



Denise Duffy & Associates, Inc.

PLANNING AND ENVIRONMENTAL CONSULTING

March 2, 2016

Ahmad Kashkoli and Susan Stewart
Division of Financial Assistance
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Subject: Second Revision to U.S. Fish and Wildlife Service Biological Assessment for Federal Endangered Species Act Section 7 Compliance - Pure Water Monterey Groundwater Replenishment Project

Dear Mr. Kashkoli and Ms. Stewart,

On behalf of our client, Monterey Regional Water Pollution Control Agency (MRWPCA), Denise Duffy & Associates, Inc. (DD&A) hereby submits the enclosed second revision to the Biological Assessment in compliance with Federal Endangered Species Act Section 7 for the United States Fish and Wildlife Service (USFWS) for the Pure Water Monterey Groundwater Replenishment Project (GWR Project). As you requested on February 10 and 11, 2016, the revised BA now includes additional maps of the key project sites, a table of mitigation measures, a project schedule, and a summary of more recent informal consultation with USFWS. As you requested on March 1, 2016, the revised BA now includes mitigation measures numbers in the Avoidance and Minimization sections of Chapter 4 and explanation regarding Monterey gilia site surveys. In addition, per comments from Jacob Martin during his site visit on February 26, 2016, the revised BA includes notes that explain that the GWR Project will avoid riparian habitat impacts during construction activities associated with horizontal directional drilling of the Blanco Drain diversion pipeline. This additional consultation is also now documented in both Chapter 2 (page 58) and in Appendix F.

The MRWPCA has applied to the State Water Resources Control Board (SWRCB) for financing from the Clean Water State Revolving Fund (CWSRF) Loan Program and for a Water Recycling Funding Program grant. In addition, the Monterey County Water Resources Agency, a project partner, has applied to the SWRCB for water rights to divert water in the Reclamation Ditch and in Blanco Drain as a component of the GWR Project. MRWPCA has also submitted an application to the United States Army Corps of Engineers (USACOE) for a Clean Water Act Section 404 Permit for the diversion facilities in the Reclamation Ditch and Blanco Drain. The CWSRF Program is partially funded by the United States Environmental Protection Agency (USEPA) and requires compliance with CEQA and federal environmental laws and regulations. The SWRCB, as the USEPA's designated federal lead, is required to consult directly with agencies responsible for implementing federal environmental laws and regulations. USACOE is also required to consult with agencies responsible for these laws prior to approving the Section 404 permit.

We understand that prior to a CWSRF financing commitment and approval of a Clean Water Act Section 404 permit, the GWR Project is subject to provisions of the Clean Water Act, Federal Endangered Species Act, and must obtain Section 7 clearance from the United States Department of the Interior, Fish and Wildlife Service (USFWS), and the United States Department of Commerce, National Oceanic and Atmospheric Administration, National

Marine Fisheries Service (NMFS) for any potential effects to special-status species. This document provides you and the USEPA with all of the information needed to initiate consultation with USFWS.

We are pleased that Susan has now visited the GWR Project sites and toured the Pure Water Monterey Demonstration Facility. We are extremely eager to see formal consultation initiated with USFWS and Jacob Martin has indicated that he has time scheduled to prepare the Biological Opinion in the coming months. Thank you in advance for doing all that you can to expedite the initiation of consultation immediately. Successful implementation of this important and environmentally beneficial project is contingent upon completion of the Biological Opinion from the USFWS in a timely manner.

Please contact me at (831) 373-4341 x12 or aimamura@ddaplanning.com with any questions or comments.

Sincerely,



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BIOLOGICAL ASSESSMENT
FOR THE U.S. FISH AND WILDLIFE SERVICE
PURE WATER MONTEREY
GROUNDWATER REPLENISHMENT PROJECT



DECEMBER 16, 2015
REVISED: FEBRUARY 12, 2016
REVISED: MARCH 2, 2016

Project Proponents:

Monterey Regional Water Pollution Control Agency
in partnership with
Monterey Peninsula Water Management District

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Biological Assessment

for the

U.S. Fish and Wildlife Service

Pure Water Monterey Groundwater Replenishment Project, Monterey County

December 16, 2015

Revision #1: February 16, 2016

Revision #2: March 2, 2016

Prepared by:
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Summary of Findings, Conclusions and Determinations

The proposed Pure Water Monterey Groundwater Replenishment Project (GWR Project or Proposed Action) intends to create a reliable source of water supply for northern Monterey County. The GWR Project consists of two components: 1) purified water for recharge of the Seaside Groundwater Basin, and 2) recycled water to augment the existing Castroville Seawater Intrusion Project's agricultural irrigation supply. Water supplies proposed to be recycled and reused by the GWR Project include municipal wastewater, industrial wastewater, urban stormwater runoff, and surface water diversions. The GWR Project is being proposed by MRWPCA in partnership with the Monterey Peninsula Water Management District (Water Management District). The GWR Project would be located within northern Monterey County and would include new facilities located within unincorporated areas of the Salinas Valley and within the cities of Salinas, Marina, and Seaside.

Two plant species are known or have the potential to occur within the Action Area and/or to be affected by the project: Monterey Spineflower (*Chorizanthe pungens* var. *pungens*) and Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*). The rationale for determination of presence or absence within the Action Area is based on protocol-level survey results, local occurrence data, and/or the habitat features documented to occur within the Action Area.

Two wildlife species is known or have the potential to occur within the Action Area and/or to be affected by the project: tricolored blackbirds (*Agelaius tricolor*) and California red-legged frog (*Rana draytonii*) (CRLF). The rationale for determination of presence or absence within the Action Area is based on local occurrence data and the habitat features documented to occur within the Action Area. Avian species protected under the MBTA are also known or have the potential to occur within the Action Area.

Design features of the Proposed Action and the avoidance and minimization measures included in the approved Mitigation, Monitoring, and Reporting Plan (MMRP) and provided in Appendix E of this document will reduce the effects of the Proposed Action to Monterey spineflower, Monterey gilia, and CRLF. However, construction activities are likely to **adversely affect** Monterey spineflower, and CRLF. Additionally, construction activities are likely to **adversely affect** Monterey gilia if it is documented during protocol-level plant surveys conducted at the Injection Well Facilities site.

Avoidance and minimization measures included in this document will reduce effects to tricolored blackbirds and other migratory birds. As such, the project **may affect, but is not likely to adversely affect** tricolored blackbirds and other migratory birds.

There are no areas of designated critical habitat within the Action Area. As such, the Proposed Action **will not affect** critical habitat.

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List of Abbreviated Terms

AFY	Acre feet per year
ASR	Aquifer Storage and Recovery
AWT	Advanced Water Treatment
BA	Biological Assessment
CalAm	California American Water Company
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CNDDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CRLF	California red-legged frog
CSIP	Castroville Seawater Intrusion Project
DD&A	Denise Duffy & Associates, Inc.
EIR	Environmental Impact Report
ESA	Federal Endangered Species Act
HDD	Horizontals Directional Drilling
MBTA	Migratory Bird Treaty Act of 1918
mgd	Million gallons per day
MMRP	Mitigation, Monitoring, and Reporting Plan
MRWPCA	Monterey Regional Water Pollution Control Agency
NOP	Notice of Preparation
NRCS	Natural Resource Conservation Service
PCE(s)	Primary Constituent Element(s)
PG&E	Pacific Gas and Electric
Regional Treatment Plant	MRWPCA's Regional Wastewater Treatment Plant
SCADA	Supervisory control and data acquisition
Service	United States Fish and Wildlife Service
SRF	State Revolving Funds
SWRCB	State Water Resources Control Board
TP1	Treatment Plant 1
USACOE	United States Army Corps of Engineers
USDA	United States Department of Agriculture

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Chapter 1. Introduction

The purpose of this biological assessment (BA) is to provide technical information and to review the Proposed Action in sufficient detail to determine to what extent the Proposed Action may affect threatened, endangered, or proposed species; designated and proposed critical habitat; and avian species protected under the Migratory Bird Treaty Act (MBTA). The BA is prepared in accordance with legal requirements found in Section 7 (a)(2) of the Endangered Species Act (16 U.S. C 1536(c)), and with the U.S. Fish and Wildlife Service (Service). The U.S. Environmental Protection Agency, with assistance by the State Water Resources Control Board (SWRCB), will serve as federal lead for Federal Endangered Species Act (ESA) Section 7 consultation. The document presents technical information upon which later decisions regarding Proposed Action effects are based.

The Monterey Regional Water Pollution Control Agency (MRWPCA), as California Environmental Quality Act lead agency, prepared and certified (on October 8, 2015) an Environmental Impact Report (EIR) for the Pure Water Monterey Groundwater Replenishment Project (GWR Project or the Proposed Action). An EIR is required to satisfy certain federal reporting requirements to pursue funding from the Clean Water State Revolving Fund (SRF) Loan Program (SWRCB, 2013). The GWR Project requires coordination with the SWRCB, the U.S. Environmental Protection Agency's designee for environmental compliance with federal environmental regulations, to provide a low interest construction loan through the Clean Water State Revolving Fund program and grants under Proposition 1. Revised versions of this report have been prepared since it was originally submitted to the SWRCB, USEPA, USACOE, and USFWS on December 17, 2015. Specifically, comments were received from Susan Stewart of SWRCB on February 10 and 11, 2016 and the document was revised and submitted on February 16, 2016. The comments received on February 10-11, 2016 were: (1) include a table of mitigation measures within the body of the report; and (2) include additional maps showing the location of permanent facilities with the Proposed Action areas. In response to those comments, DD&A added Table 1-2 and Appendix G, respectively. A comment from USFWS on February 26, 2016 during a site visit requested clarification in the form of added text to the body of the report and to Figures 3-2, 3-18 and M-1 in Appendix G to clarify that the project would be avoiding construction impacts to riparian vegetation associated with the Salinas River for the trenchless pipeline installation across the river. On March 1, 2016, Susan Stewart requested adding mitigation measure numbers to the Avoidance and Minimization Efforts section in Chapter 4. The document was revised and resubmitted on March 2, 2016. These latter comments are shown in this document in stricken text (i.e., ~~strikeout~~) for text that has been deleted and underlined text (i.e., underline) for text that has been added for clarity and in red text as new notes on the Figures above (3-2, 3-18, and M-1).

The Proposed Action for this BA and consultation is the funding of the GWR Project by the State Water Board/USEPA.¹ Another federal action for the GWR Project include the issuance of a Clean Water Act Section 404 permit by the US Army Corps of Engineers (USACOE) to construct project facilities in waters under the jurisdiction of the USACOE within the Salinas River and Reclamation Ditch watersheds.

The GWR Project components are divided into the following categories:

1. **Source water** – diversion, collection, conveyance of source water supplies to MRWPCA’s Regional Wastewater Treatment Plant (Regional Treatment Plant) (diversion/mixing structures, pipelines, pump stations, and storage facilities)
2. **Treatment process and facilities at Regional Treatment Plant** – advanced water treatment (AWT), facility, concentrate disposal, and modification to the existing Salinas Valley Reclamation Plant
3. **Product water conveyance** – pipelines, pump stations, appurtenant facilities to move the advanced treated water from the Regional Treatment Plant to the Seaside Groundwater Basin injection well facilities
4. **Injection well facilities** – deep injection and vadose zone wells, backflush facilities to inject GWR Project purified recycled water into the Seaside Basin

This BA evaluates each of the proposed components individually in order to: 1) analyze potential project effects for each component; and 2) identify corresponding avoidance and minimization measures and/or changes to the project to reduce effects for each component.

1.1 Purpose and Need

The GWR Project assumes that MRWPCA, in partnership with other agencies, would build and operate a new water supply project that will replace existing supplies that are constrained by decisions affecting the Carmel River. Specifically, the decisions include SWRCB Order No. WR 95-10 (Order 95-10) (SWRCB, 1995) and Order 2009-0060 (SWRCB, 2009), the Cease and Desist Order, that will limit use of one of the primary sources of supply for the Central Division, Monterey County District of the California American Water Company (CalAm) and that provide an immediate impetus for implementing the GWR Project for which the loan is requested. The Project also proposes to augment existing recycled water

¹ Although Tembladero Slough and Lake El Estero source water diversions are included as a component of the Project in this Project approval, the MRWPCA and their partner agency are not including these facilities in the initial phase of the Project, in particular they are not included in permit applications, loan applications, and/or grant applications. There would be no effect on Project yields due to elimination of the Lake El Estero source water diversion due to the amount and timing of water available from this source. The effect of not implementing the Tembladero Slough diversion is a reduction in the crop irrigation water yield for the Castroville Seawater Intrusion Project (CSIP) of approximately 500 to 750 acre feet per year (AFY) within some drought years. Based on source water analysis in the EIR, the Project would be expected to achieve a CSIP crop irrigation additional yield of 4,750 to 4,950 AFY and, although less frequently, up to 5,292 AFY in drought years.

supplies used for irrigation of the Castroville Seawater Intrusion Project (CSIP) area of the Salinas Valley. This component would reduce the use of groundwater in the Salinas Valley Groundwater Basin, which is affected by seawater intrusion.

The proposed GWR Project intends to create a reliable source of water supply for northern Monterey County. The GWR Project consists of two components: 1) purified water for recharge of the Seaside Groundwater Basin, and 2) recycled water to augment the existing Castroville Seawater Intrusion Project's agricultural irrigation supply. Water supplies proposed to be recycled and reused by the GWR Project include municipal wastewater, industrial wastewater, urban stormwater runoff, and surface water diversions. The GWR Project is being proposed by MRWPCA in partnership with the Monterey Peninsula Water Management District (Water Management District). The GWR Project would be located within northern Monterey County and would include new facilities located within unincorporated areas of the Salinas Valley and within the cities of Salinas, Marina, and Seaside.

Figure 1-1 shows the regional location of the Proposed Action. Once the purified, recycled water is injected into the Seaside Groundwater Basin, the treated water would mix with the groundwater present in the aquifers and be stored for future use. The primary purpose of the Proposed Action is to provide 3,500 acre-feet per year (AFY) of high quality replacement water to CalAm for delivery to its customers in the Monterey District service area, thereby enabling CalAm to reduce its diversions from the Carmel River system by this same amount and reduce adverse effects of those diversions on the species and habitat in that system.² CalAm is under a state order to secure replacement water supplies by December 2016. In addition, the Proposed Action would augment agricultural irrigation water supplies for the farmland in northern Salinas Valley (which is currently served by the existing Castroville Seawater Intrusion Project irrigation system).

Project Goals and Objectives

The primary objective of the Proposed Action is to replenish the Seaside Groundwater Basin with 3,500 AFY of purified recycled water to replace a portion of CalAm's water supply as required by state orders. To accomplish this primary objective, the Proposed Action would need to meet the following objectives:

1. Be capable of commencing operation, or of being substantially complete no later than necessary to meet CalAm's replacement water needs;³

² CalAm is an investor-owned public utility that serves approximately 38,500 customers in the Monterey Peninsula area.

³ The Monterey Peninsula Water Supply Project has been delayed to the point where it is not possible for CalAm to meet the State Water Resources Control Board Cease and Desist Order (CDO) 2009-60 deadline of December 31, 2016. Accordingly, representatives of the local agencies have been in discussion with the State

2. Be cost-effective such that the project would be capable of supplying reasonably-priced water; and
3. Be capable of complying with applicable water quality regulations intended to protect public health.

Secondary objectives of the Proposed Action include the following:

1. Provide additional water to the Regional Treatment Plant that could be used for crop irrigation through the Salinas Valley Reclamation Plant and CSIP system;
2. Develop a drought reserve to allow the increased use of Proposed Project source waters as crop irrigation within the area served by the CSIP during dry years;
3. Assist in preventing seawater intrusion in the Seaside Groundwater Basin;
4. Assist in diversifying Monterey County's water supply portfolio.

1.2 Project Description

This section describes the new physical components of the GWR Project (i.e., the Proposed Action). **Figure 1-2**, show an overview of the GWR Project key components. Appendix G provides additional detailed maps of the GWR Project.⁴ The following project components are described in detail in the subsections below:

1. *Source water diversion and storage* – facilities to enable diversion of new source waters to the existing municipal wastewater collection system and conveyance of those waters as municipal wastewater to the Regional Treatment Plant to increase availability of wastewater for recycling. Modifications would also be made to the existing Salinas Industrial Wastewater Treatment Facility to allow the use of the existing treatment ponds for storage of excess winter source water flows and later delivery to the Regional Treatment Plant for recycling.
2. *Treatment facilities at Regional Treatment Plant* – use of existing primary and secondary treatment facilities at the Regional Treatment Plant, a new AWT Facility (including pre-treatment, ozonation, membrane filtration, reverse osmosis, advanced oxidation with ultraviolet light and hydrogen peroxide, and product water stabilization), product water pump station, and concentrate disposal facilities), and

Board to develop proposals for a CDO extension that would be acceptable to the public and have the potential to obtain State Board approval. This objective has been revised when compared to the EIR due to the known delays for CalAm to achieve the CDO timeframe.

⁴ Note: Since preparing the project/Proposed Action impact area maps, DD&A has met with CDFW, USFWS, and with the project engineer at the site for the proposed horizontal directional drilling component of the Blanco Drain source water diversion sites. Those meetings have concluded with the common understanding that the impact area for construction activities will avoid any adverse effects to riparian habitat associated with the Salinas River including avoidance of tree removal and limb removal of existing trees.

- modifications to the Salinas Valley Reclamation tertiary treatment plant and storage basin.
3. *Product water conveyance* – new pipelines, booster pump station, appurtenant facilities along pipeline alignments to move the product water from the Regional Treatment Plant to the Seaside Groundwater Basin injection well facilities.
 4. *Injection well facilities* – new deep and vadose zone wells to inject Proposed Action product water into the Seaside Groundwater Basin, along with associated back-flush facilities, pipelines, electricity/ power distribution facilities, and electrical/motor control buildings.

Table 1-1 below summarizes the physical dimensions of the temporary and permanent construction disturbance for each components of the GWR Project. The following description is focused on the size, location and characteristics of the physical components that would be constructed throughout the Action Area to implement the Proposed Action. In addition, this description provides a brief overview of the operations and maintenance activities that would result in changes to the physical environment that might directly or indirectly affect federally-listed plant or animal species. **Figure 1-2** provides a project facilities overview showing the locations of all proposed action components in relation to each other.

Table 1-1: Construction Area of Disturbance and Permanent Footprint

Project Component	Construction Boundary (feet)		Permanent Component Footprint (feet)			
	Length	Width	Length	Width	Maximum Height (above ground surface)	Maximum Depth (below ground surface)
Source Water Diversion and Storage Sites						
Salinas Pump Station Diversion (several discrete trenches and pits totaling 0.75 acres)	175	175	30	25	0	20
Salinas Treatment Facility Storage and Recovery						
<i>Recovery Pump Station</i>	50	50	30	15	10	10
<i>Recovery Pipeline (Note 1)</i>	500	20	7,700	<6	0	10
<i>Pond 3 pump station and inlet structure</i>	50	50	15	30	10	20
<i>Pipeline from Pond 3</i>	6,000	20	6,000	<6	0	10
Reclamation Ditch Diversion	120	50	80	20	10	20
Blanco Drain Diversion						
<i>Diversion Pump Station</i>	50	50	50	20	10	10 (trenched sections); 25 (trenchless sections and pits)
<i>Force Main and Gravity Pipeline (including pipelines located at the Regional Treatment Plant)</i>	8,500	20	8,500	<6	0	
Treatment Facilities at Regional Treatment Plant						
AWT Facility	600	450	500 (triangular)	350	31	10
<i>Brine Mixing Facility</i>					16	31
<i>Pipelines, AWT product water pump station</i>					0	15
Salinas Valley Reclamation Plant modifications	700	400	600	300	25	10
Salinas Valley Reclamation Plant pipeline	900	20	900	<6	0	10
Product Water Conveyance Facilities						
Product Water Pipelines						
<i>RUWAP AWT to Booster Pump Station</i>	28,000	10 – 15	28,000	<6	0	10 (trenched sections); 25 (trenchless sections and pits)
<i>RUWAP Booster Pump Station to Injection Wells</i>	18,900	10 – 15	18,900	<6	0	
Booster Pump Station (one of two optional sites)	100	60	80	60	25	
Injection Well Facilities						
Well cluster, including: one Deep Injection Well, one Vadose Zone Well, motor control building, transformer, and space for replacement wells (4)	100	100	85	90	15	1,050 (Deep) 600 (Vadose)
Back-flush basin	280	150	225	125	2-3 for pipe outlet only	10
Monitoring wells, including: up to six well clusters with two wells at each site (6)	100	100	3	3	0	900
Access Roads to Injection Wells, including: underground pipeline & electrical	4200	40	4200	20	0	10
Electrical conduit along Eucalyptus Rd.	1200	10	1200	3	0	6
Access roads to monitoring wells	1000	20	1000	10	0	2
<p>Note 1: The existing 33-inch industrial wastewater conveyance pipeline would be slip-lined with the new 18-inch recovery pipeline. This would require the excavation of up to 12 sending/receiving pits measuring approximately 60-feet long by up to 20-feet wide.</p> <p>Note 2: Pipeline trenches would generally be no more than seven (7) feet wide, except in areas with sandy soils and lack of constraints to a wider trench. Constraints include known sensitive or protected resources, geography such as steep slopes, existing utilities, buildings, or other facilities that restrict the construction area. A trench section with a ground surface width of up to approximately 10 to 15 feet would be potentially used in some soil types to increase efficiencies related to shoring the trench.</p>						

This section also presents the Mitigation Measures (Avoidance and Minimization Measures) that are required to be implemented by the MRWPCA and their contractors during construction and operation of the Proposed Action. Because the MRWPCA adopted the Mitigation Monitoring and Reporting Program (MMRP) containing these measures at their meeting on October 8, 2015, they have committed to implement these measures that were determined to reduce significant effects on biological resources to a less-than-significant level.

Source Water Diversion and Storage

Salinas Pump Station Diversion

Construction

Construction activities at this site would include demolition, excavation, site grading and installation of new junction structures, new meter vault or flow measurement structures and short pipeline segments. Existing pump stations operations would be ongoing during construction due to the uninterruptible nature of conveyance of wastewater (and in some cases, stormwater flows). For this reason, temporary shunts of various waters may be necessary to maintain the collection and conveyance of waters to treatment facilities. Construction may occur up to 24 hours per day, 7 days per week due to the necessity of managing wastewater flows; however, major construction of new facilities would be limited to daytime hours. Approximately 0.75 acres would be temporarily disturbed (several discrete trenches and pits) and up to 0.25 acres of new impervious surfaces would be added to the site. The majority of permanent facilities would be subsurface. The site would be under construction for up to five months. Key construction components are:

- Open excavation within the existing facility for new cast-in-place vaults around existing pipelines
- New pipelines installed by open excavation connecting the new vaults

Operations and Maintenance

The Salinas Pump Station Diversion site is adjacent to and north of the existing Salinas Pump Station within the City's Treatment Plant 1 site (also called, TP1), and would be maintained by the same MRWPCA operations staff as currently operate the pump station. No additional employee site visits would be required at the Salinas Pump Station site. The facility would operate continually using automated flow metering, gates and valves. Operations would consist of seasonally adjusting the diversion settings to direct flows to the Pump Station or to the Salinas Treatment Facility. Gates and valves would be exercised annually if not operated more frequently. Installed flow meters would require periodic inspection and calibration on a less-than-annual frequency. Power usage at the site would be incidental to the existing pump station and would only be needed for supervisory control and data acquisition (SCADA) and metering and controls for the gates and valves. No ongoing materials delivery or solid waste generation would occur.

Salinas Treatment Facility Storage and Recovery

Construction

The majority of the construction activity for the Salinas Treatment Facility Storage and Recovery Facilities would occur within the existing 281-acre Salinas Treatment Facility site. New pipelines from Pond 3 (the western-most pond at the Salinas Treatment Facility) and the aeration basin to the return pump station, including pre-cast concrete manholes, would be constructed within the existing unpaved access road and parallel to the existing pipelines. A new lift station would be constructed at Pond 3 to return water to the return pump station. This new lift station would be constructed adjacent to the existing City of Salinas irrigation transfer station in Pond 3. If the work for the new lift station in Pond 3 must be performed while it is full, sheet piling and dewatering equipment would be required. The return pump station would be located near the existing influent pump station at the east end of the site. Return pump station and pipelines construction would include trenching and installation of new pipelines, new pump and lift station, new pumps/pump motors, electrical facilities, valve vaults and flow meter, requiring equipment delivery trucks, loaders, compactors, and backhoes.

The recovery or return pipeline from the Salinas Treatment Facility to the Salinas Pump Station Diversion site would be constructed inside the existing 33-inch influent pipeline, which is scheduled to be abandoned in place in late 2015 after a new 42-inch pipeline is completed. Installing a new pipeline inside the existing pipeline would require excavating access pits every 600-ft to 800-ft along the existing alignment, cutting into the existing pipe, pulling the new assembled pipe into the existing pipe and connecting the new pipe segments before closing the pit. The work area at each pit would be up to 20-ft wide, approximately 60-ft long and up to 10-feet deep. The width of construction disturbance at each pit could be up to 50 feet, but typically only 30 to 40 feet. Equipment would include equipment delivery trucks, loaders, backhoes, pipe cutting and welding equipment, pipeline fusing equipment (if fusible pipe is used), and pipeline pulling equipment. If work must occur in an existing street, jack-hammering and paving equipment would be required for demolition and repairing the site. The following are key aspects of construction of these facilities:

- *Recovery Pump Station* Open excavation within the existing facility, new pump station wet well adjacent to the existing pump station at the east end of the site
- *Recovery Pipeline:* Existing 33-inch pipeline would be slip-lined with a new 18-inch pipe and open excavation for sending/receiving pits at each end and every 600-800 feet along the pipeline. Pits would be located in either the existing pump station sites, within existing road rights-of-way or under agricultural land, depending on the stationing. Pipeline starts at the existing Salinas Industrial Wastewater Treatment Facility pump station, located on South Davis Road and follows a straight line to the Salinas Treatment Plant 1 (TP1) site, located on Hitchcock Road.

- Pond 3 pump station and inlet structure: Open excavation within the existing facility, adding a new wet well and inlet structure at the west end of treatment pond #3.
- Pipeline from Pond 3: Open excavation within the access road along the north side of treatment ponds 1, 2 and 3 at the existing Salinas Treatment Facility for installation of a new pipeline that would connect the Pond 3 pump station and the recovery pump station.

Operations and Maintenance

The new storage and recovery facilities at the Salinas Treatment Facility would be managed by the same number of staff that currently operates the Salinas Treatment Facility. During the storage season (November to April), the return pumps would not be operated. The Salinas Treatment Facility aeration pond would continue to operate as it currently does. Volumes in Ponds 1, 2, and 3 would be monitored. If inflows exceed the storage capacity, some flows would be diverted to the existing drying beds, or adjustments may be made at the Salinas Pump Station Diversion to send some agricultural wash water to the Regional Treatment Plant. The return pumps at the Salinas Treatment Facility and the Pond 3 lift station would be inspected during the storage season, and routine mechanical services would be scheduled during this season. Trucks with lifting equipment would be required to pull the pumps out of the wet wells for maintenance.

During the return pumping season (June to October), the return pump station would operate during the period of off-peak electrical rates, at flow rates up to 5 mgd, depending upon the daily volume of new agricultural wash water diverted directly to the Salinas Pump Station. The pumping rate may be reduced during the peak hours of agricultural wash water flows. Stored water in Pond 3 would be conveyed to the return pump station using a new lift state and gravity pipeline. At the end of this season, the Salinas Treatment Facility ponds would be empty or nearly empty, allowing maintenance to be performed, if needed, on the gates, valves, overflow structures, pump stations and levee banks.

Reclamation Ditch Diversion

Construction

Construction of the Reclamation Ditch diversion would include minor grading, installation of a wet well/diversion structure, modification of an existing sanitary sewer manhole and a short pipeline from the existing manhole to the new pump station. The work would disturb approximately 0.15 acres of land, including up to 0.05 acres of waters of the U.S. within Reclamation Ditch banks and channel bottom (no potentially jurisdictional wetlands were delineated at the site). The channel carries flow year-round, so a temporary coffer dam would be required above and below the site, with a small diversion pump to convey existing channel flows past the project construction area. The temporary coffer dams would consist of

waterproof tarps or membranes wrapped around gravel fill material, which would be removed when the work is completed.

The new pump station wet well, intake structure and pipelines would be constructed using open-trench excavation. The construction excavation may be as large as 40-feet long by 10-feet wide. Due to the steepness of the banks and depth of the excavation, a tracked, long-arm excavator would be required. The below-grade components may use pre-cast concrete structures, so that the underground work would take less than a week to complete. Once the excavations are closed, the channel protection (concrete or riprap) may be installed and the temporary cofferdams and by-pass pumping system removed. The pumps and controls would be installed in the wet well and valve vault using a large excavator or crane.

During the period the channel is blocked with temporary cofferdams, the work may proceed 7 days a week to minimize the impact and duration. Electrical power used during construction may come from a temporary electrical service by Pacific Gas and Electric (PG&E), from permanent electrical service by PG&E if installed in advance of the site work, or from portable generators. The by-pass pumps would need to operate until the in-channel work is complete, so power would be required 24-hours a day. The site is in an industrial area, so there are no nearby residents to be disturbed by the noise at night. Key aspects of the construction of this facility include the following:

- Open excavation to install new intake structure, new wet well and new pipeline to connect to existing sanitary sewer main.
- New pump station would be constructed approximately 60-ft from the receiving sanitary sewer manhole.
- Site is highly disturbed by the adjacent railroad, construction of the Davis Road overpass, construction of the Salinas sanitary sewer siphon and realignment of the Reclamation Ditch. The Reclamation Ditch is maintained as a trapezoidal channel.

Operations and Maintenance

The Reclamation Ditch Pump Station would be configured to operate autonomously, based upon diversion and by-pass flow settings. A system operator would visit the site at most once per day to check for alarms and vandalism, and to visually inspect the intake screen for clogging. The Reclamation Ditch is assumed to require one employee visit per day at most (two one-way trips). Approximately once per month an operator would need to access the channel bottom to physically clear vegetation or debris from the intake screen. The pumps would require annual inspection and servicing, using a lift truck to remove the pumps from the wet well. The flow meters would require inspection and calibration less than once per year.

Blanco Drain Diversion

Construction

Construction of the Blanco Drain Diversion would include minor grading, installation of a new wet well/diversion structure, installation of a new force main by open trench and by trenchless methods. The work would temporarily disturb approximately 0.15 acres of land at the pump station, including up to 0.05 acres of waters of the U.S. within Blanco Drain banks and channel bottom, and approximately 5 acres along the pipeline alignment including the excavation pits for constructing the pipeline under the Salinas River. The channel carries flow year-round, so a temporary coffer dam would be required above the construction site, with a small diversion pump to convey existing channel flows past the project site and the existing slide gate downstream of the adjacent Monterey County Water Resources Agency pump station. The temporary coffer dam would consist of a waterproof tarps or membrane wrapped around gravel fill material, which would be removed when the work is completed. West of the river crossing and south of the landfill site, the new force main would intersect the existing MRWPCA Salinas Interceptor. The new Blanco Drain source water force main would connect to the existing Salinas Interceptor to carry the water to the Regional Treatment Plant headworks. A hydraulic analysis of the Salinas Interceptor will be conducted during final design to determine the feasibility of the upstream connection from the Blanco Drain source water force main.

The new pump station wet well, intake structure, and on-site pipelines would be constructed using open-trench excavation. The construction excavation may be as large as 40-feet long by 10-feet wide. Due to the steepness of the banks and depth of the excavation, a tracked, long-arm excavator would be required. The below-grade components may use pre-cast concrete structures, so that the underground work would take less than a week to complete. Once the excavations are closed, the channel protection (concrete or riprap) may be installed and the temporary cofferdam and by-pass pumping system removed. The concrete deck, pumps and controls would be installed in the wet well and valve vault and hydropneumatic tank installed using a tracked excavator or crane. Some cast-in-place concrete work is expected, requiring concrete trucks accessing the site.

During the period the channel is blocked with temporary cofferdams, the work may proceed 7 days a week to minimize the impact and duration. A portion of the new pipeline must be installed using trenchless methods. That work may require 24-hour operations during the drilling phase. A portion of the pipeline would be installed within the existing Regional Treatment Plant site. That work may be performed at night to minimize impacts to plant operations.

The force main pipeline must cross under the Salinas River⁵. This work would be performed using a trenchless method, referred to as “horizontal directional drilling”. Trenchless construction would require work areas approximately 40-ft by 60-ft on each side of the river. Horizontal directional drilling is a trenchless technology where a drill bit fitted with a transmitter is guided from the drilling machine. The drill bit uses a fluid “mud” to lubricate, loosen and carry the drilled soil from the hole. The intent of this pipeline construction method is to stay far enough below the river bottom to avoid having the “mud” find a fissure in the soil, which would create a connection to the river above (called a “frac-out”). If a frac-out occurs, the mud, which is a highly caustic material, could spill into the aquatic resource and indirectly impact species dependent upon the resource.

The rest of the pipeline may be installed using open-trench methods. The final portion of the pipeline would cross the existing Regional Treatment Plant site and may require limited bore and jack construction to cross existing utilities which must remain in-service.

Surface water by-pass pumps at the Blanco Drain site would need to operate until the in-channel work is complete, so power would be required 24-hours a day.

Key construction aspects of the Diversion Pump Station component include the following:

- Open excavation to install new intake structure, new wet well and new pipeline
- New pump station would be constructed adjacent to the existing MCWRA pump station.
- The Blanco Drain is maintained as a trapezoidal channel.

Key construction aspects of the Blanco Drain Force Main and Gravity Pipeline include the following:

- Open excavation to install the majority of the new pipeline. The segment crossing the Salinas River would be installed using trenchless methods (directional drilling), with sending/receiving pits on either side.
- The pipeline would start at the new pump station and follow the farm road on the west bank of the Blanco Drain to the point the pipeline crosses the Salinas River. On the south side of the river, the pipeline would run north-west and then south-west under existing farms roads, then cross a portion of Monterey Regional Waste Management District landfill, and finally a portion of the MRWPCA Regional Treatment Plant to the point it joins the existing Salinas Interceptor pipeline.

⁵ The HDD operation will require both a sending and receiving pit to complete the connection under the Salinas River. The project proponents and engineers have designed the location of these pits (and all other HDD construction staging and activities that might result in physical impacts) to avoid riparian habitat associated with the Salinas River.

