffer Impacts

As stated above, the City typically applies a 100-foot-wide avoidance buffer surrounding wetland resources to ensure the value and function of the wetland is maintained. Additionally, the INRMP states that impacts, including an increase or decrease of water quantity, sediment transport, and change in water quality runoff to a pool basin, or vernal pool watershed should be minimized or avoided (MCAS Miramar INRMP 2011). Therefore, impacts to the surrounding buffer must be analyzed. The following section describes the location and appropriate mitigation for each wetland buffer impact. Impacts to wetland buffers are categorized as within the Coastal

Overlay Zone, within a vernal pool watershed, within Miramar Reservoir Alternative components, or within components specific to the San Vicente Reservoir Alternative.

Coastal Overlay Zone

There are no direct impacts to wetlands within the Coastal Overlay Zone; however, there are impacts within 100 feet of a wetland resource (i.e. San Diego River) from one overflow pipe that is a part of the Morena Pump Station. The impacts would be entirely within Friars Road, which is adjacent to the San Diego River. However, Friars Road is situated below the San Diego River floodplain and separated from the river by a concrete berm (San Diego River Levee system), with the berm acting as a functional barrier that would prevent any indirect impacts to the San Diego River. Since there is an existing functional buffer that would prevent any impacts to this jurisdictional resource, it would be suitable to reduce the typical buffer from 100 feet to 25 feet with agency (CDFW, USFWS, and ACOE) consultation. The levee is approximately 15 feet away from the outer edge of the proposed work area and there is an additional 10 feet of disturbed habitat, containing riprap along the backside slope of the levee. Therefore, a total of 25 feet would be an appropriate buffer. Working under the assumption that the proposed 25-foot buffer is approved by the agencies, the Project would no longer indirectly impact the wetland buffer within the Coastal Overlay Zone. Mitigation measures MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(g), MM-BIO-9~~10~~(j), and MM-BIO-9~~10~~(k) would still be implemented to ensure that no indirect impacts occur in this area.

Vernal Pools

Vernal pools deemed both occupied and unoccupied by San Diego fairy shrimp were observed adjacent to ~~three~~ four components: LFG Pipeline, MBC, the North City Pipeline, and the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line. Vernal pools (a portion of pools are unoccupied and not assigned identifiers) considered to be City wetlands, were mapped adjacent to the LFG Pipeline within the ~~VA~~ Miramar National Cemetery in MCAS Miramar. During Project planning, the location of the jurisdictional resources was avoided to the maximum extent feasible; therefore, direct impacts to these vernal pools would be avoided using trenchless construction methods. However, there would be impacts within the 100-foot wetland buffer of these unoccupied vernal pools from the LFG Pipeline and from air and blow-off valves associated with the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line. However, this area contains a topographical barrier (i.e., a slight slope approximately 2 to 3 feet above the impact area) that would prevent direct impacts to the wetland buffer; however, indirect impacts could occur to these vernal pools. Mitigation measures taken directly from the Final VPHCP MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(g), ~~MM-BIO-910(j), and MM-BIO-910(k)~~ would be implemented to ensure that no indirect impacts occur in these pools.

HELIX mapped 67 vernal pools or road ruts (not assigned identifiers) in MCAS Miramar south of Miramar Road, which contains the proposed North City Pipeline corridor. A portion of the pools are occupied by San Diego fairy shrimp and the remaining pools are unoccupied. Although work is contained with Miramar Road and no direct impacts are expected to occur to these pools, there would be impacts within 100 feet of the pools from the North City Pipeline corridor. Because this area is an existing impermeable road and does not provide valuable transitional upland habitat that serves in slowing and absorbing flood waters for flood and erosion control, sediment filtration, water purification, or groundwater recharging disturbance of the roadway would not be expected to directly impact the wetland buffer, indirect impacts could occur to the vernal pools. Mitigation measures taken directly from the Final VPHCP MM-BIO-910(al) through MM-BIO-910(gq), ~~MM-BIO-910(j), and MM-BIO-910(k)~~ would be implemented to ensure that no indirect impacts occur in these pools.

Vernal pool PW36, containing the federally endangered species San Diego fairy shrimp, was mapped along the LFG Pipeline. There would be no direct or indirect impacts from the LFG Pipeline to PW36 due to the use of trenchless construction methods under the Miramar Reservoir Alternative. However, there would be permanent wetland buffer impacts to PW36 if the San Vicente Reservoir Alternative was implemented, which would require an air and blow-off valve associated the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line. MCAS Miramar mapped three OSPFs (VP653, VP654, and VP656) and two basins (VP657 and VP1859) containing the federally endangered species San Diego fairy shrimp within the Level I MA, adjacent to the area mapped as extensive agriculture-field/pasture, row crops along the LFG Pipeline (MCAS Miramar 2016). Indirect and direct impacts to these three ~~pools~~ OSPFs would be avoided under both Alternatives with the use of trenchless construction methods. However, there would be impacts within 100 feet of the basins (VP657 and VP1859) in this area from the LFG Pipeline. The basins are separated from the impact area by a paved road that would prevent direct impacts to the wetland buffer; however, indirect impacts could occur to these basins. Mitigation measures taken directly from the Final VPHCP MM-BIO-9(l) through MM-BIO-9(q) would be implemented to ensure that no indirect impacts occur in these basins.

One basin mapped by MCAS Miramar (VP2480) is within 100 feet of the LFG compressor station; however, this basin is separated from the LFG compressor station by two existing roads—one paved road and one dirt road—which would prevent direct impacts to the wetland buffer. However, indirect impacts could occur to this basin. Mitigation measures taken directly from the Final VPHCP MM-BIO-9(l) through MM-BIO-9(q) would be implemented to ensure that no indirect impacts occur in this basin.

MCAS Miramar mapped two OSPFs (VP697 and VP699) containing the federally endangered species San Diego fairy shrimp within the Level V MA along the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line. There would be permanent impacts within the 100-foot wetland buffer of the two OSPFs from air and blow-off valves associated with the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line if the San Vicente Reservoir Alternative is implemented. Indirect impacts to PW36, VP697, and VP699 occur on MCAS Miramar lands and therefore are subject to the INRMP 2011–2015 and would be would be mitigated through MM-BIO-7~~8~~. Implementation of the INRMP mitigation measure MM-BIO-7~~8~~ would reduce the indirect impacts to less than significant. The air and blow-off valves along the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line are the only component that would require MM-BIO-7~~8~~ (see Appendix T). Additionally, mitigation measures taken directly from the Final VPHCP MM-BIO-9~~10~~(~~a~~l) through MM-BIO-9~~10~~(gq)~~, MM-BIO-910(j), and MM-BIO-910(k)~~ would be implemented to ensure that no further indirect impacts occur in these pools.

There would be impacts within 100 feet of vernal pool PW8, which occurs outside the MBC and is occupied by non-listed fairy shrimp species. However, all impacts would occur within the existing facility, which does not provide transitional upland habitat; therefore, no indirect impacts would occur to PW8. Mitigation measures taken directly from the Final VPHCP MM-BIO-9~~10~~(~~a~~l) through MM-BIO-9~~10~~(gq)~~, MM-BIO-910(j), and MM-BIO-910(k)~~ would still be implemented to ensure that no indirect impacts occur in this pool. In 2008, MCAS Miramar mapped 74 vernal pools (the majority are occupied by San Diego fairy shrimp) within the open space area of MCAS Miramar east of the NCWRP and north of Miramar Road. These vernal pools are outside the City's 100-foot wide avoidance buffer, and therefore no direct or indirect impacts would occur.

Direct impacts to vernal pools would occur at the NCPWF, but these are discussed in the direct impacts Section 4.3.6.4.

Miramar Reservoir Alternative

Under the Miramar Reservoir Alternative, three areas associated with the Morena Pipelines, one area associated with the NCWRP, and three areas associated with the North City Pipeline would have impacts occurring within 100 feet of wetland resources (excluding vernal pools and those within the Coastal Overlay Zone).

The three places the Morena Pipelines would have impacts occurring within 100 feet of wetland resources include: (1) from the pipeline corridor to the buffer surrounding southern coast live oak riparian forest at the corner of Nobel Drive and Towne Center Drive; (2) the pipeline corridor to

the buffer surrounding San Clemente Creek at the intersection of Genesee Avenue and the onramp for SR-52; and (3) the pipeline corridor to the buffer surrounding wetlands within Rose Canyon at the intersection of Genesee Road and the railroad track.

The NCWRP would impact the wetland buffer surrounding mulefat scrub located immediately east of the facility. Although impacts would occur with this wetland buffer, the sensitivity of the wetland resource to edge effects and need for upland transition is examined when considering appropriate wetland buffers. Since the NCWRP removes vegetation along the slope as part of regular maintenance activities, it can be assumed that the mulefat scrub is not affected by a diminished wetland buffer. Additionally, there is a concrete headwall containing a culvert that could be acting as a functional barrier.

The three places the North City Pipeline would have impacts occurring within 100 feet of wetland resource include: (1) from the pipeline corridor to the buffer surrounding a non-vegetated channel along Via Pasar; (2) from the staging area to the buffer surrounding Miramar Reservoir; and (3) from the pipeline's work area easement to the buffer surrounding Evan's Pond.

Impacts from the Morena Pipelines and North City Pipeline would occur within existing roadways or in areas that have been graded that do not provide valuable transitional upland habitat that serves in slowing and absorbing flood waters for flood and erosion control, sediment filtration, water purification, or groundwater recharging. Therefore, construction of the Morena Pipelines within Nobel Drive and along Genesee Avenue or construction of the North City Pipeline is not expected to impact the wetland buffer for these resources. Additionally, implementation of mitigation measures (MM-BIO-2, MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(g), MM-BIO-9~~10~~(j), and MM-BIO-9~~10~~(k)) at the locations listed above would prevent any indirect impacts to the wetland resources.

San Vicente Reservoir Alternative

Under the San Vicente Reservoir Alternative, impacts to wetland buffers (excluding vernal pools and those within the Coastal Overlay Zone) would occur within two areas along the San Vicente Pipeline and one area along the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line. There are other areas within the San Vicente Reservoir Alternative that impact both the wetland and the wetland buffer; however, these are discussed in the direct impact sections. Impacts to wetland buffers in the shared components, NCWRP and the Morena Pipelines, are discussed in the paragraph above.

The San Vicente Pipeline would intersect a wetland buffer at the following locations: (1) 0.12 acre of impacts to the buffer surrounding southern cottonwood—willow riparian forest and a

non-vegetated channel from a launching and receiving pit adjacent to a trenchless segment on the west side of I-15; and (2) 0.41 acre of impacts from a launching and receiving pit adjacent to a trenchless segment to the buffer surrounding the San Diego River on the southwest side of SR-52. Impacts to the wetland buffer surrounding a non-vegetated channel totaling 0.01 acre would occur from air and blow-off valves along the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line that runs through MCAS Miramar. Impacts to wetland buffers would not result in the degradation of the resources with implementation of mitigation measures MM-BIO-2, MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(g), MM-BIO-9~~10~~(j), and MM-BIO-9~~10~~(k).

Additionally, four areas associated with the San Vicente Pipeline would have impacts occurring within 100 feet of wetland resources. However, impacts from the San Vicente Pipeline would occur within existing roadways that do not provide valuable transitional upland habitat that serves in slowing and absorbing flood waters for flood and erosion control, sediment filtration, water purification, or groundwater recharging. Therefore, construction of the San Vicente Pipelines is not expected to impact the wetland buffer for the following resources: (1) impacts from the pipeline corridor to a buffer surrounding a riprap-lined channel at the northwest corner of Stoyer Drive and Halberns Boulevard; (2) impacts from the pipeline corridor to a buffer surrounding a concrete-lined channel on the north side of Mast Boulevard; (3) impacts from the pipeline corridor to a buffer surrounding mulefat scrub (including disturbed) and arundo-dominated riparian along Moreno Avenue; and (4) impacts from the pipeline corridor to a buffer surrounding a non-vegetated channel (tributary to San Vicente Creek) along Morena Avenue just south of the San Vicente Reservoir. Additionally, implementation of mitigation measures (MM-BIO-2, MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(g), MM-BIO-9~~10~~(j), and MM-BIO-9~~10~~(k)) at the locations listed above would prevent any indirect impacts to the wetland resources.

4.6.5 Indirect Impacts to Limnology

Long-Term Indirect Effects

This Project is different from typical projects, in that there are typical direct impacts to species that would result from Project implementation, but there are atypical indirect impacts to species that rely on the current Miramar Reservoir water composition.

As the N and P nutrient supply otherwise provided from the imported water would be largely replaced by product water discharges, the median and peak concentrations of chlorophyll-*a* (which relates to primary and secondary productivity) within the reservoir would be expected to decrease, since concentrations of P are expected to decrease relative imports from the second San Diego Aqueduct. Soluble reactive phosphorus (SRP), the form of P that is usable by algae, is the limiting nutrient overall. The limitation of TP and SRP would likely begin a "bottom-up" change in the tropic structure (trophic cascade) within the reservoir. A bottom-up change occurs when a change

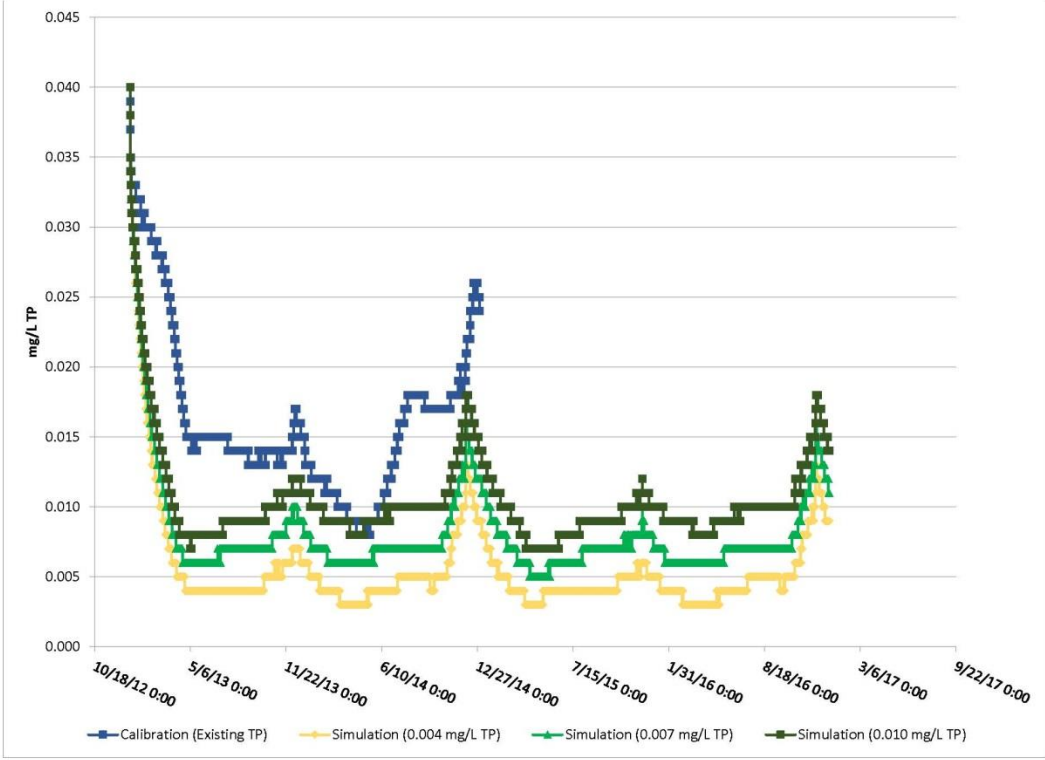
in basal resources such as the nutrient supply (e.g., TN, TP, TN/TP ratio, SRP) to primary producers (phytoplankton) or primary consumers (zooplankton) is removed or greatly reduced in abundance, and there is a corresponding change (i.e., reduction) of population size through the higher levels of the trophic community.

Total phosphorus (TP) concentrations in non-polluted natural water extend over a very wide range from <0.001 milligrams per liter (mg/L) in ultra-oligotrophic waters to >0.20 mg/L in highly eutrophic waters; however, most uncontaminated freshwaters contain between 0.010 and 0.050 mg/L of TP (Wetzel 2001). Natural background levels of TP are generally less than 0.03 mg/L, and natural levels of orthophosphate usually range from 0.005 to 0.05 mg/L (Dunne and Leopold 1978).

Reservoir water quality data collected during 2013 and 2014 were used to develop a Computation Aquatic Ecosystem Dynamics Model (CAEDYM) model (WQS 2017). The output from the calibration run of the model was used for calculating the range and median values for TP, SRP, and chlorophyll-*a* for existing (baseline) conditions. Based on these results, the existing median concentrations at the reservoir surface for TP, SRP, and chlorophyll-*a* are 0.015 mg/L (range of 0.008 to 0.040 mg/L), 0.010 mg/L (range of 0.001 to 0.025 mg/L), and 0.26 µg/L (range of 0.21 to 2.72 µg/L), respectively. During the 2-year existing conditions model run for the reservoir surface, TP ranged from a minimum of 0.008 mg/L (range of 0.008 to 0.018 mg/L) during the summer months to a maximum of 0.040 mg/L (range of 0.018 to 0.040 mg/L) during the winter months (see Graphic 1). The increased TP levels during the winter are associated with destratification of the reservoir and the subsequent release of phosphorus from bottom sediments below the thermocline.

The CAEDYM model was then run to simulate changes in the reservoir's nutrient and chlorophyll-*a* concentrations using three potential influent TP concentrations anticipated for the Project water: 0.004 mg/L, 0.007 mg/L, and 0.010 mg/L (see Graphic 1). The data from the three CAEDYM simulations were used to calculate the expected range and median concentrations at the surface of the reservoir for TN, TP, SRP, and chlorophyll-*a*. TP concentrations (which consist of 100% SRP) for the reservoir surface in the simulation runs ranged from a minimum of 0.003 mg/L (range of 0.003 to 0.013 mg/L) during the summer months to a maximum of 0.018 mg/L (range of 0.007 to 0.018 mg/L) during the winter. Surface SRP concentrations in the simulation runs ranged from a minimum of 0.003 mg/L (range of 0.003 to 0.010 mg/L) during the summer to a maximum of 0.018 mg/L (range of 0.004 to 0.018 mg/L) during the winter, with a median range of 0.004 to 0.009 mg/L. Surface chlorophyll-*a* concentrations in the simulation runs ranged from a minimum of 0.21 µg/L from summer through winter to a maximum of 0.93 µg/L in late spring, with a median value of 0.21 to 0.22 µg/L. Based on the CAEDYM model runs, future TP, SRP, and chlorophyll-*a* concentrations under a purified water regime will not be substantially lower than the existing condition.

Graphic 1
Results of CAEDYM Calibration and Simulation Runs for TP



Additional water quality data collected in Miramar Reservoir by Adamczyk and Shurin (2015) from June 2013 to June 2014 showed that the mean TP concentration in the reservoir was 0.016 mg/L (ranging from 0.00206 to 0.0391 mg/L).

The TP value associated with the change in reservoir water to a purified water regime at Miramar Reservoir is predicted to range from 0.004 to 0.010 mg/L, with a projected N:P ratio of >100:1 to 200:1. However, the low TP value associated with the purified water does not include all of the nutrient inputs to the reservoir that will affect the base TP value over time. These additional contributions to the nutrient loading in the reservoir (currently being quantified) include a) atmospheric deposition, b) aquatic vegetation, c) fauna contributions (avian feces and carcass decomposition augmented by fish stocking activities), d) the intentional return of nutrients to the reservoir from the Miramar Water Treatment Plant, e) the recycling of nutrients in the oxic region of Miramar Reservoir, and f) other (considered negligible) sources, such as surface water runoff into the reservoir from immediately adjacent areas, recreation impacts (e.g., use of fish bait, duck feeding, and/or litter), and terrestrial leaf

litter. While external sources of nitrogen are an order of magnitude smaller than what is coming in with product inflows, external phosphorus sources are nearly identical during the dry season, and approximately half in the wet season. This indicates that external sources decrease the sensitivity of the reservoir to the lower TP levels from product water inflows. As a result, TP concentrations within the reservoir over time are expected to be higher than the predicted concentration of 0.004 mg/L.

In addition to TP, SRP is included in the analysis to identify the percentage of TP that is available for biological uptake/production, and is directly related to production of chlorophyll-*a*. While the median TP concentration under existing reservoir conditions is calculated as 0.015 mg/L, approximately 33% of this amount was unavailable for plant uptake and did not contribute to SRP (0.010 mg/L). Under a Pure Water regime, it is anticipated that TP for the Project's water will be 100% SRP and immediately bioavailable to primary producers, and he Project will result in only a slight reduction (between 0.001 and 0.006 mg/L) in the median SRP concentration relative to existing conditions. As a result, the projected SRP concentrations are expected to only reduce the current median chlorophyll-*a* concentration of 0.26 micrograms per liter (µg/L) by 0.04 to 0.05 µg/L.

The extent of the predicted changes in trophic structure depends on complex processes such as ontogenetic changes in diet and habitat use of fishes (Werner and Gilliam 1984), behavioral shifts related to foraging opportunity and predation risk (Werner et al. 1983), size-selective predation (Brooks and Dodson 1965), body size shifts among zooplankton (Pace 1984), nutrient recycling by zooplankton (Bergquist and Carpenter 1986), stoichiometry of zooplankton (Elser et al. 1988), and other similar chemical, biological, and physiologically based interactions within the aquatic ecosystem. Some of the important ecosystem changes include shifts in type and amount of phytoplankton biomass, benthic plant biomass, N:P ratio of nutrient flow to phytoplankton, primary production, bacterial production, total ecosystem respiration, and direction and magnitude of net carbon dioxide (CO_2) exchange between the reservoir and the atmosphere. In addition, non-consumptive effects of predators (e.g., intimidation) can have strong effects on ecological communities (Peckarsky et al. 2008). Predator avoidance behaviors are well known and are the focus of recent reviews including one specifically focused on changes in trophic structure (Schmitz et al. 2004). In a pioneering test of these ideas at the whole lake scale, acoustic sampling was used to demonstrate that behavioral responses accelerate changes in trophic structure from piscivores to zooplankton (Romare and Hansson 2003). As a result, the presence of a refuge from predation changes interaction strengths and magnitudes of some changes in trophic structure. Additionally, quagga mussels, which are capable of filtering large volumes of water, are present in the reservoir and can substantially reduce the abundance of phytoplankton in the water column. Their presence in the reservoir is relatively new and growing and the extent of their effect is yet to be determined.

However, based on effects seen in other water bodies, if the population continues to expand, this species will eventually have long-term trophic effects due to increased plankton consumption by this species. According to Dr. Emily Stanley, a professor of limnology at the University of Wisconsin, Madison's Center for Limnology, predictions of the changes in trophic structure based on nutrient status is a complicated issue and particularly vexing if quagga mussels are present (Stanley pers. comm., 2017).

Even though there will be reduced nutrient loading associated with the introduction of purified water, the relative strength and magnitude of the change in trophic structure cannot be accurately predicted; due to the high number of variables that affect the outcome and to the lack of relevant literature and data available regarding minimum threshold nutrient values that support functioning aquatic ecosystems in warm-water oligotrophic lakes and reservoirs. Additionally, limited data is available on the status and population fluctuations within the Miramar Reservoir aquatic community, including complex species interactions (from the top to the bottom of the food chain). However, the likely result of lower nutrient concentrations (especially phosphorus) associated with a purified water regime is a modification in the aquatic food web between piscivorous fish/reptiles and amphibians, planktivorous fishes, and zooplankton and phytoplankton.

Generalized or anticipated effects can be predicted based on current nutrient values relative to future nutrient values; however, some of the potential effects of changes in trophic structure on the plankton and fish community can be reduced by terrestrial nutrient inputs and by fish stocking. The likely result of purified water addition to the reservoir is a change in the structure of the existing aquatic community. These changes may affect the relative abundance and types of aquatic species, including some level of reduction in phytoplankton and algae, which would result in decreasing prey sources for zooplankton and phytoplankton consumers such as quagga mussels and some fish species. However, the 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). Effects to planktivorous and omnivorous fish that utilize small prey (e.g., shad, bluegill and crappie) will likely be greater due to anticipated reductions in phytoplankton, zooplankton, small aquatic insects, and other small prey items used by these species, although the extent of this effect may not be substantial if the level of reservoir productivity does not appreciably decrease under a purified water regime (relative to the current condition).

Changes in vegetated habitat around the margin of the reservoir is not anticipated as a result of the purified water addition. Due to the young age of the reservoir (57 years), it is assumed that the organic layer in the littoral zone is shallow, and that bulrush (*S. californicus*) and other attached aquatic plants, are rooted in the silty/gravelly loams, which provides all of the nutrients

within the plant biomass. Staff at the UC Davis Wetland's Lab (2017) confirmed this assumption as well as information obtained from one of their former staff's dissertation regarding *S. californicus* (Carpenter et al. 2009).

As previously discussed in Section 3.1.13, Miramar Reservoir is currently classified as oligotrophic based on Carlson's (1977) Trophic Status Index, although some key characteristics are more typical of mesotrophic lakes and reservoirs. These characteristics include zooplankton domination by large-bodied macrozooplankton species (*Daphnia* and adult copepods) and generally trophically efficient energy transfers, at least for piscivorous fish such as largemouth bass. Even though the reservoir is oligotrophic for the majority of the year, elevated chlorophyll-*a* and TP concentrations have been recorded during brief periods. 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. 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).The magnitude of the effect on the biological community resulting from reductions in nutrient loading (primarily phosphorus) would likely be greatest for consumers of phytoplankton and zooplankton, and of less significance for top predators, like largemouth bass, which feed primarily on fish. As food resources become limited for primarily plankton consumers, the current food web would be modified, potentially resulting in changes to the aquatic community and to species interactions within the reservoir. The relative population sizes of higher-level consumers such as existing fish, aquatic reptiles and amphibians would be expected to decrease over time, although food resources are expected to still be available for all these groups of species, but at a decreased level, until the aquatic community and associated species abundance adjusts to the purified water regime.

