

Master Storm Water System Maintenance Program Annual Report

Lead Agency:



Transportation & Storm Water Department
Storm Water Division



SEPTEMBER 2016

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EXECUTIVE SUMMARY

Under Council Policy 800-04, the City of San Diego (City) is responsible for maintaining adequate drainage facilities for the protection of life and property. Due to the environmental sensitivity of the flood control channels that the City maintains, the Transportation & Storm Water Department's Storm Water Division (SWD) adopted the Master Storm Water System Maintenance Program (MMP) to perform channel maintenance activities for flood control in a manner that minimizes environmental impacts associated with channel maintenance. The MMP includes storm water facilities, specifically open channels, which the Storm Water Division has the responsibility to maintain.

A Programmatic Environmental Impact Report (PEIR) was prepared to support the MMP, and in August 2013 the City approved Site Development Permit (SDP) Number 1134892 for the program. Pursuant to Section 5.5 of the MMP and in accordance with PEIR Mitigation Measure 4.3.8, the Storm Water Division provides this Annual Report to document flood control channel maintenance activities and associated mitigation implemented over the past fiscal year, July 1, 2015 - June 30, 2016 (FY 2016).

Maintenance activities performed as part of the MMP have generally been conducted between September 15 and March 15 to avoid potential impacts to nesting birds. Formal regulatory approval and implementation of detailed protocol survey mitigation measures have allowed the City to conduct maintenance activities as-needed and weather permitting throughout the calendar year for some channel areas.

During the 2015-2016 winter, a strong El Niño climactic event brought significant rainfall to southern California. As such, channel maintenance performed as part of the MMP included planned maintenance in three channel areas and emergency maintenance in ten channel areas. Several additional emergency maintenance activities were performed in locations not included in the MMP. Summaries of emergency maintenance activities for locations not included in the MMP are not included in this report unless they are proposed to be included in the current program.

During FY 2016, the Storm Water Division performed planned maintenance activities in the following channel areas:

- Mission Bay High School and Pacific Beach/Olney Street Channels (MMP Maps 36 and 37)
- Alvarado Channel (MMP Maps 59, 60, 64)
- Tijuana River Valley Pilot Channel and Smuggler's Gulch (MMP Maps 138, a, b, c, 139)

During FY 2016, the Storm Water Division performed emergency maintenance activities in the following channel area within the MMP:

- Via De La Bandola (proposed to be added as MMP Map 130a)
- Auburn Creek Channel (MMP Maps 67, 68, 70, 77)
- Chollas Creek Channel (MMP Maps 71, 91, 93)
- Smythe Channel (MMP Map 130)
- Cottonwood Channel (MMP Maps 120-121)
- Jamacha Channel (MMP Map 115)
- Nestor Creek Channel (MMP Map 134)
- Parkside Channel (MMP Map 122)
- Washington Channel (MMP Map 84)
- Sorrento Channel (MMP Maps 11-12)

Compensatory mitigation for impacts to wetland resources is required as part of the MMP. Wetlands mitigation for the Tijuana River Pilot Channel and Smuggler's Gulch channels (MMP Maps 138 a, b, c, and 139) was continued during FY 2016 within and adjacent to the channel maintenance footprint. Wetlands mitigation for the Murphy Channel and Alvarado Channel maintenance projects has been reserved at a City mitigation site near Qualcomm Stadium. Wetlands mitigation for Sorrento Valley Reach 3 and Mission Bay High School and Pacific Beach/Olney Street Channels is in implementation. Site suitability searches are underway for mitigation related to wetland resources from emergency maintenance activities that occurred this past year. Uplands mitigation will be in the form of payment into the City's Habitat Acquisition Fund in accordance with Mitigation Measure 4.3.11 of the PEIR. The Storm Water Division maintained compliance with all regulatory permits and agreements during the maintenance activities for all channels.

1 INTRODUCTION

The City of San Diego (City) operates and maintains approximately 50 miles of drainage channels to convey storm water and urban runoff for the purpose of reducing flood risk and to provide essential public services. Maintenance of channels primarily involves the removal of vegetation and/or sediment to maximize storm water conveyance capacity of the City's municipal separate storm sewer system (MS4). Additionally, maintenance activities can also include repair of damaged infrastructure and removal of invasive species and debris.

Under Council Policy 800-04, the City of San Diego is responsible for maintaining adequate drainage facilities to convey storm water runoff in an efficient, economic, environmentally and aesthetically acceptable manner for the protection of property and life. The City's storm water system serves to convey storm water flow from the built environment to receiving waters in order to protect the life and property of its citizens from potential flooding. The system also serves to convey urban runoff from development such as irrigated landscaped areas, driveways, and streets that flow into drainage facilities and, ultimately, into receiving waters and the ocean. Open facilities, such as channels, can support natural resources including wetland habitat. The long-term performance of the entire system is dependent upon ongoing and proper maintenance of channel sections essential for flood control.