Operations and Maintenance

The Blanco Drain Pump Station, like the Reclamation Ditch Pump Stations, would be configured to operate autonomously based upon diversion settings. A system operator would visit the site once a day to check for alarms and vandalism and to visually inspect the intake screen for clogging. The site is adjacent to the Monterey County Water Resources Agency's Blanco Drain Pump Station, and may require separate visits by operators from the two agencies or the two agencies can enter into an agreement for shared maintenance responsibilities. The diversion would operate in a similar way to the existing Monterey County Water Resources Agency pump station. Therefore the number of daily operator visits would not measurably increase. Approximately once per month an operator would need to access the channel bottom to physically clear vegetation or debris from the intake screen. The pumps would require annual inspection and servicing, using a lift truck to remove the pumps from the wet well. Since the two pump stations are the responsibility of different agencies, scheduled maintenance would be independent of the adjacent pump station. The new station flow meter would require inspection and calibration at a less-than-annual frequency. The pipeline valves would be inspected and exercised once per year. Any above-grade air-release valves would be inspected quarterly, requiring a system operator to drive the pipeline alignment.

Treatment Facilities at the Regional Treatment Plant

Advanced Water Treatment Facility

Construction

Construction workers would access the proposed AWT Facility site via Charles Benson Road and existing access roads serving the Regional Treatment Plant. Construction activities would include grading, cutting, laying, and welding pipelines and pipe connections; pouring concrete footings for foundations, tanks, and other support equipment; constructing walls and roofs; assembling and installing major advanced treatment process components; installing piping, pumps, storage tanks, and electrical equipment; testing and commissioning facilities; and finish work such as paving, landscaping, and fencing the perimeter of the site. Construction equipment would include excavators, backhoes, graders, pavers, rollers, bulldozers, concrete trucks, flatbed trucks, boom trucks and/or cranes, forklifts, welding equipment, dump trucks, air compressors, and generators. Mechanical components of the pretreatment, membrane filtration systems, reverse osmosis, advanced oxidation, and post-treatment facilities would be prefabricated and delivered to the site for installation. Approximately 3.5 acres would be disturbed during construction. Construction activities related to the AWT Facility are expected to occur over 18 months, plus three months for testing and start-up. Key aspects of AWT Facility construction include:

- The new AWT Facility would be installed using open excavation within the existing MRWPCA Regional Treatment Plant. The 3.5 acre site is currently a mix of paved and unpaved areas.
- Portions of the work would include cast-in-place concrete structures around existing pipelines.

Operations and Maintenance

Regional Treatment Plant secondary effluent that would include a treated mixture of the source waters would be drawn from a new diversion structure on an existing main pipeline. Pumping facilities would be controlled remotely through the AWT SCADA system. The AWT Facility would operate at an overall water recovery rate of 81 percent.⁶ Waste residuals would include backwash from the biological filtration system (if included), backwash and cleaning wastes from the membrane filtration treatment system and concentrate and cleaning wastes from the reverse osmosis system. Cleaning wastes from each system would be neutralized and returned to the head of the Regional Treatment Plant, along with backwash waste residuals from the membrane treatment system. Reverse osmosis concentrate would be discharged through a new brine mixing structure to the existing Regional Treatment Plant ocean outfall. The AWT Facility would target an annual production rate of up to 3,700 AFY, requiring an average annual reverse osmosis feed supply of 4,568 AFY and producing waste residuals (reverse osmosis concentrate) of 868 AFY that would be discharge to the ocean through the existing MRWPCA ocean outfall along with other wastewater that is not recycled.

Salinas Valley Reclamation Plant Modifications

Construction

Modification of the existing Salinas Valley Reclamation Plant would primarily occur within the existing 16-acre plant site. Internal modifications would be made to the existing reclamation plant, which includes a mix of concrete structures, paved and unpaved areas. A new pipeline would be installed under the existing recycled water storage pond using open excavation, and the existing inlet and outlet structures would be modified, to allow seasonal delivery of recycled water without using the storage pond. Installation of motorized sluice gates in the chlorine contact basins, installation of a motorized sluice gate and platform at the entrance of the storage pond, installation of a pipeline between the entrance and exit structures within the storage pond, and motorizing the existing sluice gate at the exit of the storage pond all would be within the existing Salinas Valley Reclamation Plant. Construction activities would include cutting, laying, and welding pipelines and pipe connections; pouring

⁶ This recovery rate does not include the filter backwash flows routed through the Regional Treatment Plant, as these flows would be recycled through the plant and return as source water, thus not decreasing the system recovery.

concrete footings for foundations, and other support equipment; installing piping, sluice gates and electrical equipment; testing and commissioning facilities; and finish work such as repairing the existing storage pond lining. Construction equipment would include excavators, backhoes, concrete trucks, flatbed trucks, boom trucks and/or cranes, forklifts, welding equipment, dump trucks, air compressors, temporary tanks and generators. Construction activities related to the Salinas Valley Reclamation Plant Modifications are expected to occur over 12 months. Any work requiring a full system shut-down would occur during the winter months when irrigation demands for recycled water are lowest.

Operations and Maintenance

Operation of the modified facility would be similar to the current operational method. During the peak irrigation season, the plant would operate at full capacity with both chlorine contact basins used for disinfection and the 80 acre-foot pond used for tertiary-treated product water storage. During the off-peak, low demand months, normal low flow (5 to 8 mgd) volumes of flow would be sent to the plant, one or two coagulation/flocculation tanks would be used, between one and three filters would be active, and only one chlorine contact tank would be used for disinfection, while the other tank would provide product water storage. When the tertiary-treated product water has filled the storage basin, the flow to the Salinas Valley Reclamation Plant could be reduced or stopped until additional water is needed. This production would reduce the amount of secondary-treated wastewater discharged to the ocean outfall.

Operation of the system year-round would increase the time required for system maintenance, because portions of the treatment train would remain in operation as compared to the current winter shut-down. These operations occur year-round within the overall MRWPCA facility, so this increased maintenance window should not affect the overall daily level of maintenance effort.

Product Water Conveyance

Product Water Pipeline

Construction

To implement the Proposed Action, workers would install approximately 10 miles of Product Water pipelines primarily within existing roads and infrastructure easements. Pipeline installation would generally progress by 250 feet per day within or along roadways. For some pipelines in open (undeveloped) areas, work could progress at up to 400 feet per day. Progress at intersections or major utility crossings may be slower. Most pipeline segments would be installed using conventional open-trench technology; however, where it is not feasible or desirable to perform open-cut trenching, trenchless methods would be used.

Typical construction equipment for pipeline installation would include flatbed trucks, backhoes, excavators, pipe cutting and welding equipment, haul trucks for spoils transport,

trucks for materials delivery, compaction equipment, Baker tanks, pickup trucks, arch welding machines, generators, air compressors, cranes, drill rigs, and skip loaders. Pipeline segments would typically be delivered and installed in 6- to 40-foot-long sections. Soil removed from trenches and pits would be stockpiled and reused, to the extent feasible, or hauled away for offsite disposal.

Under typical circumstances, the width of the disturbance corridor for pipeline construction would vary from 50 to 100 feet, depending on the size of the pipe being installed. Trenchless technologies could require wider corridors at entry and exit pits. Pipeline installation would be ongoing throughout the entire 18-month construction period for the Proposed Action, with multiple pipe segments being installed simultaneously. Pipeline installation would be sequenced to minimize land use disturbance and disruption to the extent possible. The following describes key components of construction of the pipeline:

- The pipeline would start at the AWT Facility and proceed to the southern boundary of the MRWPCA Regional Treatment Plant under existing roads and pavements.
- The pipeline would proceed south across undeveloped lands owned by MCWD and the Armstrong Ranch to the City of Marina. The alignment follows existing farm roads.
- The pipeline follows street rights of way through Marina: Crescent Avenue, Carmel Avenue, Vaughn Avenue, Reindollar Avenue, California Avenue/5th Avenue, and connects to an existing pipeline segment, previously installed in Inter-Garrison Road (3rd Street) and 5th Avenue on the CSUMB Campus
- The pipeline construction resumes at 5th Avenue at A Street, and proceeds southwest under unpaved roads within CSUMB to General Jim Moore Boulevard (GJM Blvd). It would then proceed south in GJM Blvd to Normandy Road, where it connects to an existing recycled water pipeline.
- The final pipeline segment would connect the recycled water main in GJM Blvd to the injection well field. The alignment considered in the Project EIR branched southeast from General Jim Moore Blvd opposite Seaside Middle School and crossed an undeveloped area before crossing Eucalyptus Road and entering the injection well facilities site.

Open-Trench Construction

For pipeline segments to be installed using open-trench methods, the construction sequence would typically include clearing and grading the ground surface along the pipeline alignments; excavating the trench; preparing and installing pipeline sections; installing vaults, manhole risers, manifolds, and other pipeline components; backfilling the trench with non-expansive fills; restoring preconstruction contours; and revegetating or paving the

pipeline alignments, as appropriate. A conventional backhoe, excavator, or other mechanized equipment would be used to excavate trenches. The typical trench width would be 6 feet; however, vaults, manhole risers, and other pipeline components could require wider excavations. In addition, much of the project construction area is underlain by sandy soils that may require a laid-back trench cross-section due to considerations such as duration of construction, efficiency, and safety. In these cases, trench widths may be up to 12 feet wide. Work crews would install trench boxes or shoring or would lay back and bench the slopes to stabilize the pipeline trenches and prevent the walls from collapsing during construction. After excavating the trenches, the contractor would line the trench with pipe bedding (sand or other appropriate material shaped to support the pipeline). Construction workers would then place pipe sections (and pipeline components, where applicable) into the trench, connect the sections together by welding or other applicable joining methods as trenching proceeds, and then backfill the trench. Most pipeline segments would have 4 to 5 feet of cover. Open-trench construction would generally proceed at a rate of about 150 to 250 feet per day. Steel plates would be placed over trenches to maintain access to private driveways or public recreation areas. Some pipeline installation would require construction in existing roadways and could result in temporary lane closures or detours.

Trenchless Technologies

Where it is not feasible or desirable to perform open-cut trenching, trenchless methods such as jack-and-bore, drill-and-burst, horizontal directional drilling, and/or micro-tunneling would be employed. Pipeline segments located within heavily congested underground utility areas would likely be installed using horizontal directional drilling or micro-tunneling. Jack-and-bore methods would also be used for pipeline segments that cross beneath highways, major roadways, or drainages.

Jack-and-Bore and Micro-tunneling Methods. The jack-and-bore and micro-tunneling methods entail excavating an entry pit and receiving pit at either end of the pipe segment. A horizontal boring machine or auger is used to drill a hole, and a hydraulic jack is used to push a casing through the hole to the opposite pit. As the boring proceeds, a steel casing is jacked into the hole and pipe is installed in the casing.

Drill-and-Burst Method. The drill-and-burst method involves drilling a small pilot hole at the desired depth through a substrate, and then pulling increasingly larger reamers multiple times through the pilot hole until the hole reaches the desired diameter. The pipe is then installed through the drilled hole.

Horizontal Directional Drilling. Horizontal directional drilling requires the excavation of a pit on either end of the pipe alignment. A surface-launched drilling rig is used to drill a small horizontal boring at the desired depth between the two pits. The boring is filled with drilling fluids and enlarged by a back reamer or hole opener to the required diameter. The pipeline is then pulled into position through the boring. Entry and receiving pits would range in size

depending on the length of the crossing, but typically would have dimensions of approximately 50 by 50 feet.

Operations and Maintenance

The pipelines could operate continuously for up to 24 hours a day. General operations and maintenance activities associated with pipelines would include annual inspections of the cathodic protection system and replacement of sacrificial anodes when necessary; inspection of valve vaults for leakage; testing, exercising and servicing of valves; vegetation maintenance along rights-of-way; and repairs of minor leaks in buried pipeline joints or segments. Above-grade surge tanks would require periodic inspection (once every five years) and recoating (once every twenty years).

Product Water Booster Pump Station

Construction

Two pump stations would be constructed: the AWT Product Water Pump Station (at the site of the AWT Facility described above) and the Booster Pump Station. Construction crews would prepare the pump station sites by removing vegetation and grading the sites to create a level work area. Construction activities would include excavations for wet wells, installing shoring and forms, pouring concrete footing for foundations; assembling and installing piping, pumps, and electrical equipment; constructing concrete enclosures and roofs; and finish work such as paving, landscaping, and fencing the perimeter of the pump station sites. Construction access would be provided via existing access roads and roadways.

The AWT Product Water Pump Station would be constructed on a new concrete pad adjacent to the new product water stabilization facilities at the Regional Treatment Plant. It is assumed that the entire 3.5-acre AWT Facility site could be disturbed during project construction activities. Construction of either Booster Pump Station would result in approximately 2,400 square feet of temporary disturbance and permanent facility (including driveways and fenced areas). The new booster pump station and associated pipelines would be installed using open excavation methods. The building foundation and pump wells would be cast in place. The booster pump station is located at the existing City of Marina Corporation Yard in a paved area.

Operations and Maintenance

The proposed booster pump station could operate continuously for up to 24 hours a day. Although pump stations would typically be operated remotely via SCADA, facility operators would conduct routine visits to the pump station sites approximately once daily to monitor operations, conduct general maintenance activities, and service the pumps. Above-grade surge tanks would require periodic inspection (once every five years) and recoating (once every twenty years).

Injection Well Facilities

Construction

The following are key aspects of the Injection Well Facilities construction activity. More details follow this summary:

- All of the injection well facilities would be installed by open excavation, except the wells themselves which would be by conventional rotary drilling. Above-grade facilities would have cast-in-place concrete floors or pads.
- The Injection Well Facilities site is located in an area previously used as small arms ranges when Fort Ord was an active base. The well clusters are located along the southeast boundary of the parcel, which borders with the Bureau of Land Management's Fort Ord National Monument.
- The pipelines and conduits would be installed under existing unpaved roads or would follow another alignment within the Injection Well Facilities site generally following the same alignment, but modified as needed to follow the topography as requested by the City of Seaside. Conduits would also be installed along General Jim Moore Blvd and/or Eucalyptus Road to reach the existing PG&E service.
- A single percolation pond for well backwash water is proposed, to be located between the second and third well cluster, adjacent to the access road and pipeline corridor.
- Groundwater monitoring wells would be installed along existing unpaved roads.

Well Construction

Installation of any of the wells (deep injection, vadose zone and monitoring wells) typically follows a three-step process: drilling and logging, installation, and testing and equipping. The deep injection well would be drilled with rotary drilling methods. The method would be customized to minimize borehole impacts from drilling fluids and may incorporate air rotary methods or specialized drilling fluids (such as polymers). Cuttings from the borehole would be laid on the ground and logged by a California Certified Hydrogeologist. The direct rotary drilling method would likely be used for the monitoring wells. The deep injection well design would incorporate 18-inch to 20-inch diameter production casing and a wire-wrap stainless steel screen. Mechanical and pumping techniques would be used to develop the well after installation. Both constant discharge and constant injection testing for approximately eight hours would be completed in the injection well following well drilling. A 400-horsepower, variable speed pump would be installed at proposed deep injection well for back-flushing.

Back-flush Pipeline Facilities Construction

As described above, the back-flush facilities at the Injection Well Facilities site would include a flow meter, a back-flush pump and 400-horsepower motor, and an electrical cabinet, monitoring and SCADA. A main electrical power supply/transformer and motor control building would be built for PG&E power supply. In addition to incidental power requirements (instrumentation and monitoring equipment, site lighting, etc.), major power supply would be required to drive only one injection pump motor at a time. To construct the back-flush pipeline and basin, the contractor would excavate pipe trenches, retain the spoilage on site, import and install bedding material, and lay pipe, backfill & compact trench.

Estimated construction time for this component is approximately 4 months. The temporary construction area along the alignment of the 14-inch diameter back-flush water pipeline would be approximately 25 to 50 feet wide, for its approximate 3,000-foot length. Hence, the ground surface disturbance area would be between 1.75 and 3.5 acres. The construction area width is to provide space for a backhoe, trucks for hauling excess soil material and imported bedding material. The depth of the pipeline trench would be approximately five feet to allow for bedding of the pipe and about three to four feet of cover material.

Pump Motor Control/Electrical Conveyance Construction

The following activities would be required to construct the pump motor control and electrical conveyance facilities:

1. excavation, spoilage handling, import and install bedding material, building foundation, trench, place concrete, backfill & compact trench, finish concrete floor of electrical building;
2. install exterior electrical control cabinets on the paved area at the four clusters of vadose and deep injection wells; and
3. for electrical buildings, construct block walls, doors, louvers, roof and appurtenances, then interior finishes, lighting and HVAC; and electrical equipment and wiring.

The estimated construction period for these facilities is approximately 6 months. The temporary construction area would be approximately 25 to 50 feet wide within the alignment of the 14-inch diameter back-flush water pipeline, which is approximately 3,000 feet long. There would be no additional surface disturbance for construction of electrical conduits beyond that for the 14-inch back-flush water pipeline, described in the previous section. Construction activities would include a buried electrical power conduit and instrumentation conduits, all of which would be underground and encased in a concrete duct-bank, which would run in parallel and near the 14-inch back-flush pipeline. The depth of the duct-bank trench would be approximately 4.5 to 5 feet to allow for about 3 feet of cover material. The electrical control building that would house the SCADA transmission equipment would be approximately 16 feet by 24 feet. Its foundation construction would be slab-on-grade; hence, excavation would be only about 3 feet deep. The construction surface area would be about 600 square feet.

Operations and Maintenance

Injection wells and associated electrical and mechanical systems would operate 24 hour per day, 7 days per week throughout the year, although it is unlikely that all eight wells would be actively injecting at the same time for any length of time. Operations and maintenance staff would visit the Injection Well Facilities site most likely once daily Monday through Friday nearly every week. In addition to operation and maintenance of the wells, the workers would inspect above ground valves and appurtenances to assure they are properly functioning and to conduct and monitor the back-flush operations.

Based on the experience of the Water Management District in the operation of its nearby Aquifer Storage and Recovery (ASR) wells, back-flushing of each injection well would occur for about four hours weekly and would require discharge of the back-flush water to the percolation basin. The Water Management District conducts manual back-flushing and visual checks and field-tests the back-flush water discharge to confirm adequate flushing time has been provided. At nearby ASR wells, backflush basins percolate water from the back-flushing operations of a single well very quickly (on the order of approximately one day). Approximately once per year, a disking machine would be used to scarify the bottom of the backflush basin to increase/restore the percolation rate.

1.3 Proposed Avoidance and Minimization Measures

Table 1-1 presents the applicant-proposed Mitigation Measures (Avoidance and Minimization Measures) that are required to be implemented by the MRWPCA and their contractors during construction and operation of the Proposed Action. Because the MRWPCA adopted the Mitigation Monitoring and Reporting Program (MMRP) containing these measures at their meeting on October 8, 2015, they have committed to implement these measures that were determined to reduce significant effects on biological resources to a less-than-significant level. Because the Proposed Action (i.e., funding of the GWR Project by the Clean Water State Revolving Fund) does not include all of the facilities contemplated by the EIR and because some measures address resources outside the federal Endangered Species Act jurisdiction of USFWS, some of the mitigation measures adopted by the MRWPCA in their MMRP will not be applicable to the Proposed Action for this Biological Assessment. Avoidance and minimization measures provided in Chapter 4 as relevant to each federally-listed species are a smaller subset of those measures adopted by the MRWPCA Board and provided in **Table 1-2**.

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
Impact BF-1: Habitat Modification Due to Construction of Diversion Facilities	<p>Mitigation Measure BF-1a: Construction during Low Flow Season. Implement Mitigation Measure BT-1a. Conduct construction of diversion facilities, including the directional drilling under the Salinas River, during periods of low flow outside of the SCCC steelhead migration periods, i.e. between June and November, which would be outside of the adult migration period from December through April and outside of the smolt migration period from March through May.</p>	Reclamation Ditch and Blanco Drain Diversions
	<p>Mitigation Measure BF-1b: Relocation of Aquatic Species during Construction. Conduct pre-construction surveys to determine whether tidewater gobies or other fish species are present, and if so, implement appropriate measures in consultation with applicable regulatory agencies, which may include a program for capture and relocation of tidewater gobies to suitable habitat outside of work area during construction. Pre-construction surveys shall be consistent with requirements and approved protocols of applicable resource agencies and performed by a qualified fisheries biologist.</p>	Reclamation Ditch Diversion
	<p>Mitigation Measure BF-1c: Tidewater Goby and Steelhead Impact Avoidance and Minimization. To ensure compliance with the federal Endangered Species Act (FESA) and the California Endangered Species Act (CESA), consultation with NMFS/NOAA, USFWS, and CDFW shall be conducted as required, and any necessary take permits or authorizations would be obtained. If suitable habitat for tidewater goby (Tembladero Slough) and steelhead cannot be avoided, any in-stream portions of each project component (where the Project improvements require in-stream work) shall be dewatered/ diverted. A dewatering/diversion plan shall be prepared and submitted to NMFS, USFWS, and CDFW for review and approval. Specific plan elements are noted below and will be refined through consultation with USFWS, NMFS and CDFW:</p> <ul style="list-style-type: none"> • Required Pre-Construction surveys identified in Mitigation Measure BF-1b shall be consistent with requirements and approved protocol of applicable resource agencies and performed by a qualified fisheries biologist. • All dewatering/diversion activities shall be monitored by a qualified fisheries biologist. The fisheries biologist shall be responsible for capture and relocation of fish species out of the work area during dewatering/diversion installation. • The project proponents shall designate a qualified representative to monitor on-site compliance of all avoidance and minimization measures. The fisheries biologist shall have the authority to halt any action which may result in the take of listed species. • Only USFWS/NMFS/CDFW-approved biologists shall participate in the capture and handling of listed species subject to the conditions in the Incidental Take Permits as noted above. • No equipment shall be permitted to enter wetted portions of any affected drainage channel. All equipment operating within streams shall be in good conditions and free of leaks. • Spill containment shall be installed under all equipment staged within stream areas and extra spill containment and clean up materials shall be located in close proximity for easy access. • Work within and adjacent to streams shall not occur between November 1 and June 1 unless otherwise approved by NMFS and the CDFW. 	Reclamation Ditch Diversion

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
	<ul style="list-style-type: none"> • If project activities could degrade water quality, water quality sampling shall be implemented to identify the pre-project baseline, and to monitor during construction for comparison to the baseline. If water is to be pumped around work sites, intakes shall be completely screen with wire mesh not larger than five millimeters to prevent animals from entering the pump system. • If any tidewater goby or steelhead are harmed during implementation of the project, the project biologist shall document the circumstances that led to harm and shall determine if project activities should cease or be altered in an effort to avoid further harm to the species. • Water turbidity shall be monitored by a qualified biologist or water quality specialist during all instream work. Water turbidity shall be tested daily at both an upstream location for baseline measurement and downstream to determine if project activities are altering water turbidity. Turbidity measures shall be taken within 50 feet of construction activities to rule out other outside influences. Additional turbidity testing shall occur if visual monitoring indicates an increased in turbidity downstream of the work area. If turbidity levels immediately downstream of the project rise to more than 20 NTUs (Nephelometric Turbidity Units) above the upstream (baseline) turbidity levels, all construction shall be halted and all erosion and sediment control devices shall be thoroughly inspected for proper function, or shall be replaced with new devices to prevent additional sediment discharge into streams. <p>The above mitigation is subject to review and approval for CESA and FESA requirements by approving agencies as identified above and may be modified to further reduce, avoid or minimize impacts to species.</p>	
Impact BF-2: Interference with Fish Migration	<p>Mitigation Measure BF-2a: Maintain Migration Flows. Implement BF-1a, BF-1b, and BF-1c. Operate diversions to maintain steelhead migration flows in the Reclamation Ditch based on two criteria – one for upstream adult passage in Jan-Feb-Mar and one for downstream juvenile passage in Apr-May. For juvenile passage, the downstream passage shall have a flow trigger in both Gabilan Creek and at the Reclamation Ditch, so that if there is flow in Gabilan Creek that would allow outmigration, then the bypass flow requirements, as measured at the San Jon Gage of the Reclamation Ditch, shall be applied (see Hagar Environmental Science, <i>Estimation of Minimum Flows for Migration of Steelhead in the Reclamation Ditch</i>, February 27, 2015, in Appendix G-2, of the Draft EIR and Schaaf & Wheeler, <i>Fish Passage Analysis: Reclamation Ditch at San Jon Rd. and Gabilan Creek at Laurel Rd.</i> July 15, 2015 in Appendix CC of the Final EIR). If there is no flow in Gabilan Creek, then only the low flow (minimum bypass flow requirement as proposed in the project description) shall be applied, and these flows for the dry season at Reclamation Ditch as measured at the San Jon USGS gage shall be met. <i>Note: If there is no flow gage in Gabilan Creek, then downstream passage flow trigger shall be managed based on San Jon Road gage and flows.</i></p> <p>Mitigation Measure Alternate BF-2a: Modify San Jon Weir. [This alternative mitigation is no longer considered as part of the Proposed Action, so is not included herein.]</p>	Reclamation Ditch Diversion
Impact BT-1: Construction	Mitigation Measure BT-1a: Implement Construction Best Management Practices. The following best management practices shall be implemented during all identified phases of construction (i.e., pre-, during, and post-) to reduce impacts to special-	All components

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
Impacts to Special-Status Species and Habitat	<p>status plant and wildlife species:</p> <ol style="list-style-type: none"> 1. A qualified biologist must conduct an Employee Education Program for the construction crew prior to any construction activities. A qualified biologist must meet with the construction crew at the onset of construction at the site to educate the construction crew on the following: 1) the appropriate access route(s) in and out of the construction area and review project boundaries; 2) how a biological monitor will examine the area and agree upon a method which would ensure the safety of the monitor during such activities, 3) the special-status species that may be present; 4) the specific mitigation measures that will be incorporated into the construction effort; 5) the general provisions and protections afforded by the USFWS and CDFW; and 6) the proper procedures if a special-status species is encountered within the site. 2. Trees and vegetation not planned for removal or trimming shall be protected prior to and during construction to the maximum extent possible through the use of exclusionary fencing, such as hay bales for herbaceous and shrubby vegetation, and protective wood barriers for trees. Only certified weed-free straw shall be used, to avoid the introduction of non-native, invasive species. A biological monitor shall supervise the installation of protective fencing and monitor at least once per week until construction is complete to ensure that the protective fencing remains intact. 3. Protective fencing shall be placed prior to and during construction to keep construction equipment and personnel from impacting vegetation outside of work limits. A biological monitor shall supervise the installation of protective fencing and monitor at least once per week until construction is complete to ensure that the protective fencing remains intact. 4. Following construction, disturbed areas shall be restored to pre-construction contours to the maximum extent possible and revegetated using locally-occurring native species and native erosion control seed mix, per the recommendations of a qualified biologist. 5. Grading, excavating, and other activities that involve substantial soil disturbance shall be planned and carried out in consultation with a qualified hydrologist, engineer, or erosion control specialist, and shall utilize standard erosion control techniques to minimize erosion and sedimentation to native vegetation (pre-, during, and post-construction). 6. No firearms shall be allowed on the construction sites at any time. 7. All food-related and other trash shall be disposed of in closed containers and removed from the project area at least once a week during the construction period, or more often if trash is attracting avian or mammalian predators. Construction personnel shall not feed or otherwise attract wildlife to the area. 8. To protect against spills and fluids leaking from equipment, the project proponent shall require that the construction contractor maintains an on-site spill plan and on-site spill containment measures that can be easily accessed. 9. Refueling or maintaining vehicles and equipment should only occur within a specified staging area that is at least 100 feet from a waterbody (including riparian and wetland habitat) and that has sufficient management measures that will prevent fluids or other construction materials including water from being transported into waters of the state. Measures shall include confined concrete washout areas, straw wattles placed around stockpiled materials and plastic sheets to cover materials from becoming airborne or otherwise transported due to wind or rain into surface waters. 10. The project proponent and/or its contractors shall coordinate with the City of Seaside on the location of Injection Well 	

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
	Facilities and the removal of sensitive biotic material.	
Impact BT-1: Construction Impacts to Special-Status Species and Habitat (continued)	<p>Mitigation Measure BT-1b: Implement Construction-Phase Monitoring. The project proponents shall retain a qualified biologist to monitor all ground disturbing construction activities (i.e., vegetation removal, grading, excavation, or similar activities) to protect any special-status species encountered. Any handling and relocation protocols of special-status wildlife species shall be determined in coordination with CDFW prior to any ground disturbing activities, and conducted by a qualified biologist with appropriate scientific collection permit. After ground disturbing project activities are complete, the qualified biologist shall train an individual from the construction crew to act as the on-site construction biological monitor. The construction biological monitor shall be the contact for any special-status wildlife species encounters, shall conduct daily inspections of equipment and materials stored on site and any holes or trenches prior to the commencement of work, and shall ensure that all installed fencing stays in place throughout the construction period. The qualified biologist shall then conduct regular scheduled and unscheduled visits to ensure the construction biological monitor is satisfactorily implementing all appropriate mitigation protocols. Both the qualified biologist and the construction biological monitor shall have the authority to stop and/or redirect project activities to ensure protection of resources and compliance with all environmental permits and conditions of the project. The qualified biologist and the construction monitor shall complete a daily log summarizing activities and environmental compliance throughout the duration of the project. The log shall also include any special-status wildlife species observed and relocated.</p>	Salinas Pump Station, Salinas Treatment Facility, Blanco Drain Diversion, Product Water Conveyance, and Injection Well Facilities
	<p>Mitigation Measure BT-1c: Implement Non-Native, Invasive Species Controls. The following measures shall be implemented to reduce the introduction and spread of non-native, invasive species:</p> <ol style="list-style-type: none"> 1. Any landscaping or replanting required for the project shall not use species listed as noxious by the California Department of Food and Agriculture (CDFA). 2. Bare and disturbed soil shall be landscaped with CDFA recommended seed mix or plantings from locally adopted species to preclude the invasion on noxious weeds in the Project Study Area. 3. Construction equipment shall be cleaned of mud or other debris that may contain invasive plants and/or seeds and inspected to reduce the potential of spreading noxious weeds, before mobilizing to arrive at the construction site and before leaving the construction site. 4. All non-native, invasive plant species shall be removed from disturbed areas prior to replanting. 	All components

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
<p>Impact BT-1: Construction Impacts to Special-Status Species and Habitat (continued)</p>	<p>Mitigation Measure BT-1d: Conduct Pre-Construction Surveys for California Legless Lizard. The project proponents shall retain a qualified biologist to prepare and implement a legless lizard management plan in coordination with CDFW, which shall include, but is not limited to, the protocols for pre-construction surveys, construction monitoring, and salvage and relocation. The management plan shall include, but is not limited to, the following:</p> <ul style="list-style-type: none"> • <i>Pre-Construction Surveys.</i> Pre-construction surveys for legless lizards shall be conducted in all suitable habitat proposed for construction, ground disturbance, or staging. The qualified biologist shall hold or obtain a CDFW scientific collection permit for this species. The pre-construction surveys shall use a method called “high-grading.” The high grading method shall include surveying the habitat where legless lizards are most likely to be found, and the survey must occur under the conditions when legless lizards are most likely to be seen and captured (early morning, high soil moisture, overcast, etc.). The intensity of a continued search may then be adjusted, based on the results of the first survey in the best habitat. A “three pass method” shall be used to locate and remove as many legless lizards as possible. A first pass shall locate as many legless lizards as possible, a second pass should locate fewer lizards than the first pass, and a third pass should locate fewer lizards than the second pass. All search passes shall be conducted in the early morning when legless lizards are easiest to capture. Vegetation may be removed by hand to facilitate hand raking and search efforts for legless lizards in the soil under brush. If lizards are found during the first pass, an overnight period of no soil disturbance must occur before the second pass, and the same requirement shall be implemented after the second pass. If no lizards are found during the second pass, a third pass is not required. Installation of a barrier, in accordance with the three pass method, shall be required if legless lizards are found at the limits of construction (project boundaries) and sufficient soft sand and vegetative cover are present to suspect additional lizards are in the immediate vicinity on the adjacent property. A barrier shall prevent movement of legless lizards into the property. All lizards discovered shall be handled according to the salvage procedures outlined below. • <i>Construction Monitoring.</i> Monitoring by a qualified biologist shall be ongoing during construction. The onsite monitor shall be present during all ground disturbing construction activities. To facilitate the careful search for lizards during construction, vegetation may need to be removed. If removal by hand is impractical, equipment such as a chainsaw, string trimmer, or skid-steer may be used, if a monitor and crew are present. The task of the vegetation removal is to remove plants under the direction of the monitor, allowing the monitor to watch for legless lizards. After plants are removed, the monitor and crew shall search the exposed area for legless lizards. If legless lizards are found during preconstruction surveys or construction monitoring, the protocols for salvage and relocation identified below shall be followed. Upon completion of pre-construction surveys, construction monitoring, and any resulting salvage and relocation actions, a report shall be submitted to the CDFW. The CDFW must be notified at least 48 hours before any field activity begins. 	<p>Product Water Conveyance and Injection Well Facilities</p>

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
Impact BT-1: Construction Impacts to Special-Status Species and Habitat (continued)	<ul style="list-style-type: none"> • <i>Salvage and Relocation.</i> Only experienced persons may capture or handle legless lizards. The monitor must demonstrate a basic understanding, knowledge, skill, and experience with this species and its habitat. Once captured, a lizard shall be placed in a lidded, vented box containing clean sand. Areas of moist and dry sand need to be present in the box. The boxes must be kept out of direct sunlight and protected from temperatures over 72°F. The sand must be kept at temperatures under 66°F. Ideal temperatures are closer to 60°F. On the same day as capture, the lizards shall be examined for injury and data recorded on location where found as well as length, color, age, and tail condition. Once data is recorded, lizards shall be relocated to appropriate habitat, as determined through coordination with the CDFW, qualified biologist, and potential landowners. Suitability of habitat for lizard release must be evaluated and presented in a management plan. The habitat must contain habitat factors most important to the health and survival of the species such as appropriate habitat based on soils, vegetated cover, native plant species providing cover, plant litter layer and depth, soil and ambient temperature, quality and composition of invertebrate population and prey availability. Potential relocation sites that contain the necessary conditions may exist within the habitat reserves on the former Fort Ord, including the Fort Ord National Monument. Lizards shall be marked with a unique tag (pit or tattoo) prior to release. Release for every lizard shall be recorded with GPS. GPS locations shall be submitted as part of the survey result report to document the number and locations of lizards relocated. 	Product Water Conveyance and Injection Well Facilities