As discussed in the following paragraphs, predicting the changes that would occur to the composition and relative abundance of the modified aquatic community under in-situ conditions is extremely difficult, if feasible at all due to the variations in aquatic ecosystems and unique biological and chemical regimes within and across aquatic systems. For instance, variation among lakes and reservoirs in many ecological properties including primary production is strongly related to loading of the limiting nutrients, nitrogen and phosphorus. Low nutrient inputs lead to oligotrophic conditions (which is already the existing condition in Miramar Reservoir) and in oligotrophic lakes and reservoirs, changes in trophic structure facilitated zooplankton control of phytoplankton. Nutrients strongly limited zooplankton control of phytoplankton at low inputs suggesting little scope for trophic change in nutrient limited lakes and reservoirs. Based on available data, lake researchers have established that changes in trophic structure are evident across a range of lake and reservoir conditions and largely independent of nutrient loading and primary production. The key food web features of lakes and reservoirs that

promote changes in trophic structure are relatively stable and abundant populations of piscivores and large-bodied zooplankton grazers, especially large species of *Daphnia* (Carpenter et al. 2009). Based on data collected in Miramar Reservoir by Adamczyk and Shurin (2015), the reservoir contains a fairly stable and abundant population of piscivorous fish (e.g., largemouth bass, channel catfish, and bluegill and crappie to some degree) and a zooplankton community dominated by larger bodied species, including *Daphnia* and adult copepods. Redear sunfish, which feed primarily on snails, are also known to consume quagga mussels, which are common within the reservoir and the population is likely expanding. As a result, effects on redear sunfish are not likely to be significant unless the quagga mussel population declines.

Organic matter of terrestrial origin (allochthonous material) can enter lakes via stream flow, runoff, decay of terrestrial vegetation and/or wind deposition, which would introduce new sources of nutrients and can increase lake nutrient levels, although this direct input is usually a relatively small portion (generally 2% to 3%) of the total organic carbon budget. Particulate organic carbon can also be formed by flocculation of terrestrial dissolved organic carbon within the lake. Either way, these particles represent another pathway of a terrestrial subsidy to the lake ecosystem. In the water column, terrestrial particulate organic carbon can be consumed by zooplankton, and terrestrial particulate organic carbon that reaches sediments can be consumed by benthic invertebrates (Carpenter et al. 2009) and broken down, allowing it to be utilized by other aquatic organisms. Cole et al. (2006) found that terrestrial particulate organic carbon was a major diet item for both zooplankton (about 30% of consumption) and benthos (about 60% of consumption). Fish that feed on zooplankton and benthos are also subsidized, indirectly, by terrestrial particulate organic carbon. The terrestrial particulate organic carbon subsidy to fish averages about 30% consumption across age classes but the pathway differs. Young of year fish consume terrestrial particulate organic carbon via zooplankton, while adult fish consume terrestrial particulate organic carbon via benthic invertebrates and from fish that consumed either zooplankton or benthic invertebrates. In small lakes, the terrestrial subsidy to fish, combining all pathways is quite large ranging from about 40 to 90% in lakes that were not eutrophied. As a result, terrestrial subsidies to aquatic food webs can help support high populations of top predators and thereby stabilize or even intensify trophic change. These findings show that changes in trophic structure cannot be fully understood by studying ecosystems in isolation from their surroundings, and that landscape connections have important implications for trophic structure (Carpenter et al. 2009). Terrestrial insects and other terrestrial prey items comprise a very minor component (generally less than 0.1% from both terrestrial and aquatic sources) of organic carbon flow from land to lake ecosystems. However, terrestrial prey is available to top and mid-level predators and can have a large effect on trophic structure (Carpenter et al. 2009). In small lakes, fish consume significant quantities of terrestrial prey (Hodgson and Kitchell 1987, Hodgson and Hansen 2005). Terrestrial

prey can average 20% of the total consumption of relatively small fish and an average of 40% for adult fish (Carpenter et al. 2009).

Limitation of productivity by nutrient availability is an established paradigm for lake ecosystems; however, the relevance of this paradigm for a majority of the world's small, nutrient-poor lakes, with different concentrations of colored organic matter is questionable. Based on a comparison of small unproductive lakes along a water color gradient, data indicates that colored terrestrial organic matter controls the key process for new biomass synthesis (benthic primary production) through its effects on light attenuation, which translates into effects on production and biomass of higher trophic levels (benthic invertebrates and fish). These results are inconsistent with the idea that nutrient supply primarily controls lake productivity, and that a large share of the world's unproductive lakes, within natural variations of organic carbon and nutrient input, may be limited by light and not by nutrients (Karlsson et al. 2009).

To test the applicability of the nutrient limitation concept on small unproductive lakes, data was compiled on the relationship between fish biomass and total phosphorus in oligotrophic and mesotrophic (total phosphorus, 0 mg/L to 30 mg/L) lakes in Finland, New Zealand, and Sweden. In contrast to the situation in more nutrient-rich lakes, no relationship was found between fish biomass and total phosphorus, suggesting that factors other than nutrients determine the development of fish biomass in nutrient limited ecosystems. To provide a more thorough explanation of the roles of nutrients and light as limiting factors for the productivity of naturally nutrient-poor lakes, a detailed study of 12 lake ecosystems was conducted to measure production of algae and bacteria, the biomass of intermediate consumers, and the biomass and production of top consumers (fish). The selection of lakes represent the most common lake types in terms of small size (area, 0.02 kilometer to 0.17 kilometer); mean depth (2.6 meters to 6.0 meters), low nutrient concentrations (total phosphorus 0.0041 mg/L to 0.0240 mg/L); total nitrogen (0.089 mg/L to 0.483 mg/L) and range in dissolved organic carbon (DOC) concentrations (2.4 mg/L to 16.8 mg/L) (Karlsson et al. 2009). These nutrient values are generally comparable to current concentrations in Miramar Reservoir but are slightly higher than values that will be achieved under future (purified water) conditions.

To further evaluate this issue, Karlsson et al (2009) measured basal production of algae and bacteria (primary production and heterotrophic bacterial production based on terrestrial organic carbon) in benthic and pelagic habitats. These processes represent mobilization of energy in the lake from external sources and form a base for production at all trophic levels. Results indicated that whole-lake primary production, basal production by algae and bacteria and production of top consumers was negatively related to total phosphorus in the lake water. Therefore, additional factors other than nutrient supply controlled the biomass production in these lakes (Karlsson et al 2009). Light attenuation and mean depth of the lakes explained 73% of the variability in whole-

lake benthic primary production among the lakes. Increased production of phytoplankton and heterotrophic bacteria did not compensate for the loss of benthic primary production with decreasing light penetration, despite higher nutrient content in the more colored lakes. Analyses of stable carbon isotopes (δ C) showed that the decrease in light and the consequent loss of benthic primary production also decreased the importance of this energy pathway for fish. Fish production was positively related to benthic primary production and zoobenthos biomass in the lakes. Basal production by phytoplankton and heterotrophic bacteria did not correlate to fish production and did not significantly add to the explanation of fish production in the regression analysis. Furthermore, fish production was negatively related to zooplankton biomass in the lakes. Thus, an increase in fish resource use and growth on organic carbon generated in the pelagic habitat did not compensate for the loss of fish resource use and growth on autochthonous organic carbon generated in the benthic habitat. Consequently, fish production was positively related to the annual light irradiance in the lakes, suggesting that light availability ultimately controlled fish production by its impact on benthic algal primary production. Results indicate that interactions across ecosystem boundaries (that is, terrestrial organic matter controls lake productivity) and habitat boundaries (i.e., exploitation of benthic and pelagic resources by top consumers) determine the production of lake ecosystems (Karlsson et al. 2009).

Based on the data and analyses conducted as part of this study, the general value of the nutrient limitation paradigm for explaining and predicting the productivity of unproductive lake ecosystems is questionable. Undoubtedly, input of nutrients resulting, for example, from cultural eutrophication can stimulate pelagic biomass production of nutrient-poor lakes. However, changes in nutrient input do not necessarily result in increased total ecosystem productivity. Nutrients input in unproductive lakes is normally associated with terrestrial organic matter, and the effects of terrestrial organic matter on light penetration and benthic (light-limited) photosynthesis override possible positive effects of nutrients on pelagic (nutrient-limited) production. The data also indicates that nutrient availability is a major controlling factor of lake productivity mainly in systems that are dominated by pelagic production (for example, eutrophic lakes or very deep oligotrophic lakes), whereas light availability determines the productivity in a majority of the world's unproductive lakes within natural variations of organic matter and nutrient input (Karlsson et al. 2009).

Nutrients can also enter lakes and reservoirs via the wind and through precipitation events. Recent studies conducted at Miramar Reservoir by Adamczyk and Shurin (2015), recorded peaks in TN (4.5 mg/L to 15.3 mg/L) that coincided with precipitation events in September through October 2013 and March 2014. Phosphorus can also be mobilized and enter the reservoir through precipitation events. Particulate organic carbon concentrations (PON) showed very high spikes during the spring; however, dissolved organic carbon (DOC) showed relatively little seasonal variation with levels

remaining relatively constant at 3.03 mg C/l. Chlorophyll-*a* levels in Miramar Reservoir averaged 1 µg/L to 2 µg/L with no pronounced seasonality; although slightly elevated values from 2 µg/L to 4.6 µg/L were recorded in the summer of 2013 (Adamczyk and Shurin 2015).

As is evident from the preceding discussion, predicting the outcome of reduced nutrient loading in Miramar Reservoir is a complicated issue, and available literature is highly limited regarding the effects of reduced nutrient loading (especially at the low concentrations predicted with the change to purified water) on warm-water biological assemblages (algae and bacteria to phytoplankton and zooplankton to top predators [fish]). Most of the available studies on oligotrophic lakes have been conducted either in high elevation or in high latitude lakes and represent cold-water fisheries that are not directly comparable to issues associated with warm-water fisheries, although some of the basic principles still apply.

An exhaustive literature search found only one study that provided data on fish communities in warm-water oligotrophic urban lakes that was relatively comparable to Miramar Reservoir. The 60.7 hectare (ha) Meridian Lake is located within a relatively small drainage basin (300 ha) in Washington state at an elevation of 370 feet and has a maximum water depth of 90 feet. Trophic state index (TSI) values were calculated for the lake based on methods established by Carlson (1977) which uses Secchi depth, total phosphorus, and chlorophyll-*a* concentrations to rate lakes in terms of the amount of plant and animal biological activity on a scale of 1 to 100. Under this scheme, lakes may be classified as having low biological activity (TSI <40, oligotrophic), moderate biological activity (TSI 40 to 50, mesotrophic), or high biological activity (TSI 50> eutrophic). For the last 5 years, Lake Meridian has had relatively high (deep) Secchi disk readings and low concentrations of TP and chlorophyl-*a*; thus, it has been classified as an oligotrophic water body. In 1999, mean summer values for Secchi depth, total phosphorus, and chlorophyll-*a* translated into TSI ratings of 38.2, 36.7, and 41.6, respectively. Since differences in TSI ratings were small between the three approaches, the use of any of these three parameters yields essentially the same results (Carlson 1977).

Lake Meridian is a recreational lake, and sport fishing is an important activity, and is a well-known and popular fishing lake located close to home for many urban anglers. The lake supports an active sports fishery comprised of seasonally stocked rainbow trout, kokanee, and persistent populations of largemouth bass, yellow perch, and other warm-water species. The lake contains a variety of warm-water game fish and rainbow trout (which have been stocked for decades) similar to the Miramar Reservoir. The lake fishery includes rainbow trout, largemouth bass, smallmouth bass (*Micropterus dolomieu*), crappie, yellow perch (*Perca flavescens*), bluegill, pumpkinseed (*Lepomis gibbosus*), bullhead catfish (*Ameiurus sp.*), and several other warm-water species. For species other than yellow perch, sample sizes were small and catch rates were low compared to western Washington state averages, suggesting low species abundance (Verhey and Mueller 2001).

In comparison, Miramar Reservoir, is a 49 hectare (ha) reservoir located within a relatively small drainage basin (~187 ha) in an urban setting in Southern California at an elevation of 708 feet with a maximum water depth of 114 feet. TSI values were calculated for the reservoir using methods established by Carlson (1977). Due to the limited number and inconsistency of historical chlorophyll-*a* and TP values recorded for Miramar Reservoir , Secchi depth was used to calculate the TSI. Based on Secchi depth readings for 2012 through 2014 (i.e., years with available Secchi depth readings), the calculated TSI values for Miramar Reservoir for the 3 years was a mean of 29.0 (range of 24.7 to 40.4) in 2012, 28 (range of 23.0 to 36.3) in 2013, and a mean of 26.0 (range of 20.9 to 31.2) in 2014. The combined mean TSI value and range for all 3 years was 27.7 with a range of 20.9 to 40.4. Based on Carlson (1977), with TSI scores <40 are considered oligotrophic. Even though the mean score for all 3 years indicates that the reservoir is primarily oligotrophic with low biological productivity, scores greater than 40 (but less than 50) which occur infrequently for short periods when Secchi depth readings are relatively low (<4.0 m) indicate mesotrophic conditions with moderate biological activity. However, since these conditions are short-lived, they have little effect on the overall productivity in the reservoir.

Miramar Reservoir is also a popular recreational reservoir and sport fishing supports an active fishery composed of seasonally stocked rainbow trout, and persistent populations of largemouth bass, crappie, bluegill, redear sunfish, and channel catfish (*Ictalurus punctatus*). Creel census data showed that the average catch per unit effort (was 0.9 during the 2013–2014 fishing season, which is considered a good catch per unit effort and is higher than most of the other local reservoirs (CDFW 2014), some of which have higher nutrient levels.

Lake Meridian and Miramar Reservoir are both nutrient limited with relatively similar TSI values (mean of ~28 for Miramar Reservoir and ~38 for Meridian Lake) that support an active fishery. Although catch per unit effort values indicate that fish abundance is relatively high in Miramar Reservoir even though the TSI value (and apparent productivity) is slightly higher in Meridian Lake relative to Miramar Reservoir.

Based on the predicted TP, SRP, and chlorophyll-*a* values associated with a purified water regime, which are not substantially lower than existing conditions, reduced nutrient loading (primarily TP) will result in a slightly lowered TSI value for Miramar Reservoir; however, it is not anticipated that this reduction will result in a substantial effect on the aquatic community. Based on Carlson and Simpson (1996), oligotrophic lakes include those that have TSI values of < 30 to 40, chlorophyll-*a* concentrations of 0 µg/L to 2.6 µg/L, TP values of 0 mg/L to 0.012 mg/L, and Secchi depth readings from 4 meters to > 8 meters, which includes existing conditions as well as the predicted values for these parameters under a purified water regime.

In summary, the lack of available studies on warm-water oligotrophic lakes with similarly low nutrient levels and the complexity of interactions of aquatic species and food webs in Miramar

Reservoir, especially the effects of quagga mussels, poses challenges in determining the precise outcome of the reservoir water input and associated reduced nutrient concentrations. Due to the complexity of species interactions within the reservoir and their responses to reduced nutrient concentrations, as well as the influence of external contributing factors, effects on the aquatic community cannot be precisely quantified. Additionally, potential changes to the aquatic community will likely occur gradually over time. Since the reduction in nutrients will decrease basal production by algae and bacteria and concomitantly, phytoplankton and zooplankton production, fish that consume primarily plankton will likely be affected to a greater extent than piscivores, especially if sufficient numbers of forage fish (i.e., rainbow trout) are available for consumption by top predators (i.e., largemouth bass). As a result, some reduction in the numbers of bluegill (primarily young of the year) and crappie (which will also feed on small fish and insects) may occur as a result of decreased abundance of zooplankton, although pressure on the zooplankton community does not appear to be very high since very few species of the fish community feed primarily on zooplankton but instead feed on a variety of food resources including snails, crustaceans (e.g., crayfish), aquatic and terrestrial insects, leeches, quagga mussels, clams, frogs, and some terrestrial organisms. Additionally, since the zooplankton community in the reservoir is currently dominated by large-bodied zooplankton species (*Daphnia* and adult copepods) (Adamczyk and Shurin 2015), which is more typical of mesotrophic lakes, it is likely that this assemblage will continue to exist at some reduced level under the purified water regime. These larger zooplankton species (especially *Daphnia*) provide important food chain links to upper level consumers. Piscivorous fish will likely be the least affected organism group, since the current population of largemouth bass (the reservoirs top predator and apparently most abundant fish species based on catch data) appears to be sustained primarily by rainbow trout and other small/juvenile fish but likely at lower rates. As long as sufficient numbers of forage fish are available in the reservoir on a continual basis, top down effects of predators on lower food chain prey such as zooplankton should be minimized.

~~Currently, the presence of non-native species (i.e., red-eared sliders that compete for resources, and American bullfrogs and largemouth bass, which prey on the hatchlings), quagga mussels that affect the existing trophic regime, human presence which could affect the use of basking sites and refuge sites, and the isolated nature of the reservoir contribute to the unfavorable conditions for western pond turtle within the Miramar Reservoir. Improvements to water quality and potential modifications to phytoplankton and zooplankton communities within the Miramar Reservoir may potentially result in less food availability for some higher consumers, including western pond turtles (see Sections 3.1.13 and 4.6.5 for more information on limnology). Since red-eared sliders typically outcompete western pond turtles for available food resources (as well as basking sites), reduced food availability is likely to have a greater effect on western pond turtle than on red-eared sliders. Although this species utilizes a broad variety of terrestrial and aquatic food sources~~

~~(omnivorous), a large portion of its diet is aquatic-based invertebrates and vertebrates. Even though the dominant items in the diet of western pond turtles may vary from area to area depending on local conditions, the majority of the diet is composed of small aquatic invertebrates, including crustaceans (cladocerans and native and introduced crayfish), insects (the larvae of midges, dragonflies, beetles, stoneflies, caddisflies) and occasionally annelids. Hatchlings prey primarily on nekton and the larvae of small aquatic insects such as mosquitoes, and other small invertebrates (Holland 1994). Intermediate effects could include a decrease in overall health of the individuals within the population, decreased body weight, disease, and/or reduced hatchling survival. Similarly to the indirect impacts described above in Section 4.6.3 (construction within 1,500 feet of known pond turtle locations within the MHPA), potentially significant impacts to this species resulting from Project operation and its resultant changes to water chemistry and effects to pond turtle would remain less than significant with implementation of MM-BIO-7.~~

According to Section 5650 of the California Fish and Game Code, it is unlawful "to deposit in, permit to pass into, or place where it can pass into the waters of this state," including any "substance or material deleterious to fish, plant life, mammals, or bird life" (Fish and Game Code, Section 5650(a)(6)). Further, this "does not apply to a discharge or a release that is expressly authorized pursuant to, and in compliance with, the terms and conditions of a waste discharge requirement pursuant to Section 13263 of the Water Code or a waiver issued pursuant to subdivision (a) of Section 13269 of the Water Code issued by the State Water Resources Control Board or a regional water quality control board after a public hearing, or that is expressly authorized pursuant to, and in compliance with, the terms and conditions of a federal permit for which the State Water Resources Control Board or a regional water quality control board has, after a public hearing, issued a water quality certification pursuant to Section 13160 of the Water Code. This section does not confer additional authority on the State Water Resources Control Board, a regional water quality control board, or any other entity" (Fish and Game Code, Section 5650(b)). Appendix U~~V~~ lists all species groups, including non-listed wildlife and plant species, that potentially use or have been observed at the Miramar Reservoir and gives the likelihood that these groups would continue to persist within the reservoir after the addition of purified water.

4.7 Cumulative Impacts

The MSCP is a long-term regional conservation plan established to protect sensitive species and habitats in San Diego County. The MSCP is divided into subarea plans that are implemented separately from one another. The Project site is within the City of San Diego subarea plan and inside the MSCP Preserve area (i.e., the MHPA).

In an effort to eliminate cumulative impacts to sensitive biological resources throughout San Diego, the City is participating in a regional conservation planning effort, San Diego MSCP. This planning effort is designed to address cumulative impacts through development of a regional plan that addresses impacts to covered species and habitats in a manner that assures their conservation despite impacts of cumulative project over the long term. The ultimate goal of this plan is the establishment of biological reserve areas in conformance with the State of California Natural Communities Conservation Planning Act.

As previously discussed, the North City Project site lies within the Northern (Miramar Reservoir Alternative only), Urban, and Eastern Areas (San Vicente Reservoir Alternative only) of the City's MSCP boundary. The 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).

Preservation of habitat, planning in accordance with the biological resource conservation goals of the MSCP, and limitation of impacts in accordance with the MSCP are intended to mitigate cumulative biological resource impacts. A portion of the alignment is located within designated MHPA. Mitigation for impacts to this area would comply with the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a). Therefore, the North City Project is consistent with the MSCP, and cumulative impacts to uplands, sensitive plants, and sensitive wildlife would be mitigated through implementation of the plan.

Pursuant to the City's CEQA Significance Determination Thresholds, direct impacts to vernal pools (wetlands) and native grasslands (Tier 1) that are greater than 0.1 acre are significant and cumulatively significant. Direct impacts to Tier 1 and wetland vegetation communities require mitigation per the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a). Cumulative impacts to native grassland and vernal pools, under either Project Alternative, would be mitigated at a 1:1 ratio at the SANDER Vernal Pool and Upland Mitigation site, which is within the VPHCP hard line preserve. The SANDER Vernal Pool and Upland Mitigation site is currently within MHPA lands; an MHPA boundary line adjustment was approved by MSCP, USFWS, and CDFW on July 12, 2017. The site will provide mitigation occurring within the MSCP's MHPA and would be implemented in accordance with City/ACOE/CDFW/RWQCB guidelines. Additionally, native grassland would be created at a 1:1 ratio outside the MHPA at Pueblo South, and a Native Grassland Creation Mitigation Plan – Pueblo South (Appendix S) would be implemented. Therefore, the overall mitigation ratio for impacts native grassland would be 2:1.

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5 MITIGATION

This section describes proposed mitigation measures that would mitigate adverse and significant impacts to biological resources resulting from the proposed North City Project. The following mitigation measures address the North City Project's significant direct and indirect effects on sensitive vegetation, sensitive species, and jurisdictional aquatic resources. With implementation of the proposed measures, the identified direct and indirect impacts would be reduced to less than significant. Table 5-1 summarizes the impacted resource within each component and the proposed mitigation measure to reduce that impact and Appendix T lists each mitigation measure and the exact location where that measure would be applied.

Table 5-1
Mitigation Measures Applicable to North City Project Components

Component	Impacted Resource and Proposed Mitigation			
	Vegetation	*Plants*	*Wildlife*	*Jurisdictional Aquatic Resources*
Components Common to both Alternatives				
Morena Pump Station	X[9,10,15,16,18,19,20]		X[6,9,10,15,16,18,19,20]	X[9,10,15,16,18,19,20]
Morena Pipelines	X[2,9,10,19,20]	X[9,10,19,20]	X[3,4,6,9,10,19,20]	X[2,8,9,19,20]
NCWRP Expansion (includes NCPWF Influent Pump Station and North City Renewable Energy Facility)	X*[9,10,15,16,18,19,20]		X[3,4,9,10,15,16,18,19,20]	X[9,10,15,16,18,19,20]
NCPWF (includes the North City Pump Station)	X[1a,1b,2,8,9,15,16,18,19]	X[1a,1b,2,9,10,15,16,18,19]	X[1a,3,9,10,15,16,18,19]	X[1b,8,9,15,16,18,19]
LFG Pipeline	X[2,9,10,16,17,18,19,20]	X[2,9,10,16,17,18,19,20]	X[3,4,6,9,10,16,17,18,19,20]	X[9,10,16,17,18,19,20]
MBC	X*[9,10,15,16,18,19,20]		X[3,4,6,9,10,15,16,18,19,20]	No impacts to sensitive resources.
Miramar Reservoir Alternative				
North City Pipeline	X[2,9,10,19,20]	X[2,9,10,19,20]	X[3,4,7,9,10,19,20]	X[9,10,20]
Miramar WTP	X*[9,10,15,16,18,19,20]		X[3,9,10,15,16,18,19,20]	No impacts to sensitive resources.
Dechlorination Facility	No impacts to sensitive resources.		X[3,11,12,12,13,18,19]	No impacts to sensitive resources.
San Vicente Reservoir Alternative				
San Vicente Pipeline	X[2,8,9,19,20]	X[2,9,10,19,20]	X[2,6,,9,10,19,20]	X[2,8,9,19,20]
San Vicente Pipeline – TAT	X[1a,1c,8,9,16,17,18,19,20]	X[9,10,16,17,18,19,20]	X[3,9,10,16,17,18,19,20]	X[1c,8,9,16,17,18,19,20]
San Vicente Pipeline – IRAT	X[1a,1c,2,8,9,16,17,18,19,20]	X[2,9,10,16,17,18,19,20]	X[3,4,9,10,16,17,18,19,20]	X[1c,2,8,9,16,17,18,19,20]
San Vicente Pipeline – MAT	X[1a,1c,2,8,9,16,17,18,19,20]	X[2,9,10,16,17,18,19,20]	X[3,4,9,10,16,17,18,19,20]	X[1c,2,8,9,16,17,18,19,20]
MTBS	X[1a,9,10,15,16,18,19,20]	X[1a,9,10,15,16,18,19,20]	X[3,9,10,15,16,18,19,20]	No impacts to sensitive resources.

Table 5-1
Mitigation Measures Applicable to North City Project Components

Component	Impacted Resource and Proposed Mitigation			
	Vegetation	*Plants*	*Wildlife*	*Jurisdictional Aquatic Resources*
~~San Vicente Pipeline - Repurposed 36-inch Recycled Water Line (impacts from air and blow-off valves)~~	~~X[1a,1c,8-9-16-17,18-19,19-20]~~	~~X[9-10-16-17,18-19,19-20]~~	~~X[3,4,6,9-10-16-17,18-19-25-20]~~	~~X[1c, 7-8-16-17,18-19-20]~~
Components Common to both Alternatives				
Morena Pump Station	X[9-15,18,19]		X[6,9-15,18,19]	X[9-15,18,19]
Morena Pipelines	X[2,9-19]	X[9-19]	X[3,4a,6,9-19]	X[8-19]
NCWRP Expansion (includes NCPWF Influent Pump Station and North City Renewable Energy Facility)	X[*9-15,18,19]		X[3,4a,4b,9-15,18,19]	X[9-15,18,19]
NCPWF (includes the North City Pump Station)	X[1a,1b, 8-15,18]	X[1a,1b, 9-15,18]	X[1a,3,9-15,18]	X[1b,8-15,18]
LFG Pipeline	X[2,9-16,18,19]	X[2,9-16,18,19]	X[2-4b,6,9-16,18,19]	X[9-16,18-25]
MBC	X[*9-15,18,19]		X[3,4b,6,9-15,18,19]	X[20-25]
Miramar Reservoir Alternative				
North City Pipeline	X[2,9-19]	X[2,9-19]	X[3,4,9-19]	X[8-25]
Miramar WTP	X[*9-15,18,19]		X[3,9-15,18,19]	No impacts to sensitive resources.
Dechlorination Facility	No impacts to sensitive resources.		X[3,11,12,18]	No impacts to sensitive resources.
San Vicente Reservoir Alternative				
San Vicente Pipeline	X[2,8-19]	X[2,9-19]	X[2-6,9-19]	X[2,8-19]
San Vicente Pipeline – TAT	X[1a,1c,8-16,18,19]	X[9-16,18,19]	X[3,9-16,18,19]	X[1c,8-16,18,19]
San Vicente Pipeline – IRAT	X[1a,1c,2,8-16,18,19]	X[2,9-16,18,19]	X[3,4,9-16,18,19]	X[1c,2,8-16,18,19]
San Vicente Pipeline – MAT	X[1a,1c,2,8-16,18,19]	X[2,9-16,18,19]	X[3,4,9-16,18,19]	X[1c,2,8-16,18,19]
MTBS	X[1a,9-15,18,19]	X[1a,9-15,18,19]	X[3,9-15,18,19]	No impacts to sensitive resources.
San Vicente Pipeline - Repurposed 36-inch Recycled Water Line (impacts from air and blow-off valves)	X[1a,1c,8-16,18,19]	X[9-16,18,19]	X[3,4,6,9-16,18-25]	X[1c, 7-16,18-25]

Notes:

* Direct impacts to upland vegetation communities at the NCWRP, MBC, and Miramar WTP have been adequately addressed and mitigated to offset permanent loss of habitat (See Sections 4.3.3.1, 4.3.10.1, and 4.3.11.1).

Proposed Mitigation:

1a MM-BIO-1a (Mitigation for upland impacts)
1b MM-BIO-1b (Mitigation for vernal pools)
1c MM-BIO-1c (Mitigation for wetlands)
2 MM-BIO-2 (Habitat Revegetation)
3 MM-BIO-3 (Nesting Bird)
4 MM-BIO-4a,b (Coastal California Gnatcatcher)
5 MM-BIO-5 (Burrowing Owl)
6 MM-BIO-6 (Riparian Bird)
~~7~~ ~~MM-BIO-7 (Western Pond Turtle)~~
~~7~~8 MM-BIO-~~7~~8 (Vernal Pool Watershed)
~~8~~9 MM-BIO-~~8~~9 (Wetland Permits)
~~9~~10 MM-BIO-~~9~~10(a) (Qualified Biologist)
~~10~~11 MM-BIO-~~9~~10(b) (Preconstruction Meeting)
~~11~~12 MM-BIO-~~9~~10(c) (Biologist Documentation)
~~12~~13 MM-BIO-~~9~~10(d) (BCME)
~~13~~14 MM-BIO-~~9~~10(e) (Construction Fencing)
~~14~~15 MM-BIO-~~9~~10(f) (On-site Education)
~~15~~16 MM-BIO-~~9~~10(g) (Biological Monitoring)
~~16~~17 MM-BIO-~~9~~10(h) (Cover Trenches)
~~17~~18 MM-BIO-~~9~~10(i) (Nighttime Construction)

[18][19] MM-BIO-9[10](j) (BMPs)
[19][20] MM-BIO-9[10](k) (Toxins/Staging Areas)
[20] MM-BIO-9(l) (Silt Fencing)
[21] MM-BIO-9(m) (Dust)
[22] MM-BIO-9(n) (Vernal Pool Biologist)
[23] MM-BIO-9(o) (Limits of Work)
[24] MM-BIO-9(p) (Equipment Staging)
[25] MM-BIO-9(q) (Grading Activities)

Although there were some areas that could not be surveyed for sensitive species due to site access restrictions such as railroad right-of-way, secured flight-line areas of MCAS Miramar, and private property, there are no direct impacts within any of these areas under the Miramar Reservoir Alternative. All impact areas were accessed and surveyed. For restricted access areas, with suitable habitat for sensitive species, outside of the impact footprint presence is assumed, and the mitigation measures described in Section 5.5 would be implemented to reduce all indirect impacts to a less-than-significant level. There are three areas containing direct impacts within restricted access areas under the San Vicente Reservoir Alternative; however, vegetation mapping was conducted within these areas by surveying from outside the restricted access area. One of the areas along Tierrasanta Boulevard only has impacts from the San Vicente Pipeline within an existing dirt road, so impacts to special-status species are not expected. Another restricted access area along the San Vicente Pipeline between the unpaved section of the two ends of Mast Boulevard, was surveyed by HELIX, and impacts are analyzed based on these surveys. The third area along the San Vicente Pipeline has about 50 feet of direct impacts to non-native grassland and then becomes trenchless as it hits the San Diego River. Surveys for riparian birds and special-status plant species occurred adjacent to this area; therefore, it is unlikely that there are other special-status species within this area. For restricted access areas with suitable habitat for sensitive species, presence is assumed, and the mitigation measures described in Section 5.5 would be implemented to reduce all indirect impacts to a less-than-significant level. Therefore, it is not anticipated that there would be any unknown direct or indirect impacts to special-status species within the restricted access areas within either Project Alternative.

5.1 Sensitive Vegetation Communities

The proposed North City Project would result in impacts to sensitive vegetation communities within the proposed Project boundaries. The majority of these impacts are temporary and would occur in slivers along the alignment and would not result in the removal of large areas of native habitat. The North City Project would include mitigation that is consistent with the MSCP and the INRMP and would therefore require mitigation for impacts to sensitive vegetation communities (i.e., Tier I–III and wetlands).

Mitigation ratios for permanent impacts to sensitive vegetation communities would be determined by their location within or outside of the MHPA or MCAS Miramar. Permanent

impacts to wetlands would be mitigated according to the ratios outlined in Table 2A of the City's Biology Guidelines and those within Table 6.2.2.2b in the INRMP. Tables 5-2 and 5-3 outline the mitigation requirements for those permanent impacts either within or outside the MHPA and MCAS Miramar for the Miramar Reservoir Alternative. All permanent impacts, under the Miramar Reservoir Alternative, within MCAS Miramar or MHPA lands have been previously mitigated. Tables 5-4 and 5-5 outline the mitigation requirements for those permanent impacts either within or outside the MHPA and MCAS Miramar for the San Vicente Reservoir Alternative. As required under the INRMP Table 6.2.2.2b, mitigation within MCAS Miramar for permanent direct impacts from the San Vicente Reservoir Alternative would also include implementing temporary disturbance requirements (outlined under MM-BIO-9~~10~~(j)); preconstruction surveys for coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher (MM-BIO-4b and MM-BIO-6); wetland permit (MM-BIO-8~~9~~); and habitat compensation at a 2:1 ratio (Table 5-5). Implementation of these measures will satisfy the INRMP requirements. All mitigation for both alternatives would occur within the MSCP's MHPA and would be implemented in accordance with MCAS Miramar INRMP and City/ACOE/CDFW/RWQCB guidelines.

Table 5-2
Permanent Impacts to Vegetation Communities and Land Cover Types within the MHPA – Miramar Reservoir Alternative (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Impact Acreage within the MHPA	Mitigation			
			Outside MCAS Miramar		*Within MCAS Miramar*	
			Mitigation Ratio	*Mitigation Acres*	*Mitigation Ratio*	*Mitigation Acres*
Tier II – Uncommon Uplands						
Diegan Coastal Sage Scrub (disturbed)	II	0.04 (0.00)*	No mitigation required		—	—
Total Mitigation Required		**No mitigation required**				

Note:
* This impact occurs at the Miramar WTP and has been previously mitigated through the allocation of credits at Marron Valley Cornerstone Lands. Therefore, no mitigation is required.

Table 5-3
Permanent Impacts to Vegetation Communities and Land Cover Types
Outside of the MHPA – Miramar Reservoir Alternative (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Impact Acreage Outside the MHPA	Mitigation			
			Outside MCAS Miramar		*Within MCAS Miramar*	
			Mitigation Ratio	*Mitigation Acres*	*Mitigation Ratio*	*Mitigation Acres*
Tier I – Rare Uplands						
Native Grassland^^	I	1.30	1:1	1.30	—	—
Tier II – Uncommon Uplands						
Coastal Sage-Chaparral Transition (Level IV, V MA)	II	0.30 (0.00)*	1:1	—	2:1	0^
Diegan Coastal Sage Scrub (II, V MA)	II	3.49 (2.72)*	1:1	2.72	2:1	0^
Diegan Coastal Sage Scrub (disturbed)	II	1.31 (0.03)*	1:1	0.03	—	—
Tier III – Common Uplands						
Non-native Grassland	IIIB	6.09 (5.10)*	0.5:1	2.55	—	—
Subtotal for Sensitive Uplands Tier I-III (MM-BIO-1a)				*6.61*		
Tier IV – Other Uplands						
Urban/Developed (Level IV, V MA)	IV	~~90.07~~89.89	No mitigation required.			
Non-native Vegetation (Level V MA)	IV	0.56				
Eucalyptus Woodland	IV	0.38				
Disturbed Habitat (Level I-V MA)	IV	2.16				
Wetlands						
Vernal Pool[1]	Wetland	0.38	2:1**	0.75	—	—
Subtotal for Vernal Pools (MM-BIO-1b)				*0.75*		
	Total	**~~106.06~~105.88**	**—**	**7.36**	**—**	**0**

Notes:

^ The only permanent impacts under the Miramar Reservoir Alternative within MCAS Miramar would occur at the MBC (0.91 acre); however, these impacts have been previously mitigated.

^^ It should be noted that in order to satisfy the cumulative impact requirement permanent impacts to native grassland would be mitigated at a 1:1 ratio and created at a 1:1 ratio for an overall mitigation of 2:1. Mitigation will occur at the SANDER site (in Tier) and creation (in kind) will occur at the Pueblo South site.

* The acreage in parenthesis is the corrected total after the previously mitigated acreage totaling 3.38 acres from the MBC (0.91 acre), Miramar WTP (1.32 acres), and/or the NCWRP (1.16 acres) has been removed and should be used as the corrected total to be mitigated.

** Mitigation for vernal pools can range from 2:1 when no listed species are present, up to 4:1 when listed species with very limited distributions are present.

1 Protocol-level surveys were conducted for vernal pools and the results were negative for listed species. Since there are no listed species present, the pools would be mitigated at a 2:1 ratio.

Table 5-4
Permanent Impacts to Vegetation Communities and Land Cover Types Within the MHPA – San Vicente Reservoir Alternative (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Impact Acreage within the MHPA	Mitigation			
			Outside MCAS Miramar		*Within MCAS Miramar*	
			Mitigation Ratio	*Mitigation Acres*	*Mitigation Ratio*	*Mitigation Acres*
Tier IV – Other Uplands						
Urban/Developed	IV	0.02*	No mitigation required		—	—
	Total	**No mitigation required**				

Note:
* This total accounts for the areas excluded from the San Vicente Reservoir MHPA lands for current and future requirements of the Public Utilities Department (~~MSCP Subarea Plan~~City of San Diego 1997).

Table 5-5
Permanent Impacts to Vegetation Communities and Land Cover Types Outside of the MHPA – San Vicente Reservoir Alternative (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Impact Acreage Outside of the MHPA	Mitigation			
			Outside MCAS Miramar		*Within MCAS Miramar*	
			Mitigation Ratio	*Mitigation Acres*	*Mitigation Ratio^*	*Mitigation Acres*
Tier I – Rare Uplands						
Coast Live Oak Woodland	I	0.07	2:1	0.14	—	—
Native Grassland^^	I	1.30	1:1	1.30	—	—
Tier II – Uncommon Uplands						
Coastal Sage-Chaparral Transition (Level V MA)	II	0.31 (<0.01)*	—	—	2:1	<0.01
Diegan Coastal Sage Scrub (Level I-V MA)	II	~~3.50~~ 3.51 (~~2.73~~2.74)*	1:1	2.72	2:1	0.03
Diegan Coastal Sage Scrub (disturbed)	II	1.25	1:1	1.25	—	—
Diegan Coastal Sage Scrub: Baccharis-Dominated (Level I MA)	II	<0.01	—	—	2:1	<0.01
Tier III – Common Uplands						
Chamise Chaparral (Level V MA)	IIIA	<0.01	—	—	1:1	<0.01
Southern Mixed Chaparral	IIIA	0.26	0.5:1	0.13	—	—
Non-native Grassland (Level V)	IIIB	6.09 (5.10)*	0.5:1	2.55	1:1	<0.01
Subtotal for Sensitive Uplands Tier I-III (MM-BIO-1a)				*8.14*		
Tier IV – Other Uplands						
Urban/Developed (Level IV, V MA)	IV	~~62.96~~62.81	No mitigation required			
Non-native Vegetation (Level V MA)	IV	0.57				

Table 5-5
Permanent Impacts to Vegetation Communities and Land Cover Types Outside of the MHPA – San Vicente Reservoir Alternative (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Impact Acreage Outside of the MHPA	Mitigation			
			Outside MCAS Miramar		*Within MCAS Miramar*	
			Mitigation Ratio	*Mitigation Acres*	*Mitigation Ratio^*	*Mitigation Acres*
Disturbed Habitat (Level I-V MA)	IV	1.89				
Wetlands						
Non-vegetated Channel or Floodway	Wetland	<0.01	2:1	0.01	—	—
Open Water	Wetland	0.55	2:1	1.10	—	—
Southern Willow Scrub (Level II MA, CDFW-only jurisdiction; Level IV MA, ACOE- RWQCB- and CDFW-jurisdiction)	Wetland	<0.01	—	—	2:1**	0.01
Subtotal for Wetlands (MM-BIO-1c)				*1.12*		
Vernal Pool[2]	Wetland	0.38	2:1*^	0.75	—	—
Subtotal for Vernal Pools (MM-BIO-1b)				*0.75*		
Total[1]		**~~79.15~~78.99**	**—**	**9.96**	**—**	**0.05**

Notes:
^ Mitigation ratios for permanent impacts within MCAS Miramar are based on Table 6.2.2.2b in the INRMP and consideration is given to the Management Area where the vegetation community occurs.
^^ It should be noted that in order to satisfy the cumulative impact requirement permanent impacts to native grassland would be mitigated at a 1:1 ratio and created at a 1:1 ratio for an overall ratio of 2:1. Mitigation (in Tier) will occur at the SANDER site and creation (in kind) will occur at the Pueblo South site.
* The acreage in parenthesis is the corrected total after the previously mitigated acreage totaling 2.07 acres from the MBC (0.91 acre), and/or the NCWRP (1.16 acres) has been removed and should be used as the corrected total to be mitigated.
** The INRMP calls for a 1:1 ratio but the City typically uses a 2:1 ratio for wetlands; therefore, the more conservative ratio would be used.
*^ Mitigation for vernal pools can range from 2:1 when no listed species are present, up to 4:1 when listed species with very limited distributions are present.
1 Totals may not sum due to rounding.
2 Protocol-level surveys were conducted for pools and the results were negative for listed species. Since no listed species were present in the pools, mitigation would occur at a 2:1 ratio.

MM-BIO-1a Mitigation for Upland Impacts. In order to offset the permanent impacts to sensitive upland vegetation communities, 6.61 acres of mitigation would be required for the Miramar Reservoir Alternative and 8.14 acres of mitigation would be required for the San Vicente Reservoir Alternative. Mitigation would be provided through restoration and preservation of uplands at the SANDER Vernal Pool and Upland Mitigation Site. All mitigation would occur within the Multiple Species Conservation Program's (MSCP's) Multi-Habitat Planning Area (MHPA). Additionally, in order to satisfy the cumulative impacts requirement, 1.30 acres of native grassland creation would be conducted outside the MHPA. This would be required for either Project Alternative, and a Native Grassland Creation Mitigation Plan – Pueblo South (Appendix S) would be implemented.

MM-BIO-1b Mitigation for Vernal Pool Impacts. In order to offset permanent impacts to vernal pools, 0.75 acre of mitigation would be required for both Project Alternatives. Mitigation would be provided through restoration of vernal pools and adjacent uplands at the SANDER Vernal Pool and Upland Mitigation site, which is within the Vernal Pool Habitat Conservation Plan (VPHCP) hard line preserve. The SANDER Vernal Pool and Upland Mitigation site is within MHPA lands; therefore, mitigation would occur within the MSCP's MHPA and would be implemented in accordance with City/U.S. Army Corps of Engineers (ACOE)/California Department of Fish and Wildlife (CDFW)/Regional Water Quality Control Board (RWQCB) guidelines. The SANDER Vernal Pool and Upland Mitigation Plan (Appendix R) would be developed and implemented at the SANDER Vernal Pool and Upland Mitigation Site. Both upland vegetation, including in Tier mitigation, and vernal pool impacts would be mitigated at the SANDER site.

MM-BIO-1c Mitigation for Impacts to Jurisdictional Aquatic Resources. In order to offset permanent impacts to jurisdictional resources (excluding vernal pools), 1.12 acres of mitigation would be required for the San Vicente Reservoir Alternative. Mitigation would be provided at the SANDER Mitigation site (subject to the satisfaction of ACOE and RWQCB) or through allocation of credit at the San Diego River Mitigation Site subject to ACOE and RWQCB approval. All mitigation would occur within the MSCP's MHPA and is in accordance with City/ACOE/CDFW/RWQCB guidelines.

Construction may result in the recruitment of non-native plant species within the temporary disturbance areas and the removal of native plant species, which would be significant absent mitigation. All temporary construction areas in sensitive habitat communities would require restoration following the completion of construction. Post construction erosion control in temporary impact areas to non-sensitive habitat such as dirt roads and/or non-native vegetation would be returned to pre-existing conditions. As required under the INRMP Table 6.2.2.2a, mitigation for temporary direct impacts to sensitive habitat communities would include implementing temporary disturbance requirements (outlined under MM-BIO-~~9~~10(j)); restoration at a 1:1 ratio with additional habitat enhancement (Table 5-6); and minimizing habitat-disturbing activities between February 15 and August 31 by conducting preconstruction surveys for coastal California gnatcatcher (MM-BIO-4b). Implementation of these measures would satisfy the INRMP requirements.

All temporary impacts under the Miramar Reservoir Alternative are outside the MHPA except for impacts to 0.01 acre of urban/developed lands along Genesee Avenue from the Morena Pipelines.

Table 5-6 outlines the restoration requirements for temporary impacts either within or outside of the MHPA and MCAS Miramar for the Miramar Reservoir Alternative. A total of ~~0.42~~ 0.45 acre of restoration would occur outside MCAS Miramar and the MHPA and ~~5.34~~ 5.25 acres of restoration would occur within MCAS Miramar (outside of the MHPA) under the Miramar Reservoir Alternative. Table 5-7 outlines the restoration requirements for those temporary impacts either within or outside the MHPA and MCAS Miramar for the San Vicente Reservoir Alternative. A total of 2.71 acres of restoration within MHPA (outside MCAS Miramar), ~~5.68~~ 5.69 acres of restoration outside both the MHPA and MCAS Miramar, and ~~5.34~~ 5.25 acres of restoration within MCAS Miramar (outside the MHPA) would occur under the San Vicente Reservoir Alternative. Additionally, to satisfy the INRMP habitat enhancement requirement for temporary impacts to sensitive communities within MCAS Miramar, the City would conduct a total of ~~6.27~~ 6.14 acres of habitat enhancement within MCAS Miramar ~~adjacent to habitat revegetation activities along the LFG Pipeline, to the greatest extent feasible~~. The ~~6.27~~ 6.14 acres of enhancement would occur within disturbed habitat types and would include invasive plant control, trash removal, erosion control, and seeding and/or supplemental planting as necessary in accordance with the Conceptual Revegetation Plan (Appendix P). All restoration for both alternatives would be implemented in accordance with City/ACOE/CDFW/RWQCB guidelines summarized in MM-BIO-2.

Table 5-6
Temporary Impacts to Vegetation Communities and Land Cover Types –
Miramar Reservoir Alternative (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Impact Acreage	Outside MCAS Miramar Restoration Acres	Within MCAS Miramar Restoration Acres	Enhancement Occurring within MCAS Miramar[1]	
					Ratio[2]	*Enhancement Acreage*
Tier II – Uncommon Uplands						
Coastal Sage-Chaparral Transition (Level II MA)	II	0.14	—	0.14	2:1	0.27
Diegan Coastal Sage Scrub (Level I-V MA)	II	~~4.15~~4.06	0.19	~~3.96~~3.88	2:1 (Level I, II MA)	~~1.51~~1.43
					1:1 (Level III–V MA)	~~3.21~~3.16
Diegan Coastal Sage Scrub (disturbed) (Level IV-V MA)	II	~~0.80~~0.81	0.~~12~~13	0.68	1:1	0.68

Table 5-6
Temporary Impacts to Vegetation Communities and Land Cover Types –
Miramar Reservoir Alternative (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Impact Acreage	Outside MCAS Miramar Restoration Acres	Within MCAS Miramar Restoration Acres	Enhancement Occurring within MCAS Miramar[1]	
					Ratio[2]	*Enhancement Acreage*
Diegan Coastal Sage Scrub: Baccharis-Dominated (Level I MA)	II	0.03	—	0.03	2:1	0.05
Flat-Topped Buckwheat (Level I MA)	II	<0.01	—	<0.01	2:1	<0.01
Flat-Topped Buckwheat (disturbed) (Level I MA)	II	0.01	—	0.01	2:1	0.02
Tier III – Common Uplands						
Chamise Chaparral (Level IV, V MA)	IIIA	0.50	—	0.50	1:1	0.50
Southern Mixed Chaparral (Level III MA)	IIIA	<0.01	—	<0.01	1:1	<0.01
Non-native Grassland (Level V MA)	IIIB	~~0.13~~0.16	~~0.10~~0.13	0.03	1:1	0.03
Tier IV – Other Uplands						
Urban/ Developed	IV	85. 39[3] ~~85.86[3]~~	No habitat restoration required; however, these land covers would be included in the Landscape Plan as appropriate. Temporary disturbance requirements would be implemented in areas within MCAS Miramar (MM-BIO-9~~10~~(j)). Roadways, parking areas, and other active use areas will not be included in the Conceptual Revegetation Plan (Appendix P).			
Developed – Concrete Channel	IV	0.03[4]				
Non-native Vegetation	IV	~~0.23~~0.96				
Eucalyptus Woodland	IV	1.98				
Extensive Agriculture – Field/Pasture, Row Crops	IV	~~0.45~~0.33				

Table 5-6
Temporary Impacts to Vegetation Communities and Land Cover Types – Miramar Reservoir Alternative (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Impact Acreage	Outside MCAS Miramar Restoration Acres	Within MCAS Miramar Restoration Acres	Enhancement Occurring within MCAS Miramar[1]	
					Ratio[2]	*Enhancement Acreage*
Disturbed Habitat	IV	~~7.85~~7.63				
Total		**~~102.16~~102.04**	**~~0.41~~0.45**	**~~5.34~~5.25**	—	**~~6.27~~6.14**

Notes:
1 To satisfy the INRMP requirements, the City will be conducting ~~6.27~~ 6.14 acres of habitat enhancement within MCAS Miramar, in addition to the restoration of ~~5.34~~ 5.25 acres of temporary impact areas within MCAS Miramar.
2 Enhancement ratios for temporary impacts within MCAS Miramar are based on Table 6.2.2.2a in the INRMP and consideration is given to the Management Area where the vegetation community occurs.
3 This total includes the 0.01 acre of impact within the MHPA from the Morena Pipelines along Genesee Avenue.
4 Although no wetland vegetation would be removed, agency permits would still be required.