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
	<p>Mitigation Measure BT-1e: Prepare and Implement Rare Plant Restoration Plan to Mitigate Impacts to Sandmat Manzanita, Monterey Ceanothus, Monterey Spineflower, Eastwood’s Goldenbush, Coast Wallflower, and Kellogg’s Horkelia. Impacts to rare plant species individuals shall be avoided through project design and modification, to the extent feasible while taking into consideration other site and engineering constraints. If avoidance is not possible, the species shall be replaced at a 1:1 ratio for area of impact through preservation, restoration, or combination of both. A Rare Plant Restoration Plan, approved by the lead agency prior to commencing construction on the component site upon which the rare plant species would be impacted, shall be prepared and implemented by a qualified biologist. The plan shall include, but is not limited to, the following:</p> <ol style="list-style-type: none"> a. A detailed description of on-site and/or off-site mitigation areas, salvage of seed and/or soil bank, plant salvage, seeding and planting specifications, including, if appropriate, increased planting ratio to ensure the applicable success ratio. Specifically, seed shall be collected from the on-site individuals that would be impacted and grown in a local greenhouse, and then transplanted within the mitigation area. Plants shall be transplanted while they are young seedlings in order to develop a good root system. Alternatively, the mitigation area may be broadcast seeded in fall; however, if this method is used, some seed shall be retained in the event that the seeding fails to produce viable plants and contingency measures need to be employed. b. A description of a 3-year monitoring program, including specific methods of vegetation monitoring, data collection and analysis, restoration goals and objectives, success criteria, adaptive management if the criteria are not met, reporting protocols, and a funding mechanism. <p>The mitigation area shall be preserved in perpetuity through a conservation easement or other legally enforceable land preservation agreement. Exclusionary fencing shall be installed around the mitigation area to prevent disturbance until success criteria have been met.</p>	
<p>Impact BT-1: Construction Impacts to Special-Status Species and Habitat (continued)</p>	<p>Mitigation Measure BT-1f: Conduct Pre-Construction Protocol-Level Botanical Surveys within the remaining portion of the Project Study Area within the Injection Well Facilities site. The project proponents shall retain a qualified biologist to conduct protocol-level surveys for special-status plant species within the Injection Well Facilities site not yet surveyed. Protocol-level surveys shall be conducted by a qualified biologist at the appropriate time of year for species with the potential to occur within the site. A report describing the results of the surveys shall be provided to the project proponents prior to any ground disturbing activities. The report shall include, but is not limited to: 1) a description of the species observed, if any; 2) map of the location, if observed; and 3) recommended avoidance and minimization measures, if applicable. The avoidance and minimization measures shall include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • Impacts to species individuals shall be avoided through project design and modification, to the extent feasible while taking into consideration other site and engineering constraints. • If impacts to State listed plant species cannot be avoided, the project proponents shall comply with the CESA and consult with the CDFW to determine whether authorization for the incidental take of the species is required prior to commencing construction. If it is determined that authorization for incidental take is required from the CDFW, the project proponents shall 	<p>Non-HMP species at the Injection Well Facilities site</p>

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
	<p>comply with the CESA to obtain an incidental take permit prior to commencing construction on the site upon which state listed plant species could be taken. Permit requirements typically involve preparation and implementation of a mitigation plan and mitigating impacted habitat at a 3:1 ratio through preservation and/or restoration. At a minimum, the impacted plant species shall be replaced at a 1:1 ratio through preservation and/or restoration, as described below. The project proponents shall retain a qualified biologist to prepare a mitigation plan, which shall include, but is not limited to identifying: avoidance and minimization measures; mitigation strategy, including a take assessment, avoidance and minimization measures, compensatory mitigation lands, and success criteria; and funding assurances. The project proponents shall be required to implement the approved plan and any additional permit requirements.</p> <ul style="list-style-type: none"> • If impacts to non-State listed, special-status plant species cannot be avoided, the species shall be replaced at a 1:1 ratio for acreage and/or individuals impacted through preservation, restoration, or combination of both. A Rare Plant Restoration Plan, approved by the project proponents prior to commencing of construction on the site upon which the rare plant would be impacted, shall be prepared and implemented by a qualified biologist. The plan shall include, but is not limited to, the following: <ul style="list-style-type: none"> ○ A detailed description of on-site and/or off-site mitigation areas, salvage of seed and/or soil bank, plant salvage, seeding and planting specifications, including, if appropriate, increased planting ratio to ensure the applicable success ratio. Specifically, seed shall be collected from the on-site individuals that will be impacted and grown in a local greenhouse, and then transplanted within the mitigation area. Plants shall be transplanted while they are young seedlings in order to develop a good root system. Alternatively, the mitigation area may be broadcast seeded in fall; however, if this method is used, some seed shall be retained in the event that the seeding fails to produce viable plants and contingency measures need to be employed. ○ A description of a 3-year monitoring program, including specific methods of vegetation monitoring, data collection and analysis, restoration goals and objectives, success criteria, adaptive management if the criteria are not met, reporting protocols, and a funding mechanism. <p>The mitigation area shall be preserved in perpetuity through a conservation easement or other legally enforceable land preservation agreement. Exclusionary fencing shall be installed around the mitigation area to prevent disturbance until success criteria have been met.</p>	
<p>Impact BT-1: Construction Impacts to Special-Status Species and Habitat</p>	<p>Mitigation Measure BT-1g: Conduct Pre-Construction Surveys for Special-Status Bats. To avoid and reduce impacts to special-status bat species, the project proponents shall retain a qualified bat specialist or wildlife biologist to conduct site surveys during the reproductive season (May 1 through September 15) to characterize bat utilization of the component site and potential species present (techniques utilized to be determined by the biologist) prior to tree or building removal. Based on the results of these initial surveys, one or more of the following shall occur:</p> <ul style="list-style-type: none"> • If it is determined that bats are not present at the component site, no additional mitigation is required. 	<p>Salinas Pump Station, Salinas Treatment Facility,</p>

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
(continued)	<ul style="list-style-type: none"> • If it is determined that bats are utilizing the component site and may be impacted by the Project, pre-construction surveys shall be conducted no more than 30 days prior to any tree or building removal (or any other suitable roosting habitat) within 100 feet of construction limits. If, according to the bat specialist, no bats or bat signs are observed in the course of the pre-construction surveys, tree and building removal may proceed. If bats and/or bat signs are observed during the pre-construction surveys, the biologist shall determine if disturbance would jeopardize a maternity roost or another type of roost (i.e., foraging, day, or night). • If a single bat and/or only adult bats are roosting, removal of trees, buildings, or other suitable habitat may proceed after the bats have been safely excluded from the roost. Exclusion techniques shall be determined by the biologist and would depend on the roost type. • If an active maternity roost is detected, avoidance is preferred. Work in the vicinity of the roost (buffer to be determined by biologist) shall be postponed until the biologist monitoring the roost determines that the young have fledged and are no longer dependent on the roost. The monitor shall ensure that all bats have left the area of disturbance prior to initiation of pruning and/or removal of trees that would disturb the roost. If avoidance is not possible and a maternity roost must be disrupted, authorization from CDFW shall be required prior to removal of the roost. 	Blanco Drain Diversion, Product Water Conveyance, and Injection Well Facilities
Impact BT-1: Construction Impacts to Special-Status Species and Habitat (continued)	<p>Mitigation Measure BT-1h: Implementation of Mitigation Measures BT-1a and BT-1b to Mitigate Impacts to the Monterey Ornate Shrew, Coast Horned Lizard, Coast Range Newt, Two-Striped Garter Snake, and Salinas Harvest Mouse. If these species are encountered, implementation of Mitigation Measures BT-1a and BT- 1b, which avoid and minimize impacts through implementing construction best management practices and monitoring, would reduce potential impacts to these species to a less-than-significant level.</p> <p>Mitigation Measure BT-1i: Conduct Pre-Construction Surveys for Monterey Dusky- Footed Woodrat. To avoid and reduce impacts to the Monterey dusky-footed woodrat, the project proponents shall retain a qualified biologist to conduct pre-construction surveys in suitable habitat proposed for construction, ground disturbance, or staging within three days prior to construction for woodrat nests within the project area and in a buffer zone 100 feet out from the limit of disturbance. All woodrat nests shall be flagged for avoidance of direct construction impacts and protection during construction, where feasible. Nests that cannot be avoided shall be manually deconstructed prior to land clearing activities to allow animals to escape harm. If a litter of young is found or suspected, nest material shall be replaced, and the nest left alone for 2-3 weeks before a re-check to verify that young are capable of independent survival before proceeding with nest dismantling.</p>	Blanco Drain Diversion, Product Water Conveyance, and Injection Well Facilities

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
Impact BT-1: Construction Impacts to Special-Status Species and Habitat (continued)	<p>Mitigation Measure BT-1j: Conduct Pre-Construction Surveys for American Badger. To avoid and reduce impacts to the American badger, the project proponents shall retain a qualified biologist to conduct focused pre-construction surveys for badger dens in all suitable habitat proposed for construction, ground disturbance, or staging no more than two weeks prior to construction. If no potential badger dens are present, no further mitigation is required. If potential dens are observed, the following measures are required to avoid potential significant impacts to the American badger:</p> <ul style="list-style-type: none"> • If the qualified biologist determines that potential dens are inactive, the biologist shall excavate these dens by hand with a shovel to prevent badgers from reusing them during construction. • If the qualified biologist determines that potential dens may be active, the den shall be monitored for a period sufficient (as determined by a qualified biologist) to determine if the den is a maternity den occupied by a female and her young, or if the den is occupied by a solitary badger. • Maternity dens occupied by a female and her young shall be avoided during construction and a minimum buffer of 200 feet in which no construction activities shall occur shall be maintained around the den. After the qualified biologist determines that badgers have stopped using active dens within the project boundary, the dens shall be hand-excavated with a shovel to prevent re-use during construction. • Solitary male or female badgers shall be passively relocated by blocking the entrances of the dens with soil, sticks, and debris for three to five days to discourage the use of these dens prior to project construction disturbance. The den entrances shall be blocked to an incrementally greater degree over the three to five day period. After the qualified biologist determines that badgers have stopped using active dens within the project boundary, the dens shall be hand-excavated with a shovel to prevent re-use during construction. 	Product Water Conveyance
	<p>Mitigation Measure BT-1k: Conduct Pre-Construction Surveys for Protected Avian Species, including, but not limited to, white-tailed kite and California horned lark. Prior to the start of construction activities at each project component site, a qualified biologist shall conduct pre-construction surveys for suitable nesting habitat within the component Project Study Area and within a suitable buffer area from the component Project Study Area. The qualified biologist shall determine the suitable buffer area based on the avian species with the potential to nest at the site.</p> <p>In areas where nesting habitat is present within the component project area or within the determined suitable buffer area, construction activities that may directly (e.g., vegetation removal) or indirectly (e.g., noise/ground disturbance) affect protected nesting avian species shall be timed to avoid the breeding and nesting season. Specifically, vegetation and/or tree removal can be scheduled after September 16 and before January 31. Alternatively, a qualified biologist shall be retained by the project proponents to conduct pre-construction surveys for nesting raptors and other protected avian species where nesting habitat was identified and within the suitable buffer area if construction commences between February 1 and September 15. Pre-construction surveys shall be conducted no more than 14 days prior to the start of construction activities during the early part of the breeding season (February through April) and no more than 30 days prior to the initiation of these activities during the late part of the breeding season (May through August). Because some bird species nest early in spring and others nest later in summer, surveys for nesting birds may be required to continue during construction to address new arrivals, and because some species breed multiple times in a season. The necessity and timing of these continued surveys shall be determined by the qualified biologist</p>	All components

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
	<p>based on review of the final construction plans.</p> <p>If active raptor or other protected avian species nests are identified during the preconstruction surveys, the qualified biologist shall notify the project proponents and an appropriate no-disturbance buffer shall be imposed within which no construction activities or disturbance shall take place until the young have fledged and are no longer reliant upon the nest or parental care for survival, as determined by a qualified biologist.</p>	
Impact BT-1: Construction Impacts to Special-Status Species and Habitat (continued)	<p>Mitigation Measure BT-1l: Conduct Pre-Construction Surveys for Burrowing Owl. In order to avoid impacts to active burrowing owl nests, a qualified biologist shall conduct pre-construction surveys in suitable habitat within the construction footprint and within a suitable buffer, as determined by a qualified biologist, of the footprint no more than 30 days prior to the start of construction at a component site. If ground disturbing activities are delayed or suspended for more than 30 days after the pre-construction survey, the site shall be resurveyed. The survey shall conform to the DFG 1995 Staff Report protocol. If no burrowing owls are found, no further mitigation is required. If it is determined that burrowing owls occupy the site during the non-breeding season (September 1 through January 31), then a passive relocation effort (e.g., blocking burrows with one-way doors and leaving them in place for a minimum of three days) shall be undertaken to ensure that the owls are not harmed or injured during construction. Once it has been determined that the owls have vacated the site, the burrows shall be collapsed, and ground disturbance can proceed. If burrowing owls are detected within the construction footprint or immediately adjacent lands (i.e. within 250 feet of the footprint) during the breeding season (February 1 to August 31), a construction-free buffer of 250 feet shall be established around all active owl nests. The buffer area shall be enclosed with temporary fencing, and construction equipment and workers shall not enter the enclosed setback areas. Buffers shall remain in place for the duration of the breeding season or until it has been confirmed by a qualified biologist that all chicks have fledged and are independent of their parents. After the breeding season, passive relocation of any remaining owls shall take place as described above.</p>	<p>Product Water Conveyance</p>
	<p>Mitigation Measure BT-1m: Minimize Effects of Nighttime Construction Lighting. Nighttime construction lighting shall be focused and downward directed to preclude night illumination of the adjacent open space area.</p>	<p>Injection Well Facilities</p>
	<p>Mitigation Measure BT-1p: Avoid and Minimize Impacts to Western Pond Turtle. A qualified biologist shall survey suitable habitat no more than 48 hours before the onset of work activities at the component site for the presence of western pond turtle. If pond turtles are found and these individuals are likely to be killed or injured by work activities, the biologist shall be allowed sufficient time to move them from the site before work activities begin. The biologist shall relocate the pond turtles the shortest distance possible to a location that contains suitable habitat and would not be affected by activities associated with the project.</p>	<p>Blanco Drain Diversion</p>
	<p>Mitigation Measure BT-1q: Avoid and Minimize Impacts to California Red-Legged Frog. The following measures for avoidance and minimization of adverse impacts to California Red-Legged Frog (CRLF) during construction of the Project components are those typically employed for construction activities that may result in short-term impacts to individuals and their habitat. The focus of these measures is on scheduling activities at certain times of year, keeping the disturbance footprint to</p>	<p>Salinas Treatment Facility and Blanco Drain</p>

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
Impact BT-1: Construction Impacts to Special-Status Species and Habitat (continued)	<p>a minimum, and monitoring.</p> <ul style="list-style-type: none"> • The MRWPCA shall annually submit the name(s) and credentials of biologists who would conduct activities specified in the following measures. No project construction activities at the component site would begin until the MRWPCA receives confirmation from the USFWS that the biologist(s) is qualified to conduct the work. • A USFWS-approved biologist shall survey the work site 48 hours prior to the onset of construction activities. If CRLF, tadpoles, or eggs are found, the approved biologist shall determine the closest appropriate relocation site. The approved biologist shall be allowed sufficient time to move the CRLF, tadpoles or eggs from the work site before work activities begin. Only USFWS-approved biologists shall participate in activities associated with the capture, handling, and moving of CRLF. • Before any construction activities begin on the project component site, a USFWS-approved biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the CRLF and its habitat, the importance of the CRLF and its habitat, general measures that are being implemented to conserve the CRLF as they relate to the project, and the boundaries within which the project construction activities may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions. • A USFWS-approved biologist shall be present at the work site until such time as all removal of CRLF, instruction of workers, and disturbance of habitat have been completed. After this time, the biologist shall designate a person to monitor onsite compliance with all minimization measures and any future staff training. The USFWS-approved biologist shall ensure that this individual receives training outlined in Mitigation Measure Bt-1a and in the identification of CRLF. The monitor and the USFWS-approved biologist shall have the authority to stop work if CRLF are in harm's way. • The number of access routes, number and size of staging areas, and the total area of the activity shall be limited to the minimum necessary to achieve the project goal. Routes and boundaries shall be clearly demarcated, and these areas shall be outside of riparian and wetland areas to the extent practicable. • Work activities shall be completed between April 1 and November 1, to the extent practicable. Should the project proponent demonstrate a need to conduct activities outside this period, the project proponent may conduct such activities after obtaining USFWS approval (applies to Blanco Drain site only). • If a work site is to be temporarily dewatered by pumping, intakes shall be completely screened with wire mesh not larger than five millimeters (mm) to prevent CRLF from entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow shall be removed in a manner that would allow flow to resume with the least disturbance to 	Diversion

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
	<p>the substrate.</p> <ul style="list-style-type: none"> • The Declining Amphibian Populations Task Force’s Fieldwork Code of Practice shall be followed to minimize the possible spread of chytrid fungus or other amphibian pathogens and parasites. 	
<p>Impact BT-2: Construction Impacts to Sensitive Habitats</p>	<p>Mitigation Measure BT-2a: Avoidance and Minimization of Impacts to Riparian Habitat and Wetland Habitats. Implement Mitigation Measure BT-1a. When designing the facilities at these component sites, the MRWPCA shall site and design project features to avoid impacts to the riparian and wetland habitats shown in Attachment 8 of Appendix H and Appendix I, including direct habitat removal and indirect hydrology and water quality impacts, to the greatest extent feasible while taking into account site and engineering constraints. To protect this sensitive habitat during construction, the following measures shall be implemented:</p> <ul style="list-style-type: none"> • Place construction fencing around riparian and wetland habitat (i.e., areas adjacent to or nearby the Project construction) to be preserved to ensure construction activities and personnel do not impact this area. • All proposed lighting shall be designed to avoid light and glare into the riparian and wetland habitat. Light sources shall not illuminate these areas or cause glare. <p><i>[Note: the remainder of this mitigation from the October 8, 2016 is not applicable to the Proposed Action which wouldn’t result in any direct impacts to riparian or wetland habitat]</i></p>	<p>Reclamation Ditch and Blanco Drain Diversions</p>

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
Impact BT-2: Construction Impacts to Sensitive Habitats (continued)	<p>Mitigation Measure BT-2c: The project proponents in coordination with the contractor shall prepare and implement a Frac-Out Plan to avoid or reduce accidental impacts resulting from horizontal directional drilling (HDD) beneath the Salinas River. The Frac-Out Plan shall address spill prevention, containment, and clean-up methodology in the event of a frac out. The proposed HDD component of the Blanco Drain diversion shall be designed and conducted to minimize the risk of spills and frac-out events. The Frac-Out Plan shall be prepared and submitted to United States Fish and Wildlife Services, California Department of Fish and Wildlife, National Marine Fisheries Services, and the Regional Water Quality Control Board prior to commencement of HDD activities for the Blanco Drain Diversion construction. The following are contents of a Frac-Out Plan:</p> <ul style="list-style-type: none"> • Project description, including details of the HDD design and operations • Site description and existing conditions • Potential modes of HDD failure and HDD failure prevention and mitigation • Frac-out prevention measures (including for example, geotechnical investigations, planning for appropriate depths based on those investigations, presence of a qualified engineer during drilling to monitor the drilling process, live adjustments to the pace of drill advancement to ensure sufficient time for cutting and fluid circulation and to prevent or minimize plugging, maintaining the minimum drilling pressure necessary to maintain fluid circulation, etc.) • Monitoring requirements (for example, monitoring pump pressure circulation rate, ground surface and surface water inspection, advancing the drill only during daytime hours, on-site biological resource monitoring by a qualified biologist) • Response to accidental frac-out (including stopping drilling, permitting agency notification, surveying the area, containing the frac-out material, contacting the project biological monitor to identify and relocate species potentially in the area, turbidity monitoring, procedures for clean-up and mitigation of hazardous waste spill materials, preparation of documentation of the event, etc.) <p>Coordination plan and contact list of key project proponents, biological monitor, and agency staff in the event of an accidental frac-out event.</p>	Blanco Drain Diversion
Impact BT-4: Construction Conflicts with Local Policies, Ordinances, or Approved Habitat Conservation Plan	<p>Mitigation Measure BT-4. HMP Plant Species Salvage. For impacts to the HMP plant species within the Project Study Area that do not require take authorization from USFWS or CDFW, salvage efforts for these species shall be evaluated by a qualified biologist per the requirements of the HMP and BO. A salvage plan shall be prepared and implemented by a qualified biologist, which shall include, but is not limited to: a description and evaluation of salvage opportunities and constraints; a description of the appropriate methods and protocols of salvage and relocation efforts; identification of relocation and restoration areas; and identification of qualified biologists approved to perform the salvage efforts, including the identification of any required collection permits from USFWS and/or CDFW. Where proposed, seed collection shall occur from plants within the Project Study Area and topsoil shall be salvaged within occupied areas to be disturbed. Seeds shall be collected during the appropriate time of year for each species by qualified biologists. At the time of seed collection, a map shall also be prepared that identifies the specific locations of the plants for any future topsoil preservation efforts. The collected seeds shall be used to</p>	Product Water Conveyance, and Injection Well Facilities site within the former Fort Ord only

Table 1-2: Applicant-Proposed Avoidance and Minimization Measures for all Biological Resources Impacts, including Non-Federal Species

Impacts	Mitigation Measures	Applicable Components
	revegetate temporarily disturbed construction areas and reseed and restoration efforts on- or off-site, as determined appropriate in the salvage plan.	
Impact HS-4: Operational Surface Water Quality Impacts due to Source Water Diversions	Mitigation Measure HS-4: Management of Surface Water Diversion Operations. Rapid, imposed water-level fluctuations shall be avoided when operating the Reclamation Ditch Diversion pumps to minimize erosion and failure of exposed (or unvegetated), susceptible banks. This can be accomplished by operating the pumps at an appropriate flow rate, in conjunction with commencing operation of the pumps only when suitable water levels or flow rates are measured in the water body. Proper control shall be implemented to ensure that mobilized sediment would not impair downstream habitat values and to prevent adverse impacts due to water/soil interface adjacent to the Reclamation Ditch and Tembladero Slough. During planned routine maintenance at the Reclamation Ditch Diversion, maintenance personnel shall inspect the diversion structures within the channel for evidence of any adverse fluvial geomorphological processes (for example, undercutting, erosion, scour, or changes in channel cross-section). If evidence of any substantial adverse changes is noted, the diversion structure shall be redesigned and the project proponents shall modify it in accordance with the new design.	Reclamation Ditch Diversion

1.4 Schedule for Construction

The proposed construction schedule is provided in Table 1-2 on the following pages. The red boxes indicate when dewatering activities in the Reclamation Ditch and Blanco Drain, are proposed to occur. This is the schedule as reflected in the certified Final EIR (October 8, 2015).

1.5 Summary of Consultation to Date

On June 21, 2015, Denise Duffy & Associates (DD&A) requested a species list for the project area from Service, and Service referred them to the database Information for Planning and Conservation (IPaC) Trust Resource Report website at: <http://ecos.fws.gov/ipac/>. On September 2, 2015, DD&A generated the IPaC Trust Resource Report that is included in **Appendix A**. On November 11, 2015, DD&A created an Official list of threatened or endangered species, as required by ESA Section 7 (**Appendix B**). On January 14, 2016, MRWPCA, the Monterey Peninsula Water Management District, and MCWRA, with assistance by DD&A conducted a project information meeting at the DD&A offices at 947 Cass Street, Suite 5, Monterey, CA. The presentation and meeting summary notes of the January 14, 2016 meeting are contained within **Appendix F**. A site visit is scheduled to be conducted on February 16, 2016 and the itinerary for that site visit is also contained in **Appendix F**. Refer to the Pure Water Monterey Groundwater Replenishment Project – National Marine Fisheries Service Biological Assessment for a complete list of consultation to date with the National Oceanic and Atmospheric Administration – National Marine Fisheries Service (HDR, 2016).

1.6 Document Preparation History

DD&A Senior Environmental Scientist, Matt Johnson, was the primary author of this BA. With assistance from DD&A Project Manager, Alison Imamura, AICP, and DD&A Assistant Planner, Diana Buhler. All DD&A staff may be reached at:

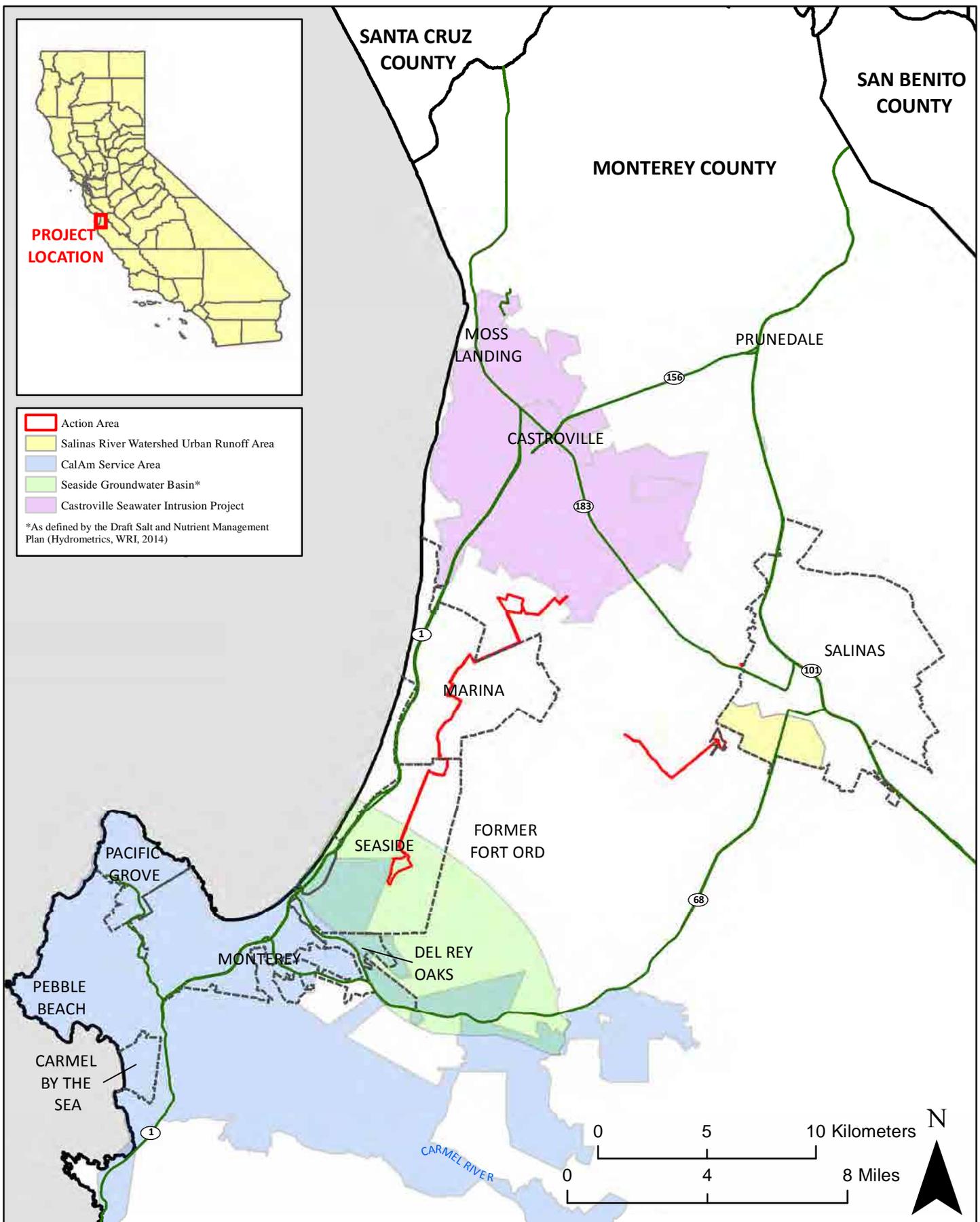
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Table 1-2. Project Construction Schedule

Project Component	General Construction Activities	2016							2017							2018						
		J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
Salinas Pump Station Site																						
Including pipes, wet wells/diversion structures, valves, SCADA	Site preparation and Demolition																					
	Excavate/form/cast Junction and Diversion structures																					
	Pipeline Trenching and Installation																					
	Install valves/Gates in Diversion structures																					
	Install electrical and controls																					
	Site Paving																					
Salinas Industrial Wastewater Treatment Facility																						
Storage and Recovery Additions - New pump station at Pond 3, pipeline at IWTP to return PS, and SCADA	Site preparation and Demolition																					
	Dewatering																					
	Excavate/form/cast wet well and intake structures at Pond 3 IWTP																					
	Pipeline Trenching and Installation at IWTP -Pond 3 to Return PS																					
	Install electrical and controls																					
	Start-up and testing																					
	Site Paving																					
Reclamation Ditch Diversion																						
Including pipes, wet wells/diversion structures, valves, SCADA	Site preparation and Demolition																					
	Bypass Flow Diversion																					
	Excavate/form/cast wet well and intake structure																					
	Pipeline Trenching and Installation																					
	Install valves/Gates in wet well and intake structures																					
	Install electrical and controls																					
	Start-up and testing																					
	Site Paving																					

Table 1-2. Project Construction Schedule

Project Component	General Construction Activities	2016							2017							2018					
		J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J
Blanco Drain Diversion and Pipeline																					
Including pipes, wet wells/diversion structures, valves, SCADA	Site preparation and Demolition																				
	Bypass Flow Diversion																				
	Excavate/form/cast wet well and intake structure																				
	Gravity Pipeline Trenching and Installation																				
	Salinas River Crossing																				
	Install gravity pipeline to RTP																				
	Install valves/Gates in wet well and intake structures																				
	Install pumps, electrical and controls																				
	Start-up and testing																				
Site Paving																					
Treatment Facilities at the Regional Treatment Plant																					
AWT Facility - including pipelines, diversion structures pretreatment, MF/RO/UV AOP, Brine Mixing Station, Product Water Pump Station	Site Preparation																				
	Grading/Sheeting-Shoring/Excavation																				
	Trenching																				
	Cutting, laying and welding pipelines																				
	Pouring concrete																				
	Building (exterior)																				
	Building (interior)																				
	Equipment Delivery and Set-Up																				
	Coating																				
	Paving, Electrical, site Clean-up																				
Final Facility Testing																					
SVRP Modifications - including new pipelines, sluice gates, contact basin mods and	Dewater 80 AF pond																				
	Trenching/Installing Pipelines																				



Regional Location Map

Date: 11/20/2015

Scale: 1 in = 4 miles

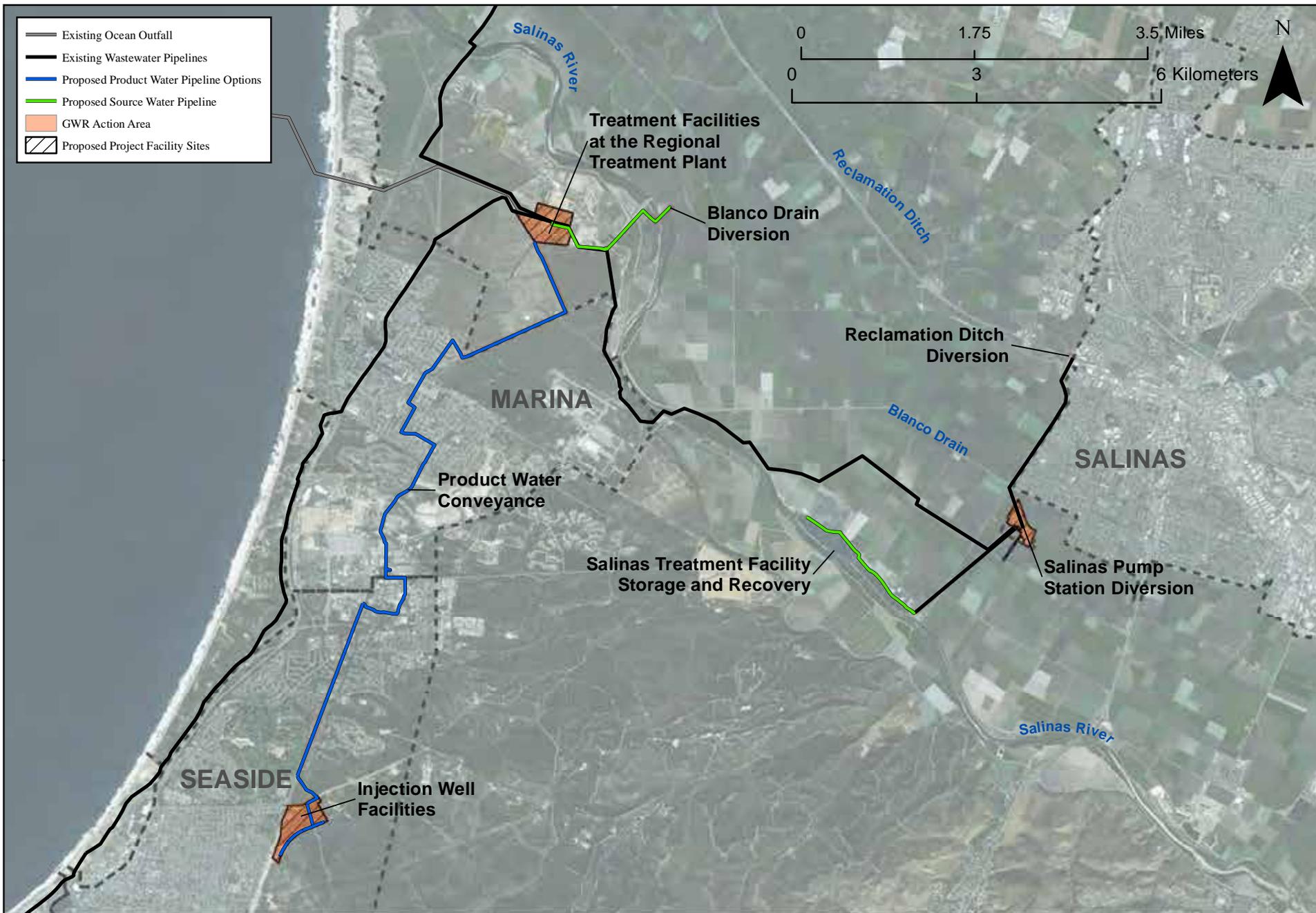
Project: 2013-13



Pure Water Monterey
Groundwater Replenishment Project
USFWS Biological Assessment

Figure

1-1



Project Key Components

Date: 11/20/2015

Scale: 1 in = 1 miles

Project: 2013-13



Pure Water Monterey
Groundwater Replenishment Project
USFWS Biological Assessment

Figure
1-2

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Chapter 2. Study Methods

The following sections discuss sources used to develop information on the proposed Action Area. Study methods and sources used consisted of a review of technical reports prepared for the Proposed Action, review of a list of Threatened and Endangered species with the potential to be affected by the Proposed Action as provided by the Service (**Appendix B**), review of existing documentation relevant to the Proposed Action, field reconnaissance, protocol-level surveys, and evaluation of impacts to identified resources.