Table 5-7
Temporary Impacts to Vegetation Communities and Land Cover Types – San Vicente Reservoir Alternative (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Impact Acreage	Outside MCAS Miramar Restoration Acres		Within MCAS Miramar Restoration Acres	Enhancement Occurring within MCAS Miramar[1]	
			Within MHPA	*Outside MHPA*		*Ratio*[2]	*Enhancement Acreage*
Tier I – Rare Uplands							
Coast Live Oak Woodland	I	0.01	—	0.01	—		
Tier II – Uncommon Uplands							
Coastal Sage-Chaparral Transition (Level II MA)	II	0.14	—	—	0.14	2:1	0.27
Diegan Coastal Sage Scrub (Level I-V MA)	II	~~6.51~~6.42	1.99	0.56	~~3.96~~3.88	2:1 (Level I, II MA)	~~1.51~~1.43
						1:1 (Level III–V MA)	~~3.21~~3.16
Diegan Coastal Sage Scrub (disturbed) (Level IV-V MA)	II	2.39	0.01	1.70	0.68	1:1	0.68

Table 5-7
Temporary Impacts to Vegetation Communities and Land Cover Types –
San Vicente Reservoir Alternative (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Impact Acreage	Outside MCAS Miramar Restoration Acres		Within MCAS Miramar Restoration Acres	Enhancement Occurring within MCAS Miramar[1]	
			Within MHPA	*Outside MHPA*		*Ratio*[2]	*Enhancement Acreage*
Diegan Coastal Sage Scrub: Baccharis-Dominated (Level I MA)	II	0.03	—	—	0.03	2:1	0.05
Diegan Coastal Sage Scrub: Restored	II	0.43	0.07	0.37	—		
Flat-Topped Buckwheat (Level I MA)	II	<0.01	—	—	<0.01	2:1	<0.01
Flat-Topped Buckwheat (disturbed) (Level I MA)	II	0.01	—	—	0.01	2:1	0.02
Tier III – Common Uplands							
Chamise Chaparral (Level IV-V MA)	IIIA	0.50	—	—	0.50	1:1	0.50
Southern Mixed Chaparral (Level III MA)	IIIA	0.37	0.03	0.34	<0.01	1:1	<0.01
Non-Native Grassland (Level V MA)	IIIB	1.28	0.43	0.83	0.03	1:1	0.03
Wetlands							
Non-vegetated Channel or Floodway	Wetland	0.08	0.02	0.06	—		
Open Water	Wetland	1.49	—	1.49	—		
Southern Arroyo Willow Riparian Forest	Wetland	0.11	—	0.11	—		
Southern Willow Scrub	Wetland	0.39	0.17	0.22	—		
Tier IV – Other Uplands							
Non-native Woodland	IV	0.15	No habitat restoration required, however these land covers would be included in the Landscape Plan as appropriate. Temporary disturbance requirements would be implemented in areas within MCAS Miramar (MM-BIO-9~~10~~(j)). Roadways, parking areas, and other active use areas will not be included in				
Non-native Vegetation	IV	~~0.23~~0.96					

Table 5-7
Temporary Impacts to Vegetation Communities and Land Cover Types –
San Vicente Reservoir Alternative (Acres)

Vegetation Community/ Land Cover Type	Subarea Plan Designation	Impact Acreage	Outside MCAS Miramar Restoration Acres		Within MCAS Miramar Restoration Acres	Enhancement Occurring within MCAS Miramar[1]	
			Within MHPA	*Outside MHPA*		*Ratio*[2]	*Enhancement Acreage*
Eucalyptus Woodland	IV	0.18	the Conceptual Revegetation Plan (Appendix P).				
Extensive Agriculture – Field/Pasture, Row Crops	IV	~~0.45~~0.33					
Intensive Agriculture – Dairies, Nurseries, Ranches	IV	0.05					
Disturbed Habitat	IV	~~9.01~~8.79					
Urban/Developed	IV	~~155.57~~156.19					
Developed – Concrete Channel[3]	IV	0.03					
	Total	**~~179.401~~80.33**	**2.71**	**~~5.685~~5.69**	**~~5.345~~5.25**	**—**	**~~6.276~~6.14**

Note:
1 To satisfy the INRMP requirements, the City will be conducting ~~6.27~~ 6.14 acres of habitat enhancement within MCAS Miramar, in addition to the restoration of ~~5.34~~ 5.25 acres of temporary impact areas within MCAS Miramar.
2 Enhancement ratios for temporary impacts within MCAS Miramar are based on Table 6.2.2.2a in the INRMP and consideration is given to the Management Area where the vegetation community occurs.
3 Although no wetland vegetation would be removed, agency permits would still be required.

MM-BIO-2 **Habitat Revegetation.** Habitat revegetation and erosion control treatments will be installed within temporary disturbance areas in native habitat, in accordance with the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a) and the San Diego Municipal Code, Land Development Code—Landscape Standards (City of San Diego 2016~~b~~). The Conceptual Revegetation Plan (Appendix P) was prepared by a Restoration Specialist. Habitat revegetation will feature native species that are typical of the area, and erosion control features will include silt fence and straw fiber rolls, where appropriate. The revegetation areas will be monitored and maintained for 25 months to ensure adequate establishment and sustainability of the plantings/seedings.

Revegetation Plan(s) and Specifications:

1. Landscape Construction Documents (LCD) shall be prepared on D-sheets and submitted to the City of San Diego Development Services Department, Landscape Architecture Section (LAS) for review and approval. LAS shall consult with Mitigation Monitoring Coordination (MMC) and obtain concurrence prior to approval of LCD. The LCD shall consist of revegetation, planting, irrigation and erosion control plans; including all required graphics, notes, details, specifications, letters, and reports as outlined below.
2. Landscape Revegetation Planting and Irrigation Plans shall be prepared in accordance with the San Diego Land Development Code (LDC) Chapter 14, Article 2, Division 4, the LDC Landscape Standards submittal requirements, and Attachment "B" (General Outline for Revegetation/ Restoration Plans) of the City of San Diego's LDC Biology Guidelines (April 2012). The Principal Qualified Biologist (PQB) shall identify and adequately document all pertinent information concerning the revegetation goals and requirements, such as but not limited to, plant/seed palettes, timing of installation, plant installation specifications, method of watering, protection of adjacent habitat, erosion and sediment control, performance/success criteria, inspection schedule by City staff, document submittals, reporting schedule, etc. The LCD shall also include comprehensive graphics and notes addressing the ongoing maintenance requirements (after final acceptance by the City). For areas where a water source is not available, irrigation can be completed by a water truck. Additionally, it is recommended that planting/seeding occur in the fall or early winter, to the maximum extent practical, in order to minimize the amount of water truck visits needed.
3. The Revegetation Installation Contractor (RIC), Revegetation Maintenance Contractor (RMC), PQB, and Grading Contractor (GC), where applicable shall be responsible to insure that for all grading and contouring, clearing and grubbing, installation of plant materials, and any necessary maintenance activities or remedial actions required during installation and the 120-day plant establishment period are done per approved LCD. The following procedures at a minimum, but not limited to, shall be performed:
    a. The RMC shall be responsible for the maintenance of the upland mitigation area for a minimum period of 120 days.
    b. At the end of the 120-day period, the PQB shall review the revegetation area to assess the completion of the short-term plant establishment period

and submit a report for approval by MMC. If the 120-day plant establishment period success criteria has not been met, an extension may be warranted at the discretion of the PQB.

c. MMC would provide approval in writing to begin the 25-month maintenance and monitoring program.

d. Existing indigenous/native species shall not be pruned, thinned, or cleared in the revegetation/mitigation area.

e. The revegetation site shall not be fertilized.

f. The RIC is responsible for reseeding (if applicable) if weeds are not removed, within one week of written recommendation by the PQB.

g. Weed control measures shall include the following: (1) hand removal, (2) cutting, with power equipment, and (3) chemical control. Hand removal of weeds is the most desirable method of control and would be used wherever possible.

h. Damaged areas shall be repaired immediately by the RIC/RMC. Insect infestations, plant diseases, herbivory, and other pest problems would be closely monitored throughout the 25-month maintenance period. Protective mechanisms such as metal wire netting shall be used as necessary. Diseased and infected plants shall be immediately disposed of off -site in a legally -acceptable manner at the discretion of the PQB or Qualified Biological Monitor (City approved). Where possible, biological controls would be used instead of pesticides and herbicides.

5.2 Sensitive Plant Species

Per the San Diego Municipal Code, Land Development Code—Biology Guidelines, securing comparable habitat at the required ratio would mitigate for the direct impact to most sensitive species. No species with very limited geographic ranges (narrow endemic species) would be impacted by the proposed Project. Therefore, significant direct impacts to sensitive plant species would be mitigated or restored to a less-than-significant level through implementation of MM-BIO-1a, MM-BIO-1c, and MM-BIO-2, which provide mitigation and restoration for impacts to sensitive vegetation as described in Section 5.1. Indirect impacts to sensitive plants would be mitigated to a less-than-significant level through MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(g), MM-BIO-9~~10~~(j), and MM-BIO-9~~10~~(k), described fully in Section 5.5.

5.3 Sensitive Wildlife Species

Per the San Diego Municipal Code, Land Development Code—Biology Guidelines, direct impacts to vegetation communities used by wildlife would be conserved or restored through the implementation of MM-BIO-1a through MM-BIO-1c and MM-BIO-2, which provide mitigation or restoration for impacts to sensitive vegetation as described in Section 5.1. Special consideration should be given to the timing of construction work. Wildlife is more susceptible to damage or harassment during their growing or breeding season. To minimize impacts to wildlife during active growing and breeding seasons, Section 6.2.2.2 of the INRMP emphasizes the importance of planning construction to avoid performing work during breeding or growing seasons. For vernal pool species, the growing/breeding season occurs when soil is wet, which depends on annual rainfall typically occurring November through May. For other threatened and endangered species, the growing/breeding season is generally February 15 through August 31. If possible, construction should be planned to avoid the growing/breeding season. Construction-related direct and indirect noise impacts may occur to breeding wildlife, including the federally threatened coastal California gnatcatcher, and the MSCP Covered Species Cooper's hawk, yellow warbler, yellow-breasted chat, and other avian species if construction occurs during the breeding season (i.e., March 1 through August 15 for coastal California gnatcatcher, March 1 through August 31 for Cooper's hawk, March 15 through September 15 for least Bell's vireo, and February 1 through September 15 for other breeding species). Indirect impacts to wildlife species would be mitigated to a less-than-significant level through MM-BIO-9~~10~~(a) through MM-BIO-9~~10~~(i), and MM-BIO-9~~10~~(k). In addition, the following mitigation measures will be implemented to further reduce indirect impacts to sensitive wildlife species: MM-BIO-2 (provided in Section 5.1), MM-BIO-3, MM-BIO-4a, MM-BIO-4b, MM-BIO-5, MM-BIO-6, ~~MM-BIO-7,~~ and MM-BIO-7~~8~~ (provided below). Appendix T lists each mitigation measure and the exact location where that measure would be applied.

MM-BIO-3 **Nesting Birds.** To avoid any direct impacts any species identified as a candidate, sensitive, or special status species in the MSCP or other local or regional plans, policies or regulations, or by the CDFW or USFWS, removal of habitat that supports active nests in the proposed area of disturbance should occur outside of the breeding season for these species (February 1 to September 15). If removal of habitat in the proposed area of disturbance must occur during the breeding season, the Qualified Biologist shall conduct a preconstruction survey to determine the presence or absence of nesting birds on the proposed area of disturbance. The preconstruction survey shall be conducted within 10 calendar days prior to the start of construction activities (including removal of vegetation). The applicant shall submit the results of the preconstruction survey to City Development Services Department for review and approval prior to initiating any construction activities. If nesting birds are detected, a letter report or mitigation plan in conformance with the City's Biology Guidelines

and applicable state and federal law (i.e., appropriate follow up surveys, monitoring schedules, and construction barriers/buffers, etc.) shall be prepared and include proposed measures to be implemented to ensure that take of birds or eggs is avoided. The report or mitigation plan shall be submitted to the City for review and approval and implemented to the satisfaction of the City. The City's MMC Section and Biologist shall verify and approve that all measures identified in the report or mitigation plan are in place prior to and/or during construction.

MM-BIO-4a Coastal California Gnatcatcher. Prior to the preconstruction meeting, the Assistant Deputy Director (ADD) or MMC shall verify that the MHPA boundaries and the Project requirements regarding the coastal California gnatcatcher, as specified below, are shown on the construction plans.

No clearing, grubbing, grading, or other construction activities shall occur during the coastal California gnatcatcher breeding season (March 1 to August 15), until the following requirements have been met to the satisfaction of the ADD/MMC:

1. A Qualified Biologist (possessing a valid Endangered Species Act Section 10(a)(1)(a) Recovery Permit) shall survey those habitat areas within the MHPA that would be subject to construction noise levels exceeding 60 decibels [dB(A)] hourly average for the presence of the coastal California gnatcatcher. Surveys for coastal California gnatcatcher shall be conducted pursuant to the protocol survey guidelines established by the USFWS within the breeding season prior to the commencement of any construction. If coastal California gnatcatchers are present, then the following conditions must be met:
    a. Between March 1 and August 15, no clearing, grubbing, or grading of occupied coastal California gnatcatcher habitat shall be permitted. Areas restricted from such activities shall be staked or fenced under the supervision of a Qualified Biologist; and
    b. Between March 1 and August 15, no construction activities shall occur within any portion of the site where construction activities would result in noise levels exceeding 60 dB(A) hourly average at the edge of occupied coastal California gnatcatcher habitat. An analysis showing that noise generated by construction activities would not exceed 60 dB(A) hourly average at the edge of occupied habitat must be completed by a Qualified Acoustician (possessing current noise engineer license or registration with monitoring noise level experience with listed animal species) and approved by the ADD/MMC at least 2 weeks prior to the commencement

of construction activities. Prior to the commencement of construction activities during the breeding season, areas restricted from such activities shall be staked or fenced under the supervision of a Qualified Biologist; or

c. At least 2 weeks prior to the commencement of construction activities, under the direction of a Qualified Acoustician, noise attenuation measures (e.g., berms, walls) shall be implemented to ensure that noise levels resulting from construction activities would not exceed 60 dB(A) hourly average at the edge of habitat occupied by the coastal California gnatcatcher. Concurrent with the commencement of construction activities and the construction of necessary noise attenuation facilities, noise monitoring shall be conducted at the edge of the occupied habitat area to ensure that noise levels do not exceed 60 dB(A) hourly average. If the noise attenuation techniques implemented are determined to be inadequate by the Qualified Acoustician or Biologist, then the associated construction activities shall cease until such time that adequate noise attenuation is achieved or until the end of the breeding season (August 16). Construction noise monitoring shall continue to be monitored at least twice weekly on varying days, or more frequently depending on the construction activity, to verify that noise levels at the edge of occupied habitat are maintained below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. If not, other measures shall be implemented in consultation with the biologist and the ADD/MMC, as necessary, to reduce noise levels to below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. Such measures may include, but are not limited to, limitations on the placement of construction equipment and the simultaneous use of equipment.

2. If coastal California gnatcatchers are not detected during the protocol survey, the Qualified Biologist shall submit substantial evidence to the ADD/MMC and applicable resource agencies which demonstrates whether or not mitigation measures such as noise walls are necessary between March 1 and August 15 as follows:

   a. If this evidence indicates that the potential is high for coastal California gnatcatcher to be present based on historical records or site conditions, then Condition 1(a) shall be adhered to as specified above.

   b. If this evidence concludes that no impacts to this species are anticipated, no mitigation measures would be necessary.

MM-BIO-4b **Coastal California Gnatcatcher.** Ambient noise levels on MCAS Miramar, in particular in the vicinity of the airfield, exceed typical construction noise level. On MCAS Miramar, construction noise levels are not anticipated to exceed ambient noise levels. Potential impacts associated with construction activities on MCAS Miramar would be mitigated through the following:

1. Qualified Biologist (possessing a valid federal Endangered Species Act (FESA) Section 10(a)(1)(a) Recovery Permit) shall conduct a pre-construction survey within suitable habitat. Between February 15 and August 31, no clearing, grubbing, or grading of occupied coastal California gnatcatcher habitat shall be permitted. Areas restricted from such activities shall be staked or fenced under the supervision of a Qualified Biologist; and
2. For potential impacts associated with construction noise, presence or absence of coastal California gnatcatcher would be determined by pre-construction surveys conducted by a Qualified Biologist adjacent to the Project area. Coastal sage scrub outside of the impact area would be flagged to protect it from construction equipment as directed by the Project Biologist. Between February 15 and August 31, no noise-generating construction activities that exceed ambient noise levels would occur in close proximity to occupied habitat. If necessary, other measures shall be implemented in consultation with the Project Biologist as necessary, to reduce noise levels. Measures may include, but are not limited to, limitations on the placement of construction equipment and the simultaneous use of equipment.

MM-BIO-5 **Burrowing Owl.** The following is a species-specific mitigation measure, required to meet MSCP Subarea Plan Conditions of Coverage. The mitigation measure would reduce potential impacts to burrowing owl and associated habitat located outside the MHPA (burrowing owl and associated habitat impacts within the MHPA must be avoided).

Prior to Permit or Notice to Proceed Issuance:

1. As this project has been determined to have burrowing owl occupation potential, the Permit Holder shall submit evidence to the Assistant Deputy Director of the City's Entitlements verifying that a Biologist possessing qualifications pursuant to the "Staff Report on Burrowing Owl Mitigation," State of California Natural Resources Agency, California Department of Fish

and Game (hereafter referred as CDFG 2012, Staff Report), has been retained to implement a burrowing owl construction impact avoidance program.

2. The Qualified Biologist shall attend the preconstruction meeting to inform construction personnel about the City's burrowing owl requirements and subsequent survey schedule.

Prior to Start of Construction:

1. The Permit Holder and Qualified Biologist must ensure that initial preconstruction/take avoidance surveys of the Project "site" are completed between 14 and 30 days before initial construction activities, including brushing, clearing, grubbing, or grading of the Project site; regardless of the time of the year. "Site" means the Project site and the area within a radius of 450 feet of the Project site. A report detailing the results of the surveys shall be submitted and approved by the Wildlife Agencies and/or City MSCP staff prior to construction or burrowing owl eviction(s) and shall include maps of the Project site and burrowing owl locations on aerial photos.
2. The preconstruction survey shall follow the methods described in CDFG 2012, Staff Report, Appendix D.
3. 24 hours prior to commencement of ground-disturbing activities, the Qualified Biologist shall ~~verify~~ update and report results of preconstruction/take avoidance surveys. Verification shall be provided to the City's MMC Section. If results of the preconstruction surveys have changed and burrowing owl are present in areas not previously identified, immediate notification to the City and Wildlife Agencies shall be provided prior to ground disturbing activities.

During Construction:

1. Best Management Practices shall be employed, as burrowing owls are known to use open pipes, culverts, excavated holes, and other burrow-like structures at construction sites. Legally permitted active construction projects which are burrowing owl occupied and have followed all protocol in this mitigation section, or sites within 450 feet of occupied burrowing owl areas, should undertake measures to discourage burrowing owls from recolonizing previously occupied areas or colonizing new portions of the site. Such measures include, but are not limited to, ensuring that the ends of all pipes and culverts are covered when they are not being worked on, and covering rubble piles, dirt piles, ditches, and berms.

2. Ongoing burrowing owl detection—If burrowing owls or active burrows are not detected during the preconstruction surveys, Section "a" below shall be followed. If burrowing owls or burrows are detected during the preconstruction surveys, Section "b" shall be followed. Neither the MSCP Subarea Plan nor this mitigation section allows for any burrowing owls to be injured or killed outside or within the MHPA; in addition, impacts to burrowing owls within the MHPA must be avoided.

   a. **Post Survey Follow Up if Burrowing Owls and/or Signs of Active Natural or Artificial Burrows Are Not Detected During the Initial Preconstruction Survey**. Monitoring the site for new burrows is required using the protocol in Appendix D of the Burrowing Owl Staff Report (CDFG 2012) for the period following the initial preconstruction survey, until construction is scheduled to be complete and is complete. (NOTE: Using a projected completion date (that is amended if needed) will allow development of a monitoring schedule which adheres to the required number of surveys in the detection protocol.)

      i. If no active burrows are found but burrowing owls are observed to occasionally (1–3 sightings) use the site for roosting or foraging, they should be allowed to do so with no changes in the construction or construction schedule.

      ii. If no active burrows are found but burrowing owls are observed, during follow up monitoring to repeatedly (4 or more sightings), using the site for roosting or foraging, the City's MMC Section shall be notified, and any portion of the site where owls have been sighted and that has not been graded or otherwise disturbed shall be avoided until further notice.

      iii. If a burrowing owl begins using a burrow on the site at any time after the initial preconstruction survey, procedures described in Section b must be followed.

      iv. Any actions other than these require the approval of the City and the Wildlife Agencies.

   b. **Post-Survey Follow Up if Burrowing Owls and/or Active Natural or Artificial Burrows are detected during the Initial Preconstruction Survey**. Monitoring the site for new burrows is required using the protocol in Appendix D of the Burrowing Owl Staff Report (CDFG 2012) for the period following the initial preconstruction survey, until construction is scheduled to be complete and is complete. (NOTE: Using a projected completion date (that

is amended if needed) will allow development of a monitoring schedule which adheres to the required number of surveys in the detection protocol.)

i. This section (b) applies only to sites (including biologically defined territory) wholly outside of the MHPA; all direct and indirect impacts to burrowing owls within the MHPA shall be avoided.

ii. If one or more burrowing owls are using any burrows (including pipes, culverts, debris piles etc.) on or within 300 feet of the proposed construction area, the City's MMC Section shall be contacted. The City's MMC Section shall contact the Wildlife Agencies regarding eviction/collapsing burrows and enlist the appropriate City biologist for ongoing coordination with the Wildlife Agencies and the qualified consulting burrowing owl biologist. No construction shall occur within 300 feet of an active burrow without written concurrence from the Wildlife Agencies. This distance may increase or decrease, depending on the burrow's location in relation to the site's topography, and other physical and biological characteristics.

1. Outside the Breeding Season: If the burrowing owl is using a burrow on site outside the breeding season (i.e., September 1 – January 31), the burrowing owl may be evicted after the qualified burrowing owl biologist has determined via fiber optic camera or other appropriate device, that no eggs, young, or adults are in the burrow and written concurrence from the Wildlife Agencies for eviction is obtained prior to implementation.

2. During Breeding Season: If a burrowing owl is using a burrow on site during the breeding season (February 1 to August 31), construction shall not occur within 300 feet of the burrow until the young have fledged and are no longer dependent on the burrow, at which time the burrowing owls can be evicted. Eviction requires written concurrence from the Wildlife Agencies prior to implementation.

3. Survey Reporting During Construction: Details of construction surveys and evictions (if applicable) carried out shall be immediately (within 5 working days or sooner) reported to the City's MMC Section and the Wildlife Agencies and must be provided in writing (as by e-mail) and acknowledged to have been received by the required Wildlife Agencies and Development Services Department Staff member(s).

Post Construction:

1. Details of all the surveys and actions undertaken on site with respect to burrowing owls (i.e., occupation, eviction, locations etc.) shall be reported to the City's MMC Section and the Wildlife Agencies within 21 days post-construction and prior to the release of any grading bonds. This report must include summaries of all previous reports for the site and maps of the Project site and burrowing owl locations on aerial photos.

Project construction within 500 feet of the San Diego River, Rose Creek, San Clemente Creek, and any other sensitive riparian areas with suitable habitat may have adverse indirect impacts on least Bell's vireo and southwestern willow flycatcher if construction occurs during the breeding season from March 15 through September 15 for least Bell's vireo, and from May 1 through September 1 for southwestern willow flycatcher, and the species are determined to be present.

MM-BIO-6 **Riparian Bird.** Prior to the preconstruction meeting, the ADD/MMC shall verify that MHPA boundaries and the Project requirements regarding the least Bell's vireo and southwestern willow flycatcher, as specified below, are shown on the construction plans.

No clearing, grubbing, grading, or other construction activities shall occur during the least Bell's vireo breeding season (March 15 to September 15) and southwestern willow flycatcher breeding season (May 1 to September 1) until the following requirements have been met to the satisfaction of the ADD/MMC:

1. A Qualified Biologist (possessing a valid Endangered Species Act Section 10(a)(1)(a) Recovery Permit) shall survey those habitat areas within the MHPA that would be subject to construction noise levels exceeding 60 decibels [dB(A)] hourly average for the presence of the least Bell's vireo and southwestern willow flycatcher. Surveys for least Bell's vireo and southwestern willow flycatcher, shall be conducted pursuant to the protocol survey guidelines established by the USFWS within the breeding season prior to the commencement of any construction. If least Bell's vireo or southwestern willow flycatcher are present, then the following conditions must be met:

    a. Between March 15 to September 15 for least Bell's vireo and May 1 to September 1 for southwestern willow flycatcher, no clearing, grubbing, or grading of occupied habitat shall be permitted. Areas restricted from such activities shall be staked or fenced under the supervision of a Qualified Biologist; and

b. Between March 15 to September 15 for least Bell's vireo and May 1 to September 1 for southwestern willow flycatcher, no construction activities shall occur within any portion of the site where construction activities would result in noise levels exceeding 60 dB(A) hourly average at the edge of occupied habitat. An analysis showing that noise generated by construction activities would not exceed 60 dB(A) hourly average at the edge of occupied habitat must be completed by a Qualified Acoustician (possessing current noise engineer license or registration with monitoring noise level experience with listed animal species) and approved by the ADD/MMC at least 2 weeks prior to the commencement of construction activities. Prior to the commencement of construction activities during the breeding season, areas restricted from such activities shall be staked or fenced under the supervision of a Qualified Biologist; or

c. At least 2 weeks prior to the commencement of construction activities, under the direction of a Qualified Acoustician, attenuation measures (e.g., berms, walls) shall be implemented to ensure that noise levels resulting from construction activities would not exceed 60 dB(A) hourly average at the edge of habitat occupied by the least Bell's vireo, and/or southwestern willow flycatcher. Concurrent with the commencement of construction activities and the construction of necessary noise attenuation facilities, noise monitoring shall be conducted at the edge of the occupied habitat area to ensure that levels do not exceed 60 dB(A) hourly average. If the noise attenuation techniques implemented are determined to be inadequate by the Qualified Acoustician or Biologist, then the associated construction activities shall cease until such time that adequate noise attenuation is achieved or until the end of the breeding season (August 16). Construction noise monitoring shall continue to be monitored at least twice weekly on varying days, or more frequently depending on the construction activity, to verify that noise levels at the edge of occupied habitat are maintained below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. If not, other measures shall be implemented in consultation with the biologist and the ADD/MMC, as necessary, to reduce noise levels to below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. Such measures may include, but are not limited to, limitations on the placement of construction equipment and the simultaneous use of equipment.

2. If least Bell's vireo and/or southwestern willow flycatcher are not detected during the protocol survey, the Qualified Biologist shall submit substantial evidence to the ADD/MMC and applicable resource agencies, which demonstrates whether or not mitigation measures such as noise walls are necessary between March 15 to September 15 for least Bell's vireo, and/or May 1 to September 1 for southwestern willow flycatcher, adherence to the following is required:

   a. If this evidence indicates that the potential is high for least Bell's vireo and/or southwestern willow flycatcher to be present based on historical records or site conditions, then Condition 1(a) shall be adhered to as specified above.

   b. If this evidence concludes that no impacts to this species are anticipated, no mitigation measures would be necessary.

~~Miramar Reservoir is maintained and operated as a domestic drinking water supply for the City of San Diego. Currently, the presence of non-native species (i.e., red-eared sliders that compete for resources, and American bullfrogs and largemouth bass which prey on the hatchlings), quagga mussels that affect the existing trophic regime, human presence which could affect the use of basking sites and refuge sites, and the isolated nature of the reservoir contribute to unfavorable conditions within the Miramar Reservoir. As required by the City's ASMDs for MSCP Covered Species, the Project must maintain and manage a 1,500-foot area around known locations within the preserve lands for this species. Although the Miramar Reservoir Alternative would not have direct impacts to western pond turtle habitat (including basking sites) resulting from construction, placement of the North City Pipeline would occur within 1,500 feet of known locations within the MHPA. Since a monitoring and adaptive management plan within the reservoir would be contradictory to the drinking water reservoir goals, objectives, and mandates; warm water fishery maintenance; and other human related recreational objectives; therefore a trapping and relocation plan is proposed for this already threatened and non-natural pond turtle population within the Miramar Reservoir. The USGS-advocated trapping and relocation program, which can successfully establish new populations or maintain extant populations (Harmsworth Associates & Goodman 2002, 2003), would help increase and expand western pond turtle populations into areas that have higher habitat quality than the Miramar Reservoir, which has high human access and is an artificial reservoir within a park setting (USGS 2005). Specific methods for the trapping and relocation of pond turtles within the Miramar Reservoir are described in detail in Appendix U and summarized below.~~

~~**MM-BIO-7 Western Pond Turtle.** Since the Miramar Reservoir (as described above) is maintained and operated as a drinking water reservoir and contains a warm water fishery, both of which create conditions that provide less than optimal habitat for~~

~~western pond turtle, and because an adaptive management program for this species would be contradictory to these uses, the City prepared a trapping and relocation plan for this species (Appendix U). Relocation would be conducted in accordance with the plan and in consultation with the California Department of Fish and Wildlife (CDFW) with input from the U.S. Geological Survey and approval by the Development Services Department and by MSCP Planning. The relocation plan provides the methods for the trapping of western pond turtles and relocation to the most proximate suitable habitat that would not be affected by the proposed project.~~

~~Specific trapping timing and methodology/recurrence intervals would be developed in consultation with CDFW and would be performed by a Qualified Biologist operating under an active California State Scientific Collecting Permit. However, trapping would be performed in late April through early August to remove egg-laying females from the reservoir prior to egg deposition, thus eliminating the potential for stranding of eggs or hatchlings.~~

Impacts and applicable mitigation for areas within MCAS Miramar lands are analyzed in the context of the INRMP and included in Appendix A of this report. Implementation of the proposed mitigation measure would be necessary for compliance with the INRMP.

MM-BIO-~~7~~8 Vernal Pool Watershed. There would be permanent indirect impacts within the PW36, VP697, and VP699 watersheds from air and blow-off valves associated with the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line only if the San Vicente Reservoir Alternative is implemented. As required under the Integrated Natural Resources Management Plan (INRMP), mitigation for permanent indirect impacts from the San Vicente Reservoir Alternative to an occupied watershed (PW36, VP697, and VP699) within the Level I and Level V Management Areas (MAs) would include: enhancement of remaining portions of watershed (protection by temporary fencing or other means, enlarge another portion); monitoring of species in the feature may be necessary to document extent of actual impacts to threatened or endangered species; if impacts are documented to threatened or endangered species, then additional action would be required for indirect impacts to the threatened or endangered species by habitat enhancement, possibly elsewhere; and no work around the vernal pool during the rainy season or when ground is wet (about November 1 to June 1). The City typically applies a 100-foot-wide avoidance buffer surrounding wetland resources; however, the width of the buffer may be determined on a case-by-case basis depending on the need and value. Therefore, no work within a 100-foot buffer around the vernal pool during rainy

season or when ground is wet (about November 1 to June 1), unless it is determined that a reduced buffer is more appropriate.

5.4 Jurisdictional Aquatic Resources

Implementation of the North City Project would result in the long-term loss of jurisdictional aquatic resources under the jurisdiction of the ACOE, RWQCB, and/or CDFW as well as wetlands under the jurisdiction of the City of San Diego. The Project would avoid and minimize impacts to areas under the jurisdiction of these agencies to the extent practicable. Unavoidable impacts would be mitigated in accordance with the ratios defined by the City's Biology Guidelines (see Section 5.1). Indirect impacts to jurisdictional resources would be mitigated to a less-than-significant level through AMM - BIO-1 through MM-BIO-9~~10~~(g), MM-BIO-9~~10~~(j), and MM-BIO-9~~10~~(k), provided in Section 5.5. In addition, mitigation measures MM-BIO-1c and MM-BIO-7~~8~~ would be implemented to further reduce impacts to jurisdictional resources (see Section 5.1).

MM-BIO-8~~9~~ Wetland Permits. The owner/permittee shall provide evidence that all required regulatory permits, such as those required under Section 404 of the federal Clean Water Act, Section 1600 of the California Fish and Game Code, and the Porter-Cologne Water Quality Control Act, has been obtained.

5.5 Mitigation Measures for Indirect Impacts

In order to avoid and minimize indirect impacts to sensitive resources, the following mitigation measures would be implemented, and Appendix T lists each measure and the exact location where that measure would be applied:

MM-BIO-9~~10~~ The following measures will be included in the design and construction documents for each Project component to reduce potential impacts to sensitive resources:

a. **Qualified Biologist.** The owner/permittee shall provide a letter to the City's Mitigation Monitoring Coordination (MMC) section stating that a Project Biologist (Qualified Biologist) as defined in the City of San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012a), has been retained to implement the Project's biological monitoring program. The letter shall include the names and contact information of all persons involved in the biological monitoring of the Project.

b. **Preconstruction Meeting.** The Qualified Biologist shall attend the preconstruction meeting, discuss the Project's biological monitoring program, and arrange to perform any follow up mitigation measures and reporting including site-specific monitoring, restoration or revegetation, and additional fauna/flora surveys/salvage.

c. **Documentation.** The Qualified Biologist shall submit all required documentation to MMC verifying that any special mitigation reports including but not limited to, maps, plans, surveys, survey timelines, or buffers are completed or scheduled per City Biology Guidelines, Multiple Species Conservation Program (MSCP), Environmentally Sensitive Lands Ordinance, project permit conditions; California Environmental Quality Act (CEQA); National Environmental Policy Act (NEPA); endangered species acts (federal Endangered Species Act and California Endangered Species Act); and/or other local, state or federal requirements.

d. **Biological Construction Mitigation/Monitoring Exhibit.** The Qualified Biologist shall present a Biological Construction Mitigation/Monitoring Exhibit (BCME), which includes the biological documents above. In addition, the BCME would include restoration/revegetation plans, plant salvage/relocation requirements (e.g., burrowing owl exclusions, etc.), avian or other wildlife surveys/survey schedules (including general avian nesting and U.S. Fish and Wildlife (USFWS) protocol), timing of surveys, wetland buffers, avian construction avoidance areas/noise buffers/barriers, other impact avoidance areas, and any subsequent requirements determined by the Qualified Biologist and the City Assistant Deputy Director (ADD)/MMC. The BCME shall include a site plan, written and graphic depiction of the Project's biological mitigation/ monitoring program, and a schedule. The BCME shall be approved by MMC and referenced in the construction documents.

e. **Construction Fencing.** Prior to construction activities, the Qualified Biologist shall supervise the placement of orange construction fencing or equivalent along the limits of disturbance adjacent to sensitive biological habitats and verify compliance with any other project conditions as shown on the BCME. This phase shall include flagging plant specimens and delineating buffers to protect sensitive biological resources (e.g., habitats/flora & fauna species, including nesting birds) during construction. Appropriate steps/care should be taken to minimize attraction of nest predators to the site.

f. **On-site Education.** Prior to commencement of construction activities, the Qualified Biologist shall meet with the owner/permittee or designee and the construction crew and conduct an on-site educational session regarding the need to avoid impacts outside of the approved construction area and to protect sensitive flora and fauna (e.g., explain the avian and wetland buffers, flag system for removal of invasive species or retention of sensitive plants, and clarify acceptable access routes/methods and staging areas).

g. **Biological Monitoring.** During construction, a Qualified Biologist would be present to assist in the avoidance of impacts to native vegetation, jurisdictional aquatic resources, sensitive plants and wildlife, and nesting birds. Specific biological monitoring and or mitigation measures for sensitive wildlife, sensitive vegetation communities, and jurisdictional aquatic resources are described further in the mitigation measures.

h. **Cover Trenches.** General biological monitoring shall include verifying that the contractor has covered all steep-walled trenches or excavations overnight or after shift. If trenches or excavations cannot be covered, the monitor would verify that the contractor has installed exclusionary fencing (e.g., silt fence) around the trenches or excavation areas or installed ramps to prevent entrapment of wildlife (e.g., reptiles and mammals). If animals are encountered within any trenches or excavated areas, they would be removed by the biological monitor, if possible, or provided with a means of escape (e.g., a ramp or sloped surface) and allowed to disperse. In addition, the biological monitor would provide training to construction personnel to increase awareness of the possible presence of wildlife beneath vehicles and equipment and to use best judgment to avoid killing or injuring wildlife. The biological monitor would be available to assist with moving wildlife, if necessary.

i. **Nighttime Construction.** To reduce impacts to nocturnal species in those areas where they have a potential to occur, nighttime construction activity within undeveloped areas containing sensitive biological resources would be minimized whenever feasible and shielded lights would be utilized when necessary. Construction nighttime lighting would be subject to City Outdoor Lighting Regulations per San Diego Land Development Code (LDC) Section 142.0740.

j. **BMPs/Erosion/Runoff.** The City will incorporate methods to control runoff, including a Stormwater Pollution Prevention Plan (SWPPP) to meet National Pollutant Discharge Elimination System (NPDES) regulations or batch discharge permit from the City. Implementation of stormwater regulations are expected to substantially control adverse edge effects (e.g., erosion, sedimentation, habitat conversion) during and following construction both adjacent and downstream from the study area. Typical construction best management practices (BMPs) specifically related to reducing impacts from dust, erosion, and runoff generated by construction activities would be implemented. During construction, material stockpiles shall be placed such that they cause minimal interference with on-site drainage patterns. This will protect sensitive vegetation from being inundated with sediment-laden runoff. Dewatering shall be conducted in accordance with standard regulations of the Regional Water Quality Control Board (RWQCB). An

NPDES permit, issued by RWQCB to discharge water from dewatering activities, shall be required prior to start of dewatering. This will minimize erosion, siltation, and pollution within sensitive communities. Design of drainage facilities shall incorporate long-term control of pollutants and stormwater flow to minimize pollution and hydrologic changes.

k. **Toxics/Project Staging Areas/Equipment Storage.** Projects that use chemicals or generate by-products such as pesticides, herbicides, and animal waste, and other substances that are potentially toxic or impactive to native habitats/flora/fauna (including water) shall incorporate measures to reduce impacts caused by the application and/or drainage of such materials into the MHPA. No trash, oil, parking, or other construction/development-related material/activities shall be allowed outside any approved construction limits. Where applicable, this requirement shall be incorporated into leases on publicly owned property when applications for renewal occur. Provide a note in/on the CDs that states: "All construction-related activity that may have potential for leakage or intrusion shall be monitored by the Qualified Biologist/Owners Representative or Resident Engineer to ensure there is no impact to the MHPA."

The following avoidance and minimization measures were taken directly from the Final VPHCP and apply to all components (North City Pipeline, MBC, LFG Pipeline, and the San Vicente Pipeline - Repurposed 36-inch Recycled Water Line) adjacent to vernal pools:

l. **Silt Fencing.** Covered projects shall require temporary fencing (with silt barriers) of the limits of Project impacts (including construction staging areas and access routes) to prevent additional vernal pool impacts and prevent the spread of silt from the construction zone into adjacent vernal pools. Fencing shall be installed in a manner that does not impact habitats to be avoided. Final construction plans shall include photographs that show the fenced limits of impact and all areas of vernal pools to be impacted or avoided. If work inadvertently occurs beyond the fenced or demarcated limits of impact, all work shall cease until the problem has been remedied to the satisfaction of the City. Temporary construction fencing shall be removed upon project completion.

m. **Dust.** Impacts from fugitive dust that may occur during construction grading shall be avoided and minimized through watering and other appropriate measures.

n. **Vernal Pool Biologist.** A qualified monitoring biologist that has been approved by the City shall be on -site during Project construction activities to ensure compliance with all mitigation measures identified in the CEQA environmental document. The

biologist shall be knowledgeable of vernal pool species biology and ecology. The biologist shall perform the following duties:

a. Oversee installation of and inspect the fencing and erosion control measures within or upslope of vernal pool restoration and/or preservation areas a minimum of once per week and daily during all rain events to ensure that any breaks in the fence or erosion control measures are repaired immediately.

b. Periodically monitor the work area to ensure that work activities do not generate excessive amounts of dust.

c. Train all contractors and construction personnel on the biological resources associated with this project and ensure that training is implemented by construction personnel. At a minimum, training shall include (1) the purpose for resource protection; (2) a description of the vernal pool species and their habitat(s); (3) the conservation measures that must be implemented during Project construction to conserve the vernal pool species, including strictly limiting activities, and vehicles, equipment, and construction materials to the fenced Project footprint to avoid sensitive resource areas in the field (i.e., avoided areas delineated on maps or on the Project site by fencing); (4) environmentally responsible construction practices as outlined in measures 5, 6, and 7; (5) the protocol to resolve conflicts that may arise at any time during the construction process; and (6) the general provisions of the project's mitigation monitoring and reporting program (MMRP), the need to adhere to the provisions of FESA, and the penalties associated with violating FESA.

d. Halt work, if necessary, and confer with the City to ensure the proper implementation of species and habitat protection measures. The biologist shall report any violation to the City within 24 hours of its occurrence.

e. Submit regular (e.g., weekly) letter reports to the City during Project construction and a final report following completion of construction. The final report shall include as-built construction drawings with an overlay of habitat that was impacted and avoided, photographs of habitat areas that were avoided, and other relevant summary information documenting that authorized impacts were not exceeded and that general compliance with all conservation measures was achieved.

o. **Limits of Work.** The following conditions shall be implemented during Project construction:

a. Employees shall strictly limit their activities, vehicles, equipment, and construction materials to the fenced Project footprint.

b. The Project site shall be kept as clean of debris as possible. All food-related trash items shall be enclosed in sealed containers and regularly removed from the site.

c. Disposal or temporary placement of excess fill, brush, or other debris shall be limited to areas within the fenced Project footprint.

p. **Equipment Staging.** All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities shall occur in designated areas within the fenced Project impact limits. These designated areas shall be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering the vernal pools or their watersheds, and shall be shown on the construction plans. Fueling of equipment shall take place within existing paved areas greater than 100 feet from the vernal pools or their watersheds. Contractor equipment shall be checked for leaks prior to operation and repaired as necessary. A spill kit for each piece of construction equipment shall be on site and must be used in the event of a spill. "No-fueling zones" shall be designated on construction plans.

q. **Grading Activities.** Grading activities immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools. To achieve this goal, grading adjacent to avoided pools shall comply with the following:

a. Grading shall occur only when the soil is dry to the touch both at the surface and 1 inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and 1 inch below indicates whether the soil is dry.

b. After a rain of greater than 0.2 inch, grading shall occur only after the soil surface has dried sufficiently as described above, and no sooner than 2 days (48 hours) after the rain event ends.

c. To prevent erosion and siltation from stormwater runoff due to unexpected rains, best management practices (i.e., silt fences) shall be implemented as needed during grading.

d. If rain occurs during grading, work shall stop and resume only after soils are dry, as described above.

e. Grading shall be done in a manner to prevent runoff from entering preserved vernal pools.

f. If necessary, water spraying shall be conducted at a level sufficient to control fugitive dust but not to cause runoff into vernal pools.

g. If mechanized grading is necessary, grading shall be performed in a manner to minimize soil compaction (i.e., use the smallest type of equipment needed to feasibly accomplish the work).

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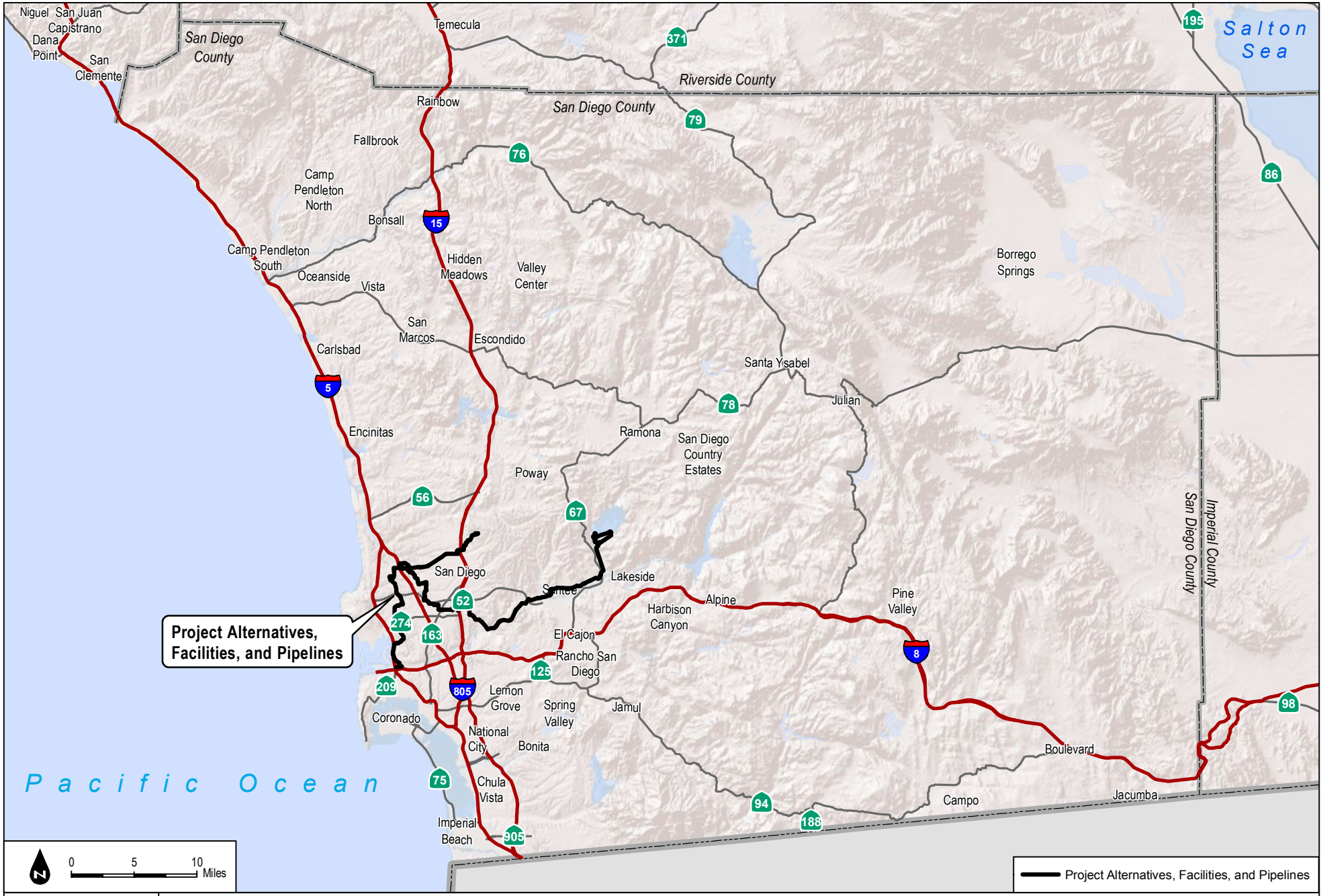

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SOURCE: ESRI 2016

FIGURE 1-1
Regional Map

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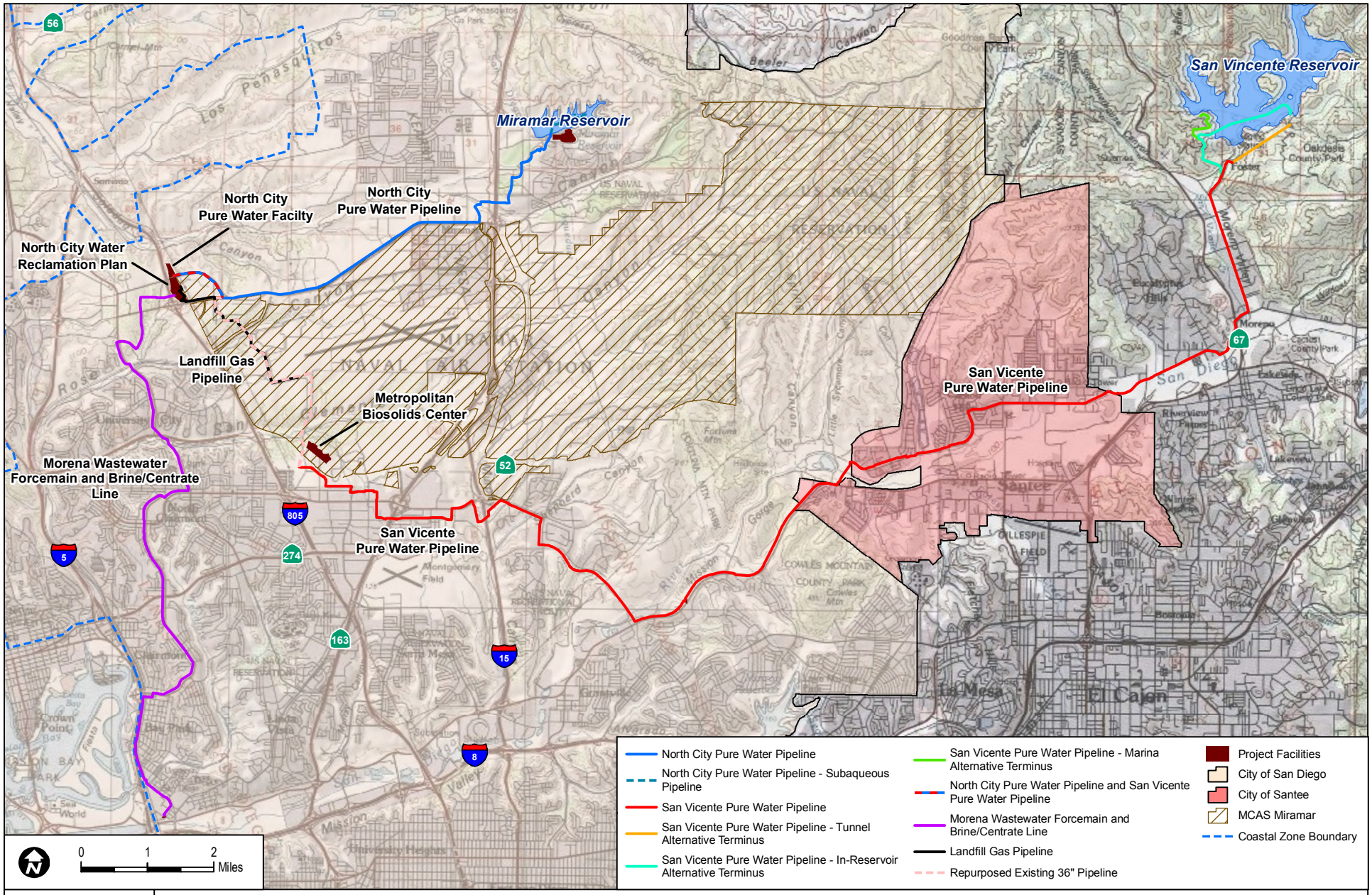

SOURCE: USGS 7.5-Minute Series Del Mar, Poway, San Vicente Reservoir, La Jolla, La Mesa, El Cajon Quadrangles; City of San Diego 2016; CA Coastal Commission