2.1 Listed and Proposed Species Potentially in the Action Area

In order to determine which federally listed or proposed species are known to, or have the potential to, occur in the Action Area, a list of threatened and endangered species with the potential to be affected by the Proposed Action provided by the Service (**Appendix B**; Service, 2015), the California Natural Diversity Data Base (CNDDB) occurrence reports (CDFW, 2015), and other materials were reviewed. From these sources, a table of federally listed or proposed species known, or with the potential to occur, in the Action Area was compiled. **Table 2-1** lists the federally listed plant species along with their legal status, habitat requirements, a determination of the presence of suitable habitat, and a brief statement of their likelihood to occur within the Action Area. **Table 2-2** lists the federally listed wildlife species along with their legal status, habitat requirements, a determination of the presence of suitable habitat, and a brief statement of their likelihood to occur within the Action Area. Only those species identified to occur, or assumed to occur, within the Action Area are discussed in Section 4 of this BA. All other species are assumed absent within the Action Area based on the species-specific reasons presented in **Tables 2-1** and **2-2**.

Table 2-1: Federally Listed and Proposed Plant Species Documented to Occur in the Project Region

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale
<i>Astragalus tener</i> var. <i>titi</i>	Coastal dunes milk-vetch	E	Coastal bluff scrub on sandy soils, coastal dunes, and mesic areas of coastal prairie at elevations of 1-50 meters. Annual herb in the Fabaceae family; blooms March-May.	P	Not Present: Not identified during focused botanical surveys in 2009, 2010, and 2014. Suitable habitat not present in areas not surveyed.
<i>Chorizanthe pungens</i> var. <i>pungens</i>	Monterey spineflower	T/CH	Maritime chaparral, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland on sandy soils at elevations of 3-450 meters. Annual herb in the Polygonaceae family; blooms April-June.	P	Present: Observed throughout Fort Ord, near Armstrong Ranch. Identified on the dunes at the Injection Well Facilities site and RUWAP Alignment Option components during focused botanical surveys in 2009, 2010, and 2014.
<i>Chorizanthe robusta</i> var. <i>robusta</i>	robust spineflower	E/CH	Openings in cismontane woodland, coastal dunes, and coastal scrub on sandy or gravelly soils at elevations of 3-300 meters. Annual herb in the Polygonaceae family; blooms April-September.	P	Not Present: Not identified during focused botanical surveys in 2009, 2010, and 2014. Suitable habitat not present in areas not surveyed.
<i>Erysimum teretifolium</i>	Santa Cruz wallflower	E	Chaparral and lower montane coniferous forest on inland marine sands, at elevations of 120-610 meters. Perennial herb in the Brassicaceae family; blooms March-July.	P	Not Present: Not identified during focused botanical surveys in 2009, 2010, and 2014. Suitable habitat not present in areas not surveyed.
<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>	Monterey (sand) gilia	E	Maritime chaparral, cismontane woodland, coastal dunes, and openings in coastal scrub on sandy soils at elevations of 0-45 meters. Annual herb in the Polemoniaceae family; blooms April-June.	P	Potential: There is a high likelihood sand gilia may occur within the unsurveyed portion of the Injection Well Facilities site.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale
<i>Hesperocyparis goveniana</i>	Gowen cypress	T	Closed-cone coniferous forest and maritime chaparral at elevations of 30-300 meters. Evergreen tree in the Cupressaceae family. Natively occurring only at Point Lobos near Gibson Creek and the Huckleberry Hill Nature Preserve near Highway 68.	P	Not Present: Not identified during focused botanical survey in 2009, 2010, and 2014. Project Study Area is outside of currently known range for this species.
<i>Holocarpha macradenia</i>	Santa Cruz tarplant	T/CH	Coastal prairies and valley foothill grasslands, often clay or sandy soils, at elevations of 10-220 meters. Annual herb in the Asteraceae family; blooms June-October.	P	Not Present: Not identified during focused botanical surveys in 2009, 2010, and 2014. Suitable habitat not present in areas not surveyed.
<i>Lasthenia conjugens</i>	Contra Costa goldfields	E/CH	Mesic areas of valley and foothill grassland, alkaline playas, cismontane woodland, and vernal pools at elevations of 0-470 meters. Annual herb in the Asteraceae family; blooms March-June.	A	Not Present: Not identified during focused botanical surveys in 2009, 2010, and 2014. Suitable habitat not present in areas not surveyed.
<i>Layia carnosa</i>	Beach layia	E	Coastal dunes and coastal scrub on sandy soils at elevations of 0-60 meters. Annual herb in the Asteraceae family; blooms March-July.	P	Not Present: Not identified during focused botanical surveys in 2009, 2010, and 2014. Suitable habitat not present in areas not surveyed.
<i>Lupinus tidestromii</i>	Tidestrom's lupine	E	Coastal dunes at elevations of 0-100 meters. Perennial rhizomatous herb in the Fabaceae family; blooms April-June. Only Monterey County plants are state-listed Endangered as var. <i>tidestromii</i> .	P	Not Present: Not identified during focused botanical surveys in 2009, 2010, and 2014. Suitable habitat not present in areas not surveyed.
<i>Pentachaeta bellidiflora</i>	White-rayed pentachaeta	E	Cismontane woodland and valley and foothill grasslands, often on serpentinite soils, at elevations of 35-620 meters. Annual herb in the Asteraceae family; blooms March-May.	A	Not Present: Not identified during focused botanical surveys in 2009, 2010, and 2014. Suitable habitat not present in areas not surveyed.
<i>Piperia yadonii</i>	Yadon's rein orchid	E	Sandy soils in coastal bluff scrub, closed-cone coniferous forest, and maritime chaparral at elevations of 10-510 meters. Annual herb in the Orchidaceae family;	P	Not Present: Not identified during focused botanical surveys in 2009, 2010, and 2014. Suitable habitat not present in areas not surveyed.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale
<i>Potentilla hickmanii</i>	Hickman's cinquefoil	E	Coastal bluff scrub, closed-cone coniferous forests, vernal mesic meadows, and freshwater marshes and swamps at elevations of 10-149 meters. Perennial herb in the Rosaceae family; blooms April-August.	P	Not Present: Not identified during focused botanical surveys in 2009, 2010, and 2014. Suitable habitat not present in areas not surveyed.
<i>Trifolium trichocalyx</i>	Monterey clover	E	Sandy openings and burned areas of closed-cone coniferous forest at elevations of 30-240 meters. Annual herb in the Fabaceae family; blooms April-June.	P	Not Present: Not identified during focused botanical surveys in 2009, 2010, and 2014. Suitable habitat not present in areas not surveyed.
<p>Status Definitions E = Listed as Endangered under the federal Endangered Species Act T = Listed as Threatened under the federal Endangered Species Act C = Candidate for listing under the federal Endangered Species Act CH = Critical Habitat designated or proposed- does not necessarily mean constituent elements are present</p> <p>Habitat Definitions A = Habitat absent P = Habitat present</p> <p>Rationale Definitions Known = Species is known to occur within the Action Area Potential = Species has a potential to occur within the Action Area based on presence of suitable habitat and known occurrences of the species within the vicinity Unlikely = Appropriate habitat is present within the Action Area, but species is not likely to be present based on the species-specific reason provided Not Present = Appropriate habitat is not present within the Action Area and/or species was not identified during focused surveys</p>					

Table 2-2: Federally Listed and Proposed Wildlife Species Documented to Occur in the Project Region

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale
INVERTEBRATES					
<i>Branchinecta lynchi</i>	Vernal pool fairy shrimp	T	Require ephemeral pools with no flow. Associated with vernal pool/grasslands from near Red Bluff (Shasta County), through the central valley, and into the South Coast Mountains Region. Require ephemeral pools with no flow.	A	Unlikely: No CNDDDB occurrences within quads searched. California fairy shrimp (<i>Linderella occidentalis</i>) known to occur in vernal pools in the vicinity of the Action Area, but no vernal pool fairy shrimp have been identified. No habitat is present within the Action Area.
<i>Cicindela ohlone</i>	<i>Ohlone tiger beetle</i>	E	Coastal terraces with remnant stands of open native grassland with clay or sandy soils. Hunt, breed, and dig small vertical burrows along sunny single-track trails and dirt roads (maintained by cattle, hikers, etc.) in coast terrace meadows that still support native grasses. Current range from the City of Scotts Valley to the eastern edge of the City of Santa Cruz.	A	Unlikely: Action Area is outside of the known current range.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale
<i>Euphilotes enoptes smithi</i>	Smith's blue butterfly	E	Most commonly associated with coastal dunes and coastal sage scrub plant communities in Monterey and Santa Cruz Counties. Plant hosts are <i>Eriogonum latifolium</i> and <i>E. parvifolium</i> .	A	Unlikely: The CNDDDB reports an occurrence of this species that ranges from Seaside to Monterey and includes portions of the Action Area. The host plants for this species were not identified within the Action Area during focused botanical surveys in 2009, 2010, and 2014. In addition, while the coastal scrub and coastal dune scrub habitats within the Reclamation Ditch Affected Reach and Old Salinas Channel Affected Reach may support obligate host plant species the Proposed Action will not affect vegetation in these areas.
<i>Trimerotropis infantilis</i>	Zayante band-winged grasshopper	E	Open sandy areas with sparse, low annual and perennial herbs on high ridges with sparse ponderosa pine. Often occurs with Ben Lomond wallflower. Restricted to sand parkland habitat found on ridges and hills within the Zayante sandhills habitat in Santa Cruz County. Flight season extends from late May through August.	A	Unlikely: No suitable habitat present within the Project Study Area.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale
AMPHIBIANS					
<i>Ambystoma californiense</i>	California tiger salamander	T/CH	Annual grassland and grassy understory of valley-foothill hardwood habitats in central and northern California. Need underground refuges and vernal pools or other seasonal water sources.	A	Unlikely: No breeding habitat is present within the Action Area. Several breeding locations are known within Fort Ord; however, all of these are located 2.0 miles or greater from the Action Area, outside of the known dispersal range for this species. A potential tiger salamander breeding site was previously found and reported within Armstrong Ranch, approximately 300 feet from the Action Area, and suitable upland habitat is present within the Action Area in this area. However, it was determined through genetic testing that the tiger salamander population at this location was non-native and the breeding habitat has been graded and no longer exists.
<i>Ambystoma macrodactylum croceum</i>	Santa Cruz long-toed salamander	E	Preferred habitats include ponderosa pine, montane hardwood-conifer, mixed conifer, montane riparian, red fir, and wet meadows. This is an isolated subspecies which occurs in a small number of localities in Santa Cruz and Monterey Counties. Adults spend the majority of the time in underground burrows and beneath objects. Larvae prefer shallow water with clumps of vegetation.	A	Unlikely: No breeding habitat is present on the Action Area. The nearest CNDDDB occurrence is approximately five miles from the Action Area, outside of the potential dispersal range for this species.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale
<i>Rana draytonii</i>	California red-legged frog	T/CH	Lowlands and foothills in or near permanent or late-season sources of deep water with dense, shrubby, or emergent riparian vegetation. During late summer or fall adults are known to utilize a variety of upland habitats with leaf litter or mammal burrows.	P	Potential: The nearest CNDDDB occurrence is located approximately one mile from the Action Area along the Salinas River. CRLF were observed breeding at this location in 2009.
BIRDS					
<i>Brachyramphus marmoratus</i>	Marbled murrelet (nesting)	T	Occur year-round in marine subtidal and pelagic habitats from the Oregon border to Point Sal. Partial to coastlines with stands of mature redwood and Douglas-fir. Requires dense mature forests of redwood and/or Douglas-fir for breeding and nesting.	A	Unlikely: No CNDDDB occurrences within quads searched. No habitat is present within the Action Area.
<i>Agelaius tricolor</i>	Tricolored blackbird	C	Nest in colonies in dense riparian vegetation, along rivers, lagoons, lakes, and ponds. Forages over grassland or aquatic habitats.	P	Potential: Suitable foraging and nesting habitat occurs adjacent to the Salinas Treatment Facility site, the Action Area does not include the wastewater ponds or riparian habitat where this species could occur. Riparian habitat associated with the Salinas River is considered suitable nesting habitat for this species.
<i>Charadrius alexandrinus nivosus</i>	Western snowy plover	T/CH	Sandy beaches on marine and estuarine shores, also salt pond levees and the shores of large alkali lakes. Requires sandy, gravelly or friable soil substrate for nesting.	A	Unlikely: Three CNDDDB occurrences are recorded within portions of the Action Area. No suitable habitat for this species is present within the Action Area.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale
<i>Empidonax traillii extimus</i>	Southwestern willow flycatcher (nesting)	E	Breeds in riparian habitat in areas ranging in elevation from sea level to over 2,600 meters. Builds nest in trees in densely vegetated areas. This species establishes nesting territories and builds, and forages in mosaics of relatively dense and expansive areas of trees and shrubs, near or adjacent to surface water or underlain by saturated soils. Not typically found nesting in areas without willows (<i>Salix sp.</i>), tamarisk (<i>Tamarix ramosissima</i>), or both.	A	Unlikely: No CNDDDB occurrences within quads searched. Habitat is present within the Project Study Area. This species has a low potential for occurrence as no breeding pairs have been seen in recent decades and the species is unlikely to reoccupy this area until brown-headed cowbirds, which parasitize the nest of other species, are heavily controlled.
<i>Gymnogyps californianus</i>	California condor	E/CH	Roosting sites in isolated rocky cliffs, rugged chaparral, and pine covered mountains 2000-6000 feet above sea level. Foraging area removed from nesting/roosting site (includes rangeland and coastal area - up to 19 mile commute one way). Nest sites in cliffs, crevices, potholes.	A	Unlikely: No CNDDDB occurrences within quads searched. No habitat is present within the Action Area.
<i>Rallus longirostris obsoletus</i>	California clapper rail	E	Occur within a range of salt and brackish marshes.	P	Unlikely: Only low quality habitat is present within the Action Area. This species is now likely restricted to the San Francisco Bay area. Occurrences have been recorded at Elkhorn Slough; however, this species has not been observed there since the 1980s.
<i>Sterna antillarum browni</i>	California least tern (nesting colony)	E	Sea beaches, bays; large rivers, bars.	A	Unlikely: No CNDDDB occurrences within quads searched. No habitat is present within the Action Area.
<i>Vireo bellii pusillus</i>	Least Bell's vireo	E	Riparian habitats. Breed in willow riparian forest supporting a dense, shrubby understory. Oak woodland with a willow riparian understory is also used in some areas, and individuals sometimes enter adjacent chaparral, coastal sage scrub, or desert scrub habitats to forage.	P	Unlikely: Only low quality habitat is present within the Action Area; considered extirpated in northern Monterey County.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale
FISH					
<i>Eucyclogobius newberryi</i>	Tidewater goby	E/CH	Brackish water habitats, found in shallow lagoons and lower stream reaches. Tidewater gobies appear to be naturally absent (now and historically) from three large stretches of coastline where lagoons or estuaries are absent and steep topography or swift currents may prevent tidewater gobies from dispersing between adjacent localities. The southernmost large, natural gap occurs between the Salinas River in Monterey County and Arroyo del Oso in San Luis Obispo County.	P	Unlikely: Tidewater goby have been rarely observed in the Salinas Lagoon surveys. Tidewater goby were observed for the first time during the 12 years of the lagoon survey and for the first time since 1951, when two gobies were observed during fall 2013 surveys. The tidewater goby was presumed lost from the lagoon due to levee construction and channelization (USFWS 2013 as cited in HDR Engineering, January 2015). It is likely that the gobies observed in 2013 had dispersed from nearby Bennett Slough or Moro Cojo Slough (MCWRA 2013b as cited in HDR Engineering, January 2015). Construction and operation impacts are not expected within Salinas Lagoon as a result of the Proposed Action.
MAMMALS					
<i>Enhydra lutris nereis</i>	Southern sea otter	T	Generally found inhabiting nearshore coastal waters of less than 117 feet in depth. <i>E. lutris</i> can be found in association with both rocky and soft-bottom habitats. Typical haunts of the sea otter are characterized by precipitous rocky shores, barrier reefs, tidewater stones, and dense kelp forests.	A	Unlikely: No suitable habitat present within the Action Area.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale
<p>Status Definitions E = Listed as Endangered under the federal Endangered Species Act T = Listed as Threatened under the federal Endangered Species Act C = Candidate for listing under the federal Endangered Species Act CH = Critical Habitat designated or proposed- does not necessarily mean constituent elements are present</p> <p>Habitat Definitions A = Habitat absent P = Habitat present</p> <p>Rationale Definitions Known = Species is known to occur within the Action Area Potential = Species has a potential to occur within the Action Area based on presence of suitable habitat and known occurrences of the species within the vicinity Unlikely = Appropriate habitat is present within the Action Area, but species is not likely to be present based on the species-specific reason provided Not Present = Appropriate habitat is not present within the Action Area and/or species was not identified during focused surveys</p>					

2.2 Data Sources

The primary literature and data sources reviewed in order to determine the occurrence or potential for occurrence of special-status species within the Action Area are as follows: current agency status information from the U.S. Fish and Wildlife Service (Service) and California Department of Fish and Wildlife (CDFW) for species listed, proposed for listing, or candidates for listing as threatened or endangered under the Federal Endangered Species Act (ESA), the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS, 2010); and the California Natural Diversity Database (CNDDDB) RareFind occurrence reports (CDFW, 2015). The CNDDDB RareFind occurrence reports were reviewed from the Moss Landing, Marina, Monterey, Seaside, and Salinas quadrangles and the surrounding quadrangles (Soquel, Watsonville East, Watsonville West, Mt. Carmel, Prunedale, San Juan Bautista, Natividad, Soberanes Point, Spreckels, Chualar, and Carmel Valley).

Botanical Resources

The generalized vegetation classification schemes for California described by Holland (1986) and Sawyer et al. (2009) were consulted in classifying the vegetation within the Action Area. The final classification and characterization of the vegetation within the Action Area is based on field observations and the List of Vegetation Alliances and Associations (or Natural Communities List) (Sawyer et al., 2009). Although this list replaces all other lists of terrestrial natural communities and vegetation types developed for the CNDDDB, the more commonly used terrestrial communities derived from Holland are used for ease of reference.

Information regarding the distribution and habitats of local and state vascular plants was also reviewed (Howitt and Howell, 1964 and 1973; Munz and Keck, 1973; Hickman, 1993; Baldwin, et al., 2012; Matthews, 2006; Jepson Flora Project, 2014). All plants observed within the Action Area were identified using keys and descriptions in Hickman (1993) and Matthews (2006). Scientific nomenclature for plants in this report follows Baldwin, et al., (2012) and common names follow Matthews (2006). A full botanical inventory was not recorded for the Action Area; however, the dominant species within each habitat were recorded and all plant species encountered were identified to eliminate them as being special-status species.

The entire Action Area, with the exception of, a portion of the Injection Well Facilities site, Old Salinas River Channel Affected Reach, and the Reclamation Ditch Affected Reaches past the top of bank, was surveyed for botanical resources following the applicable guidelines outlined in: *Guidelines for Conducting and Reporting Botanical Inventories for Federally listed, Proposed and Candidate Plants* (Service, 2000), *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW, 2009), and *CNPS Botanical Survey Guidelines* (CNPS, 2001).

Wildlife Resources

The following literature and data sources were reviewed: CDFW reports on special-status wildlife (Remsen, 1978; Williams, 1986; Jennings and Hayes, 1994; Thelander, 1994); California Wildlife Habitat Relationships life history accounts and range maps (CDFW, 2014); and general wildlife references (Stebbins, 2003).

Based on the identification of special-status wildlife species with the potential to occur within or in the vicinity of the Action Area, it was determined that protocol-level surveys to determine presence or absence were not necessary. There are two protocol-level surveys for federally listed species that could be applicable to the Proposed Action – surveys for the California red-legged frog (CRLF), and California tiger salamander (*Ambystoma californiense*) (CTS). Due to known occurrences of the CRLF within the Action Area near the Salinas River (the Salinas Treatment Facility and the Blanco Drain Diversion sites) the BA assumes presence of CRLF at these locations. None of the Proposed Action components are located within 2 km of a known CTS breeding location; therefore, protocol-level surveys for CTS were not conducted.

2.3 Personnel and Survey Dates

Numerous field surveys have been conducted within the Action Area over previous years; most recently field surveys were conducted by DD&A in February and March 2015, as well as April, May, August 2014.

2.4 Agency Coordination and Professional Contacts

- The Notice of Preparation (NOP) of a Draft Environmental Impact Report was circulated to local, state, and federal agencies and other interested parties from May 30 to July 2, 2013 for a 30-day review period.
- A supplement to the NOP was prepared and circulated to a larger distribution list than the prior NOP from December 9, 2014 through January 8, 2015 for an additional 30-day review period to reflect updates to the Proposed Project that had occurred since the original NOP was issued.
- The Draft EIR was completed and circulated to the larger distribution list , as follows
 - On April 21, 2015, the NOA and Notice of Completion were sent to the State Clearinghouse/Governor’s Office of Planning and Research, and to approximately 800 interested responsible and trustee agencies (including the Service and other federal agencies), interested groups, organizations, and individuals.
- MRWPCA held two public meetings during the Draft EIR review period to inform the public of the content of the Draft EIR and CEQA process and to provide an opportunity

for the public to ask questions and to submit comments. On May 20, 2015 and on May 21, 2015.

- On June 21, 2015, Denise Duffy & Associates requested a species list for the project area from the Service, and the Service referred them to the database IPaC Trust Resource Report website at: <http://ecos.fws.gov/ipac/>. On September 2, 2015, DD&A generated the IPaC Trust Resource Report that is included in **Appendix A**. Refer to the Pure Water Monterey Groundwater Replenishment Project – National Marine Fisheries Service Biological Assessment for a complete list of consultation to date with the National Oceanic and Atmospheric Administration – National Marine Fisheries Service (HDR, November 2015).
- On November 11, 2015, DD&A created an Official list of threatened or endangered species, as required by ESA Section 7. (**Appendix B**)
- On January 14, 2016, DD&A presented the Pure Water Monterey Project to Service staff member, Jacob Martin.
- On February 26, 2016, DD&A, MCWRA, and MRWPCA staff met with Service staff member, Jacob Martin, in the field to tour all components of the Pure Water Monterey Project.

Chapter 3. Results: Environmental Setting

3.1 Description of Existing Biological and Physical Conditions

Proposed Action Region

The Proposed Action is located within Monterey County and traverses the Monterey Peninsula, which encompasses a broad range of biological resources. Most Proposed Action components would be located primarily within urbanized, developed areas and existing agricultural lands. However, some Proposed Action components would occur within undeveloped habitats. The project region is located near the confluence of the San Francisco Bay, Central Coast, and South Coast Range floristic provinces; the flora of Monterey County is among the most diverse in California. The Monterey Bay region represents the population range limits of many rare plant species endemic to northern and southern portions of the state.

In general, the Proposed Action would be situated in level to gently sloped topography within eight miles of the ocean, with elevations ranging from sea level to approximately 425 feet above sea level at the proposed Injection Well Facility Site. The average annual precipitation in this portion of Monterey County ranges from 12 to 20 inches; annual temperatures average 59 degrees Fahrenheit.

The Proposed Action region includes the following surface water bodies: Reclamation Ditch, Blanco Drain, and Salinas River. This analysis further defines “Affected Reaches” as portions of the Reclamation Ditch, Tembladero Slough, Salinas River, and the Old Salinas River Channel, which have the potential to be affected by the operation of the Proposed Action as a result of changes in hydrology, due to the proposed diversions.

Action Area

The Action Area evaluated for this BA includes all areas within all four major components of the Proposed Action; (source water, diversion and storage, treatment process and facilities at the Regional Treatment Plant, product water conveyance, and injection well facilities) that will be disturbed during the construction phase of the Proposed Action (**Figures 3-1 through 3-14**). The following component sites are addressed⁷:

- Source Water Diversion and Storage
 - Salinas Pump Station Diversion
 - Salinas Treatment Facility Storage and Recovery
 - Reclamation Ditch Diversion

⁷ Detailed descriptions of each component are presented in Section 1.2 of this document.

- Blanco Drain Diversion
- AWT Facility and Salinas Valley Reclamation Plant Modifications at the Regional Treatment Plant
- Product Water Pipeline
- Product Water Booster Pump Station
- Injection Well Facilities

While the “affected reaches” of the Reclamation Ditch, Tembladero Slough, Salinas River, and the Old Salinas River Channel are included in the Proposed Action region and briefly discussed during the effects section of this document they were not ultimately included in the Action Area because the Proposed Action will not directly affect these resources and the potential indirect effects have been determined to be negligible.

Appendix C shows the detailed aerial photographs of the areas that would be potentially disturbed during construction activities and the locations of the permanent facilities.

Physical Conditions

Soils

The SSURGO Database (USDA-NRCS, 2015) identifies five map units within the Action Area (**Figure 3-15**). The SSURGO Database description of these units is provided below.

Alviso

This poorly drained soil is found in basins and on tidal flats, and was formed in alluvium derived from sedimentary rocks. In a representative profile, the surface layer is a gray, neutral silty clay loam approximately five inches thick. Below that, there is approximately nine inches of light gray, mildly alkaline silty clay loam which is underlain by approximately 31 inches of light gray to gray mildly alkaline silty clay. In areas where this soil is classified as “drained” the soil has been partially drained by structures such as levees, dikes, and gates used to control the inflow of tidewater.

Antioch

These moderately well-drained soils, found on terraces and alluvial fans, were formed in alluvium derived from sedimentary rocks. In a representative profile, the surface layer is an approximately 15-inch thick, grayish-brown, strongly acid very fine sandy loam. The subsurface layer is an approximately six-inch thick, light gray, slightly acid, very fine sandy loam.

Baywood Sand

This somewhat excessively drained soil was formed in stabilized sand dunes. In a representative profile of this soil, the surface layer is approximately 21 inches thick, grayish brown and brown, slightly acidic and medium acid sand.

Clear Lake Clay

This poorly-drained soil is found on flood plains and in basins, and was formed in alluvium derived from sedimentary rocks. In a representative profile, the top layer is an approximately 24-inch thick, dark gray, moderately alkaline clay.

Cropley

These well-drained soils are found on alluvial fans, floodplains, basins, terraces, and terrace breaks, and were formed in alluvium derived from sedimentary rocks. In a representative profile, the surface layer is an approximately 36-inch thick, very dark gray, moderately alkaline silty clay.

Diablo Clay

This well-drained soil is found in uplands and was formed in material underlain by calcareous sandstone and shale. In a representative profile, the surface layer is an approximately 30-inch thick, dark gray to very dark gray, slightly acidic, and neutral clay.

Dune Land

This soil is comprised of loose wind-deposited quartz and feldspar sand. It is found on gently sloping to steep areas of hummocks, mounds, and hills.

Elkhorn

These well-drained soils are found on dune like marine terraces and on benches that have smooth, undulating slopes, and were formed in material underlain by weakly consolidated sandy sediments or ferruginous sandstone. In a representative profile, the top layer is an approximately 20- to 35-inch thick, gray or grayish brown, medium acid fine sandy loam.

Metz

This somewhat excessively drained soil is found largely along drainage ways and on modified sand dunes, and was formed in alluvium derived mostly from sedimentary rocks. The texture of the surface layer is variable, as this complex consists of undulating to gently rolling soils that are intermingled. In a representative profile, the surface layer is approximately 12 inches thick. The texture of the surface layer can include sand, loamy sand, silt loam, and sandy loam that is gravelly or cobbly in areas. The subsoil material extends to a depth of more than 60 inches; it is light brownish gray, moderately alkaline, stratified fine sand, sand, and very sandy loam.

Mocho

This well-drained soil is found on floodplains and was formed in alluvium derived mostly from sedimentary rocks. In a representative profile, the surface is layer an approximately 12-inch thick, grayish brown, calcareous silt loam. The subsoil is a light brownish gray, calcareous silty clay loam and silt loam, which extends to a depth of 68 inches or more.

Oceano

This excessively drained soil was formed in eolian (wind-formed) sands on old stabilized dunes. In a representative profile, the surface layer is approximately 18 inches thick, grayish brown, medium acid loamy sand. The subsoil is approximately 55 inches thick, acid loamy sand with clay bands, and various shades of brown to yellowish brown.

Pacheco

This poorly drained soil is found on nearly level floodplains and was formed in alluvium derived from sedimentary rocks. In a representative profile, the surface layer is an approximately 22-inch thick, dark gray, slightly acidic, and mildly alkaline clay loam.

Rincon

The Rincon series consists of deep, well drained soils that formed in alluvium from sedimentary rocks. Rincon soils are on old alluvial fans and both stream and marine terraces, and have slopes of 0 to 30 percent. The mean annual precipitation is about 16 inches and the mean annual air temperature is about 60 degrees F. In a representative profile, the surface layer is very dark gray, dark gray, gray, very dark grayish brown, dark grayish brown, or grayish brown. This horizon is loam, clay loam, or silty clay loam, and is usually clay loam. Usually the surface is hard and massive. If not massive, structure is destroyed after several years of cultivation.

Salinas

This well-drained soil is found on low terraces and was formed in mixed alluvium derived from sedimentary and granitic rocks. In a representative profile, the surface layer is clay loam, silty clay loam, heavy loam, or heavy silt loam, approximately 33 inches thick, very dark gray, and dark gray.

Santa Ynez

This moderately well-drained soil is found on terraces and low hills, and was formed in alluvium derived from sandstone and granitic rock. In a representative profile, the top layer is an approximately 16- to 32-inch thick, grayish brown and gray, medium acid fine sandy loam. The subsurface layer is an approximately two-inch thick, light brownish gray, medium

acid fine sandy loam. The subsoil layer is an approximately 25-inch thick, gray and grayish brown, medium acid to mildly alkaline clay and clay loam.

Xerorthents

This soil type consists of steep to extremely steep soils found on bluffs beside major rivers, steep escarpments of fans and terraces, and the banks of deeply entrenched streams and gullies that have confined bottoms. These soils are comprised of mainly unconsolidated or weakly consolidated alluvium that often includes pebbles, cobblestones, and stones. Textures can vary somewhat, and are mostly sandy loam or coarse sandy loam, and are gravelly or cobbly.

Hydrology

The Action Area includes the following surface water bodies (**Figure 3-16**):

1. Salinas River between the City's stormwater outfall pipeline near the Davis Road Salinas River Bridge and the Salinas River lagoon,
2. The portion (700 linear feet) of Blanco Drain just upstream of its confluence with the Salinas River,
3. Reclamation Ditch below Davis Road overcrossing down to its confluence with the Tembladero Slough,
4. Tembladero Slough
5. Old Salinas River Channel between the Old Salinas River Channel gated outlet and the Potrero Tide Gate near Moss Landing Harbor,
6. Smaller watersheds within the cities of Marina, and Seaside,
7. Carmel River watershed and Carmel Bay (due to the Proposed Project objective of reducing CalAm pumping of the Carmel River alluvial aquifer), and
8. Monterey Bay and Pacific Ocean.

The Proposed Action is located along the western margin of the Coast Range and the climate is dominated by the Pacific Ocean. The Action Area region is characterized by moderate coastal climate with mild, wet winters and generally dry summer days, which are often overcast or have coastal fog and cool temperatures. The average temperature is approximately 60 degrees Fahrenheit. Rainfall occurs primarily between November and April. Average rainfall in Salinas is approximately 13 inches per year, approximately 90% occurring between November and April. The average rainfall in other areas of the county varies, but is approximately 18 inches per year.

Proposed Action facilities would be located in and would involve water resources spanning several watersheds, including the Salinas River watershed and the Reclamation Ditch

watershed, which includes various creeks, ditches and sloughs, including Alisal Creek, Santa Rita Creek, Gabilan Creek, Tembladero Slough, and Old Salinas River Channel.

Vegetation

Numerous field surveys have been conducted within the Action Area over previous years; most recently field surveys were conducted by DD&A in February 2015. These surveys resulted in the mapping and quantification of 11 habitat types within the Action Area (**Figure 3-17 through 3-30**). **Table 3-1, Habitat Types Identified within the Action Area** provides the acreages of these habitats for each Proposed Action component. A brief description of each of these habitats follows the table, along with a statement regarding the presence or potential presence of federally-listed species within each habitat type.

Table 3-1. Acreage of Vegetation Types within the Action Area

Habitat Type (acres)	Component Name							
	Source Water Diversion and Storage Sites					Treatment Facilities at the Regional Treatment Plant	Product Water Conveyance	Injection Well Facilities
	Salinas Pipeline	Salinas Pump Station	Salinas Treatment Facility	Reclamation Ditch	Blanco Drain			
Ruderal/Developed /Active Agriculture	6.7 ac	35.9 ac	7.4 ac	1.3 ac	6.5 ac	51.4 ac	58.6 ac	21.9 ac
Non-Native Grassland	--	--	--	--	0.8 ac	18.9 ac	16.5 ac	--
Central Maritime Chaparral	--	--	--	--	--	--	1.9 ac	63.0 ac
Coast Live Oak Woodland	--	--	--	--	--	--	1.1 ac	3.6 ac
Wastewater Ponds	--	--	--	--	--	33.1 ac	--	--
Riparian	--	--	--	--	0.7 ac	--	--	--
Aquatic	--	--	--	0.1 ac	0.3 ac	--	--	--

Ruderal/Developed/Active Agriculture

Approximately 189.6 acres of ruderal/developed/active agriculture habitat occur within the Action Area, and this habitat type is associated with all Proposed Action components. Ruderal/developed/active agriculture habitat areas are those areas which have been disturbed by human activities and are vegetated by non-native annual grasses and other “weedy” species, or do not contain any vegetation other than row crops. This habitat type includes areas ranging from regularly disturbed areas dominated by non-native herbaceous species adapted to disturbance, to areas with buildings, roads, and pavement.

Most of the ruderal/developed/active agriculture habitat areas within the Action Area are nearly or completely devoid of vegetation. Other ruderal/developed/active agriculture areas

include row crops or vegetation dominated by ripgut grass (*Bromus diandrus*), slender oat (*Avena barbata*), cut-leaved plantain (*Plantago coronopus*), English plantain (*P. lanceolata*), hottentot fig (*Carpobrotus edulis*), sand mat (*Cardionema ramosissimum*), long-beaked filaree (*Erodium botrys*), and telegraph weed (*Heterotheca grandiflora*).