FIGURE 1-2

Vicinity Map

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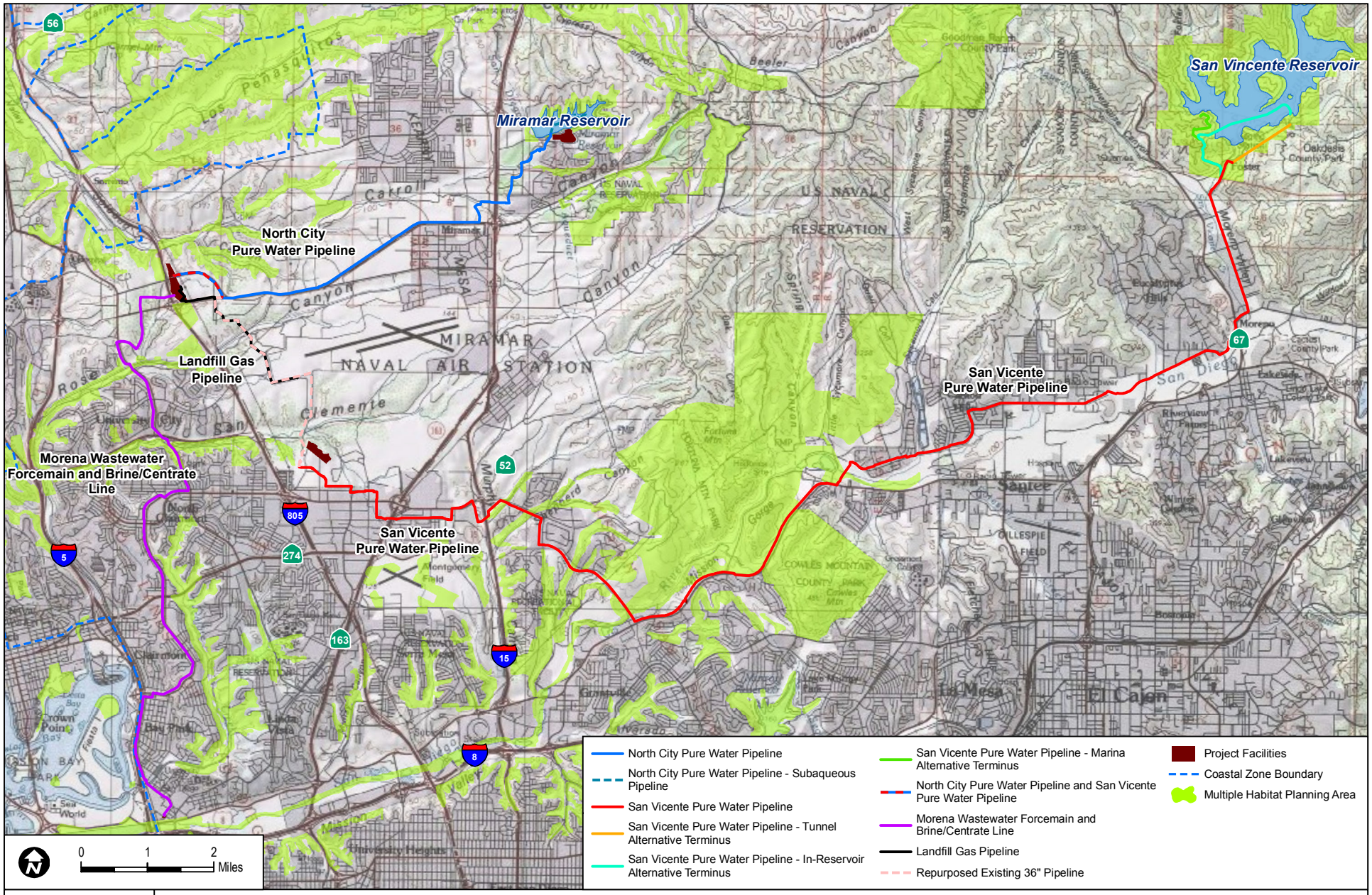

SOURCE: USGS 7.5-Minute Series Del Mar, Poway, San Vicente Reservoir, La Jolla, La Mesa, El Cajon Quadrangles; SANDAG 2016; CA Coastal Commission

FIGURE 1-3

Multi-Habitat Planning Area

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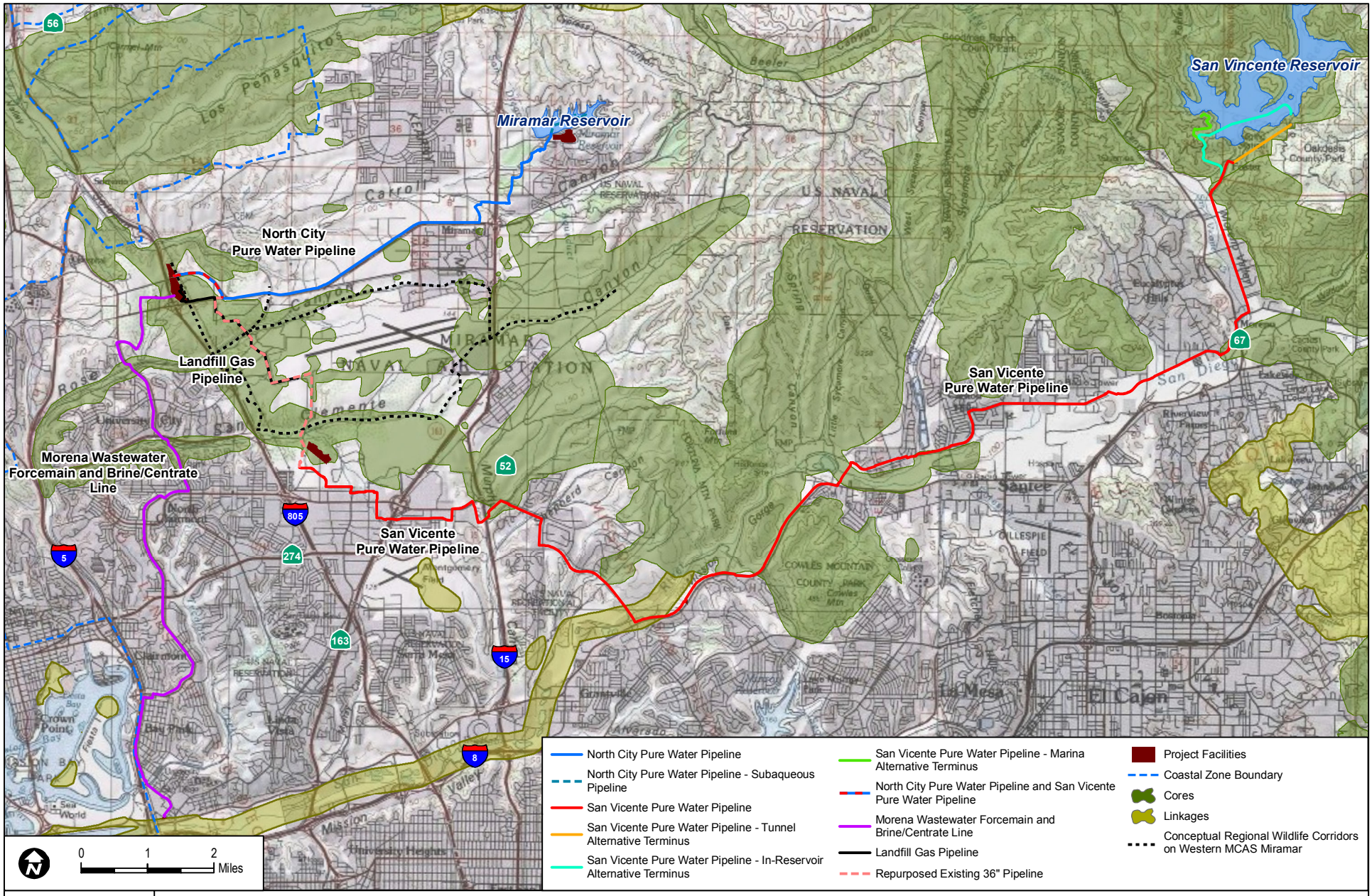

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SOURCE: Miramar BRAC EIS, Ogden 1996, USGS 7.5-Minute Series Del Mar, Poway, San Vicente Reservoir, La Jolla, La Mesa, El Cajon Quadrangles; SANDAG 2016; CA Coastal Commission

FIGURE 1-4

Core Areas and Habitat Linkages

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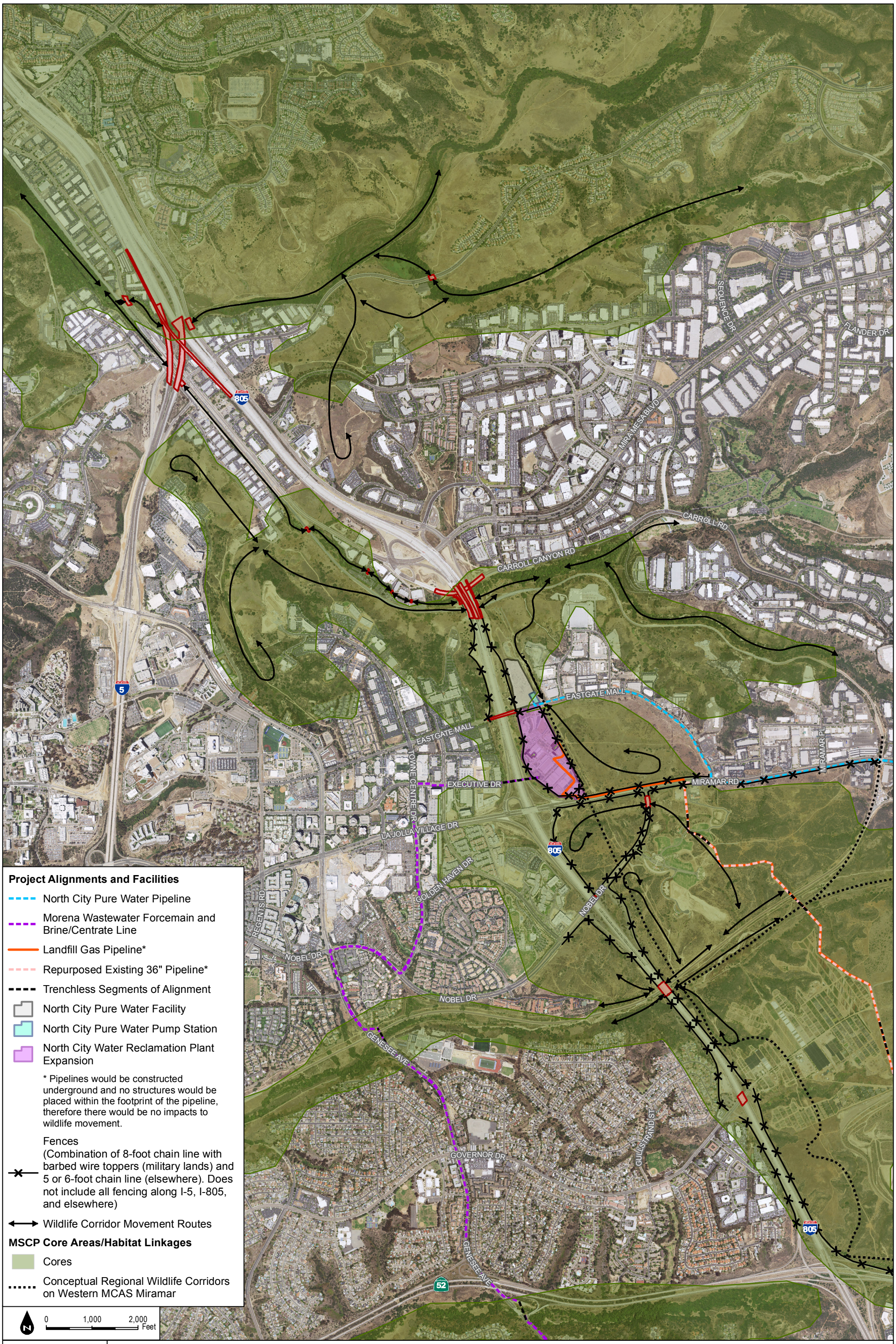

SOURCE: City San Diego, 2017, 2018; Bing Maps

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FIGURE 1-4A

NCPWF Impacts within Biological Core Area 15

Biological Resources Report for the North City Project

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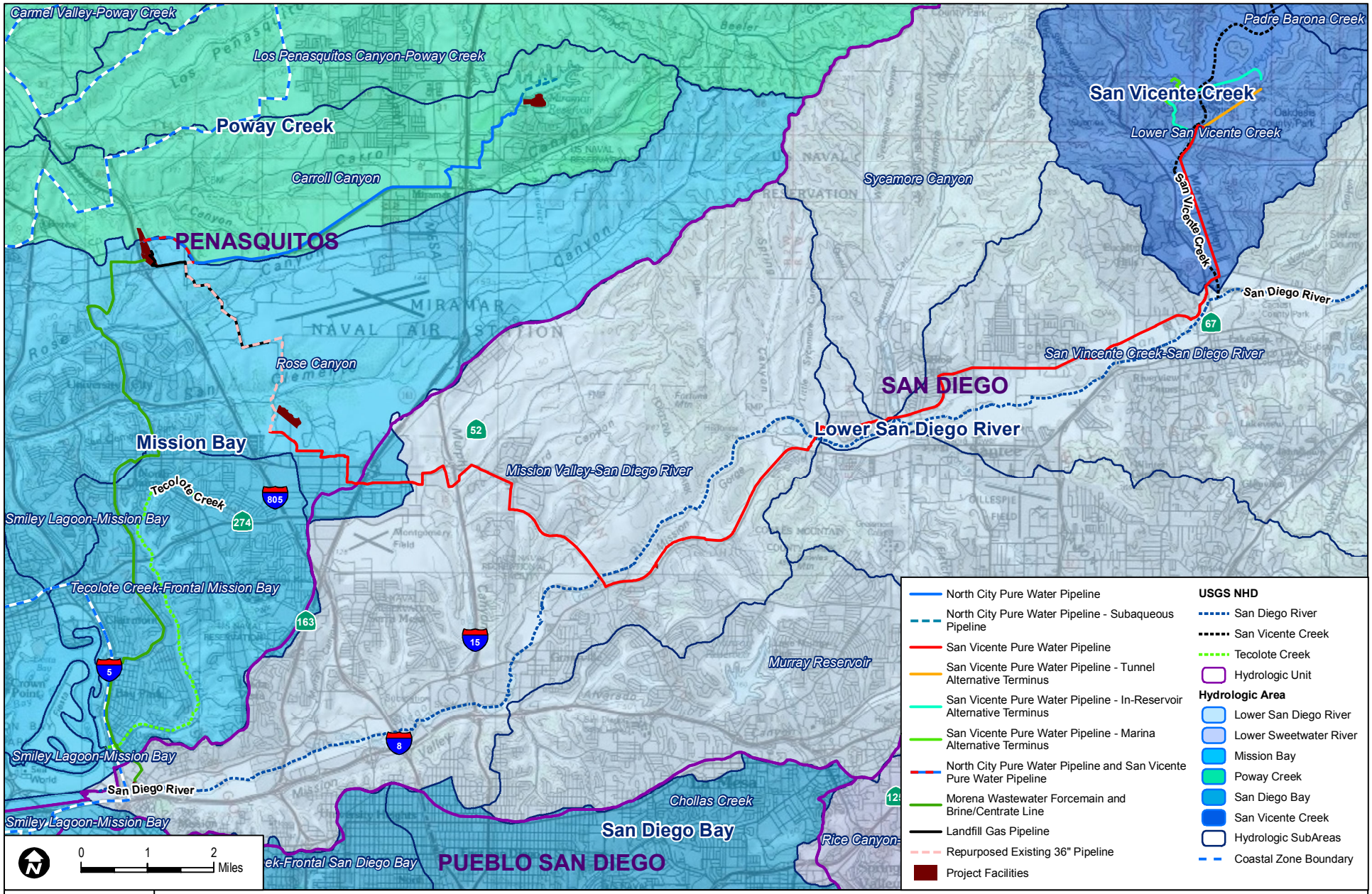

SOURCE: CA Dept. Water Resources; USGS

FIGURE 1-5

Hydrology

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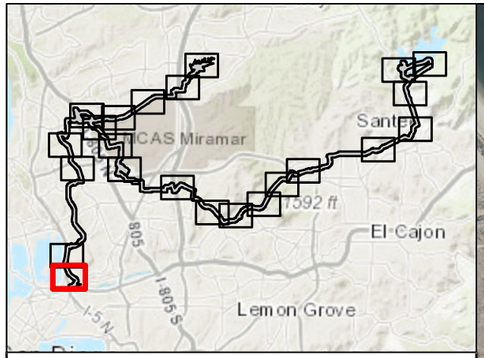

LEGEND

- Sensitive Plant Study Area
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - CAM, Cismontane Alkali Marsh
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - EUC, Eucalyptus Woodland
  - FWM, Coastal and Valley Freshwater Marsh
  - MFS, Mulefat Scrub
  - SWS, Southern Willow Scrub

Sensitive Plants

- *Juncus acutus ssp. leopoldii*

0 500 1,000 Feet

DH
DH
DH
MFS
CAM
CAM

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1A

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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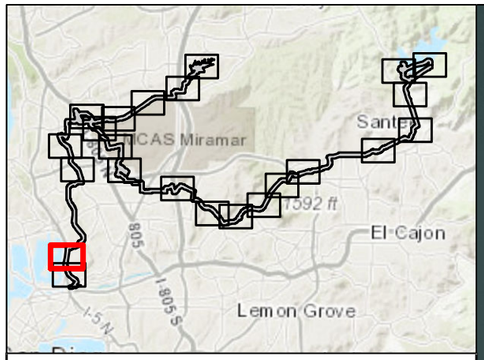

LEGEND

- Sensitive Plant Study Area
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - EUC, Eucalyptus Woodland

0 500 1,000 Feet

SOURCE: SANDAG, 2016

FIGURE 2-1B

Sensitive Plant Survey Areas and Results

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Biological Resources Report for the North City Project

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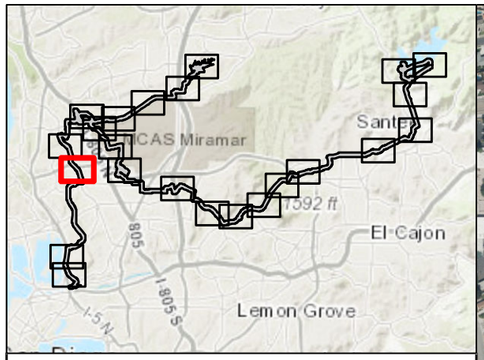

LEGEND

- Sensitive Plant Study Area
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - CLOW, Coast Live Oak Woodland
  - CSS, Diegan Coastal Sage Scrub
  - CSSB, Diegan Coastal Sage Scrub: Baccharis-dominated
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - NNV, Non-native Vegetation
  - NVC, Non-vegetated Channel or Floodway
  - SRF, Southern Riparian Forest
  - SWRF, Southern Arroyo Willow Riparian Forest
  - dCLOW, disturbed Coast Live Oak Woodland
  - dCSS, disturbed Diegan Coastal Sage Scrub
  - dSRF, disturbed Southern Riparian Forest

Sensitive Plants

- *Artemisia palmeri*

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1C

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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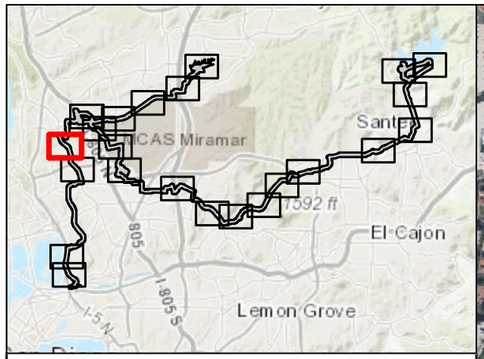

LEGEND

- Sensitive Plant Study Area
- No Access
- Sensitive Plant Survey Area
- 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
  - dCSS, disturbed Diegan Coastal Sage Scrub

Sensitive Plants

- *Ceanothus verrucosus*
- *Iva hayesiana*
- *Pinus torreyana ssp. torreyana*
- *Romneya coulteri*

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1D

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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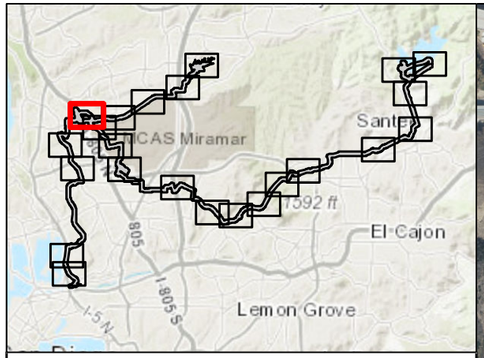

LEGEND

- Sensitive Plant Study Area
- Access Roads
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - CC, Chamise Chaparral
  - CSS, Diegan Coastal Sage Scrub
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - FWM, Coastal and Valley Freshwater Marsh
  - MFS, Mulefat Scrub
  - NG, Native Grassland
  - NNG, Non-native Grassland
  - NNV, Non-native Vegetation
  - SWS, Southern Willow Scrub
  - VP, Vernal Pool
  - dCSS, disturbed Diegan Coastal Sage Scrub

Sensitive Plants

- *Brodiaea orcuttii*
- *Ceanothus verrucosus*
- *Holocarpha virgata ssp. elongata*
- *Microseris douglasii ssp. platycarpha*
- *Pentachaeta aurea ssp. aurea*
- *Quercus dumosa*
- *Selaginella cinerascens*
- *Viguiera laciniata*

0 500 1,000 Feet

EASTGATE MALL

MIRAMAR RD

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1E

Sensitive Plant Survey Areas and Results

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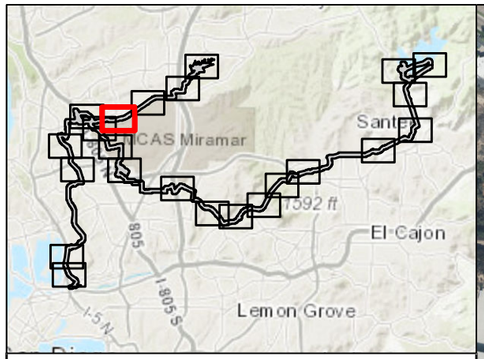

LEGEND

- Sensitive Plant Study Area
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - CC, Chamise Chaparral
  - CSS, Diegan Coastal Sage Scrub
  - CSSB, Diegan Coastal Sage Scrub: Baccharis-dominated
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - NNG, Non-native Grassland
  - NVC, Non-vegetated Channel or Floodway
  - SMX, Southern Mixed Chaparral
  - VP, Vernal Pool
  - dCSS, disturbed Diegan Coastal Sage Scrub

Sensitive Plants

- *Iva hayesiana*

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1F

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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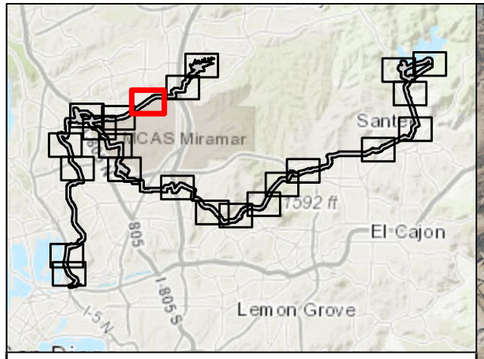

LEGEND

- Sensitive Plant Study Area
- No Access
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - CSSB, Diegan Coastal Sage Scrub: Baccharis-dominated
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - EUC, Eucalyptus Woodland
  - NNG, Non-native Grassland

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1G

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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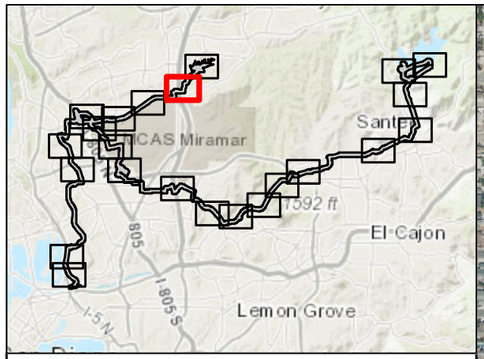
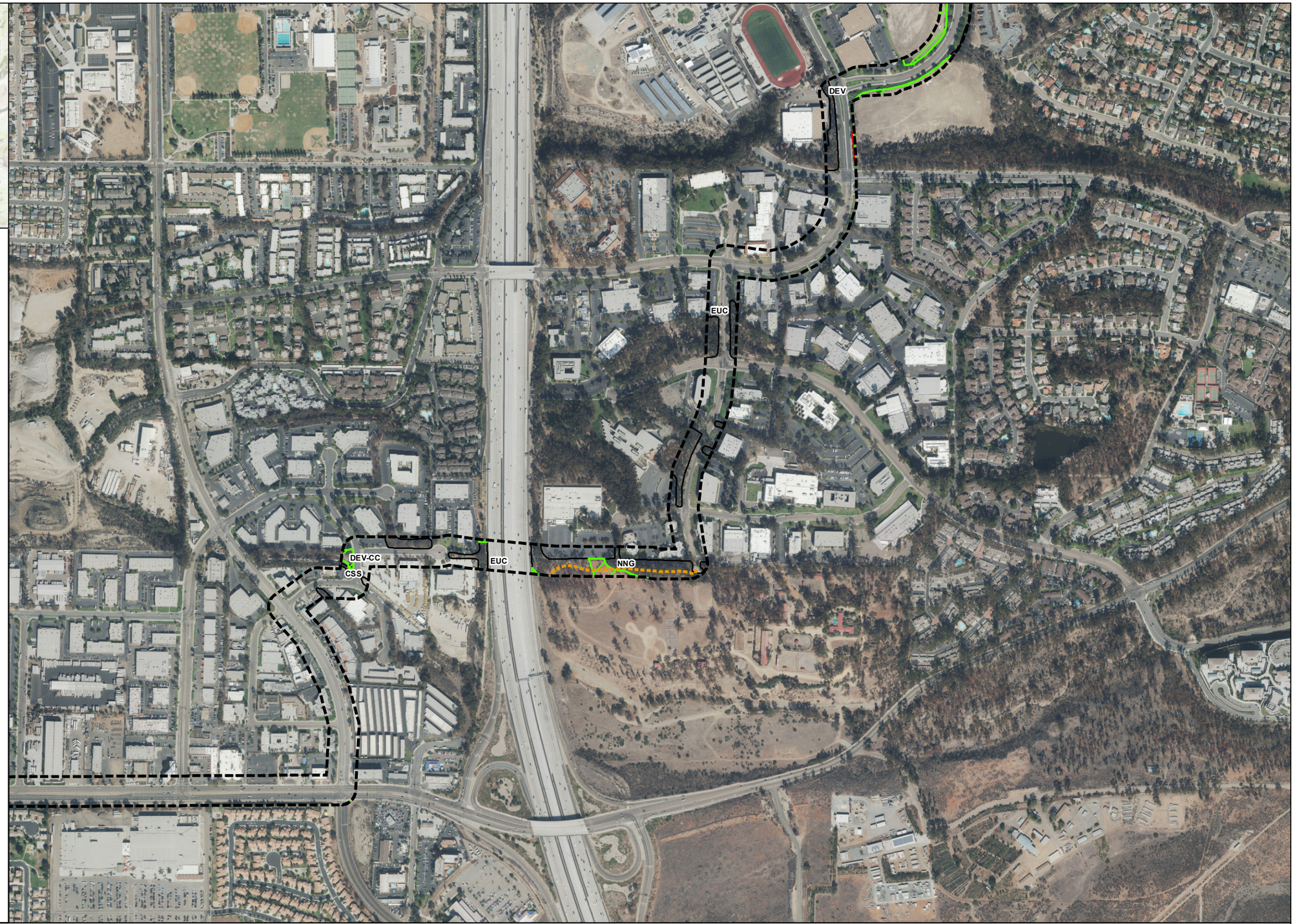