Common wildlife species that do well in urbanized and disturbed areas can utilize this habitat, such as the American crow (*Corvus brachyrhynchos*), California ground squirrel (*Otospermophilus beecheyi*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), western scrub jay (*Aphelocoma californica*), European starling (*Sturnus vulgaris*), Coast Range fence lizard (*Sceloporus occidentalis bocourtii*), and rock pigeon (*Columba livia*). This habitat type is considered to have low biological value, as it is generally dominated by non-native plant species and consists of relatively low quality habitat from a wildlife perspective.

No federally-listed wildlife species are expected to occur within this habitat type. Monterey spineflower (*Chorizanthe pungens* var. *pungens*) was identified during the 2014 botanical surveys within portions of the ruderal/developed areas of the Action Area.

Non-Native Grassland

Non-native grasslands typically occur throughout California in open areas of valleys and foothills, usually on fine-textured clay or loam soils that are somewhat poorly drained (Holland, 1986). Non-native grasslands are often dominated by non-native annual grasses and forbs along with scattered native grasses and wildflowers. Within the Action Area, approximately 36.2 acres of this habitat type occurs at the Blanco Drain Diversion site, Treatment Facilities at the Regional Treatment Plant, and within the Product Water Conveyance alignment. The non-native grasslands at the Treatment Facilities at the Regional Treatment Plant, and Blanco Drain Diversion site are highly disturbed. Due to on-going disturbance activities at these sites, non-native grassland present does not provide suitable habitat for special-status plant or wildlife species.

Migratory bird species given protection under the MBTA may forage and nest within this habitat type. Monterey spineflower was identified within this habitat type during the 2014 surveys.

The non-native grassland includes many of the same species as the ruderal habitat described above. However, instead of herbaceous species, annual grasses are dominant, such as ripgut brome, soft chess (*Bromus hordeaceus*), rattail fescue (*Vulpia myuros*), slender oat, barnyard foxtail (*Hordeum murinum* spp. *leporinum*), and perennial ryegrass (*Lolium perenne*). Non-native grasslands provide habitat to a number of wildlife species, including rodents and reptiles, such as the Botta's pocket gopher (*Thomomys bottae*), California ground squirrel, northern pacific rattlesnake (*Crotalus oreganus* ssp. *oreganus*), gopher snake (*Pituophis*

catenifer catenifer), coast garter snake (*Thamnophis elegans terrestris*), and western fence lizard. Raptors are also known to forage in this habitat.

Central Maritime Chaparral

Central maritime chaparral is a plant community found within the coastal fog zone on sandy to rocky soils. Many of the plants in the chaparral community require fire in order to propagate. This habitat type is dominated by sclerophyllous (having hard, thick, leathery leaves) shrubs that may be drought-deciduous or evergreen, and are often spiny. Within the Action Area approximately 64.9 acres of central maritime chaparral occurs within the Product Water Conveyance alignment and the Injection Well Facilities site.

Dominant plant species include shaggy-bark manzanita (*Arctostaphylos tomentosa* ssp. *tomentosa*), sandmat manzanita, coyote bush (*Baccharis pilularis*), deerweed (*Acmispon glaber*), chamise (*Adenostoma fasciculatum*), and sticky monkey flower (*Mimulus aurantiacus*). Additional species include California coffeeberry (*Frangula californica*), poison oak (*Toxicodendron diversilobum*), black sage (*Salvia mellifera*), mock heather (*Ericameria ericoides*), Eastwood's goldenbush (*E. fasciculata*), Monterey ceanothus, coast live oak (*Quercus agrifolia*), rush rose (*Crocanthemum scoparium*), golden yarrow (*Eriophyllum confertiflorum*), sticky cinquefoil (*Drymocallis glandulosa*), Monterey spineflower, Michael's rein orchid (*Piperia michaelii*), globe lily (*Calochortus albus*), and checker lily (*Fritillaria affinis*).

Common wildlife species that occur within central maritime chaparral habitat include California quail (*Callipepla californica*), California towhee (*Melospiza crissalis*), California thrasher (*Toxostoma redivivum*), common poorwill (*Phalaenoptilus nuttallii*), Anna's hummingbird (*Calypte anna*), wrentit (*Chamaea fasciata*), western scrub jay, northern pacific rattlesnake, Coast Range fence lizard, gopher snake, coast garter snake, and brush rabbit (*Sylvilagus bachmani*).

Migratory bird species given protection under the MBTA may forage and nest within this habitat type. Monterey spineflower was identified within this habitat type during the 2014 surveys.

Coast Live Oak Woodland

Approximately 4.7 acres of coast live oak woodland (*Quercus agrifolia*/*Toxicodendron diversilobum*/grass Association) are present within the Action Area along the Product Water Conveyance alignment and the Injection Well Facilities site. The canopy is quite dense in many areas with an understory dominated by poison oak. Other plant species present within the coast live oak woodland include hedge-nettle (*Stachys* sp.), slender oat, shaggy-bark manzanita, sheep sorrel (*Rumex acetosella*), fiesta flower (*Pholistoma auritum*), and

scattered shrubs such as fuchsia-flowered gooseberry (*Ribes speciosum*), California coffeeberry, and sticky monkey flower.

Coast live oak woodland is an important habitat to many wildlife species. Oaks provide nesting sites for many avian species and cover for a variety of mammals, including mourning dove (*Zenaida macroura*), American kestrel (*Falco sparverius*), California ground squirrel, and California pocket mouse (*Chaetodipus californicus*). Acorns provide an important food source for acorn woodpecker (*Melanerpes formicivorus*), western scrub jay, and black-tailed deer (*Odocoileus hemionus columbianus*). Other common wildlife species found in the coast live oak woodland are raccoon, Nuttall's woodpecker (*Picoides nuttallii*), northern flicker (*Colaptes auratus*), bobcat (*Lynx rufus*), and coyote (*Canis latrans*). Generally, red-tailed hawks (*Buteo jamaicensis*) and great-horned owls (*Bubo virginianus*) nest and roost in the coast live oaks.

Monterey spineflower was identified at the edges of the coast live oak woodland habitat within the Action Area. Migratory bird species given protection under the MBTA may forage and nest within this habitat type.

Riparian

Riparian habitats are those plant communities supporting woody vegetation found along rivers, creeks, streams, canyon bottom drainages, and seeps. Riparian habitat, or Arroyo willow thickets, occurs within stream banks and benches, slope seeps, and stringers along drainages (Sawyer et al., 2009). Holland (1986) describes this habitat type as a dense, low, closed-canopy, broadleaved, winter-deciduous riparian forest dominated by Arroyo willow (*Salix lasiolepis*) that occurs on moist to saturated sandy or gravelly soil, especially on bottomlands. Wetlands may occur within this habitat type. Riparian habitat, totaling approximately 0.7 acres, is present at the Blanco Drain Diversion site.

Riparian areas provide habitat for many wildlife species, particularly birds and herpetofauna (the reptiles and amphibians of a particular region or habitat). Common species that may be found within the riparian habitat in the Action Area includes Sierran treefrog (*Pseudacris sierra*), Monterey ensatina (*Ensatina eschscholtzii eschscholtzii*), tree swallow (*Tachycineta bicolor*), song sparrow (*Melospiza melodia*), and Pacific-slope flycatcher (*Empidonax difficilis*).

The riparian habitat at the Blanco Drain Diversion site along the Salinas River may provide habitat for tricolored blackbirds (*Agelaius tricolor*) and other migratory bird species. Additionally, the California red-legged frog (*Rana draytonii*) (CRLF) is assumed present within the riparian habitat at the Salinas Treatment Facility site, as this species is known to occur and breed within and adjacent to the Salinas River. Due to the salinity and lack of

suitable breeding habitat, CRLF is not expected to occur within the three Affected Reaches. No federally listed plant species were identified within this habitat type.

Aquatic

Aquatic habitat within the Action Area is present within two component sites, totaling approximately 0.4 acres, plus horizontal directional drilling under the Salinas River. Although not included in the Action Area the three Affected Reaches also contain aquatic habitat. Aquatic habitat occurs at two source water diversion component sites (Reclamation Ditch, and Blanco Drain), and within the Affected Reaches (Reclamation Ditch, Tembladero Slough, and Old Salinas River Channel). Additionally, aquatic habitat is present within the Salinas River area adjacent to the Action Area along the Salinas Treatment Facility site and the Salinas River above the proposed pipeline that would be installed using horizontal directional drilling.

The Reclamation Ditch is a maintained, channelized ditch surrounded along almost its entire length by development and agriculture. The Tembladero Slough is downstream of, and connected to, the Reclamation Ditch. Like the Reclamation Ditch, the Tembladero Slough is almost completely barren of vegetation and surrounded by agriculture. Downstream and connected to the Tembladero Slough, the Old Salinas River Channel extends to the Potrero Tide Gates and is tidally influenced and brackish. As described above, the Affected Reaches of the Proposed Action include portions of the Reclamation Ditch, Tembladero Slough, and the Old Salinas River Channel.

A proposed diversion site is located on the Blanco Drain and the proposed pipeline to convey water diverted from Blanco Drain would cross the Salinas River. The Blanco Drain system, commonly referred to as Blanco Drain, drains the surrounding agriculture surface run-off and tile drainage. The Blanco Drain is tributary to the Salinas River. A 50-foot long reach of the Salinas River was included in the Blanco Drain Diversion site and is bordered by willows adjacent to agricultural fields.

Common wildlife using these aquatic habitats include waterfowl such as Canada goose, mallard, American coot, great egret, and cormorants (*Phalacrocorax* sp.).

No federally listed plant species were identified or anticipated to occur within the aquatic habitat areas. The aquatic habitat may support California red-legged frog.

Wastewater Ponds

Wastewater ponds are present at the Salinas Treatment Facility and Treatment Facilities at the Regional Treatment Plant component sites of the Action Area, totaling approximately 33.1 acres. Residential, commercial, and industrial wastewater is conveyed to the MRWPCA Regional Treatment Plant. Secondary treated effluent from the Regional Treatment Plant is also recycled at the co-located Salinas Valley Reclamation Plant for irrigation of 12,000

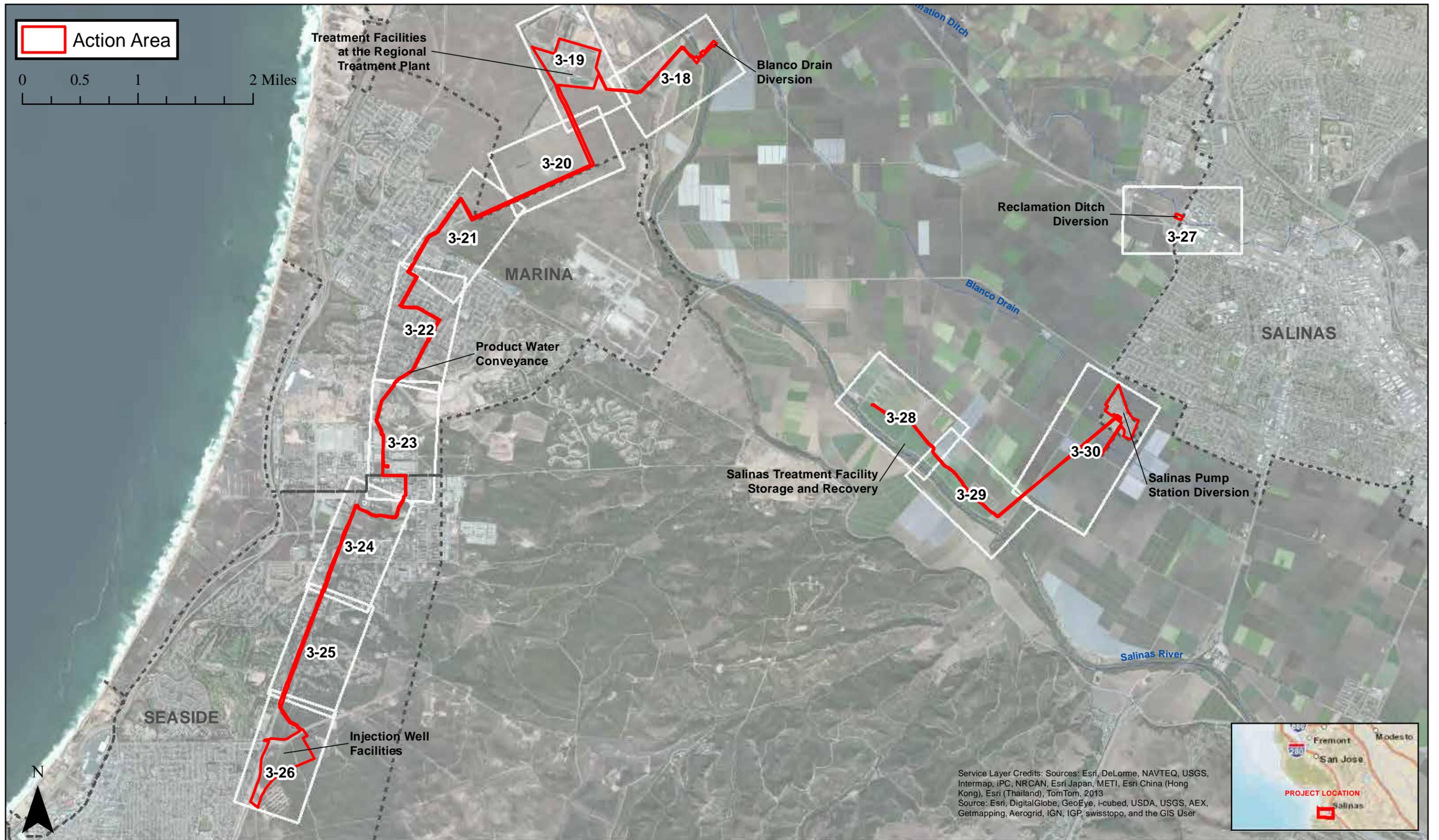
acres of farmland in the northern Salinas Valley. The existing facilities at the Regional Treatment Plant, including the Reclamation Plant, are designed and permitted to produce up to 29.6 MGD of recycled water. The Salinas Valley Reclamation Plant includes an 80 acre-foot storage pond that holds tertiary-treated and Salinas River water before it is distributed to farmland by a distribution system called the Castroville Seawater Intrusion Project. The use of recycled wastewater for irrigation reduces regional dependence on and use of local groundwater, which, in turn reduces groundwater pumping-related seawater intrusion into the Salinas Valley aquifers. The pond at the Treatment Facilities at the Regional Treatment Plant is lined with plastic and contains no vegetation. It does not provide any suitable habitat for special-status plant species. This recycled water storage pond may provide habitat for waterfowl and other migratory bird species; however, it does not provide any suitable habitat for other special-status wildlife species.

The City of Salinas operates an industrial wastewater conveyance and treatment system that serves approximately 25 agricultural processing and related businesses located east of Sanborn Road and south of U.S. Highway 101. This wastewater collection system is completely separate from the Salinas municipal sewage collection system and includes 14-inch to 33-inch diameter gravity pipelines that flow to the Salinas Pump Station, and then flow into a 42-inch gravity pipeline to the Salinas Treatment Facility. Over 80% of the wastewater flows in this system are from fresh vegetable packers (typically, wash water used on harvested row crops). The Salinas Treatment Facility consists of an influent pump station, an aeration lagoon, percolation ponds, and rapid infiltration beds to treat, percolate, and evaporate the water. Disturbed and developed areas associated with the wastewater ponds at the Salinas Treatment Facility, including access roads and berms surrounding the ponds, were included in this habitat type.

Roads and berms surrounding the wastewater ponds and ponds that are not currently functioning are denuded or support ruderal vegetation species, such as cheeseweed (*Malva parviflora*), poison hemlock (*Conium maculatum*), ripgut brome, slender oat, cut-leaved plantain, long-beaked filaree, and bur clover (*Medicago polymorpha*). These areas are regularly disturbed and the vegetation maintained by methods such as mowing and/or plowing, or herbicide. Some of the infiltration beds also support a limited amount of emergent vegetation, such as brass buttons (*Cotula coronopifolia*) and bulrush (*Scirpus* sp.).

Common wildlife species which do well in urbanized and disturbed areas can utilize these areas, such as the California ground squirrel, raccoon, striped skunk, and Coast Range fence lizard. However, these areas also provide suitable habitat for avian species, including waterfowl, such as mallard (*Anas platyrhynchos*), Canada goose (*Branta canadensis*), American coot (*Fulica americana*), gadwall (*Anas strepera*), ruddy duck (*Oxyura jamaicensis*), great blue heron (*Ardea herodias*), American avocet (*Recurvirostra americana*), and dowitcher (*Limnodromus* sp.).

No federally listed wildlife species are expected to occur within the wastewater ponds at the Salinas Treatment Facility site. However the wastewater ponds at the Salinas Treatment Site and the Treatment Facilities at the Regional Treatment Plant may provide habitat for protected waterfowl and other migratory bird species. No federally listed plant species were identified within these areas.



Action Area Map - Overview

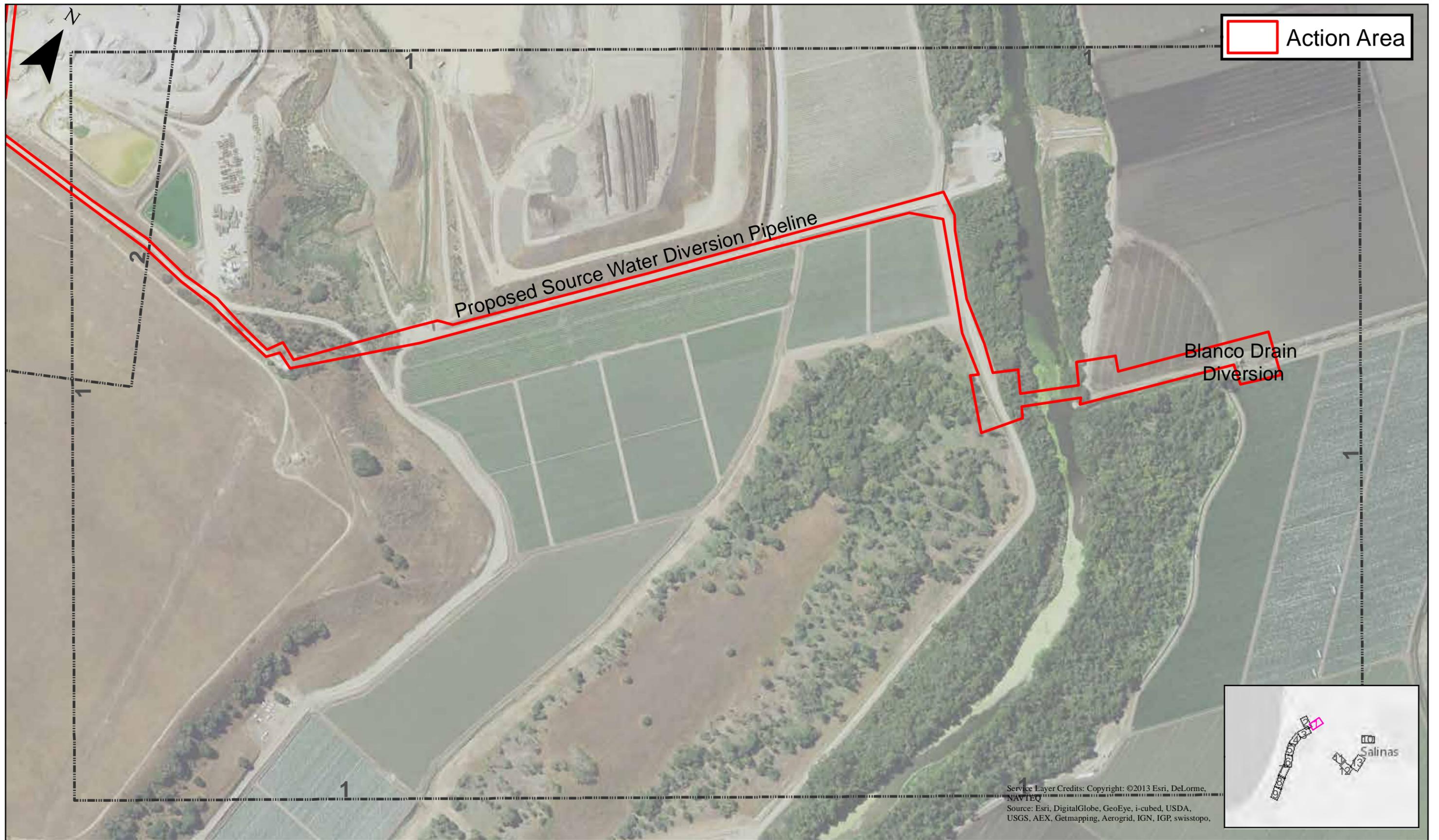
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Date: 11/23/2015
 Scale: 1 inch = 1 miles
 Project: 2013-13



Pure Water Monterey
 Groundwater Replenishment Project
 USFWS Biological Assessment

Figure
 3-1



Action Area Map - Series

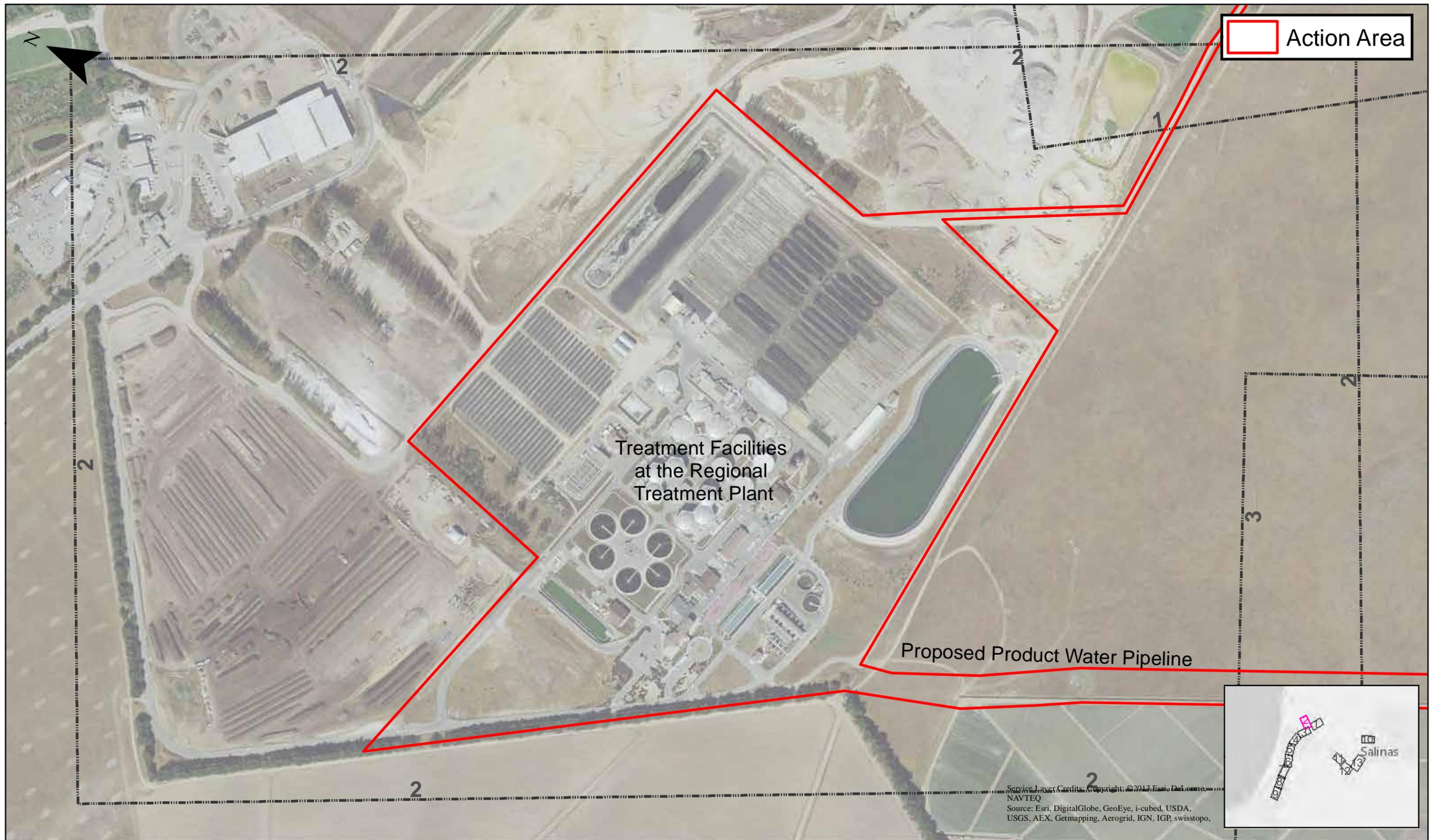
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Date: 11/23/2015
 Scale: 1 inch = 370 feet
 Project: 2013-13



Pure Water Monterey
 Groundwater Replenishment Project
 USFWS Biological Assessment

Figure
 3-2



Action Area Map - Series

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Date: 11/23/2015
 Scale: 1 inch = 370 feet
 Project: 2013-13



Pure Water Monterey
 Groundwater Replenishment Project
 USFWS Biological Assessment

Figure
3-3





<p>Action Area Map - Series</p> <p>C:\GIS\GIS_Projects\2013-13 GWR\Final Products\BIO\BA\Action Area Map Series.mxd</p>	<p>Date: <u>11/23/2015</u></p> <p>Scale: <u>1 inch = 380 feet</u></p> <p>Project: <u>2013-13</u></p>		<p>Pure Water Monterey Groundwater Replenishment Project USFWS Biological Assessment</p>	<p>Figure 3-5</p>
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Action Area Map - Series

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Date: 11/23/2015
 Scale: 1 inch = 380 feet
 Project: 2013-13



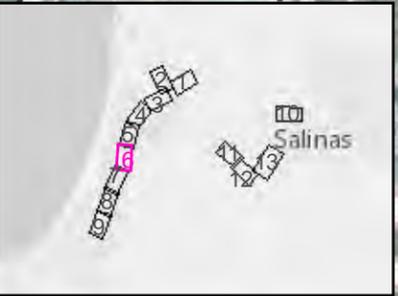
Pure Water Monterey
 Groundwater Replenishment Project
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Figure
 3-6



□ Action Area

Proposed Product Water Pipeline



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Action Area Map - Series

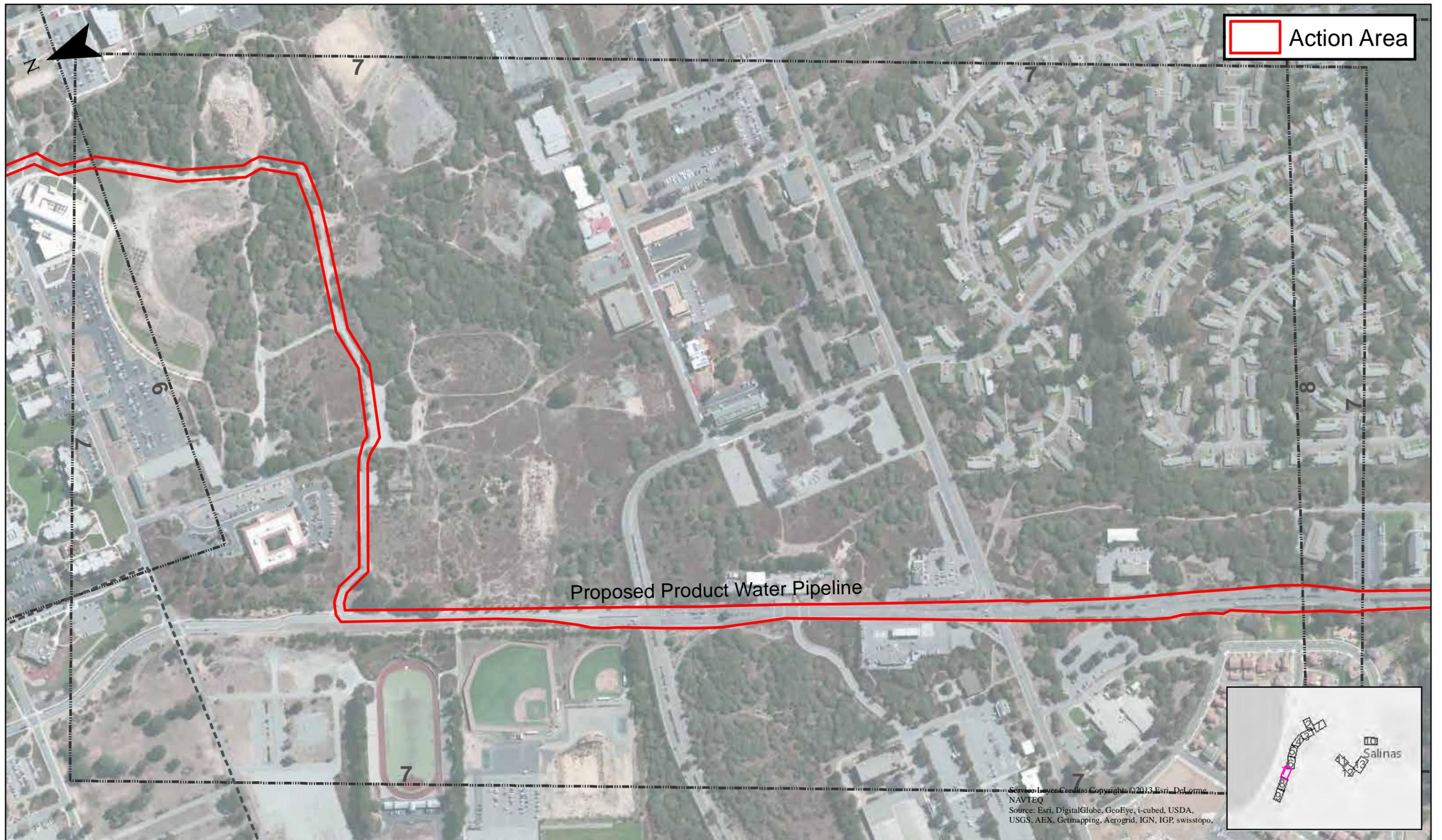
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Date: 11/23/2015
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 Project: 2013-13



Pure Water Monterey
 Groundwater Replenishment Project
 USFWS Biological Assessment

Figure
 3-7



Action Area Map - Series

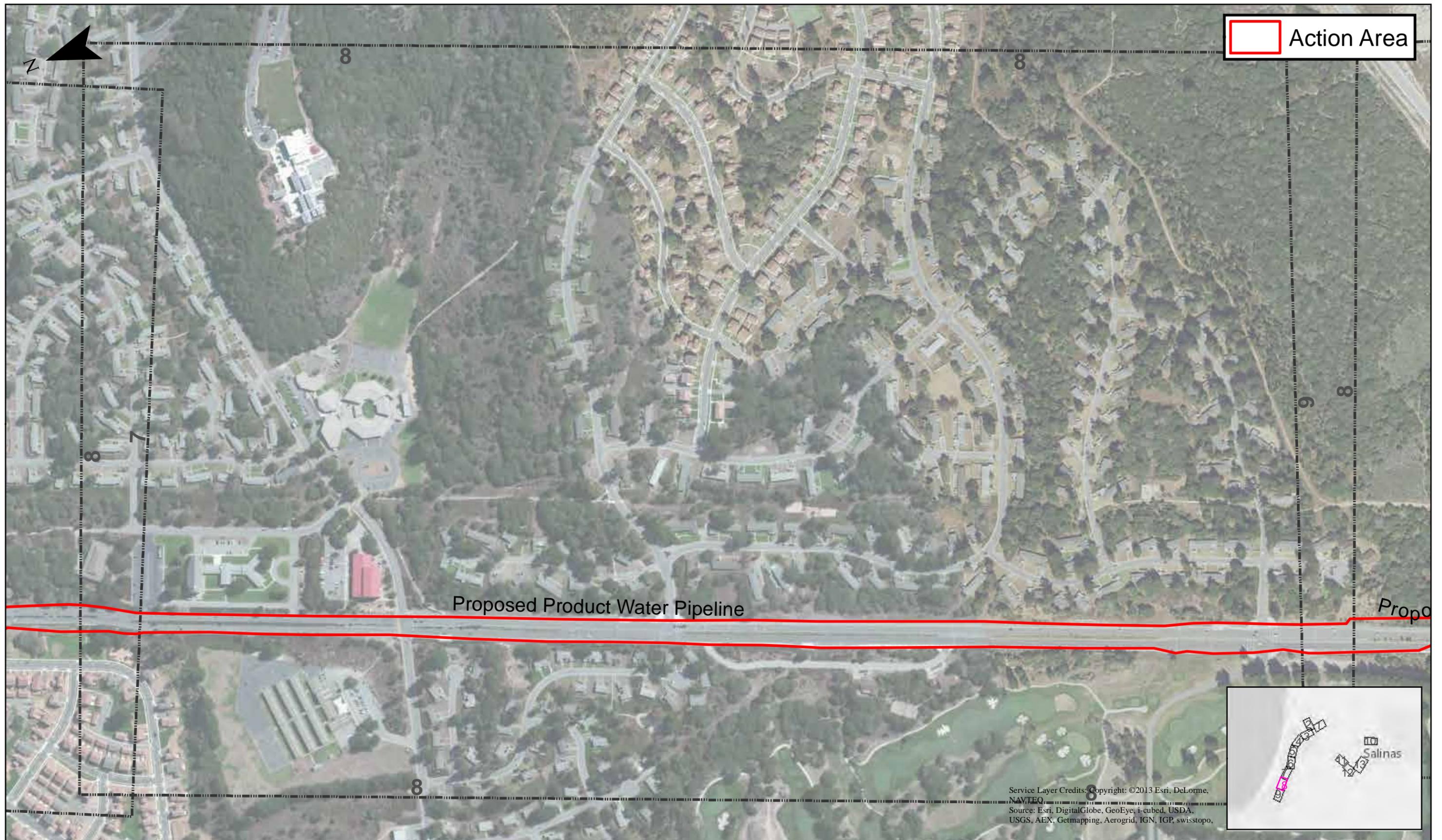
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 Project: 2013-13



Pure Water Monterey
 Groundwater Replenishment Project
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Figure
 3-8