LEGEND

- Sensitive Plant Study Area
- No Access
- Access Roads
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - CSS, Diegan Coastal Sage Scrub
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - EUC, Eucalyptus Woodland
  - NNG, Non-native Grassland



N 0 500 1,000 Feet

SOURCE: SANDAG, 2016

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FIGURE 2-1H

Sensitive Plant Survey Areas and Results

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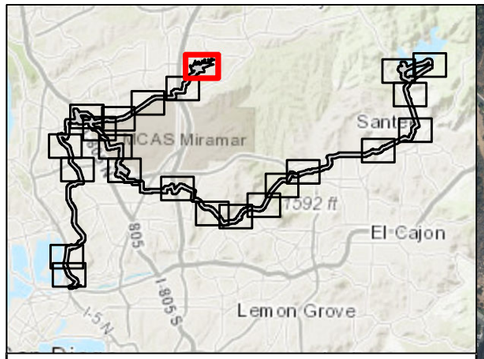

LEGEND

- Sensitive Plant Study Area
- No Access
- Sensitive Plant Survey Area
- 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
  - 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

Sensitive Plants

- *Adolphia californica*
- *Ferocactus viridescens*
- *Pentachaeta aurea ssp. aurea*
- *Pinus torreyana ssp. torreyana*
- *Quercus dumosa*
- *Selaginella cinerascens*

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1I

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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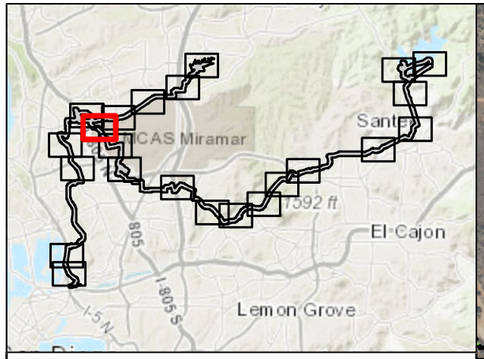

LEGEND

- Sensitive Plant Study Area
- Access Roads
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - CC, Chamise Chaparral
  - CSS, Diegan Coastal Sage Scrub
  - CSS-CHP, Coastal Sage-Chaparral Transition
  - 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
  - dCSS, disturbed Diegan Coastal Sage Scrub

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*

0 500 1,000 Feet

MIRAMAR RD

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1J

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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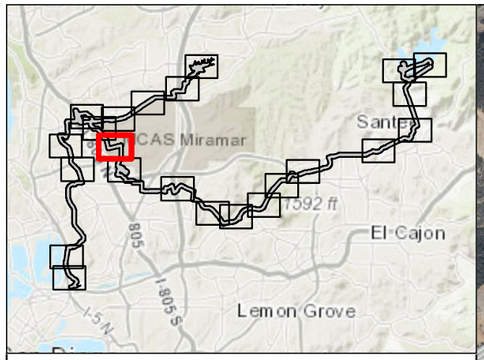

LEGEND

- Sensitive Plant Study Area
- Access Roads
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - BSC, Flat-topped Buckwheat
  - 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
  - SMX, Southern Mixed Chaparral
  - VP, Vernal Pool
  - dBSC, disturbed Flat-topped Buckwheat
  - dCSS, disturbed Diegan Coastal Sage Scrub

Sensitive Plants

- *Brodiaea orcuttii*
- *Ceanothus verrucosus*
- *Holocarpha virgata ssp. elongata*
- *Selaginella cinerascens*

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1K

Sensitive Plant Survey Areas and Results

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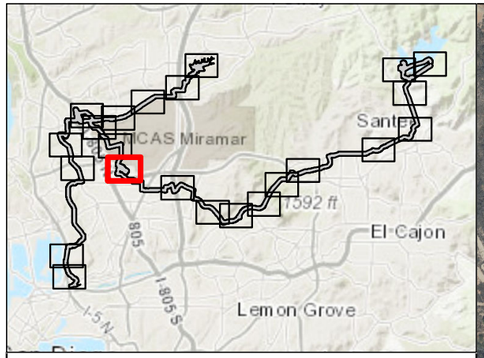
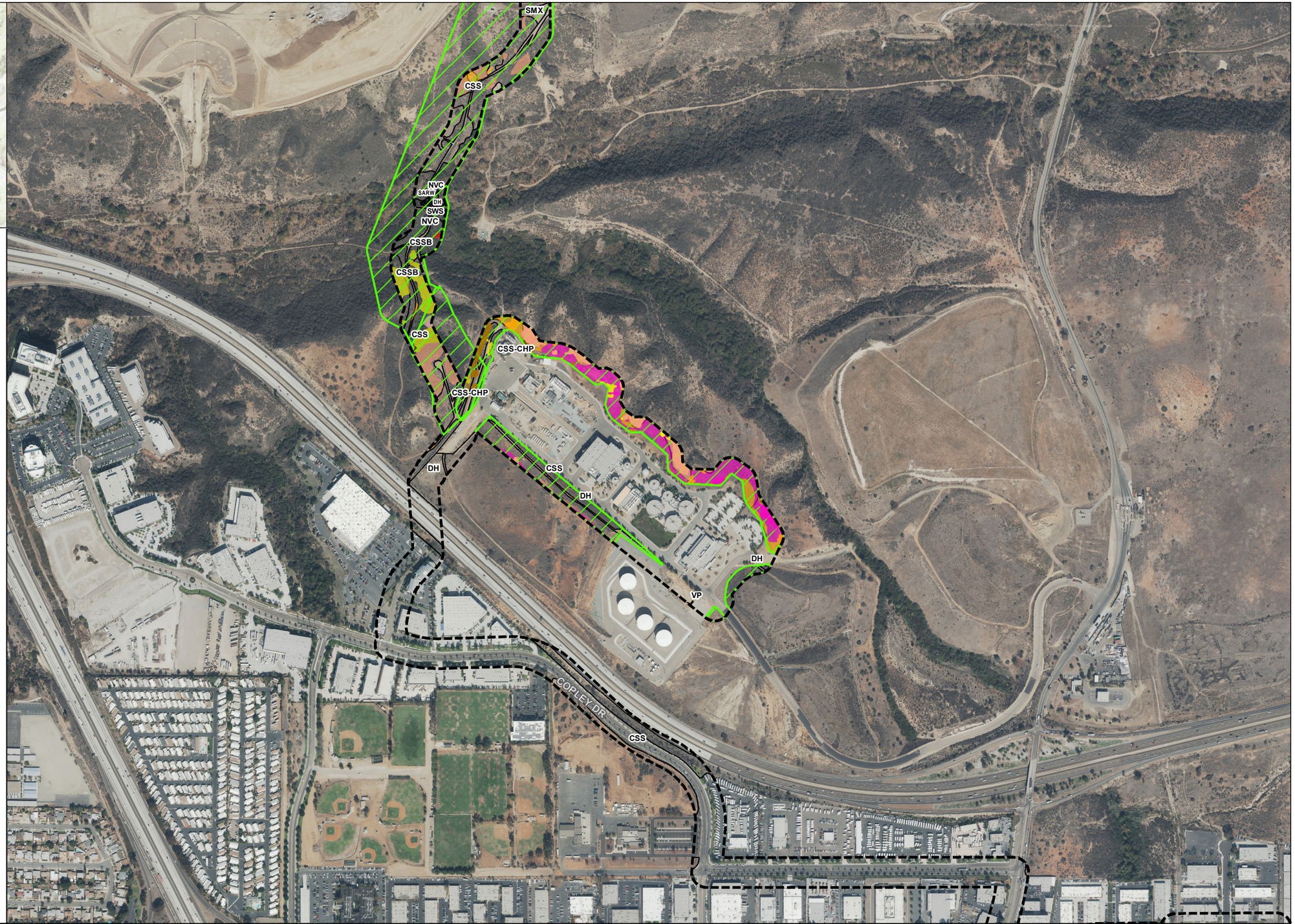


LEGEND

- Sensitive Plant Study Area
- Sensitive Plant Survey Area
- 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
  - SWS, Southern Willow Scrub
  - VP, Vernal Pool
  - dCSS, disturbed Diegan Coastal Sage Scrub

Sensitive Plants

- *Ceanothus verrucosus*
- *Chorizanthe polygonoides var. longispina*
- *Holocarpha virgata ssp. elongata*
- *Isocoma menziesii var. decumbens*
- *Quercus dumosa*
- *Selaginella cinerascens*



0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1L

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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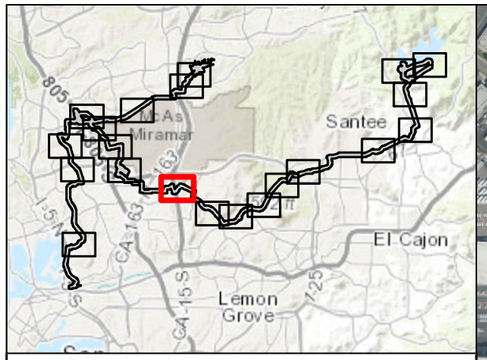

LEGEND

- Sensitive Plant Study Area
- No Access
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - CSS, Diegan Coastal Sage Scrub
  - CSSB, Diegan Coastal Sage Scrub: Baccharis-dominated
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - 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

Sensitive Plants

- *Ferocactus viridescens*
- *Viguiera laciniata*
- *Lepidium virginicum var. robinsonii*
- *Viguiera laciniata*

0 500 1,000 Feet

SOURCE: SANDAG, 2016

FIGURE 2-1M

Sensitive Plant Survey Areas and Results

DUDEK

Biological Resources Report for the North City Project

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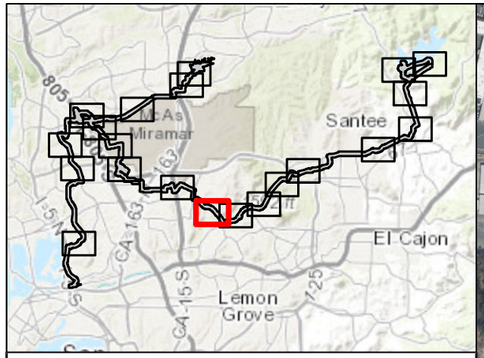

LEGEND

- Sensitive Plant Study Area
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - ARU, Arundo-Dominated Riparian
  - CSS, Diegan Coastal Sage Scrub
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - EUC, Eucalyptus Woodland
  - FWM, Coastal and Valley Freshwater Marsh
  - NNV, Non-native Vegetation
  - OW, Open Water
  - dCSS, disturbed Diegan Coastal Sage Scrub

Sensitive Plants

- *Viguiera laciniata*
- *Viguiera laciniata*

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1N

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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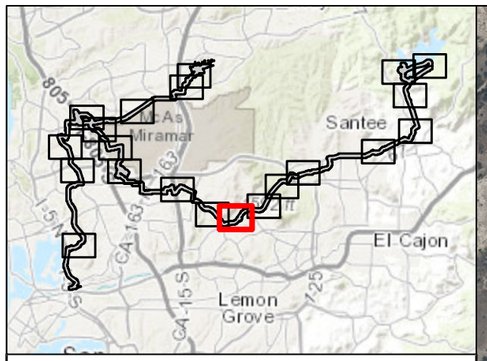

LEGEND

- Sensitive Plant Study Area
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - ARU, Arundo-Dominated Riparian
  - CLOW, Coast Live Oak Woodland
  - CSS, Diegan Coastal Sage Scrub
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - EUC, Eucalyptus Woodland
  - FWM, Coastal and Valley Freshwater Marsh
  - NNG, Non-native Grassland
  - NNW, Non-native Woodland
  - OW, Open Water
  - SWS, Southern Willow Scrub
  - dCSS, disturbed Diegan Coastal Sage Scrub

Sensitive Plants

- *Viguiera laciniata*
- *Viguiera laciniata*

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1O

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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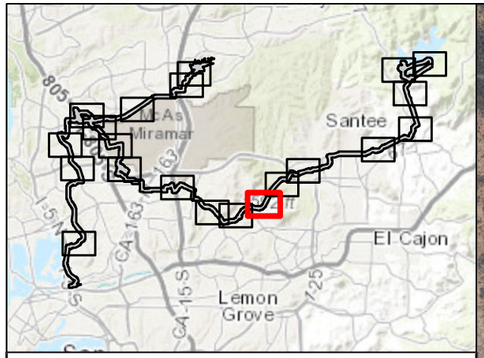

LEGEND

- Sensitive Plant Study Area
- Sensitive Plant Survey Area
- 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
  - SMX, Southern Mixed Chaparral
  - SWS, Southern Willow Scrub
  - dCSS, disturbed Diegan Coastal Sage Scrub

Sensitive Plants

- *Lepidium virginicum var. robinsonii*
- *Viguiera laciniata*
- *Selaginella cinerascens*
- *Viguiera laciniata*

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1P

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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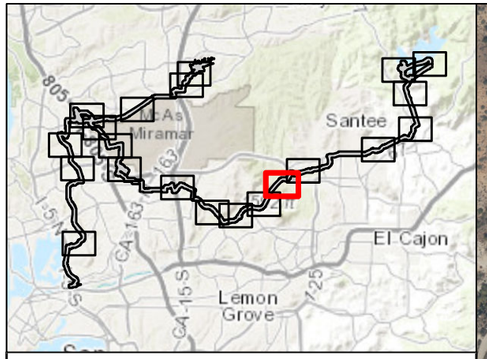

LEGEND

- Sensitive Plant Study Area
- No Access
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - CSS, Diegan Coastal Sage Scrub
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - NNG, Non-native Grassland
  - NNW, Non-native Woodland
  - NVC, Non-vegetated Channel or Floodway
  - SMX, Southern Mixed Chaparral
  - SWRF, Southern Arroyo Willow Riparian Forest

Sensitive Plants

- *Juglans californica*
- *Lepidium virginicum var. robinsonii*
- *Viguiera laciniata*
- *Selaginella cinerascens*
- *Viguiera laciniata*

0 500 1,000 Feet

DH
NVC
CSS
MISSION GORGE RD
CARLTON OAKS DR

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1Q

Sensitive Plant Survey Areas and Results

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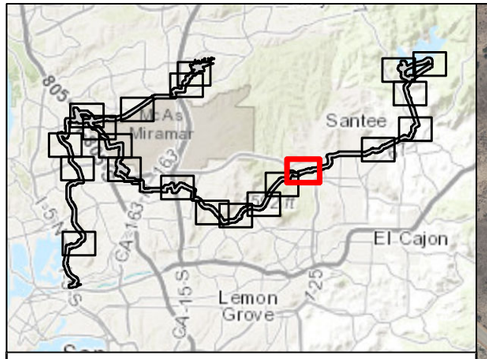

LEGEND

- Sensitive Plant Study Area
- No Access
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - CSS, Diegan Coastal Sage Scrub
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - NNG, Non-native Grassland
  - NNW, Non-native Woodland
  - NVC, Non-vegetated Channel or Floodway
  - SWRF, Southern Arroyo Willow Riparian Forest
  - SWS, Southern Willow Scrub

Sensitive Plants

- *Juglans californica*
- *Viguiera laciniata*
- *Viguiera laciniata*

0 500 1,000 Feet

SWS
CARLTON OAKS DR
NNW
NNW
NVC

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1R

Sensitive Plant Survey Areas and Results

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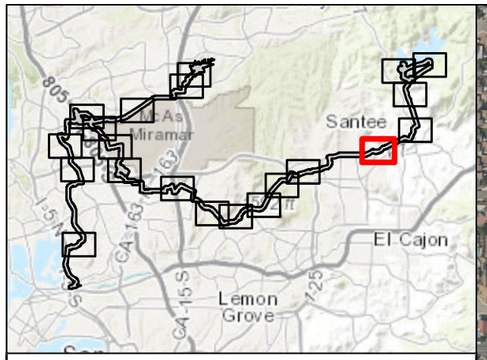

LEGEND

- Sensitive Plant Study Area
- No Access
- Sensitive Plant Survey Area
- 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: SANDAG, 2016

FIGURE 2-1S

Sensitive Plant Survey Areas and Results

DUDEK

Biological Resources Report for the North City Project

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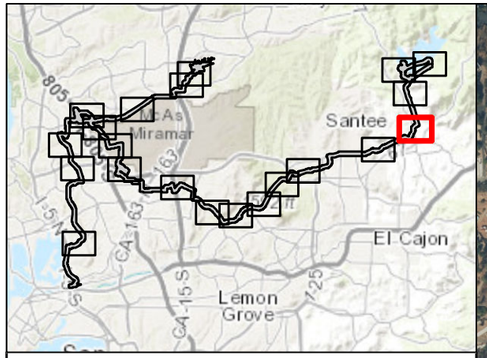

LEGEND

- Sensitive Plant Study Area
- No Access
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - CSS, Diegan Coastal Sage Scrub
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - EUC, Eucalyptus Woodland
  - NNG, Non-native Grassland
  - NVC, Non-vegetated Channel or Floodway
  - SCWRF, Southern Cottonwood-Willow Riparian Forest
  - SWS, Southern Willow Scrub

Sensitive Plants

- *Viguiera laciniata*
- *Viguiera laciniata*

0 500 1,000 Feet

MORENO AVE
WILLOW RD
SR-67
LAKESIDE AVE
RIVERSIDE DR
DH
EUC
DH

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1T

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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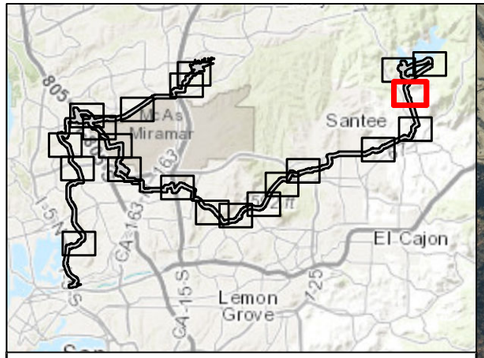

LEGEND

- Sensitive Plant Study Area
- Sensitive Plant Survey Area
- 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

Sensitive Plants

- *Viguiera laciniata*

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1U

Sensitive Plant Survey Areas and Results

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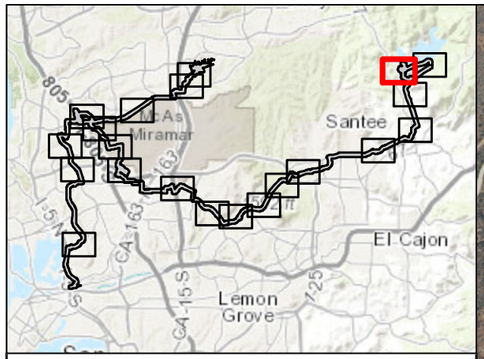

LEGEND

- Sensitive Plant Study Area
- Sensitive Plant Survey Area
- 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
  - NNG, Non-native Grassland
  - NVC, Non-vegetated Channel or Floodway
  - OW, Open Water
  - SMX, Southern Mixed Chaparral

Sensitive Plants

- *Clarkia delicata*
- *Pseudognaphalium leucocephalum*
- *Viguiera laciniata*
- *Lepidium virginicum var. robinsonii*
- *Pseudognaphalium leucocephalum*
- *Selaginella cinerascens*
- *Viguiera laciniata*

0 500 1,000 Feet

SMX
CSSr
DH
DH
SMX
CSSr
CSS
NVC
MORENO AVE

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1V

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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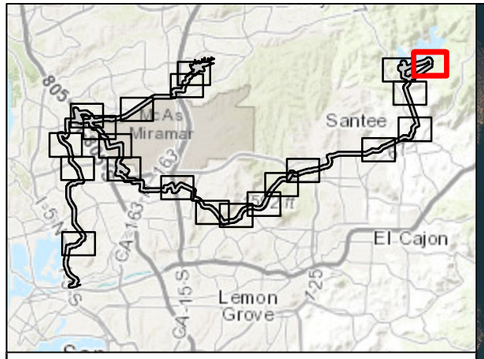
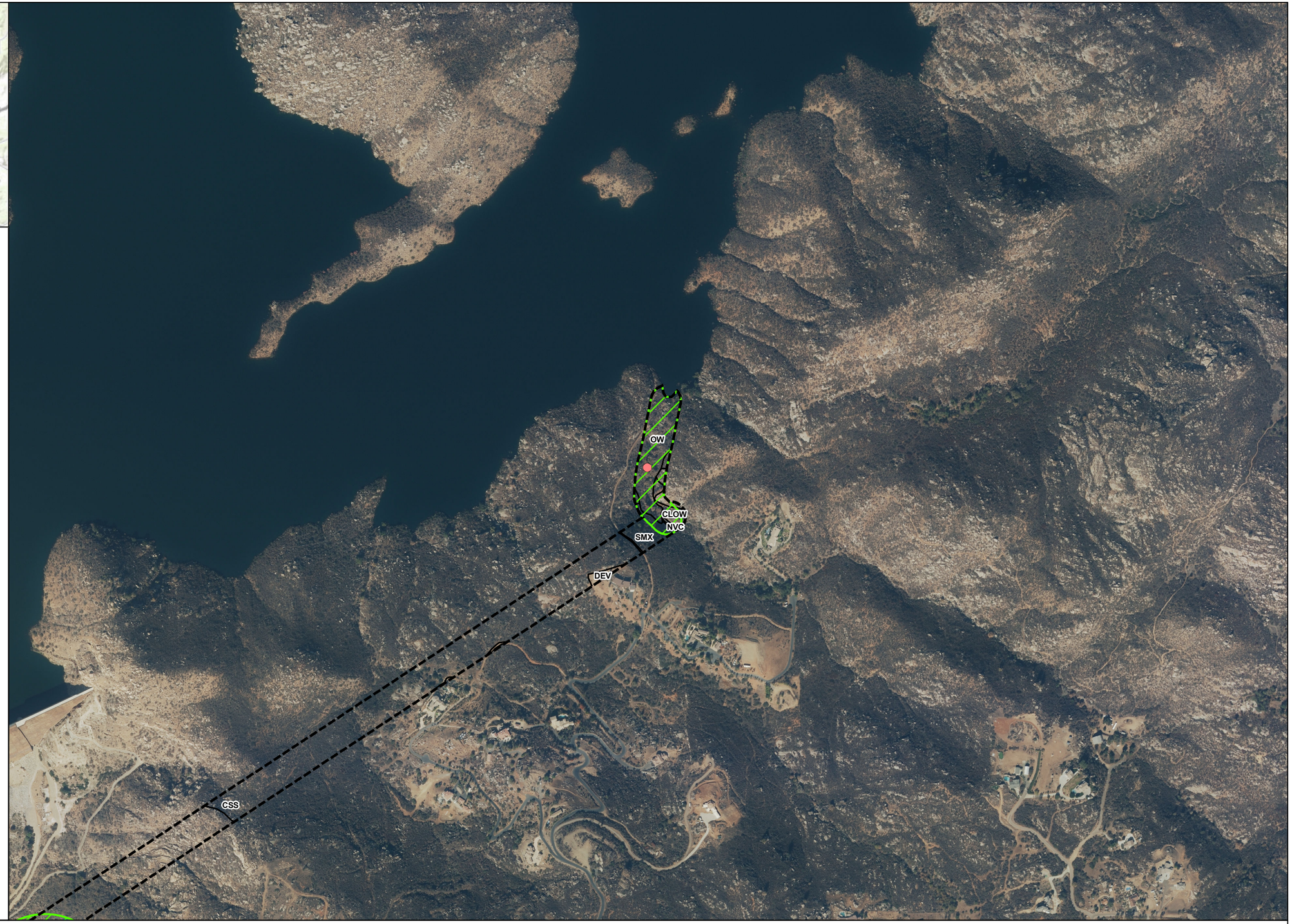


LEGEND

- Sensitive Plant Study Area
- Sensitive Plant Survey Area
- Vegetation Communities/Land Covers
  - CLOW, Coast Live Oak Woodland
  - CSS, Diegan Coastal Sage Scrub
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - NVC, Non-vegetated Channel or Floodway
  - OW, Open Water
  - SMX, Southern Mixed Chaparral

Sensitive Plants

- *Artemisia palmeri*
- *Artemisia palmeri*
- *Lepidium virginicum var. robinsonii*
- *Selaginella cinerascens*



N

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-1W

Sensitive Plant Survey Areas and Results

Biological Resources Report for the North City Project

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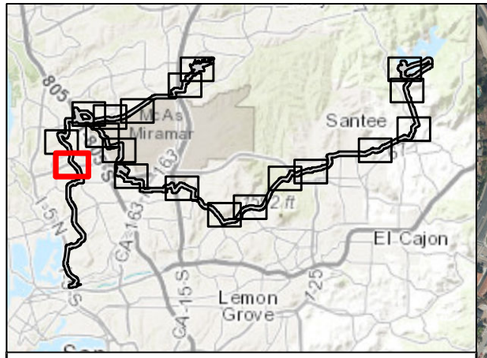

LEGEND

- Project Study Area
- Burrowing Owl Assessment
- Vegetation Communities/Land Covers
  - CLOW, Coast Live Oak Woodland
  - CSS, Diegan Coastal Sage Scrub
  - CSSB, Diegan Coastal Sage Scrub: Baccharis-dominated
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - EUC, Eucalyptus Woodland
  - MFS, Mulefat Scrub
  - NNG, Non-native Grassland
  - NNV, Non-native Vegetation
  - NVC, Non-vegetated Channel or Floodway
  - SCLO, Southern Coast Live Oak Riparian Forest
  - SRF, Southern Riparian Forest
  - SWRF, Southern Arroyo Willow Riparian Forest
  - dCLOW, disturbed Coast Live Oak Woodland
  - dCSS, disturbed Diegan Coastal Sage Scrub
  - dSRF, disturbed Southern Riparian Forest