Action Area Map - Series

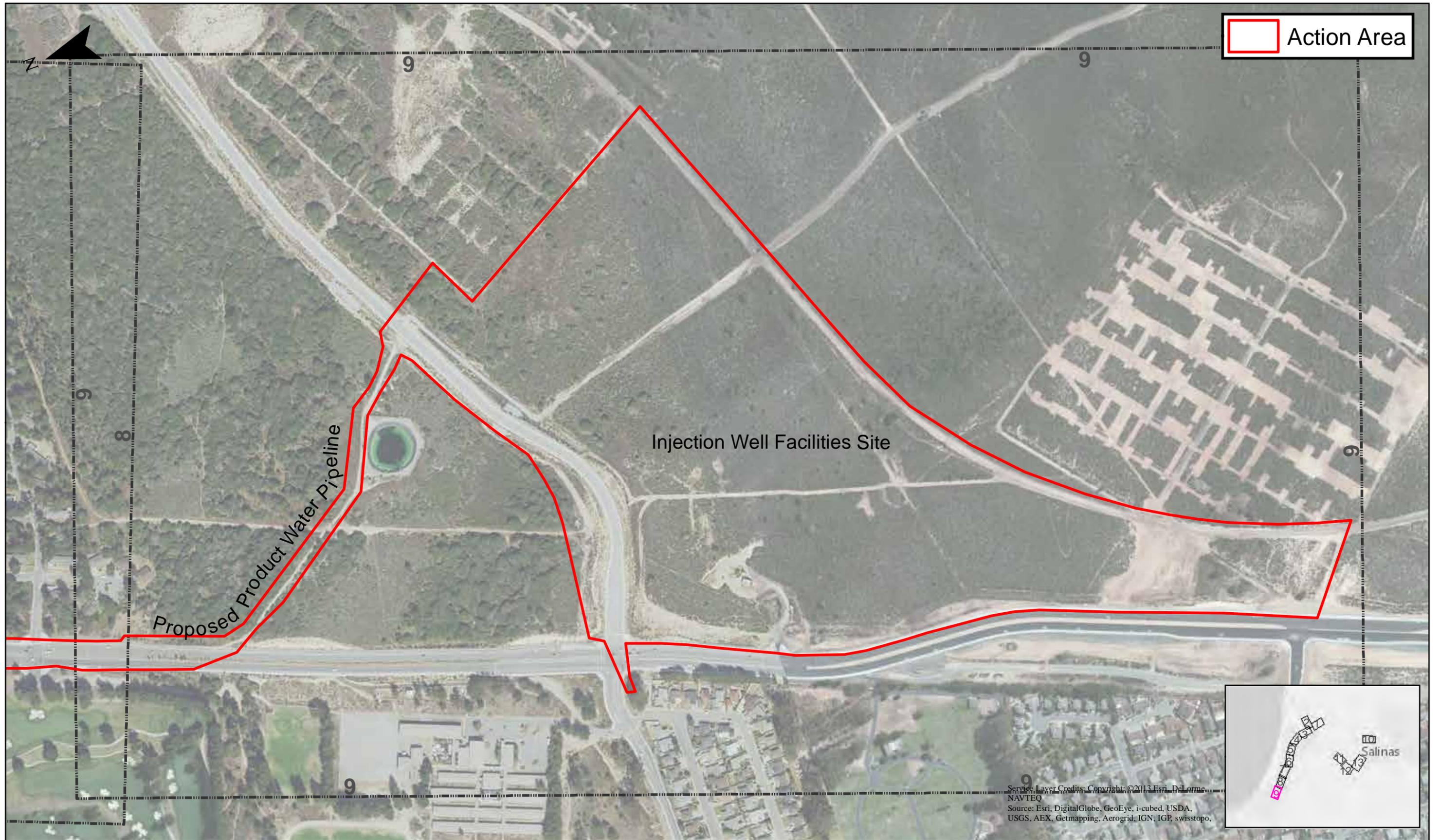
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Date: 11/23/2015
 Scale: 1 inch = 380 feet
 Project: 2013-13



Pure Water Monterey
 Groundwater Replenishment Project
 USFWS Biological Assessment

Figure
 3-9



Action Area Map - Series

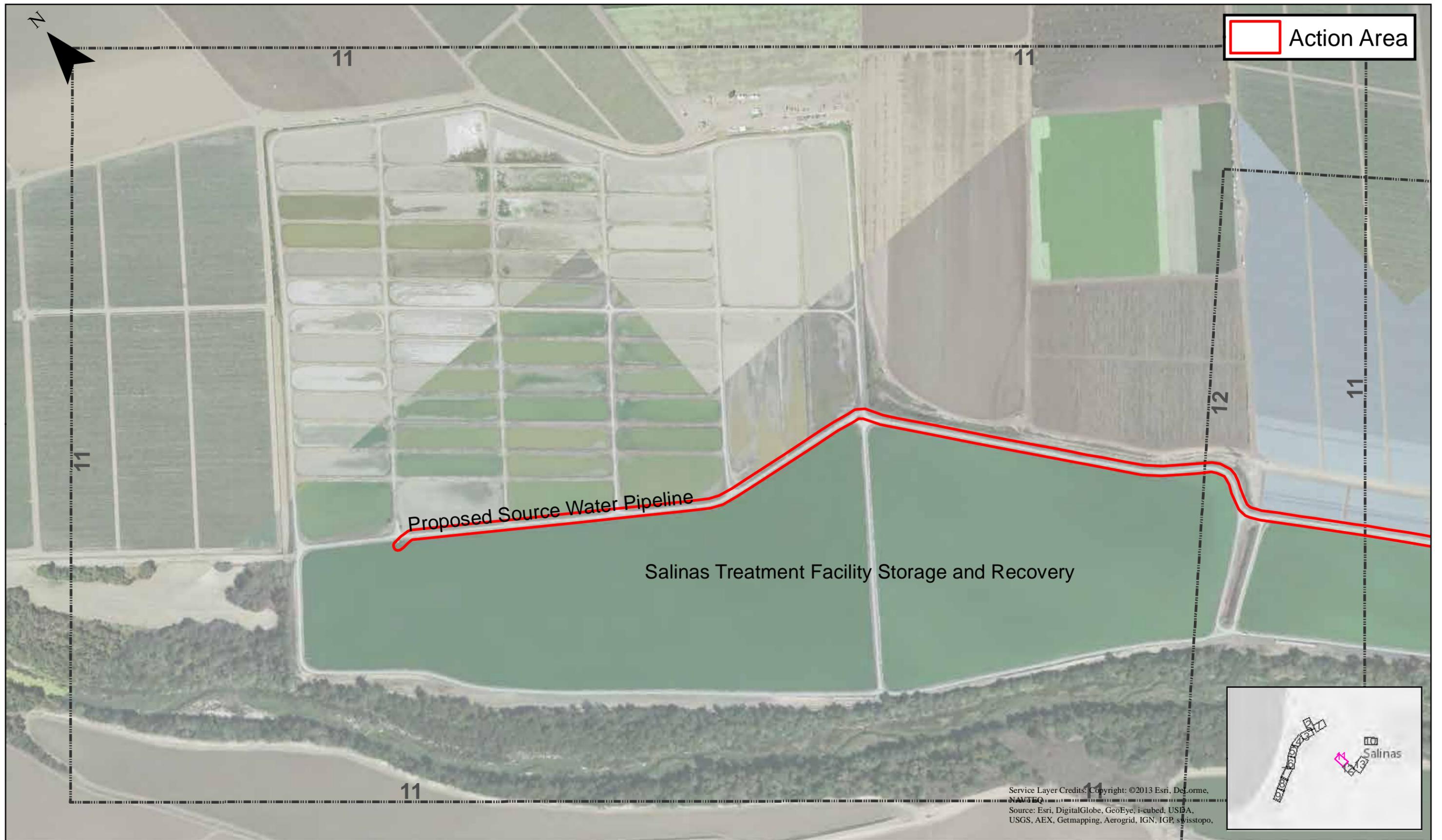
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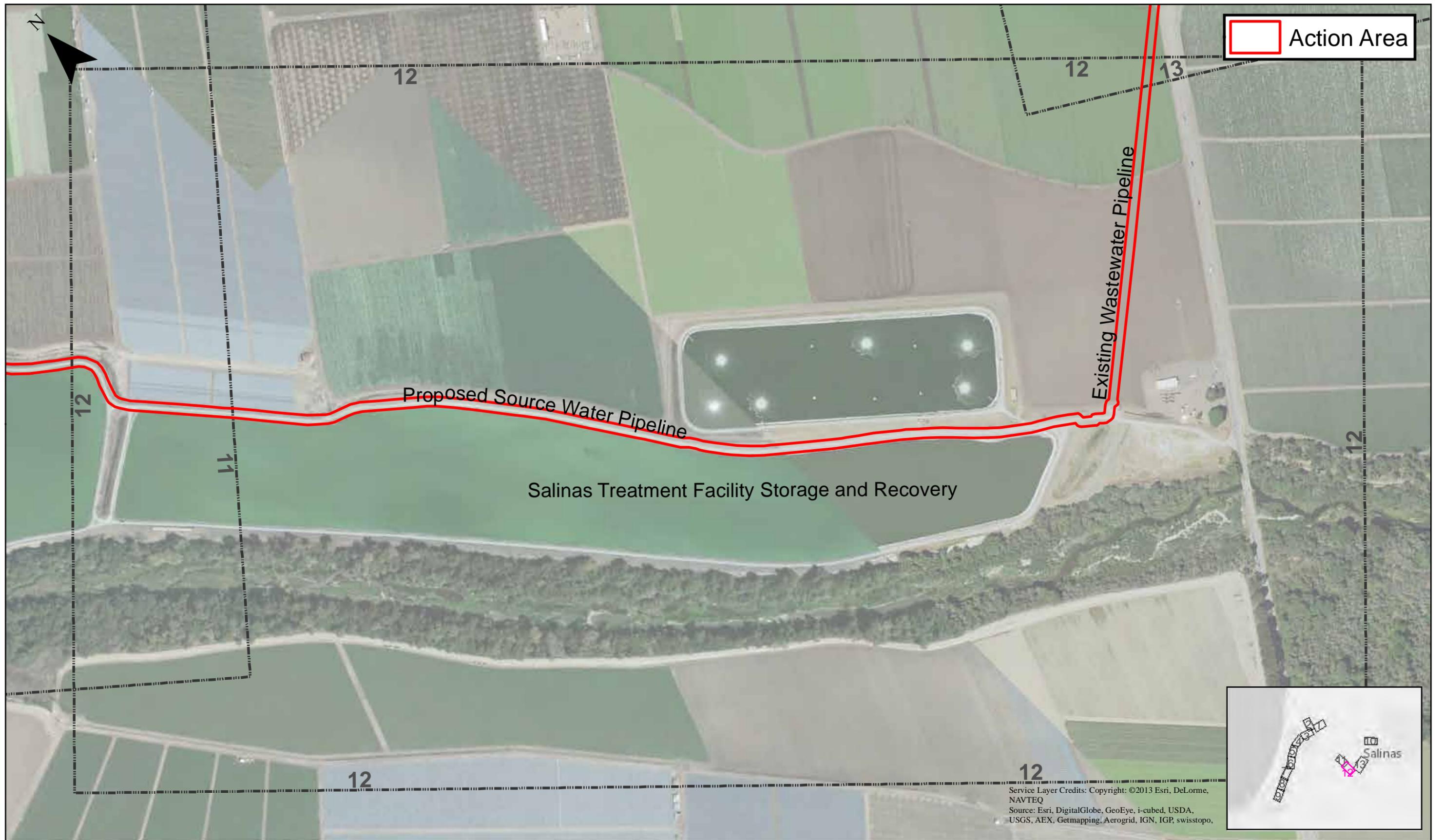
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 Project: 2013-13



Pure Water Monterey
 Groundwater Replenishment Project
 USFWS Biological Assessment

Figure
3-10





Action Area Map - Series

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Date: 11/23/2015
 Scale: 1 inch = 380 feet
 Project: 2013-13



Pure Water Monterey
 Groundwater Replenishment Project
 USFWS Biological Assessment

Figure
 3-13



Action Area Map - Series

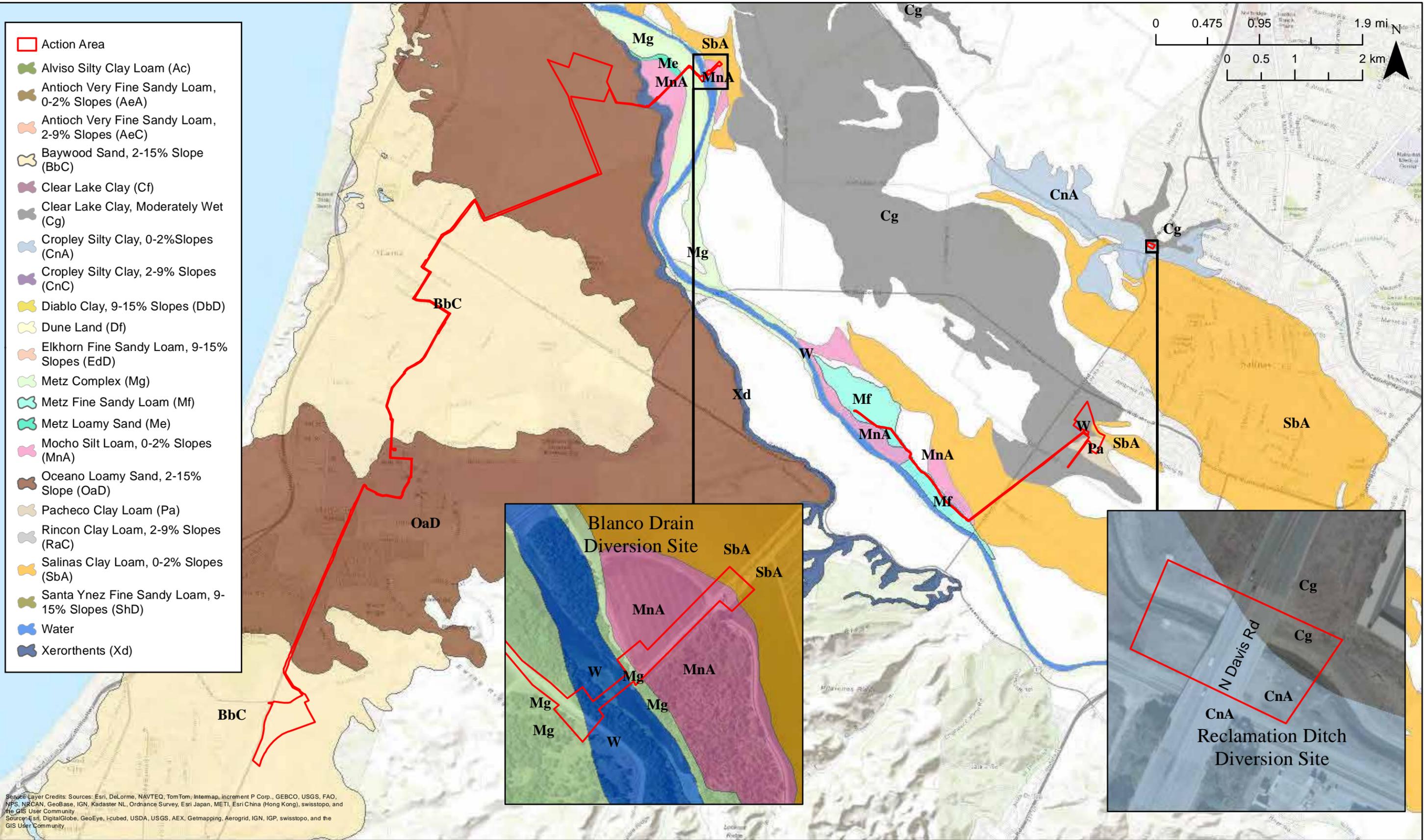
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 Project: 2013-13



Pure Water Monterey
 Groundwater Replenishment Project
 USFWS Biological Assessment

Figure
 3-14



Action Area Soil Map

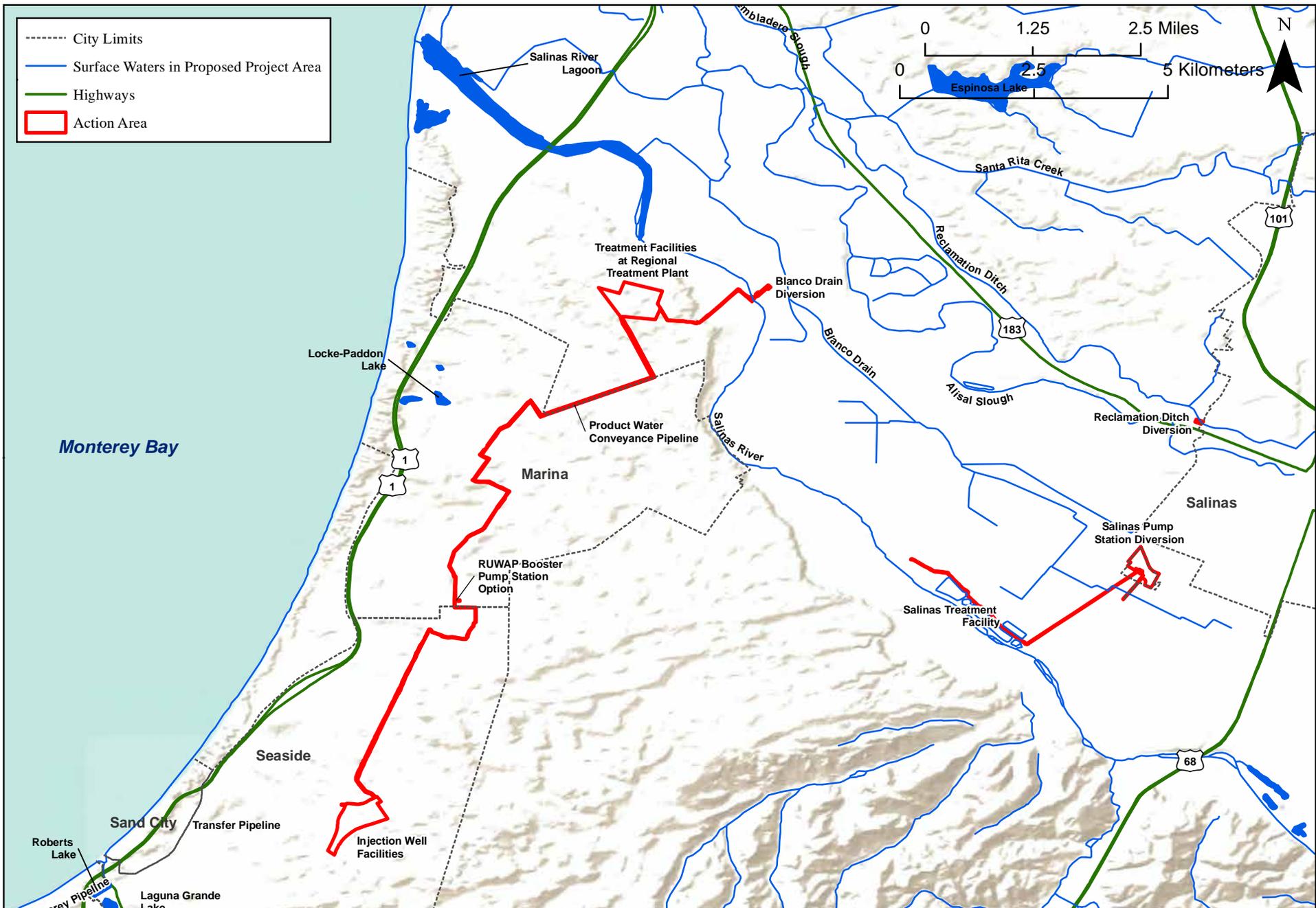
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 Scale: 1 inch = 1 miles
 Project: 2013-13



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 Groundwater Replenishment Project
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Figure
 3-15



<h1>Hydrology Map</h1> <p>Document Path: C:\GIS\GIS_Projects\2013-13 GWR\Final Products\BIO\BA\Hydrology Map.mxd</p>	<p>Date: <u>11/20/2015</u></p> <p>Scale: <u>1 in = 2 miles</u></p> <p>Project: <u>2013-13</u></p>	 <p>Pure Water Monterey Groundwater Replenishment Project USFWS Biological Assessment</p>	<p>Figure 3-16</p>
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 Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Action Area Habitat Map - Overview

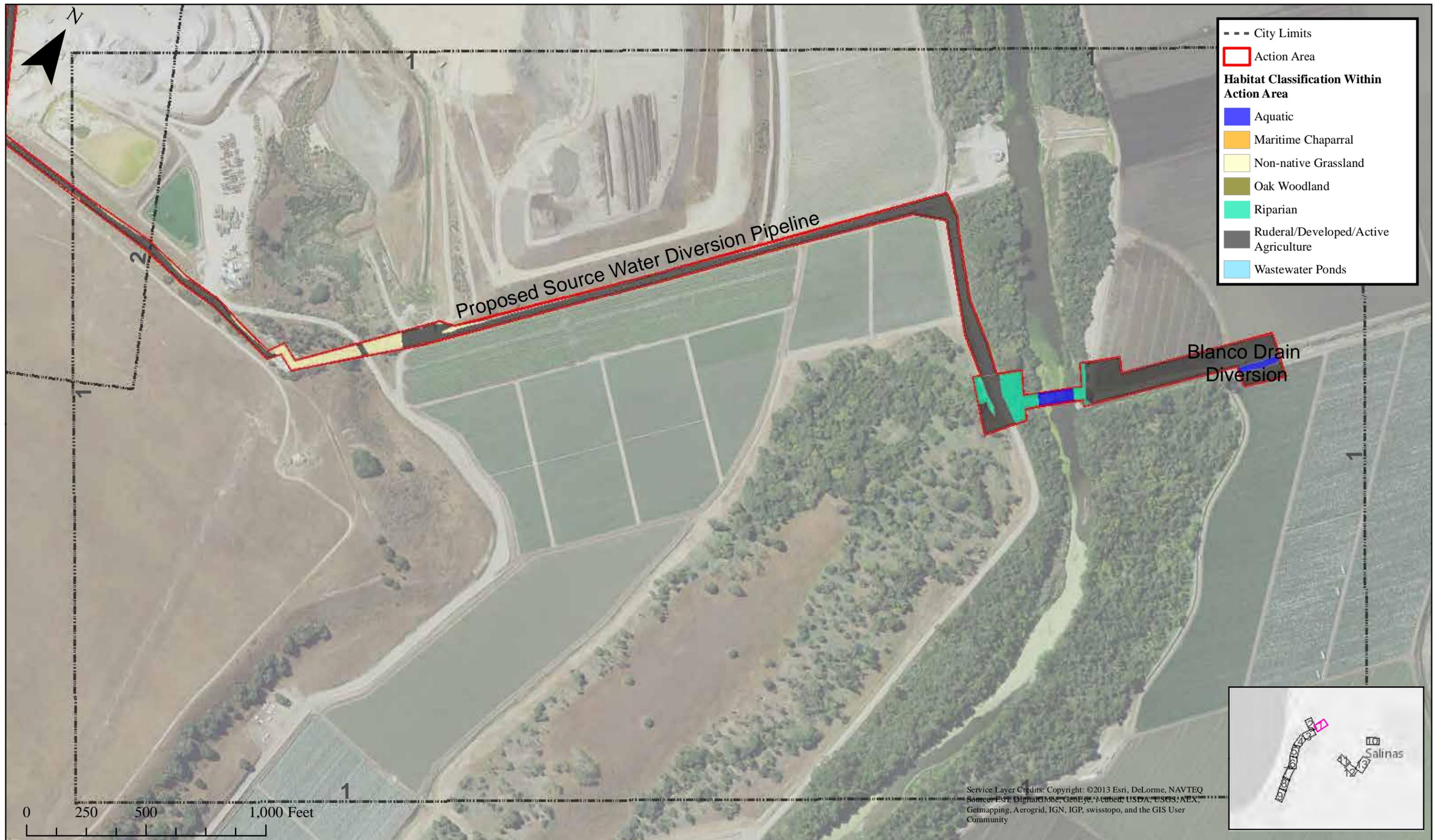
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Date: 11/23/2015
 Scale: 1 inch = 1 miles
 Project: 2013-13



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Figure
 3-17



Action Area Habitat Map Series

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Date: 11/25/2015
 Scale: 1 inch = 0 miles
 Project: 2013-13



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Figure
 3-18



Action Area Habitat Map Series

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 Scale: 1 inch = 0 miles
 Project: 2013-13



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Figure
 3-19



Action Area Habitat Map Series

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Date: 11/25/2015
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 Project: 2013-13



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Figure
 3-20



Action Area Habitat Map Series

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Date: 11/25/2015
 Scale: 1 inch = 0 miles
 Project: 2013-13



Pure Water Monterey
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Figure
 3-21



Action Area Habitat Map Series

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Date: 11/25/2015
 Scale: 1 inch = 0 miles
 Project: 2013-13



Pure Water Monterey
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Figure
 3-22



Action Area Habitat Map Series

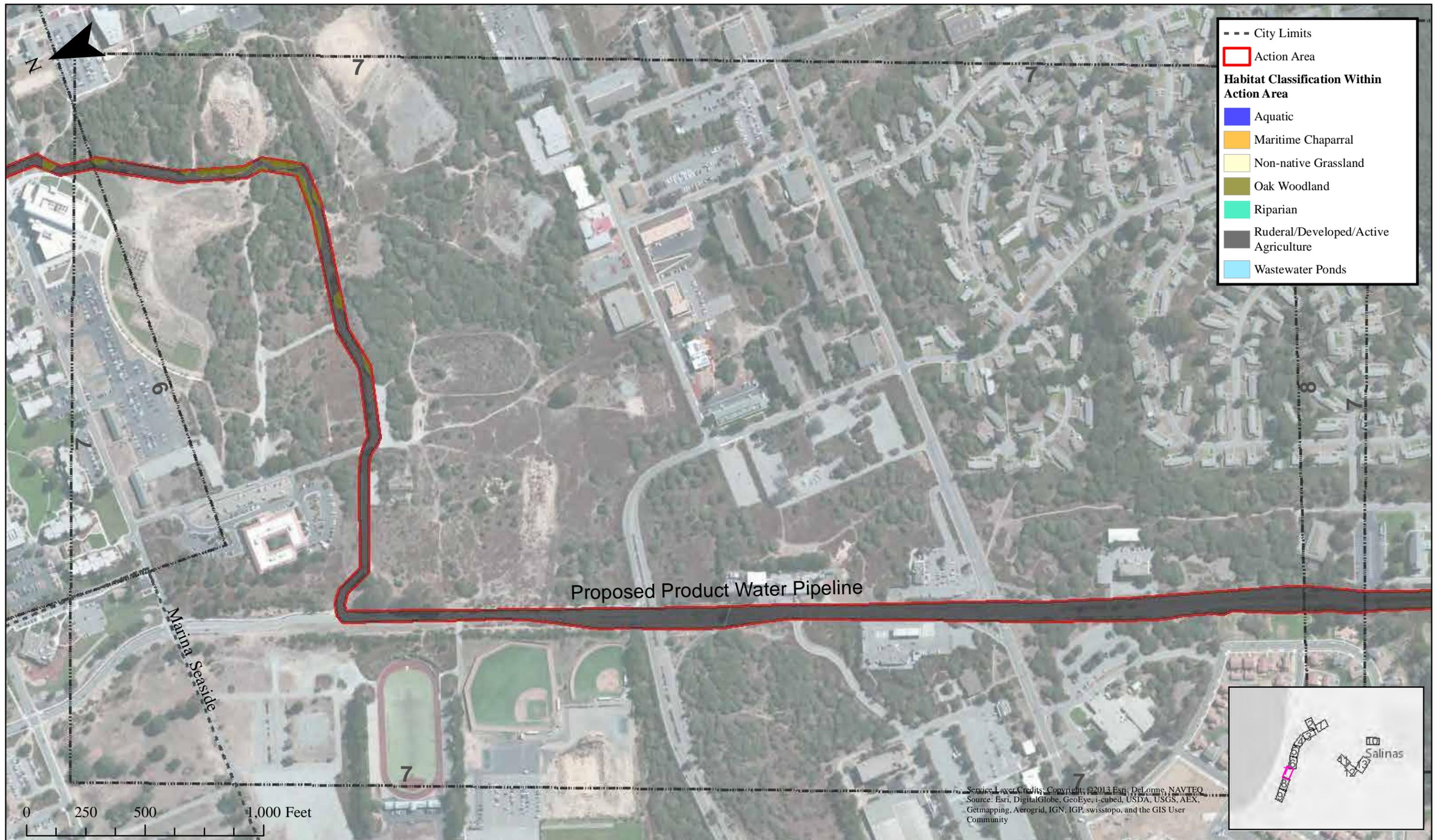
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Date: 11/25/2015
 Scale: 1 inch = 0 miles
 Project: 2013-13



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Figure
 3-23



Action Area Habitat Map Series

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Date: 11/25/2015
 Scale: 1 inch = 0 miles
 Project: 2013-13



Pure Water Monterey
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Figure
 3-24



Action Area Habitat Map Series

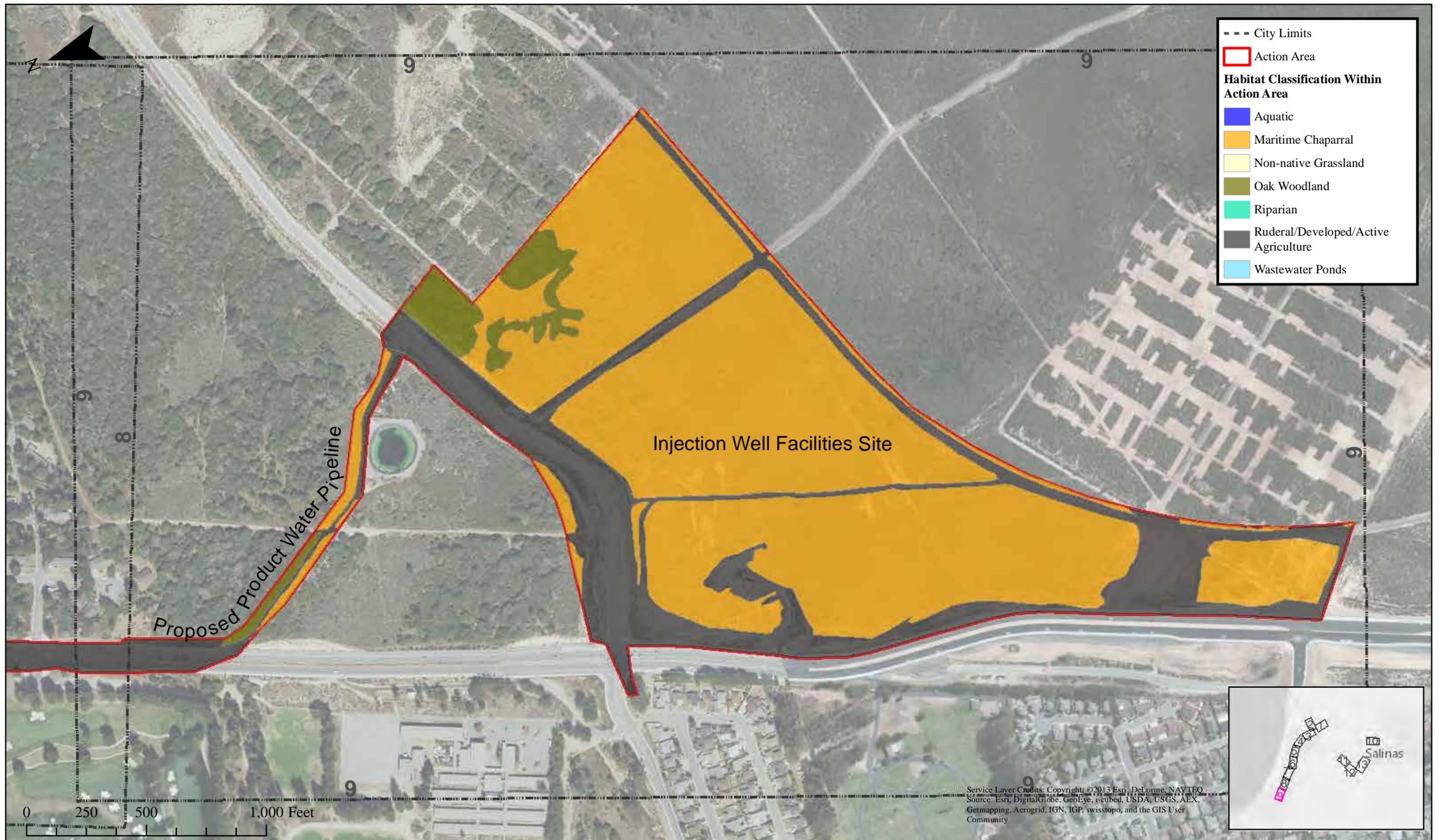
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Date: 11/25/2015
 Scale: 1 inch = 0 miles
 Project: 2013-13



Pure Water Monterey
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Figure
 3-25



Action Area Habitat Map Series

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Date: 11/25/2015
 Scale: 1 inch = 0 miles
 Project: 2013-13



Pure Water Monterey
 Groundwater Replenishment Project
 USFWS Biological Assessment

Figure
 3-26



Action Area Habitat Map Series

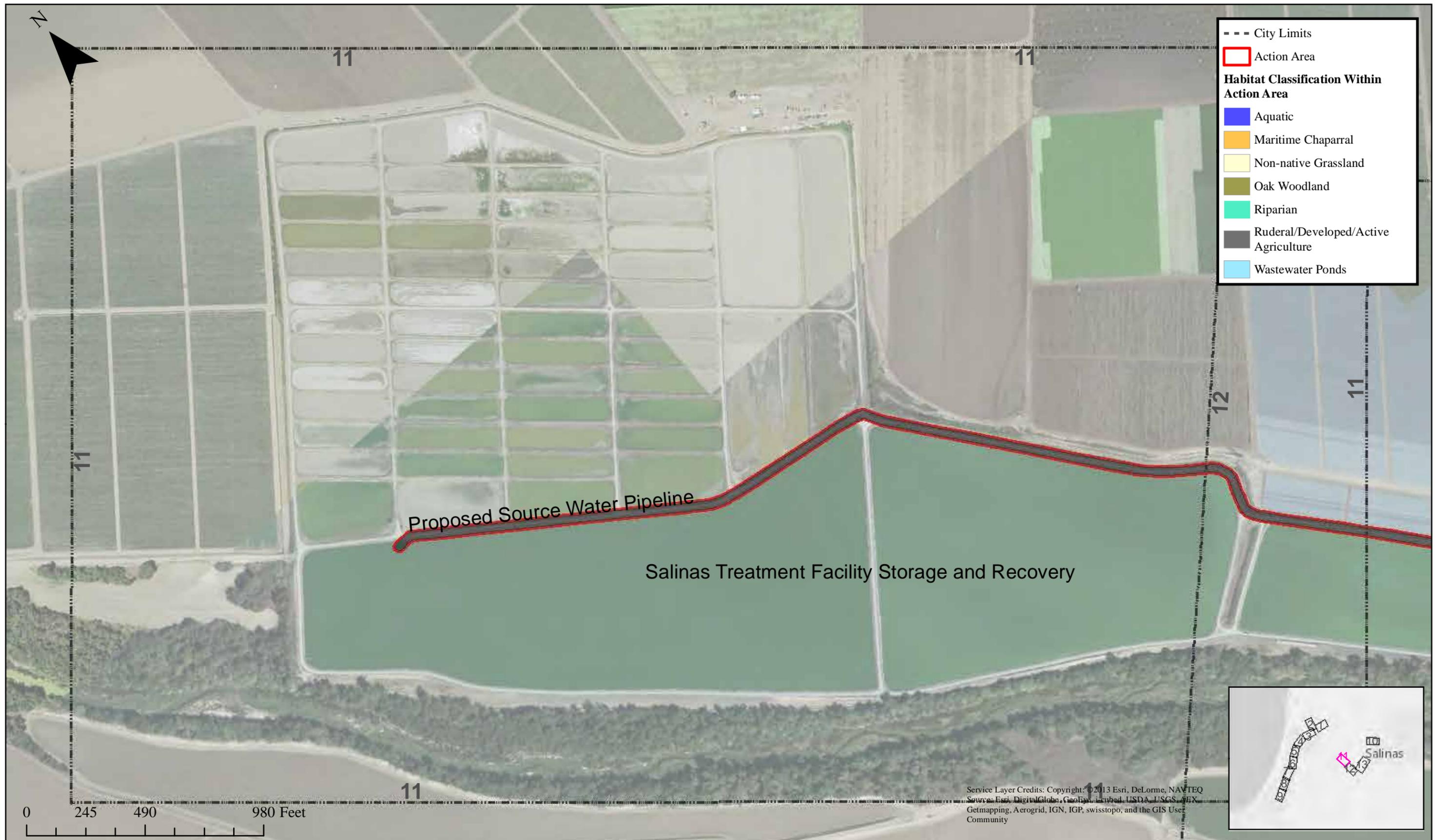
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Date: 11/25/2015
 Scale: 1 inch = 0 miles
 Project: 2013-13



Pure Water Monterey
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Figure
3-27



Action Area Habitat Map Series

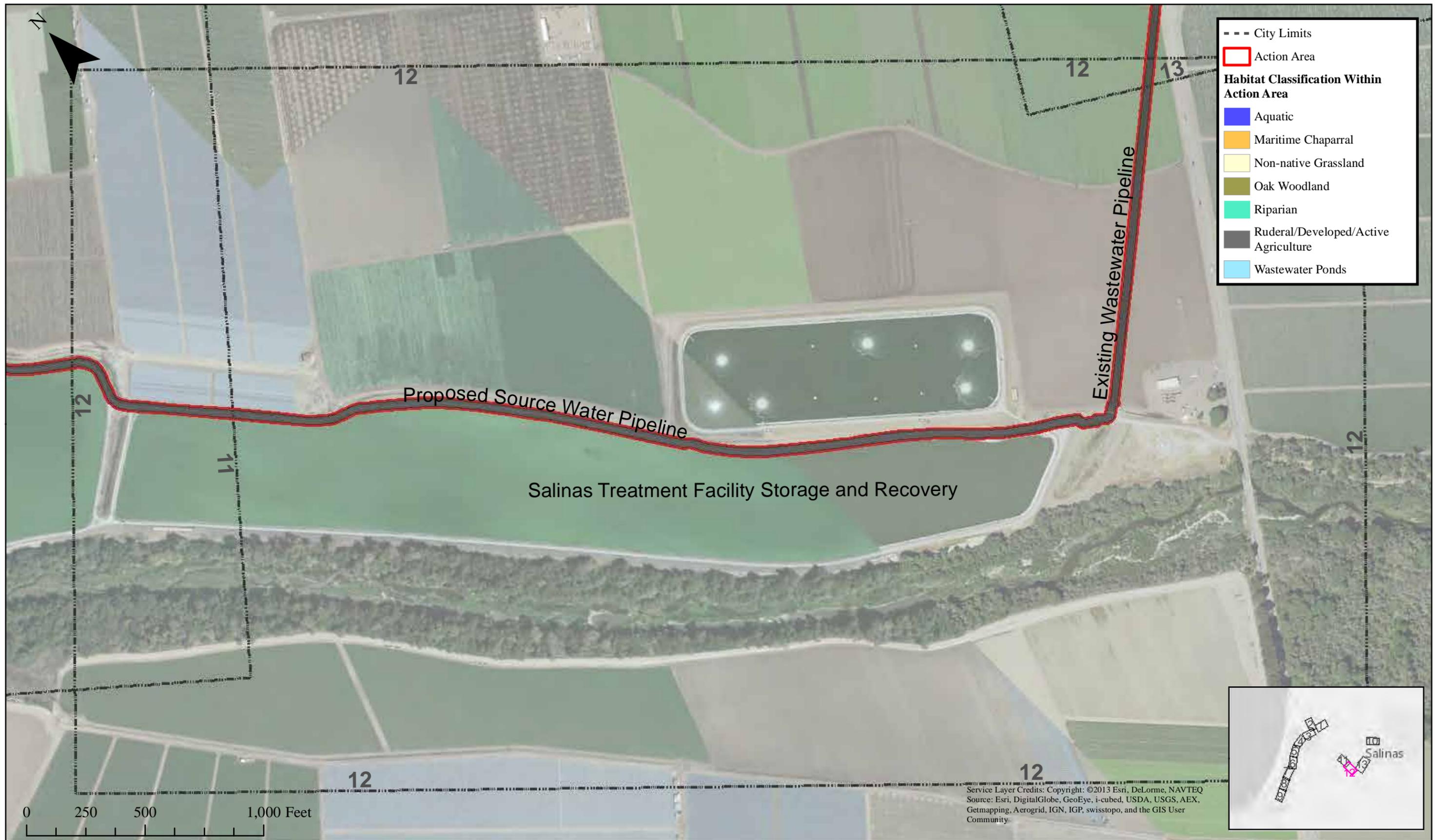
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Date: 11/25/2015
 Scale: 1 inch = 0 miles
 Project: 2013-13



Pure Water Monterey
 Groundwater Replenishment Project
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Figure
 3-28



Action Area Habitat Map Series

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Date: 11/25/2015
 Scale: 1 inch = 0 miles
 Project: 2013-13



Pure Water Monterey
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Figure
 3-29



Action Area Habitat Map Series

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Date: 11/25/2015
 Scale: 1 inch = 0 miles
 Project: 2013-13



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Figure
 3-30

Chapter 4. Results: Biological Resources, Discussion of Impacts, Avoidance and Minimization Efforts

4.1 Federally-Listed/Proposed Plant Species

Of the federally listed species in Table 2-1, two plant species are known or have the potential to occur within the Action Area and/or to be affected by the project: Monterey Spineflower and Monterey gilia. The rationale for determination of presence or absence within the Action Area is based on protocol-level survey results, local occurrence data and/or the habitat features documented to occur within the Action Area. All other federally listed or proposed plant species are assumed absent for the species-specific reasons presented in Table 2-1 and therefore, will not be affected by the project.

Discussion of Monterey Spineflower

Monterey spineflower, a small, prostrate annual in the buckwheat family, was listed as threatened on February 4, 1994 (Service, 1994). Information contained in this species account was obtained primarily from the final rule for listing, Recovery Plan for Seven Coastal Plants and the Myrtle's Silverspot Butterfly (Service, 1998), and final rule for designation of critical habitat (Service, 2002).

Monterey spineflower occurs in sandy soils within coastal habitats from the Monterey Peninsula (Monterey County) northward along the coast to southern Santa Cruz County, and inland to the coastal plain of the Salinas Valley. At coastal sites ranging from the Monterey Peninsula north to Manresa State Beach, Monterey spineflower is found in active coastal dune systems and on coastal bluffs upon which windblown sand has been deposited. The distribution of suitable habitat is subject to dynamic shifts caused by patterns of dune mobilization, stabilization, and successional trends in coastal dune vegetation that increase in cover over time. Accordingly, individual colonies of Monterey spineflower, found in gaps between stands of scrub, shift in distribution and size over time. Other native plants associated with Monterey spineflower in these areas include beach bur (*Ambrosia chamissonis*), beach sagewort (*Artemisia pycnocephala*), mock heather (*Ericameria ericoides*), Monterey Indian paintbrush (*Castilleja latifolia*), and beach pea (*Lathyrus littoralis*). At some locations, Monterey spineflower occurs in close proximity to other federally listed species, including Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*), Menzies' wallflower (*Erysimum menziesii* ssp. *menziesii*), and Smith's blue butterfly (*Euphilotes neoptes smithi*), and western snowy plover (*Charadrius alexandrinus nivosus*).

At more inland sites, Monterey spineflower occurs on sandy, well-drained soils in a variety of plant communities, most frequently maritime chaparral, valley oak woodland, and grassland. Within grassland communities, Monterey spineflower occurs along roadsides, in firebreaks, and in other disturbed sites, while in oak woodland, chaparral, and scrub

communities, it occurs in sandy openings between shrubs. In older stands with a high cover of shrubs, Monterey spineflower is restricted to roadsides, firebreaks, and trails that bisect these communities. Prior to the onset of human use of this area, Monterey spineflower may have been restricted to openings within these communities created by animal movement corridors, herbivory, and wildfires. The southwestern edge of Monterey spineflower habitat on the former Fort Ord was once likely continuous with habitat found in the community of Del Rey Oaks and at the Monterey Airport. Other inland sites that support Monterey spineflower are located in the area between Aptos and La Selva Beach in Santa Cruz County and near Prunedale in northern Monterey County. At some of these locations, Monterey spineflower occurs in close proximity with the federally endangered Yadon's piperia (*Piperia yadonii*) and robust spineflower (*Chorizanthe robusta* var. *robusta*).

Farther up the Salinas River, Monterey spineflower is found on a dune located within the river floodplain near Soledad, Monterey County. Two historic sites for Monterey spineflower occur near that locality, but the plant has likely been extirpated from these sites due to conversion to agriculture and channelization activities along the Salinas River. The dune near Soledad is the only one of its size and extends between there and the river mouth.

Monterey spineflower is a short-lived annual species that germinates during the winter months and flowers from April through June. Although its pollination ecology has not been studied, Monterey spineflower is likely visited by a wide array of pollinators. Observations of pollinators on other species of *Chorizanthe* that occur in Santa Cruz County have included leaf cutter bees (megachilids), at least six species of butterflies, flies, and spicid wasps. Each flower produces one seed; depending on plant vigor, dozens or hundreds of seeds could be produced per individual. The importance of pollinator activity in seed set has been demonstrated by the production of seed with low viability where pollinator access was limited. The plants turn a rusty hue as they dry through the summer months, eventually shattering during the fall. Seed dispersal is facilitated by the involucre spines, which attach the seed to passing animals. While animal vectors most likely facilitate dispersal between colonies and populations, the prevailing coastal winds undoubtedly play a part in scattering seed within colonies and populations.

Several coastal dune restoration efforts within the last decade have included measures to eliminate non-native species and to propagate and reintroduce Monterey spineflower, notably at Moss Landing North Harbor, Pajaro Dunes, and the University of California's Moss Landing Marine Laboratory. Such efforts have contributed to the understanding that Monterey spineflower readily grows where suitable sandy substrates occur and competition with other plant species is minimal.

Residential development, agricultural land conversion, recreational use, sand mining, dune stabilization, and competition with non-native plants, such as European beachgrass

(*Ammophila arenaria*) and iceplant (*Carpobrotus* spp.), have all reduced the populations and habitat of the Monterey spineflower. Habitat loss and conversion from agricultural and residential development, activities at military institutions, and invasion by non-native plants were identified as the primary threats to Monterey spineflower at the time of listing (Service, 1994). Hikers and equestrians may trample these plants at various locations throughout its range. Most of the historical locations of the Monterey spineflower in the Salinas Valley have probably been extirpated by conversion of grassland and valley oak woodland habitats to agricultural fields.

Survey Results

The CNDDDB reports 27 occurrences of this species in the 16 quadrangles reviewed, four of which include portions of the Action Area (**Figure 4-1**). This species was identified during the 2014 botanical surveys in the Product Water Conveyance RUWAP alignment option (0.1 acre) and Injection Well Facilities site (0.1 acre). Monterey spineflower also have a high likelihood of occurrence at portions of the Injection Well Facilities site that have not yet been surveyed.

Critical Habitat

On May 29, 2002, the Service designated final critical habitat for Monterey spineflower (Service, 2002). In March 2005, the Homebuilders Association of Northern California filed a complaint against the Service, and in March 2006, a settlement was reached to re-evaluate critical habitat for the Monterey spineflower and four other coastal plants. The existing critical habitat remains in place until the current critical habitat process has been completed and new critical habitat designated. There is no critical habitat designated within the Action Area (**Figure 4-2**).

Avoidance and Minimization Efforts

All of the avoidance and minimization efforts described in this BA were adopted by the MRWPCA Board of Directors on October 8th, 2015 through the approval the Mitigation Monitoring and Reporting Program (MMRP) for the certified Final Environmental Impact Report for the Proposed Action. Mitigation Measures BT-1e and BT-1f are reflected in the avoidance and minimization measures below.

HMP Species Strategy – Former Fort Ord Action Area

Approximately 0.1 acre of Monterey spineflower occurs within the Action Area on the former Fort Ord. All of the Action Area within the former Fort Ord is located within parcels designated by the HMP as “development.” Proposed Action components within the former Fort Ord include portions of the RUWAP Product Water Conveyance pipeline, the booster pump, and Injection Well Facilities.

Through implementation of the HMP, impacts to HMP species and habitats occurring within the designated development parcels were anticipated and mitigated through the establishment of habitat reserves and corridors, and the implementation of habitat management requirements within habitat reserve parcels on former Fort Ord. Parcels designated as “development” have no management restrictions. However, the Biological Opinion (BO) and HMP require the identification of sensitive biological resources within these parcels that may be salvaged for use in restoration activities in reserve areas.

Monterey spineflower is a HMP species known or with the potential to occur within the Action Area on the former Fort Ord. With the designated habitat reserves and corridors and habitat management requirements of the HMP in place, the loss of one or more individuals of these species is not expected to jeopardize the long-term viability of these species and their populations on the former Fort Ord (Service, 1993). This is because the recipients of disposed land with restrictions or management guidelines designated by the HMP would be obligated to implement those specific measures through the HMP and deed covenants. Because the Proposed Action is: 1) only proposing development activities within designated development parcels; 2) required to comply with the habitat management restrictions identified in the HMP; and 3) would not result in any additional impacts to HMP species and habitats beyond those anticipated in the HMP, no additional avoidance and minimization measures for these HMP species are required.

Avoidance and Minimization Efforts for Occurrences outside Former Fort Ord

Monterey spineflower also occurs outside of the property discussed above that is subject to the requirements of the HMP and the associated BO. Approximately 0.1 acre of Monterey spineflower occurs in Action Areas outside the former Fort Ord. The following avoidance and minimization measures are provided to reduce the potential effects to Monterey spineflower occurring within the Action Area.

1. A qualified biologist must conduct an Employee Education Program for the construction crew prior to any construction activities. A qualified biologist must meet with the construction crew at the onset of construction at the site to educate the construction crew on the following: 1) the appropriate access route(s) in and out of the construction area and review project boundaries; 2) how a biological monitor will examine the area and agree upon a method which would ensure the safety of the monitor during such activities, 3) the federally listed species that may be present; 4) the specific mitigation measures that will be incorporated into the construction effort; 5) the general provisions and protections afforded by the Service and CDFW; and 6) the proper procedures if a federally listed species is encountered within the site.
2. Any landscaping or replanting required for the project shall not use species listed as noxious by the California Department of Food and Agriculture (CDFA).

3. Bare and disturbed soil shall be landscaped with CDFA recommended seed mix or plantings from locally adopted species to preclude the invasion on noxious weeds in the Action Area.
4. Construction equipment shall be cleaned of mud or other debris that may contain invasive plants and/or seeds and inspected to reduce the potential of spreading noxious weeds, before mobilizing to arrive at the construction site and before leaving the construction site.
5. All non-native, invasive plant species shall be removed from disturbed areas prior to replanting.
6. Impacts to rare plant species individuals shall be avoided through project design and modification, to the extent feasible while taking into consideration other site and engineering constraints. If avoidance is not possible, the species shall be replaced at a 1:1 ratio for area of impact through preservation, restoration, or combination of both. A Rare Plant Restoration Plan, approved by the lead agency prior to commencing construction on the component site upon which the rare plant species would be impacted, shall be prepared and implemented by a qualified biologist. The plan shall include, but is not limited to, the following:
 - a. A detailed description of on-site and/or off-site mitigation areas, salvage of seed and/or soil bank, plant salvage, seeding and planting specifications, including, if appropriate, increased planting ratio to ensure the applicable success ratio. Specifically, seed shall be collected from the on-site individuals that would be impacted and grown in a local greenhouse, and then transplanted within the mitigation area. Plants shall be transplanted while they are young seedlings in order to develop a good root system. Alternatively, the mitigation area may be broadcast seeded in fall; however, if this method is used, some seed shall be retained in the event that the seeding fails to produce viable plants and contingency measures need to be employed.
 - b. A description of a 3-year monitoring program, including specific methods of vegetation monitoring, data collection and analysis, restoration goals and objectives, success criteria, adaptive management if the criteria are not met, reporting protocols, and a funding mechanism.
 - c. The mitigation area shall be preserved in perpetuity through a conservation easement or other legally enforceable land preservation agreement. Exclusionary fencing shall be installed around the mitigation area to prevent disturbance until success criteria have been met.

The project proponents shall retain a qualified biologist to conduct protocol-level surveys for federally listed plant species within the Action Area of the Injection Well Facilities site not yet surveyed. Protocol-level surveys shall be conducted by a qualified biologist at the appropriate time of year for species with the potential to occur within the site. A report describing the results of the surveys shall be provided to the project proponents prior to any ground disturbing activities. The report shall include, but is not limited to: 1) a description of the species observed, if any; 2) map of the location, if observed; and 3) recommended avoidance and minimization measures, if applicable. As the Injection Well Facilities site is located on the former Fort Ord any Monterey spineflower occurrences documented during the protocol-level surveys are subject to the avoidance and minimizations measures identified in the HMP and associated BO, described in the previous section.

Project Effects

Construction Effects

The Proposed Action would result in the construction of a variety of permanent features required for the operation of the Proposed Action, including, but not limited to, pipelines, pump stations, a water treatment facility, and Injection Well Facilities. Some components would be located underground (e.g., pipelines) and, therefore, construction activities may affect Monterey spineflower through temporary, short-term disturbance of populations but would not result in long-term permanent impacts. For the above-ground Proposed Action components (source water diversion sites, Treatment Facilities at the Regional Treatment Plant, booster pump station, and Injection Well Facilities), construction activities could potentially permanently affect Monterey spineflower.

Operational Effects

Daily operation of the pipelines and other underground Proposed Action components would not affect Monterey spineflower; however, periodic maintenance activities associated with project operations of above-ground facilities could potentially affect Monterey spineflower. Maintenance activities associated with pipelines would include annual inspections, testing and servicing of valves, vegetation maintenance along rights-of-way, and repairs of minor leaks in buried pipeline joints or segments. In addition, it is anticipated that the deep injection wells at the Injection Well Facilities site would require back-flushing for about four hours about once per week and would require discharge of the back-flush water to a back-flush percolation basin.

Modifications to the Project to Mitigate Effects

No modifications to the project to mitigate effects to Monterey Spineflower are necessary as negative effects will be minimized and avoided, as identified above.

Cumulative Effects (FESA)

The geographic scope for cumulative impact analysis on terrestrial resources consists of the overall region (such as central coastal California) in which the Proposed Action facilities are being constructed. Based on the list of cumulative projects provided on **Appendix D**, projects throughout the region could have adverse effects on the same sensitive species and habitats that occur within and adjacent to the Proposed Action component sites.

The Proposed Action has the potential to impact some of the same biological resources as other past, present, and probable future projects. However, the Proposed Action's construction-related impacts would not be cumulatively considerable with implementation of the avoidance and minimization measures identified.

Similarly, the Proposed Action's operational impacts would not be cumulatively considerable with implementation of the avoidance and minimization measures identified.

Discussion of Monterey Gilia

Monterey gilia is a short, sticky-haired annual herb in the phlox family (Polemoniaceae). It has an erect central stem with a basal rosette of leaves, and produces purple funnel-shaped flowers with narrow petal lobes and a purple throat. Monterey gilia is distinguished from the other three subspecies of *G. tenuiflora* by its relatively large fruit capsules and stamens which are only slightly exerted from the corolla. Monterey gilia is known to locally intergrade with *G. tenuiflora ssp. tenuiflora* at the more inland areas of its distribution at Fort Ord.

Monterey gilia is endemic to the Monterey Bay and Monterey Peninsula dune complexes. It is distributed in discontinuous populations and its range extends from Spanish Bay on the Monterey Peninsula north to Sunset Beach State Park in Santa Cruz County (CDFW, 2013). Most of these populations are on private land and are unprotected. Along the coast, Monterey gilia is found on rear dunes, near the dune summit in level areas, and on depressions or slopes in wind-sheltered openings in low-growing dune scrub vegetation. It does not occur in areas exposed to strong winds and salt spray (Service, 2005). On ancient dune soils, which extend inland six to eight miles in the former Fort Ord area, it occurs in openings among maritime chaparral, coastal sage scrub, oak woodlands and where other vegetative cover is low.

The plant occurs along trails and roadsides, on the cut banks of sandy ephemeral drainages, in recently burned chaparral, and in other disturbed patches. It appears to do well on sites that have undergone recent substrate disturbance. Most populations are small and localized.

Monterey gilia is an annual herb that typically germinates from December through February. It is able to self-pollinate as well as outcross, and fruit is set from the end of April to the end of May (Service, 2005). It produces small seeds that are dropped or shaken from their

capsules and are then dispersed, likely by gravity or wind. The species appears to produce viable seed even at very small statures. Seeds are dispersed by wind throughout the dune openings; dispersal is inhibited however by dense stands of low-growing dune scrub.

The loss of populations and habitat for Monterey gilia has resulted from coastal urban development and sand mining operations. Recreational users, such as off-road vehicle users, hikers, and equestrians, threaten populations and habitat. The introduction of aggressive, non- native species like iceplant and European beachgrass for dune stabilization has altered habitats, resulting in unsuitable conditions for gilia. Commercial and residential development near Marina, Seaside, Sand City, and the Monterey Peninsula threaten remaining Monterey gilia populations.

Survey Results

The CNDDDB reports 29 occurrences of this species in the 16 quadrangles reviewed. This species was not identified during the 2014 botanical surveys. However a portion of the Injection Well Facilities site was added to the Action Area after the appropriate identification period and, therefore, was not able to be surveyed for special-status plants. The additional area consists of central maritime chaparral and ruderal/developed/active agriculture habitat. Monterey gilia has a high potential to occur at the portion of the Injection Well Facilities that have not yet been surveyed.

Critical Habitat

Monterey gilia was listed as federally endangered on June 22, 1992 (Service, 1992) and it was listed by the State of California as threatened in January 1987. Critical habitat has not been proposed for the species.

Avoidance and Minimization Efforts

All of the avoidance and minimization efforts described in this BA were adopted by the MRWPCA Board of Directors on October 8th, 2015 through the approval the Mitigation Monitoring and Reporting Program (MMRP) for the certified Final Environmental Impact Report for the Proposed Action. These measures are reflected in Mitigation Measure BT-1f.

1. The project proponents shall retain a qualified biologist to conduct protocol-level surveys for special-status plant species within the Project Survey Area of the ~~Product Water Conveyance Pipeline: Coastal Alignment Option between Del Monte Boulevard and the Regional Treatment Plant site on Armstrong Ranch~~ and the portion of the Injection Well Facilities site not yet surveyed. Protocol-level surveys shall be conducted by a qualified biologist at the appropriate time of year for species with the potential to occur within the site. A report describing the results of the surveys shall be provided to the project proponents prior to any ground disturbing activities. The report shall include, but is not limited to: 1) a description of the species observed, if any; 2) map of the location, if observed; and 3) recommended avoidance and minimization measures, if applicable.

2. As identified above in the Monterey spineflower discussion through implementation of the HMP, impacts to HMP species and habitats occurring within the designated development parcels were anticipated and mitigated through the establishment of habitat reserves and corridors, and the implementation of habitat management requirements within habitat reserve parcels on former Fort Ord. Monterey gilia is also listed as an HMP species and therefore is covered by the associated BO. ~~Monterey gilia identified during the surveys identified above would be subject to the measures identified in the HMP and the associated BO, therefore no additional avoidance and minimization measures have been proposed.~~ DD&A conducted rare plant surveys for all areas outside of Former Fort Ord without identifying Monterey gilia, therefore avoidance and minimization measures for Monterey gilia outside of former Fort Ord have not been included.

Project Effects

Construction Effects

The Proposed Action would result in the construction of a variety of permanent features required for the operation of the Proposed Action, including, but not limited to, pipelines, pump stations, a water treatment facility, and Injection Well Facilities. Some components would be located underground (e.g., pipelines) and, therefore, construction activities may affect Monterey gilia in temporary, short-term disturbance of populations but would not result in long-term permanent impacts. Above-ground Proposed Action components at the Injection Well Facilities site could potentially permanently affect Monterey gilia.

Operational Effects

Daily operation of the pipelines and other underground Proposed Action components would not affect Monterey gilia; however, periodic maintenance activities associated with project operations could potentially affect Monterey gilia. Maintenance activities associated with pipelines would include annual inspections, testing and servicing of valves, vegetation maintenance along rights-of-way, and repairs of minor leaks in buried pipeline joints or segments. In addition, it is anticipated that the deep injection wells at the Injection Well Facilities site would require back-flushing for about four hours about once per week and would require discharge of the back-flush water to a back-flush percolation basin.

Modifications to the Project to Mitigate Effects

No modifications to the project to mitigate effects to Monterey gilia are necessary as negative effects will be minimized and avoided, as identified above.

Cumulative Effects (FESA)

The Proposed Action has the potential to impact some of the same biological resources as other past, present, and probable future projects. However, the Proposed Action's

construction-related impacts would not be cumulatively considerable with implementation of the avoidance and minimization measures identified.

Similarly, the Proposed Action's operational impacts would not be cumulatively considerable with implementation of the avoidance and minimization measures identified.

4.2 Federally-Listed or Proposed Animal Species Occurrences

Of the federally listed species in Table 2-1, two wildlife species are known or have the potential to occur within the Action Area and/or to be affected by the project: CRLF and tricolored blackbird. The rationale for determination of presence or absence within the Action Area is based on local occurrence data and the habitat features documented to occur within the Action Area. Avian species protected under the MBTA are also known or have the potential to occur within the Action Area. These federally regulated natural resources also have the potential be affected by the project and are discussed below. All other federally listed or proposed wildlife species are assumed absent for the species-specific reasons presented in Table 2-1 and therefore, will not be affected by the project.

Discussion of California Red-Legged Frog

The CRLF was listed as a federally Threatened species on June 24, 1996 (Service, 1996). The CRLF is the largest native frog in California (44-131 mm snout-vent length) and was historically widely distributed in the central and southern portions of the state (Jennings and Hayes, 1994). Adults generally inhabit aquatic habitats with riparian vegetation, overhanging banks, or plunge pools for cover, especially during the breeding season (Jennings and Hayes, 1988). They may take refuge in small mammal burrows, leaf litter, or other moist areas during periods of inactivity or to avoid desiccation (Rathbun, et al., 1993; Jennings and Hayes, 1994). Radiotelemetry data indicates that adults engage in straight-line breeding season movements irrespective of riparian corridors or topography and they may move up to two miles between non-breeding and breeding sites (Bulger et. al., 2003). During the non-breeding season, a wider variety of aquatic habitats are used including small pools in coastal streams, springs, water traps, and other ephemeral water bodies (Service, 1996). CRLF may also move up to 300 feet from aquatic habitats into surrounding uplands, especially following rains, where individuals may spend days or weeks (Bulger et al., 2003).

This species requires still or slow-moving water during the breeding season where it can deposit large egg masses, which are most often attached to submergent or emergent vegetation. Breeding typically occurs between December and April depending on annual environmental conditions and locality. Eggs require six to 12 days to hatch and metamorphosis generally occurs after 3.5 to seven months, although larvae are also capable of over-wintering. Following metamorphosis, generally between July and September, juveniles are 25-35 mm in size. Juvenile CRLF appear to have different habitat needs than adults. Jennings and Hayes (1988) recorded juvenile frogs mostly from sites with shallow

water and limited shoreline or emergent vegetation. Additionally, it was important that there be small one-meter breaks in the vegetation or clearings in the dense riparian cover to allow juveniles to sun themselves and forage, but to also have close escape cover from predators. Jennings and Hayes also noted that tadpoles have different habitat needs and that in addition to vegetation cover, tadpoles use mud. It is speculated that CRLF larvae are algae grazers, however, foraging larval ecology remains unknown (Jennings, et. al., 1993).

It has been shown that occurrences of CRLF are negatively correlated with presence of non-native bullfrogs (Moyle, 1973; Jennings and Hayes, 1986 and 1988), although both species are able to persist at certain locations, particularly in the coastal zone. It is estimated that CRLF has disappeared from approximately 75% of its former range and has been nearly extirpated from the Sierra Nevada, Central Valley, and much of southern California (Service, 1996).

Survey Results

The CNDDDB reports 106 occurrences of CRLF within the 16 quadrangles reviewed. The CNDDDB does not present specific location data for some of these occurrences. However, the nearest specific occurrence is a breeding location directly adjacent to the Blanco Drain Diversion site along the Salinas River (**Figure 4-3**). This occurrence is the only specific CNDDDB CRLF occurrence within 1.6 kilometers of the Action Area, the accepted proximity radius from a project site based on telemetry data collected by Bulger *et al.* (2003). CRLF is known to occur within suitable habitat along the Salinas River at the Salinas Treatment Facility site; however, suitable upland or breeding habitat does not occur within the remaining Action Area. Since the CRLF is known to occur in the Salinas River, this species is assumed present within the riparian habitat at the Salinas Treatment Facility and Blanco Drain Diversion sites.

Critical Habitat

Critical habitat was designated for CRLF on April 13, 2006 (Service, 2006) and revised on March 17, 2010 (U.S. Federal Register). The revised critical habitat went into effect on April 16, 2010. The primary constituent elements (PCEs) CRLF critical habitat are:

- 1) **Aquatic Breeding Habitat:** Standing bodies of fresh water (with salinities less than 7.0 ppt.), including natural and manmade ponds, slow moving streams or pools within streams, and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in all but the driest years.
- 2) **Non-Breeding Aquatic Habitat:** Fresh water habitats, as described above, that may or may not hold water long enough for the subspecies to hatch and complete its aquatic life cycle but that do provide for shelter, foraging, predator avoidance, and aquatic dispersal for juvenile and adult CRLF. Other wetland habitats that would be

considered to meet these elements include, but are not limited to: plunge pools within intermittent creeks; seeps; quiet water refugia during high water flows; and springs of sufficient flow to withstand the summer dry period.

- 3) **Upland Habitat:** Upland areas within 200 feet (60 meters) of the edge of the riparian vegetation or dripline surrounding aquatic and riparian habitat, and comprised of various vegetational series such as grasslands, woodlands, and/or wetland/riparian plant species that provides the frog shelter, forage, and predator avoidance. Upland features are also essential in that they are needed to maintain the hydrologic, geographic, topographic, ecological, and edaphic features that support and surround the wetland or riparian habitat. These upland features contribute to the filling and drying of the wetland or riparian habitat and are responsible for maintaining suitable periods of pool inundation for larval frogs and their food sources, and provide breeding, non-breeding, feeding, and sheltering habitat for juvenile and adult frogs (e.g., shelter, shade, moisture, cooler temperatures, a prey base, foraging opportunities, and areas for predator avoidance). Upland habitat can include structural features such as boulders, rocks and organic debris (e.g. downed trees, logs), as well as small mammal burrows and moist leaf litter.

- 4) **Dispersal Habitat:** Accessible upland or riparian dispersal habitat within designated units and between occupied locations within 0.7 mile (1.2 km) of each other that allows for movement between such sites. Dispersal habitat includes various natural habitats and altered habitats such as agricultural fields, which do not contain barriers to dispersal (an example of a barrier to dispersal is a heavily traveled road constructed without bridges or culverts). Dispersal habitat does not include moderate to high density urban or industrial developments with large expanses of asphalt or concrete, nor does it include large reservoirs over 50 acres (20 ha) in size, or other areas that do not contain those features identified in PCE 1, 2, or 3 as essential to the conservation of the subspecies.

CRLF critical habitat does not occur within the Action Area.

Avoidance and Minimization Efforts

All of the avoidance and minimization efforts described in this BA were adopted by the MRWPCA Board of Directors on October 8th, 2015 through the approval the Mitigation Monitoring and Reporting Program (MMRP) for the certified Final Environmental Impact Report for the Proposed Action. These measures are reflected in Mitigation Measure BT-1q.

The following measures for avoidance and minimization of adverse impacts to CRLF during construction of the Proposed Action components are those typically employed for construction activities that may result in short-term impacts to individuals and their habitat.

The focus of these measures is on scheduling activities at certain times of year, keeping the disturbance footprint to a minimum, and monitoring.

1. The MRWPCA shall annually submit the name(s) and credentials of biologists who would conduct activities specified in the following measures. No project construction activities at the component site would begin until the MRWPCA receives confirmation from the Service that the biologist(s) is qualified to conduct the work.
2. A Service-approved biologist shall survey the work site 48 hours prior to the onset of construction activities. If CRLF, tadpoles, or eggs are found, the approved biologist shall determine the closest appropriate relocation site. The approved biologist shall be allowed sufficient time to move the CRLF, tadpoles or eggs from the work site before work activities begin. Only Service-approved biologists shall participate in activities associated with the capture, handling, and moving of CRLF.
3. Before any construction activities begin on the project component site, a Service-approved biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the CRLF and its habitat, the importance of the CRLF and its habitat, general measures that are being implemented to conserve the CRLF as they relate to the project, and the boundaries within which the project construction activities may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.
4. A Service-approved biologist shall be present at the work site until such time as all removal of CRLF, instruction of workers, and disturbance of habitat have been completed. After this time, the biologist shall designate a person to monitor on-site compliance with all minimization measures and any future staff training. The Service-approved biologist shall ensure that this individual receives training outlined above and in the identification of CRLF. The monitor and the Service-approved biologist shall have the authority to stop work if CRLF are in harm's way.
5. The number of access routes, number and size of staging areas, and the total area of the activity shall be limited to the minimum necessary to achieve the project goal. Routes and boundaries shall be clearly demarcated, and these areas shall be outside of riparian and wetland areas to the extent practicable.
6. Work activities shall be completed between April 1 and November 1, to the extent practicable. Should the project proponent demonstrate a need to conduct activities outside this period, the project proponent may conduct such activities after obtaining Service approval (applies to Blanco Drain site only).
7. If a work site is to be temporarily dewatered by pumping, intakes shall be completely screened with wire mesh not larger than five millimeters (mm) to prevent CRLF from

entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow shall be removed in a manner that would allow flow to resume with the least disturbance to the substrate.