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-2A

Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results

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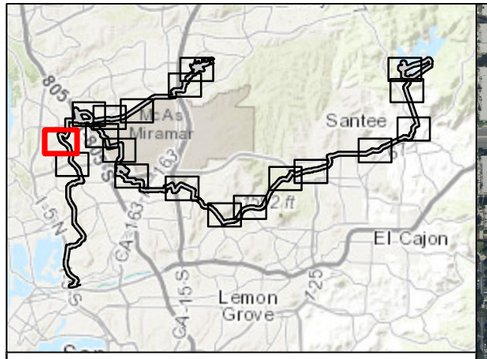

LEGEND

- Project Study Area
- No Survey Access
- Burrowing Owl Assessment
- 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

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-2B

Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results

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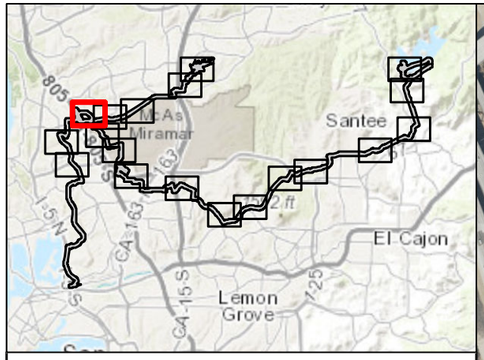
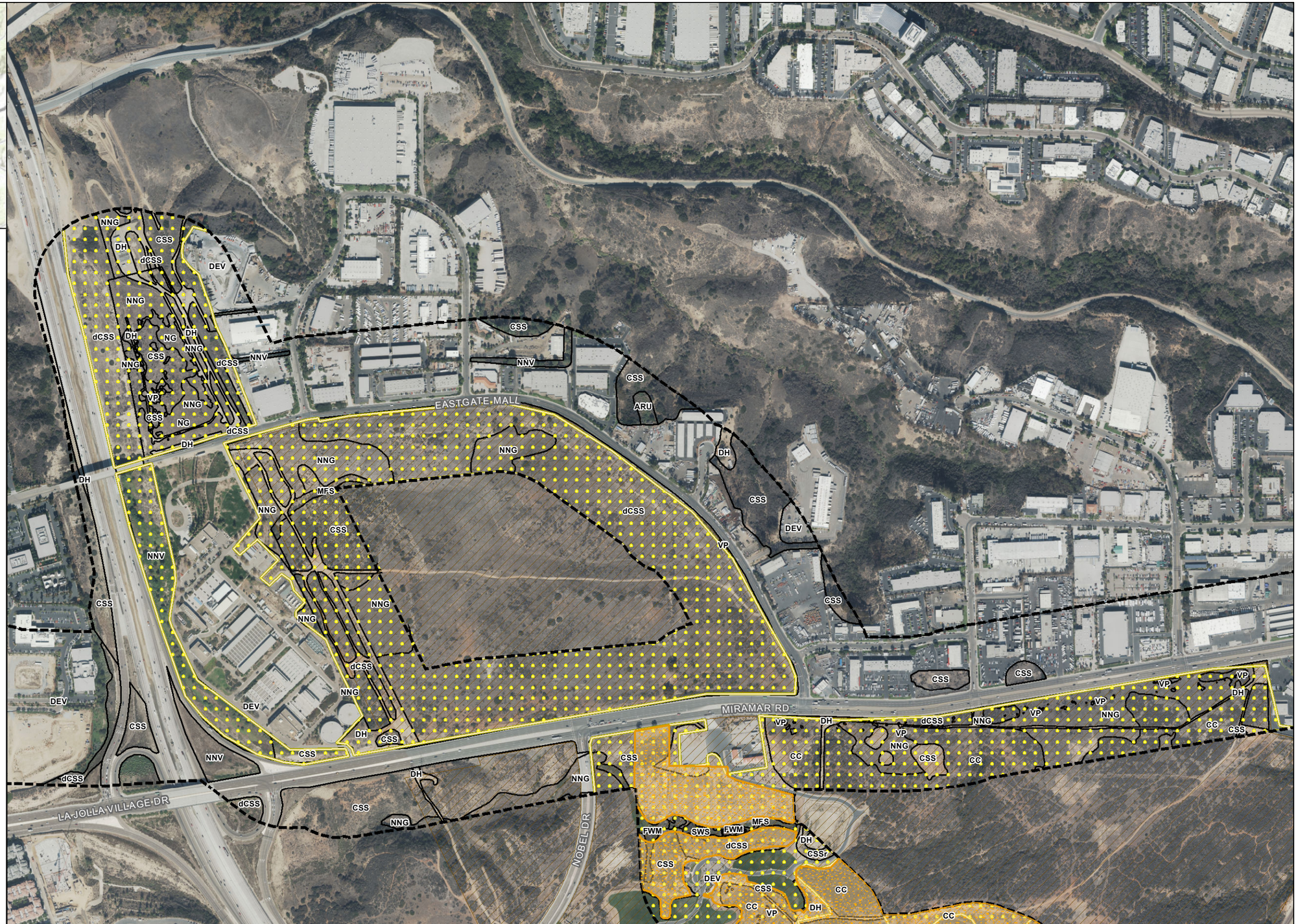


LEGEND

- Project Study Area
- MCAS Miramar
- Burrowing Owl Assessment
- Hermes Copper Butterfly Survey Areas
- Vegetation Communities/Land Covers
  - ARU, Arundo-Dominated Riparian
  - CC, Chamise Chaparral
  - CSS, Diegan Coastal Sage Scrub
  - CSS-r, Diegan Coastal Sage Scrub-Restored
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - FWM, Coastal and Valley Freshwater Marsh
  - MFS, Mulefat Scrub
  - NG, Native Grassland
  - NNG, Non-native Grassland
  - NNV, Non-native Vegetation
  - SWS, Southern Willow Scrub
  - VP, Vernal Pool
  - dCSS, disturbed Diegan Coastal Sage Scrub



0 500 1,000 Feet

SOURCE: SANDAG, 2016

FIGURE 2-2C

Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results

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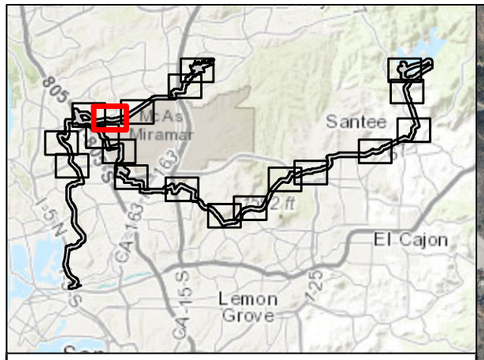

LEGEND

- Project Study Area
- MCAS Miramar
- Burrowing Owl Assessment
- Hermes Copper Butterfly Survey Areas
- Vegetation Communities/Land Covers
  - CC, Chamise Chaparral
  - CSS, Diegan Coastal Sage Scrub
  - CSS-r, Diegan Coastal Sage Scrub-Restored
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - EUC, Eucalyptus Woodland
  - NNG, Non-native Grassland
  - NNV, Non-native Vegetation
  - SMX, Southern Mixed Chaparral
  - VP, Vernal Pool
  - dCSS, disturbed Diegan Coastal Sage Scrub

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-2D

Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results

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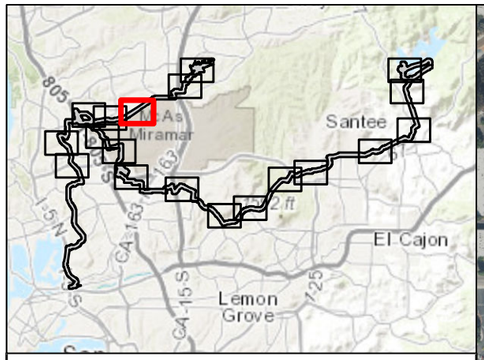
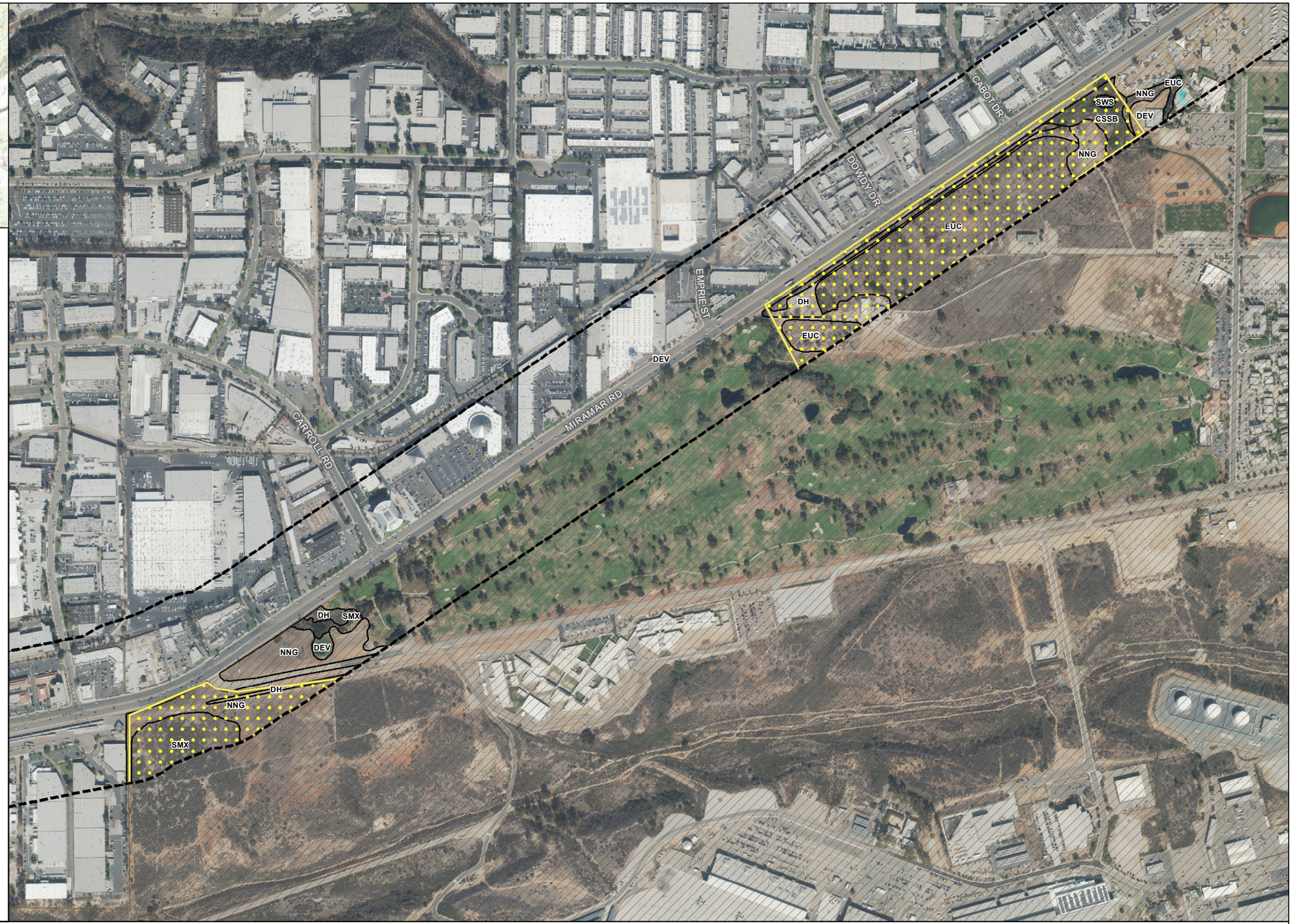


LEGEND

- Project Study Area
- MCAS Miramar
- Burrowing Owl Assessment
- Vegetation Communities/Land Covers
  - CSSB, Diegan Coastal Sage Scrub: Baccharis-dominated
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - EUC, Eucalyptus Woodland
  - NNG, Non-native Grassland
  - SMX, Southern Mixed Chaparral
  - SWS, Southern Willow Scrub



0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-2E

Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results

Biological Resources Report for the North City Project

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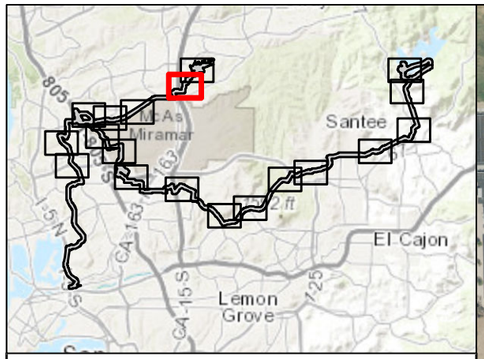

LEGEND

- Project Study Area
- MCAS Miramar
- Burrowing Owl Assessment
- Vegetation Communities/Land Covers
  - CSS, Diegan Coastal Sage Scrub
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - EUC, Eucalyptus Woodland
  - NNG, Non-native Grassland

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-2F

Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results

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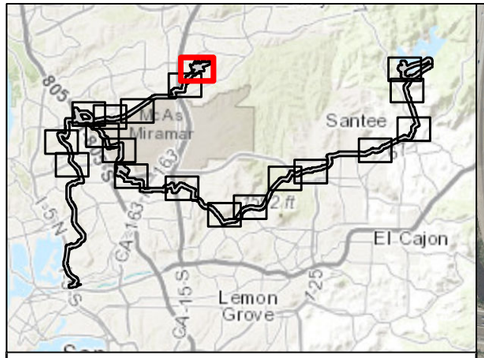

LEGEND

- Project Study Area
- Burrowing Owl Assessment
- 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

0 500 1,000 Feet

SCRIPPS RANCH BLVD

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-2G

Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results

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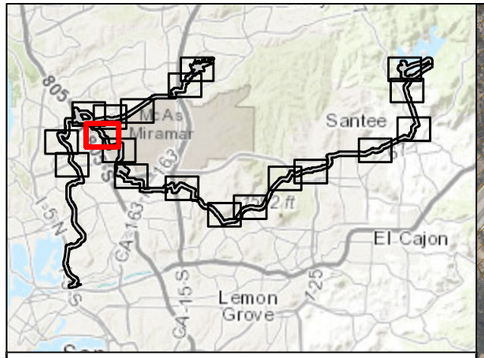
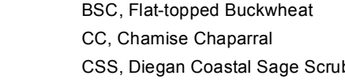
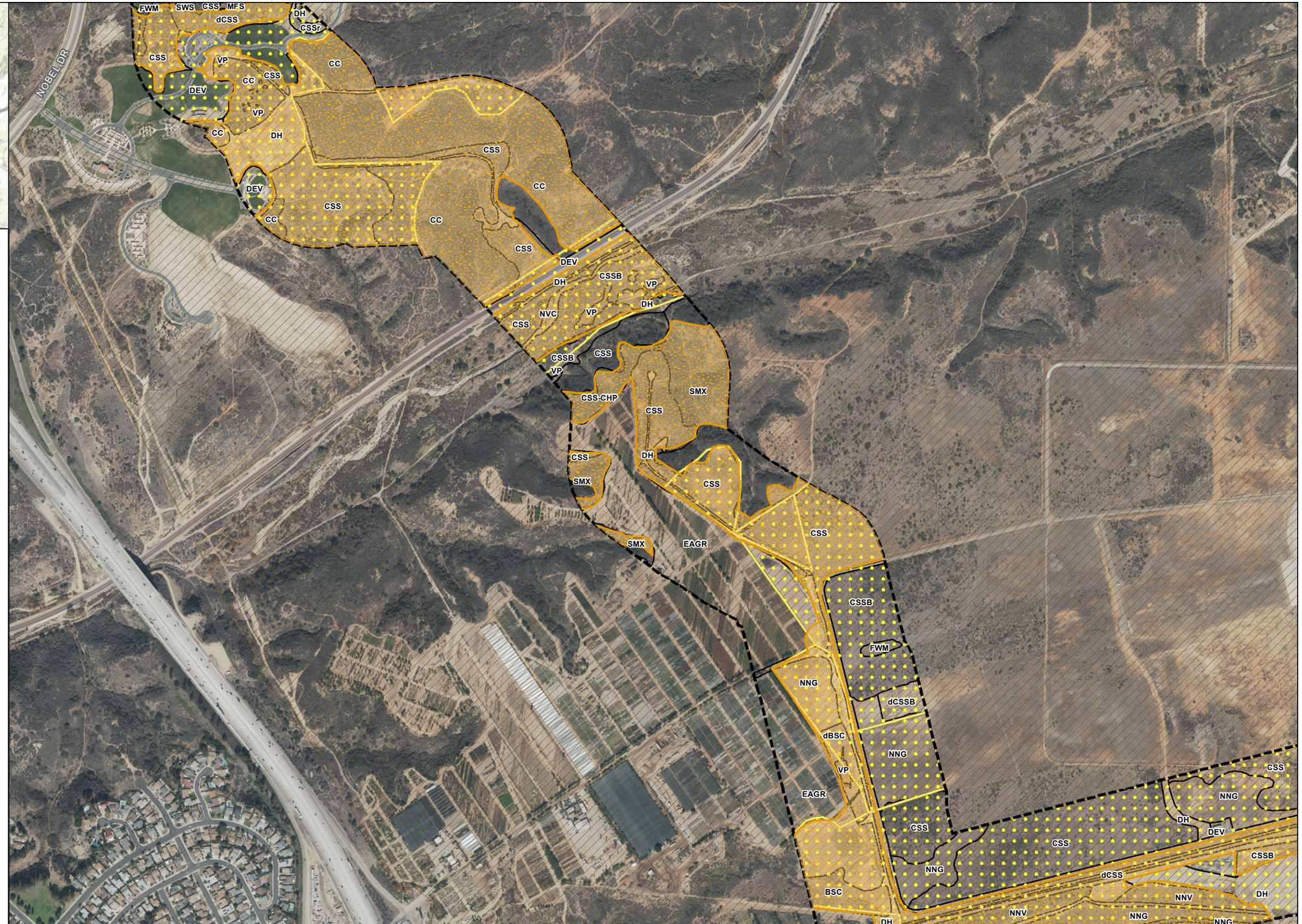


LEGEND

- Project Study Area
- MCAS Miramar
- Burrowing Owl Assessment
- Hermes Copper Butterfly Survey Areas
- Vegetation Communities/Land Covers
  - BSC, Flat-topped Buckwheat
  - 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
  - NNV, Non-native Vegetation
  - 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





SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-2H

Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results

Biological Resources Report for the North City Project

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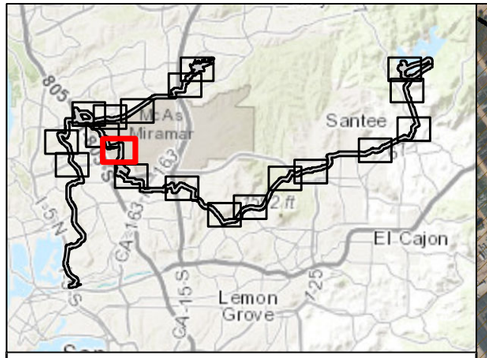

LEGEND

- Project Study Area
- MCAS Miramar
- Burrowing Owl Assessment
- Hermes Copper Butterfly Survey Areas
- 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
  - 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

0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-2I

Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results

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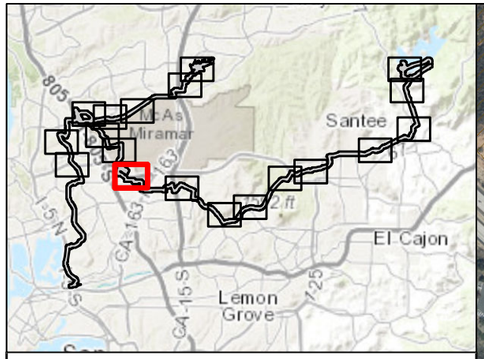
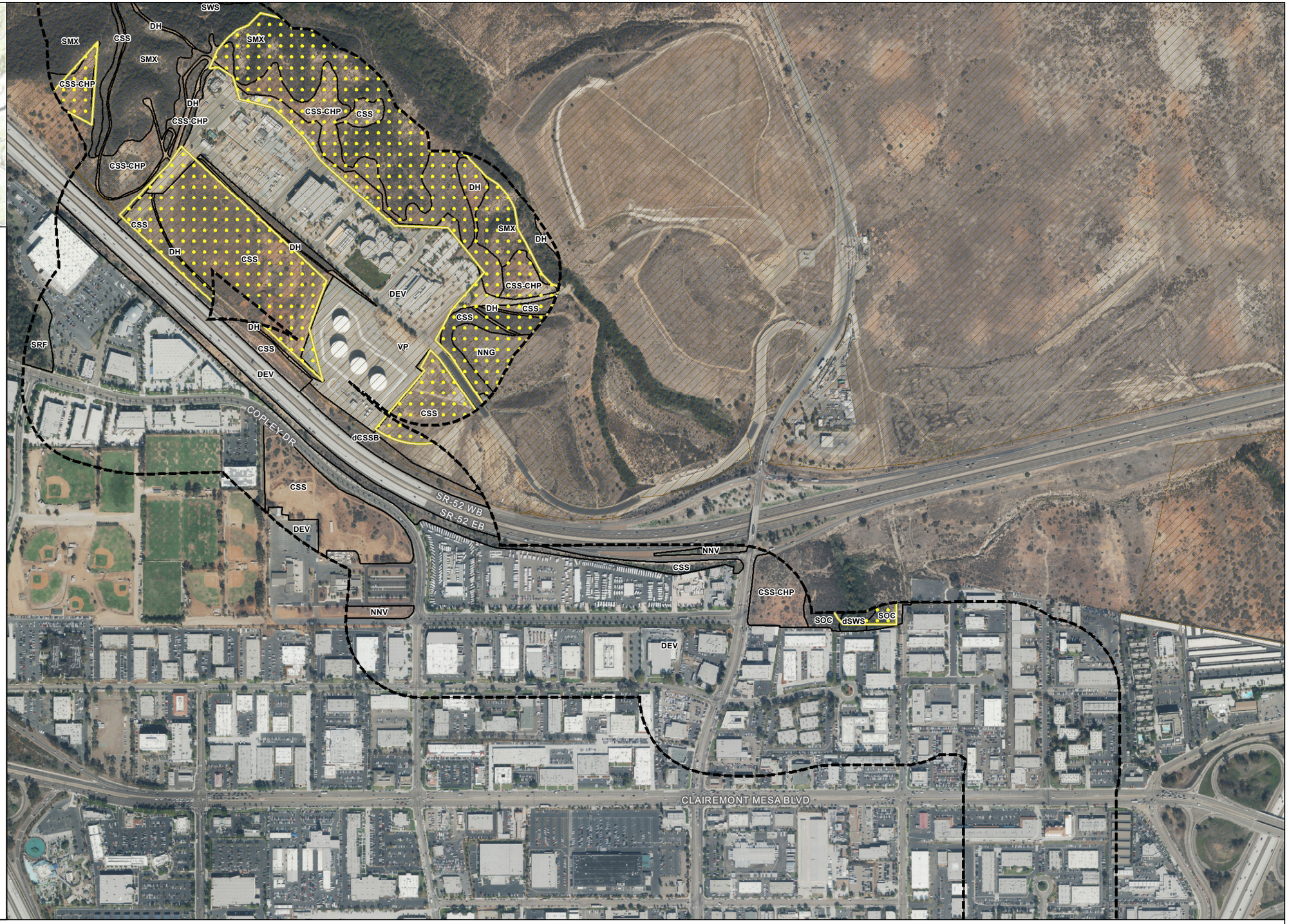


LEGEND

- Project Study Area
- MCAS Miramar
- Burrowing Owl Assessment
- 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
  - 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



0 500 1,000 Feet

SOURCE: SANDAG, 2016

DUDEK

FIGURE 2-2J

Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results

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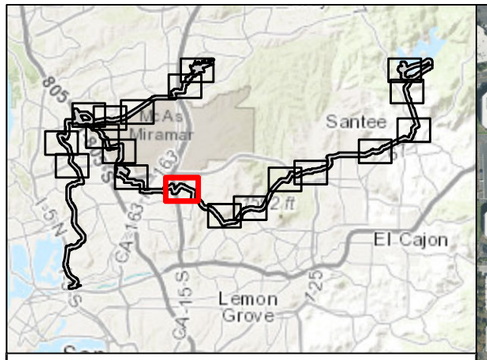

LEGEND

- Project Study Area
- MCAS Miramar
- No Survey Access
- Burrowing Owl Assessment
- 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

0 500 1,000 Feet

SOURCE: SANDAG, 2016

FIGURE 2-2K

Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results

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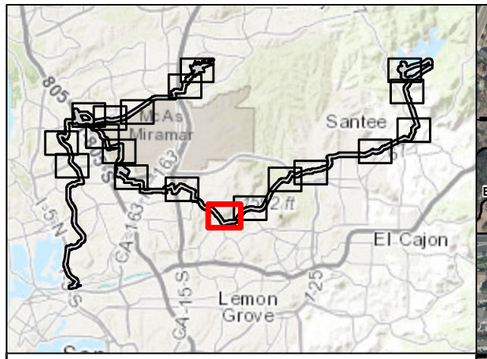

LEGEND

- Project Study Area
- No Survey Access
- Burrowing Owl Survey Areas
- Burrowing Owl Assessment
- Vegetation Communities/Land Covers
  - ARU, Arundo-Dominated Riparian
  - CLOW, Coast Live Oak Woodland
  - CSS, Diegan Coastal Sage Scrub
  - DEV, Urban/Developed
  - DH, Disturbed Habitat
  - EUC, Eucalyptus Woodland
  - FWM, Coastal and Valley Freshwater Marsh
  - NNV, Non-native Vegetation
  - NNW, Non-native Woodland
  - OW, Open Water
  - SWS, Southern Willow Scrub
  - dCSS, disturbed Diegan Coastal Sage Scrub

0 500 1,000 Feet

SOURCE: SANDAG, 2016

FIGURE 2-2L

Burrowing Owl and Hermes Copper Butterfly Survey Areas and Results

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Biological Resources Report for the North City Project

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