8. The Declining Amphibian Populations Task Force's Fieldwork Code of Practice shall be followed to minimize the possible spread of chytrid fungus or other amphibian pathogens and parasites.
9. When designing the facilities at these component sites, the MRWPCA shall site and design project features to avoid impacts to the riparian and wetland habitats, including direct habitat removal and indirect hydrology and water quality impacts, to the greatest extent feasible while taking into account site and engineering constraints. To protect this sensitive habitat during construction, the following measures shall be implemented:
 - a. Place construction fencing around riparian and wetland habitat (i.e., areas adjacent to or nearby the Proposed Action construction) to be preserved to ensure construction activities and personnel do not impact this area.
 - b. All proposed lighting shall be designed to avoid light and glare into the riparian and wetland habitat. Light sources shall not illuminate these areas or cause glare.
10. The project proponents in coordination with the contractor shall prepare and implement a Frack-Out Plan to avoid or reduce accidental impacts resulting from horizontal directional drilling (HDD) beneath the Salinas River. The Frac-Out Plan shall address spill prevention, containment, and clean-up methodology in the event of a frac-out. The proposed HDD component of the Blanco Drain diversion shall be designed and conducted to minimize the risk of spills and frac-out events. The Frac-Out Plan shall be prepared and submitted to Service, CDFW, National Marine Fisheries Services, and the Regional Water Quality Control Board prior to commencement of HDD activities for the Blanco Drain Diversion construction. The following are typical contents of a Frac-Out Plan:
 - a) Project description, including details of the HDD design and operations
 - b) Site description and existing conditions
 - c) Potential modes of HDD failure and HDD failure prevention and mitigation
 - d) Frac-out prevention measures (including for example, geotechnical investigations, planning for appropriate depths based on those investigations, presence of a qualified engineer during drilling to monitor the drilling process, live adjustments to the pace of drill advancement to ensure sufficient time for cutting and fluid circulation and to prevent or minimize plugging, maintaining the minimum drilling pressure necessary to maintain fluid circulation, etc.)

- e) Monitoring requirements (for example, monitoring pump pressure circulation rate, ground surface and surface water inspection, advancing the drill only during daytime hours, on-site biological resource monitoring by a qualified biologist)
- f) Response to accidental frac-out (including stopping drilling, permitting agency notification, surveying the area, containing the frac-out material, contacting the project biological monitor to identify and relocate species potentially in the area, turbidity monitoring, procedures for clean-up and mitigation of hazardous waste spill materials, preparation of documentation of the event, etc.)
- g) Coordination plan and contact list of key project proponents, biological monitor, and agency staff in the event of an accidental frac-out event.

Project Effects

Construction Effects

The Proposed Action would result in the construction of a variety of permanent features required for the operation of the Proposed Action, including, but not limited to, pipelines, pump stations, a water treatment facility, and Injection Well Facilities. Construction activities may affect CRLF in temporary, short-term disturbance but would not result in long-term permanent effects. Injury or mortality could occur from animals being crushed by earth-moving equipment, debris, and worker foot traffic. Work activities, including resultant noise and vibration, could cause California red-legged frogs to leave or avoid suitable habitat. This disturbance and displacement may increase the potential for predation, desiccation, competition for food and shelter, or strike by vehicles on roadways. Individuals in burrows may be killed or injured by project filling or grading activities; or covered. Uninformed workers could disturb, injure, or kill California red-legged frogs. Indirect impacts to CRLF individuals could result from sedimentation and contamination of aquatic habitat as a result of erosion from disturbed portions of the Action Area or frac-out during directional drilling efforts. Accidental spills of hazardous materials or careless fueling or oiling of vehicles or equipment could degrade water quality or upland habitat to a degree where California red-legged frogs are adversely affected or killed.

Operational Effects

Daily operation of the pipelines and other underground Proposed Action components would not affect CRLF; however, periodic maintenance activities associated with project operations could potentially affect CRLF. Maintenance activities associated with pipelines would include annual inspections, testing and servicing of valves, vegetation maintenance along rights-of-way, and repairs of minor leaks in buried pipeline joints or segments. Introduction of lighting associated with permanent facilities could affect individual CRLF.

Modifications to the Project to Mitigate Effects

No modifications to the project to mitigate effects to individual CRLF are necessary as negative effects will be minimized and avoided, as identified above.

Cumulative Effects (FESA)

It is estimated that CRLF has disappeared from approximately 75% of its former range and has been nearly extirpated from the Sierra Nevada, Central Valley, and much of southern California (Service, 1996). Threats to CRLF include loss of habitat due to a wide variety of human impacts, including urbanization, water diversions, construction of reservoirs, water pollution, and agricultural practices. Additionally, CRLF are threatened by the introduction of non-native predators and competitors, including the American bullfrog (*Rana catesbeiana*). As the project will avoid and minimize impacts to individuals no cumulative impacts to CRLF are anticipated.

Discussion of Tricolored Blackbird

The tricolored blackbird (*Agelaius tricolor*) is currently considered a Species of Conservation Concern. As of September 18, 2015, the species' status is under review after a 90 day finding that formal listing on the Endangered Species Act may be warranted (80 FR 56423 56432). This species is common locally throughout the Central Valley and in coastal districts from Sonoma County south. These birds are summer residents in northeastern California, occurring regularly only at Tule Lake, but found as far south as Honey Lake in some years. In winter, this species becomes more widespread along the central coast and San Francisco Bay area (Grinnell and Miller, 1944). Tricolored blackbirds breed near fresh water, preferably in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herbs, which also serve as their preferred nesting habitat. Nests are built of mud and plant materials over or near fresh water, especially in emergent wetlands. This species is highly colonial and the minimum nesting colony size is about 50 pairs (Grinnell and Miller 1944). Drinking water is probably required, at least when seeds and grains are the major foods.

Survey Results

The CNDDDB reports 10 occurrences of tricolored blackbird within the 16 quadrangles reviewed. The nearest specific occurrence is approximately 0.5 mile west of the Action Area (**Figure 4-4**). Suitable nesting habitat occurs within the riparian habitat associated with the Salinas River at the Blanco Drain Diversion site. Additionally suitable nesting and foraging habitat occurs adjacent to the Salinas Treatment Facility wastewater ponds.

Critical Habitat

Critical habitat has not been designated for the tricolored blackbird.

Avoidance and Minimization Efforts

All of the avoidance and minimization efforts described in this BA were adopted by the MRWPCA Board of Directors on October 8th, 2015 through the approval the Mitigation Monitoring and Reporting Program (MMRP) for the certified Final Environmental Impact Report for the Proposed Action. These measures are reflected in Mitigation Measure BT-1k.

1. Prior to the start of construction activities at each project component site, a qualified biologist shall conduct pre-construction surveys for suitable nesting habitat within the component Action Area and within a suitable buffer area from the component Action Area.

In areas where nesting habitat is present within the component project area or within the determined suitable buffer area, construction activities that may directly (e.g., vegetation removal) or indirectly (e.g., noise/ground disturbance) affect tricolored blackbirds shall be timed to avoid the breeding and nesting season. Specifically, vegetation and/or tree removal can be scheduled after September 16 and before January 31. Alternatively, a qualified biologist shall be retained by the project proponents to conduct pre-construction surveys for tricolored blackbirds where nesting habitat was identified and within the suitable buffer area if construction commences between February 1 and September 15. Pre-construction surveys shall be conducted no more than 14 days prior to the start of construction activities during the early part of the breeding season (February through April) and no more than 30 days prior to the initiation of these activities during the late part of the breeding season (May through August).

If active tricolored blackbird nests are identified during the pre-construction surveys, the qualified biologist shall notify the project proponents and an appropriate no-disturbance buffer shall be imposed within which no construction activities or disturbance shall take place until the young have fledged and are no longer reliant upon the nest or parental care for survival, as determined by a qualified biologist.

Project Effects

Construction Effects

If construction occurs during the nesting season (generally February 15 to September 1), there is the potential to adversely affect tricolored blackbirds. Construction activities such as vegetation removal or site grading during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment within the Action Area and immediately adjacent areas of the Action Area. Implementation of the measures identified above will avoid or reduce these potential effects.

Operational Effects

The proposed project would not adversely affect tricolored blackbirds over any long-term or operational timeframe.

Modifications to the Project to Mitigate Effects

No modifications to the project to mitigate effects to tricolored blackbirds are necessary as negative effects will be avoided and the project will result in increased and improved habitat for tricolored blackbirds.

Cumulative Effects (FESA)

Threats to tricolored blackbirds include loss of nesting and foraging habitat and disturbance of nests by recreational activities, stream channelization, development, logging, grazing, and water diversion throughout the west. As the project will avoid and minimize effects to individuals, no cumulative effects to tricolored blackbirds are anticipated. The project will temporarily affect habitat for tricolored blackbirds.

Discussion of Migratory Bird Species

The MBTA of 1918 prohibits killing, possessing, or trading migratory birds except in accordance with regulation prescribed by the Secretary of the Interior. Most actions that result in taking or in permanent or temporary possession of a protected species constitute violations of the MBTA. The Service is responsible for overseeing compliance with the MBTA and implements Conventions (treaties) between the United States and four countries for the protection of migratory birds – Canada, Mexico, Japan, and Russia. The Service maintains a list of migratory bird species that are protected under the MBTA, which was updated in 2010 to: 1) correct previous mistakes, such as misspellings or removing species no longer known to occur within the United States; 2) add species, as a result of expanding the geographic scope to include Hawaii and U.S. territories and new evidence of occurrence in the United States or U.S. territories; and 3) update name changes based on new taxonomy (Service, 2010a).

Survey Results

Various migratory bird species have a potential to nest within any of the large trees present within and adjacent to the Action Area, which includes several individuals or small clusters of cypress, Monterey pine, coast live oak, willow, and eucalyptus trees.

Migratory bird species that may be present within the Action Area include, but are not limited to, common poorwill (*Phalaenoptilus nuttallii*), western meadowlark (*Sturnella neglecta*), Townsend's warbler (*Setophaga townsendii*), black phoebe (*Sayornis nigricans*), white-crowned sparrow (*Zonotrichia leucophrys*), California thrasher (*Toxostoma redivivum*), ash-throated fly catcher (*Myiarchus cinerascens*), tree swallow (*Tachycineta bicolor*), and California horned lark (*Eremophila alpestris actia*).

Critical Habitat

No critical habitat is designated for migratory birds.

Avoidance and Minimization Efforts

All of the avoidance and minimization efforts described in this BA were adopted by the MRWPCA Board of Directors on October 8th, 2015 through the approval the Mitigation Monitoring and Reporting Program (MMRP) for the certified Final Environmental Impact Report for the Proposed Action. These measures are reflected in Mitigation Measure BT-1k.

1. Prior to the start of construction activities at each project component site, a qualified biologist shall conduct pre-construction surveys for suitable nesting habitat within the component Action Area and within a suitable buffer area from the component Action Area. The qualified biologist shall determine the suitable buffer area based on the avian species with the potential to nest at the site.

In areas where nesting habitat is present within the component project area or within the determined suitable buffer area, construction activities that may directly (e.g., vegetation removal) or indirectly (e.g., noise/ground disturbance) affect protected nesting avian species shall be timed to avoid the breeding and nesting season. Specifically, vegetation and/or tree removal can be scheduled after September 16 and before January 31. Alternatively, a qualified biologist shall be retained by the project proponents to conduct pre-construction surveys for nesting raptors and other protected avian species where nesting habitat was identified and within the suitable buffer area if construction commences between February 1 and September 15. Pre-construction surveys shall be conducted no more than 14 days prior to the start of construction activities during the early part of the breeding season (February through April) and no more than 30 days prior to the initiation of these activities during the late part of the breeding season (May through August). Because some bird species nest early in spring and others nest later in summer, surveys for nesting birds may be required to continue during construction to address new arrivals, and because some species breed multiple times in a season. The necessity and timing of these continued surveys shall be determined by the qualified biologist based on review of the final construction plans.

If active protected migratory bird species nests are identified during the pre-construction surveys, the qualified biologist shall notify the project proponents and an appropriate no-disturbance buffer shall be imposed within which no construction activities or disturbance shall take place until the young have fledged and are no longer reliant upon the nest or parental care for survival, as determined by a qualified biologist.

Project Effects

Construction Effects

If construction occurs during the nesting season (generally February 15 to September 1), there is the potential to adversely affect migratory bird species. Construction activities such as vegetation removal or site grading during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment within the Action Area and immediately adjacent areas of the Action Area. Implementation of the measures identified above will avoid or reduce these potential effects.

Operational Effects

The proposed project would not adversely affect migratory bird species over any long-term or operational timeframe.

Modifications to the Project to Mitigate Effects

No modifications to the project to mitigate effects to migratory birds are necessary as negative effects will be avoided and the project will result in increased and improved habitat for migratory bird species.

Cumulative Effects (FESA)

Threats to migratory bird species include loss of nesting and foraging habitat and disturbance of nests by recreational activities, stream channelization, development, logging, grazing, and water diversion throughout the west. As the project will avoid and minimize effects to individuals, no cumulative effects to migratory birds species are anticipated. The project will temporarily affect habitat for migratory birds.

 Action Area

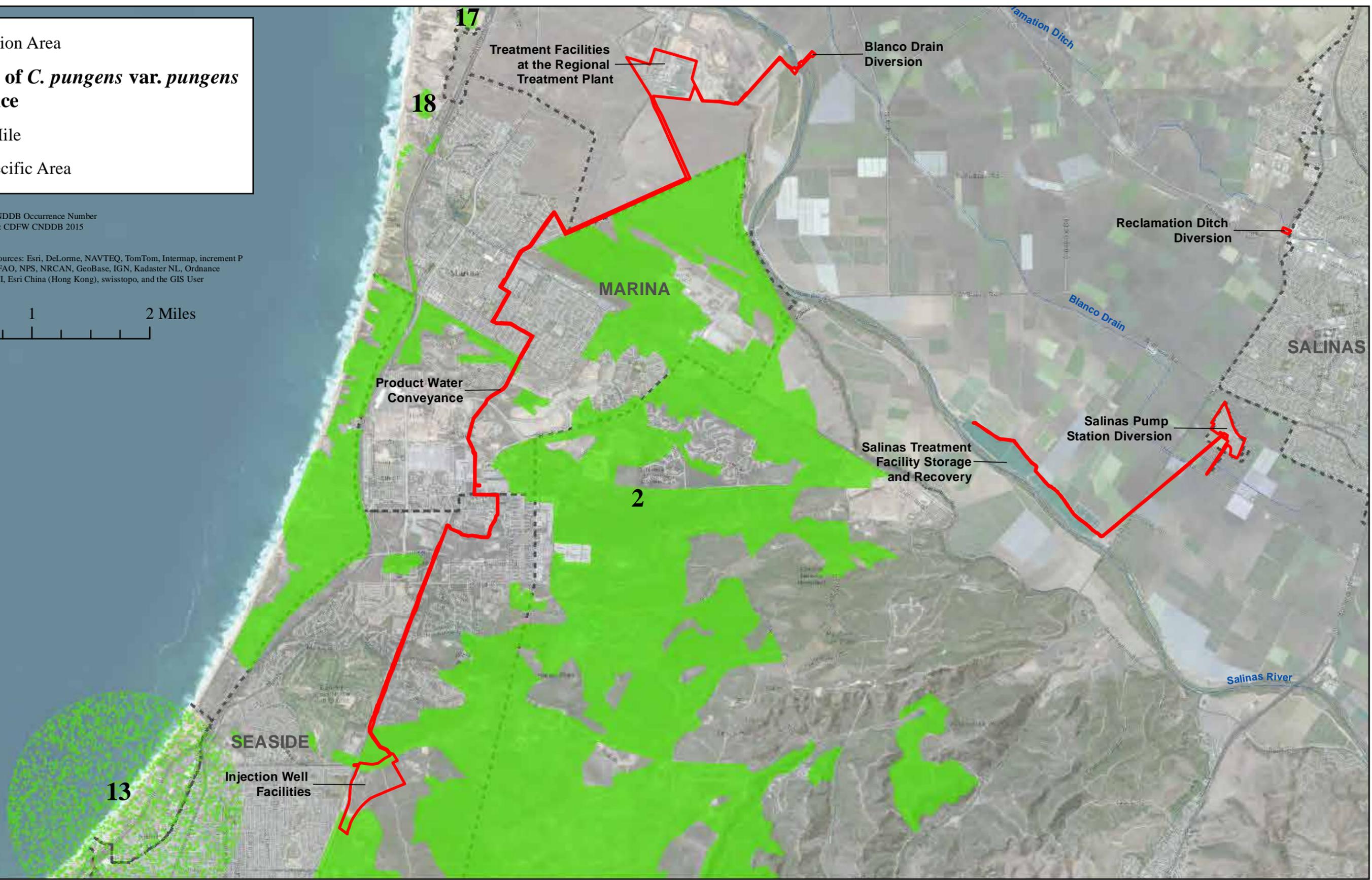
Accuracy of *C. pungens* var. *pungens* Occurrence

 1 Mile

 Specific Area

Labels Correspond to CNDDDB Occurrence Number
 Occurrence Data Credits: CDFW CNDDDB 2015

Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, and the GIS User Community



Chorizanthe pungens var. *pungens* Occurrence Data

C:\GIS\GIS_Projects\2013-13 GWR\Final Products\BIO\BA\Monterey Spineflower Occurrence Map.mxd

Date: 11/23/2015
 Scale: 1 in = 1 miles
 Project: 2013-13



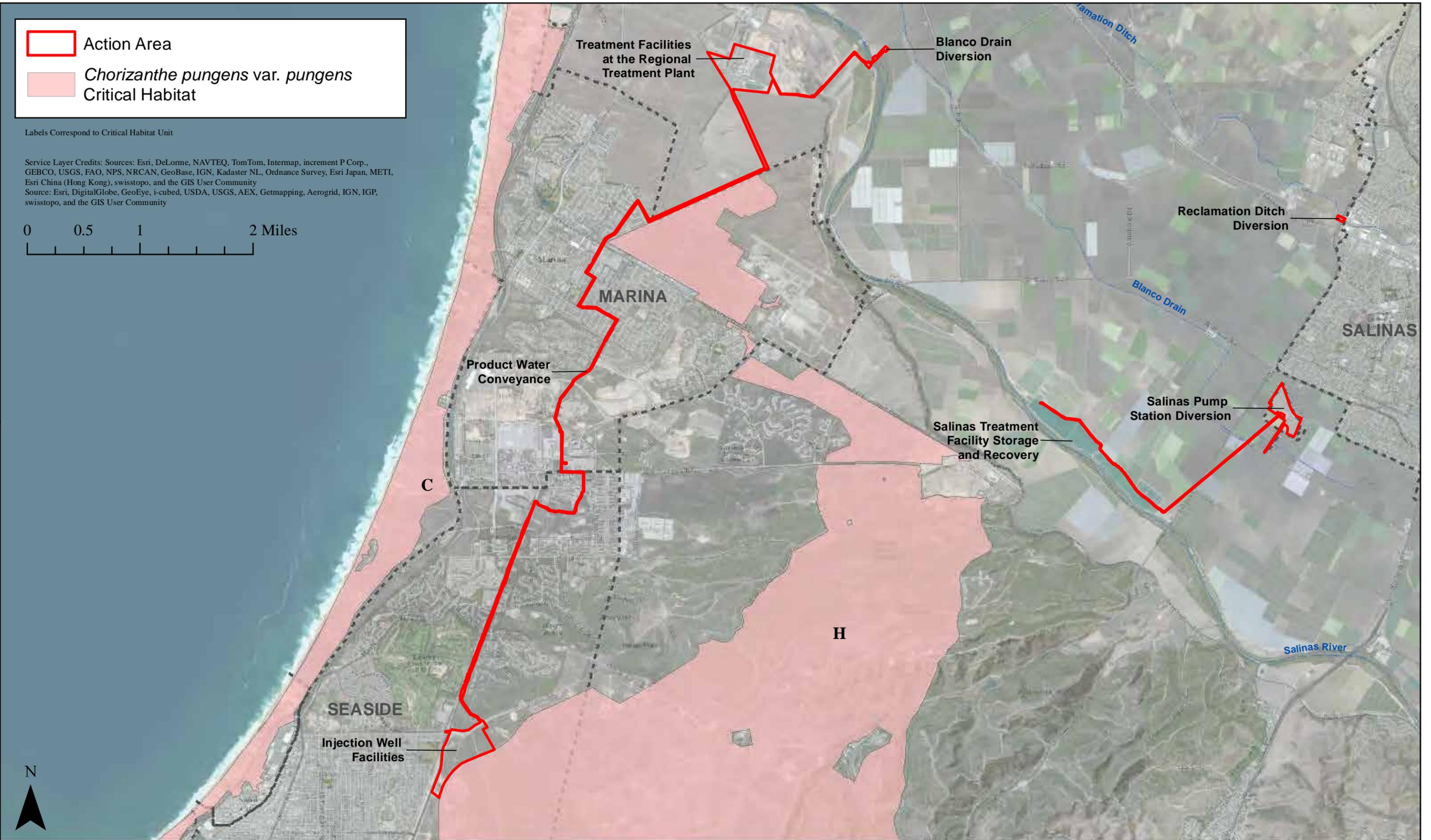
Pure Water Monterey
 Groundwater Replenishment Project
 USFWS Biological Assessment

Figure
 4-1

 Action Area
 *Chorizantho pungens* var. *pungens* Critical Habitat

Labels Correspond to Critical Habitat Unit

Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, and the GIS User Community
 Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Chorizantho pungens var. *pungens* Critical Habitat

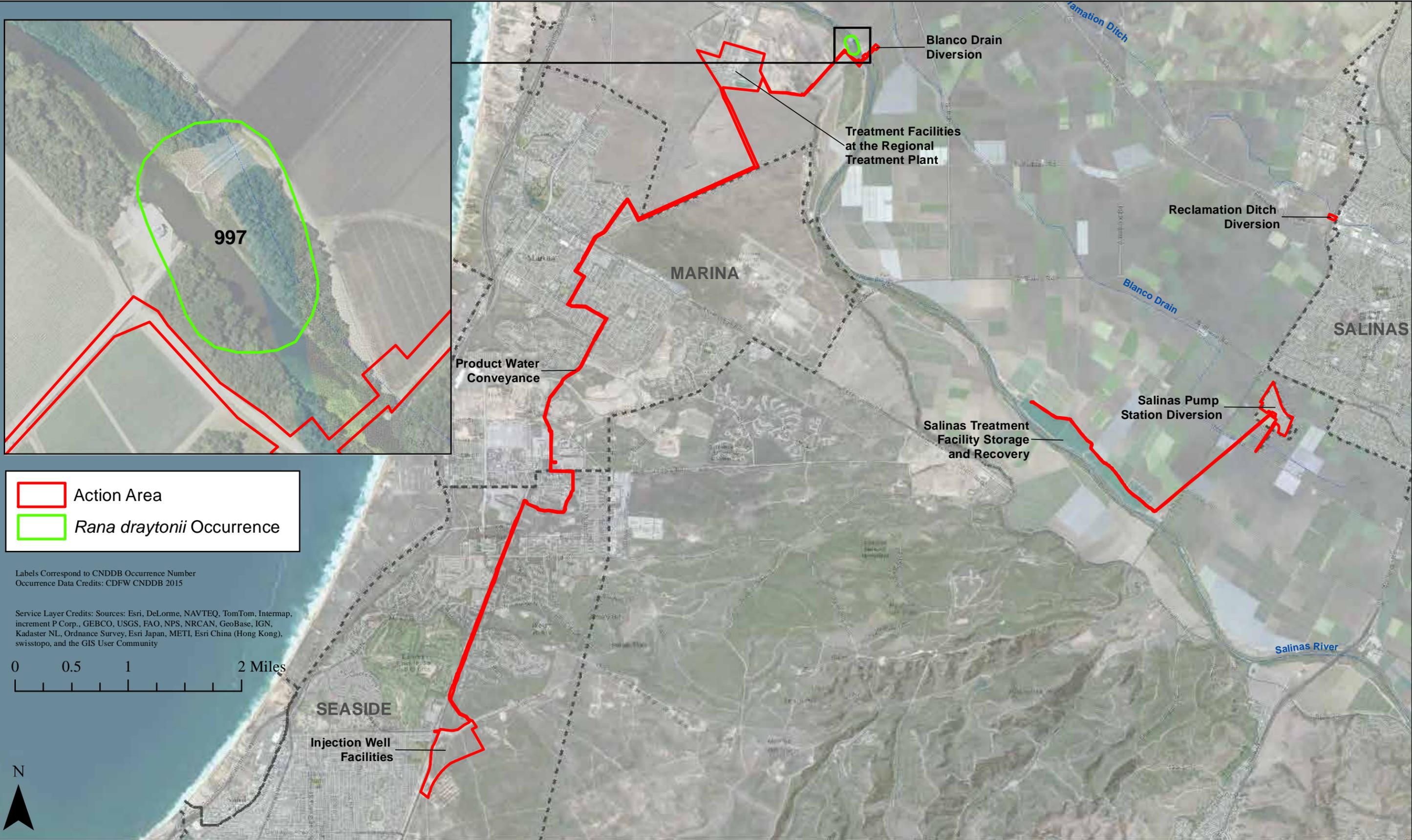
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Date: 11/23/2015
 Scale: 1 in = 1 miles
 Project: 2013-13



Pure Water Monterey
 Groundwater Replenishment Project
 USFWS Biological Assessment

Figure
 4-2



Rana draytonii Occurrence Data

C:\GIS\GIS_Projects\2013-13 GWR\Final Products\BIO\BA\CRLF Occurrence Map.mxd

Date: 11/23/2015
 Scale: 1 in = 1 miles
 Project: 2013-13



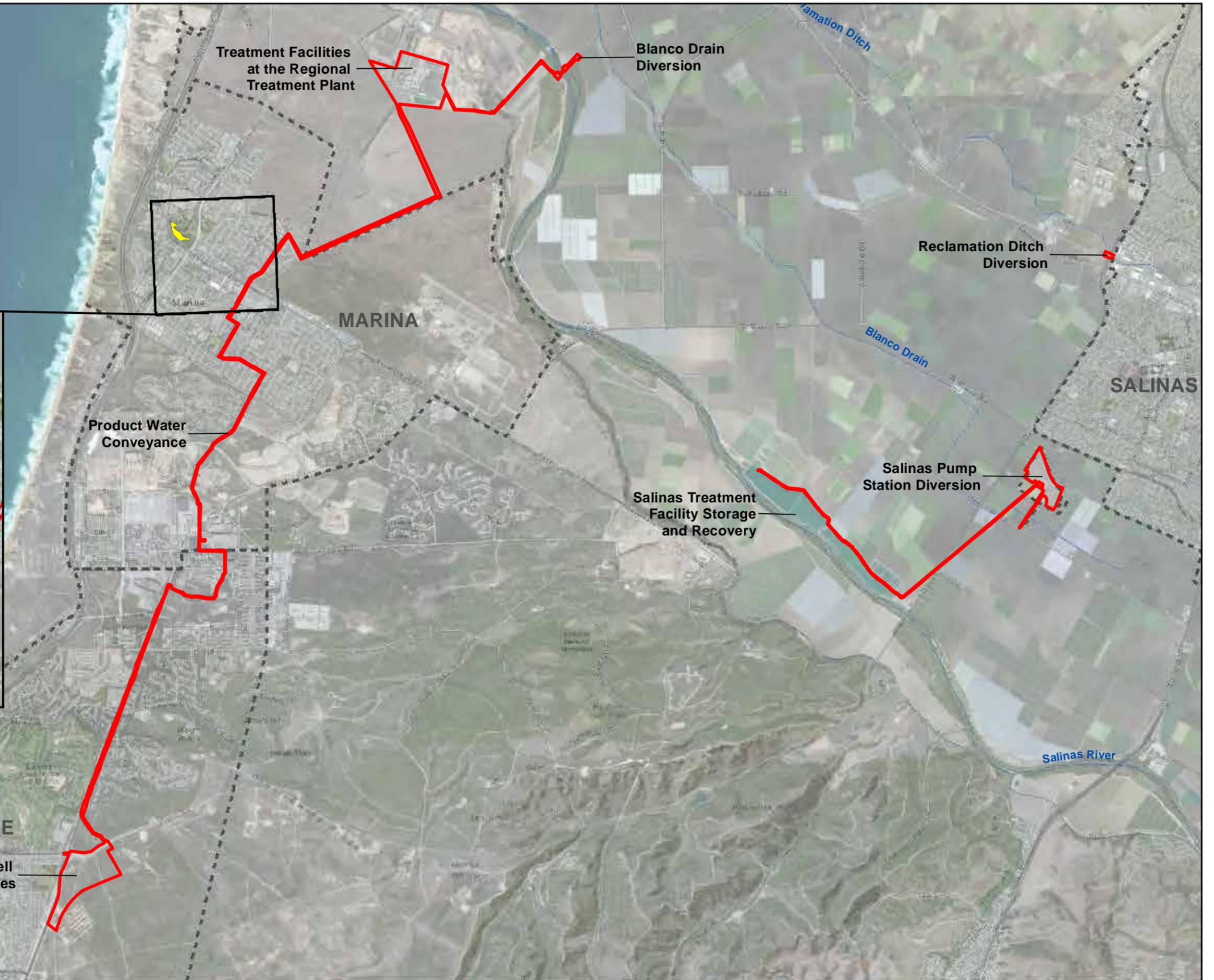
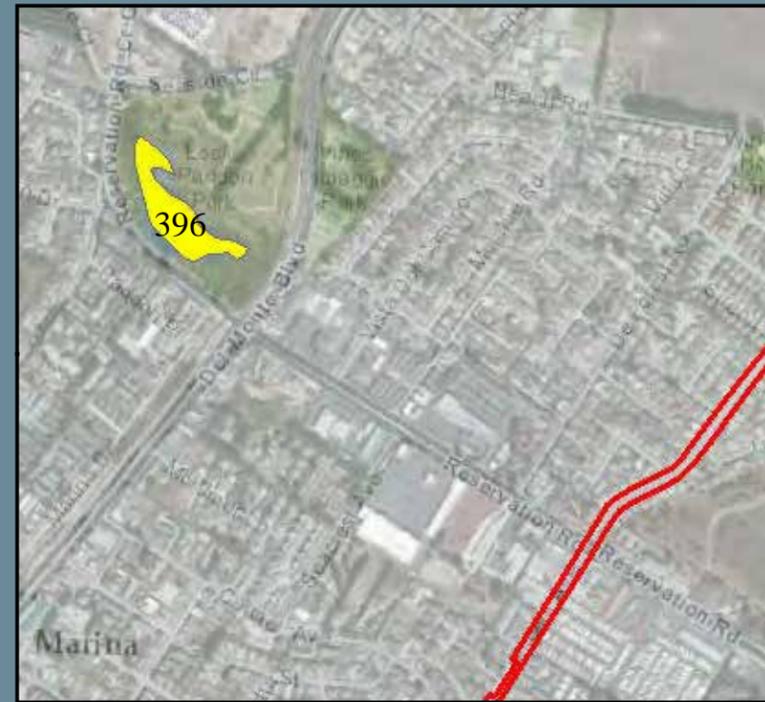
Pure Water Monterey
 Groundwater Replenishment Project
 USFWS Biological Assessment

Figure
 4-3

 *Agelaius tricolor* Occurrence
 Action Area

Labels Correspond to CNDDDB Occurrence Number
 Occurrence Data Credits: CDFW CNDDDB 2015

Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, and the GIS User Community



Agelaius tricolor Occurrence Data

C:\GIS\GIS_Projects\2013-13 GWR\Final Products\BIO\BA\Tricolored Occurrence Map.mxd

Date: 11/25/2015
 Scale: 1 in = 1 miles
 Project: 2013-13



Pure Water Monterey
 Groundwater Replenishment Project
 USFWS Biological Assessment

Figure
 4-4

Chapter 5. Conclusions and Determination

5.1 Conclusions

The official Service species list for the project was received on November 11, 2015. Three federally threatened species are known or likely to occur within the Action Area: Monterey Spineflower, Monterey gilia, and CRLF. Direct mortality of CRLF individuals may occur associated with construction activities, such as vegetation removal or site grading. Indirect impacts to CRLF may include mortality of individuals due to sedimentation and contamination of aquatic habitat a result of erosion from disturbed portions or frac-out associated with directional drilling, of the Action Area during construction.

One species proposed for listing is likely to occur within the Action Area: tricolored blackbird. Several migratory bird species protected by the MBTA also have the potential to nest and forage within the Action Area. Temporary disturbance may occur to foraging tricolored blackbirds or migratory birds during construction activities. Additionally, if construction occurs during the nesting season, activities such as vegetation removal or site grading could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment within Action Area and immediately adjacent areas of the Action Area.

There are no areas of designated critical habitat aside from designated critical habitat for steelhead within the Action Area (Please refer to the NOAA fisheries BA for a complete discussion of steelhead critical habitat).

5.2 Determination

Design features of the Proposed Action and the avoidance and minimization measures included in the approved Mitigation, Monitoring, and Reporting Plan (MMRP) and provided in Appendix E of this document will reduce the effects of the Proposed Action to Monterey spineflower, Monterey gilia, and CRLF. However, construction activities are likely to **adversely affect** Monterey spineflower, and CRLF. Additionally, construction activities are likely to **adversely affect** Monterey gilia if it is documented during protocol-level plant surveys conducted at the Injection Well Facilities site.

Avoidance and minimization measures included in this document will reduce impacts to tricolored blackbirds and other migratory birds. As such, the project **may affect, but is not likely to adversely affect** tricolored blackbirds and other migratory birds.

There are no areas of designated critical habitat within the Action Area. As such, the project **will not affect** critical habitat.

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