Due to the environmental sensitivity of the natural resources associated with some of the flood control channels, the MMP was developed to ensure that the City complied with various federal, state, and local laws intended to protect and/or minimize impacts to environmental resources (City of San Diego 2011a and b, October 2011). These regulations include, but are not limited to the Clean Water Act (CWA), Endangered Species Act (ESA), California Coastal Act, California Fish and Game Code, California Porter-Cologne Act, California Environmental Quality Act (CEQA), and the San Diego Municipal Code. Additionally, as part of the environmental permitting process, the City works with the public, various stakeholders, non-governmental organizations, and environmental groups, in an effort to avoid, minimize, and/or mitigate impacts.

The goal of the MMP is to provide a comprehensive approach to storm water system maintenance. It is intended to achieve the following major objectives:

1. Fulfill the mandate of Section 26.1 of the San Diego City Charter to provide essential public works and public health services by maintaining the storm water conveyance system for the purpose of reducing flood risk;
2. Develop a comprehensive program that will govern the future maintenance of the City's storm water system in an efficient, economic, environmentally and aesthetically acceptable manner for the protection of property and life, in accordance with Council Policy 800-04;

3. Ensure implementation of Best Management Practices (BMPs) and maintenance protocols during maintenance activities to avoid and/or minimize effects to environmental resources, and incorporate the analysis of the operational and pollution prevention benefits of each proposed project; and
4. Create an integrated comprehensive review process for annual maintenance activities that will facilitate operational needs, authorizations from local, state and federal regulatory agencies and include consideration of citizen and other stakeholder interests.

In accordance with these goals and objectives, the Storm Water Division (SWD) prioritizes channel maintenance facilities based upon hydrology, potential risk of flooding, and public input. The SWD conducts appropriate technical analyses required by the MMP's Final Recirculated Programmatic Environmental Impact Report (PEIR) to determine the scope, scale, and environmental impacts of each channel prioritized for maintenance in order to justify the need for maintenance activities and obtain appropriate environmental permits from up to six regulatory agencies. Finally, the SWD implements the planned and emergency channel maintenance activities, ensures permit conditions and mitigation measures are met for each project, and reports annually on channel maintenance and associated compensatory mitigation conducted as part of the MMP.

The remainder of this report discusses the activities implemented by the Storm Water Division over the past year to meet the goals of the MMP. As required by the MMP and PEIR, this summary includes:

- Tabular summary of the biological resources/sensitive vegetation impacted during maintenance and the mitigation;
- Master table containing the following information for each individual storm water facility or segment which is regularly maintained:
 - Date and type of most recent maintenance;
 - Description of mitigation which has occurred; and
 - Description of the status of mitigation which has been implemented for past maintenance activities.
- Results of water quality tests completed before and/or after maintenance;
- Discussion of vegetation growth and sediment accumulation since last maintenance event;
- Estimate of the conveyance capacity resulting from the past year's maintenance.
- Scaled map of each affected storm water facility illustrating pre- and post-maintenance vegetation;
- Summary of the status of mitigation which has been carried out during the current and previous years to mitigate for impacts to upland and wetland vegetation, and well as sensitive species;

- Two digital date-stamped photographs of each of the areas that were maintained in the current year;
- Description of any remedial actions and the outcome of their implementation for each affected storm water facility;
- A list of all storm water facilities anticipated to be maintained in the coming year; and
- A preliminary estimate of sensitive biological and/or cultural resources to be impacted in the coming year with each maintenance activity and mitigation required for anticipated impacts.

The results of this report will be presented as an informational item to the Environment Committee (formerly the Natural Resources and Culture Committee) of the San Diego City Council and the Community Planners Committee and will be provided to the City of San Diego Development Services Department, California Department of Fish and Wildlife, Regional Water Quality Control Board, US Fish and Wildlife Service, and US Army Corps of Engineers.

It should be noted that the MMP identifies a specific planning, impact assessment and mitigation process for channel maintenance activities within portions of the jurisdiction of the City. The channel facilities included in the MMP's certified PEIR includes 113 facility segments, covering a linear distance of 32 miles. A lawsuit was filed regarding the MMP (San Diegans for Open Government et al. v. City of San Diego, San Diego Superior Court Case No. 37-2011-00101571), and the City entered into a settlement agreement (Settlement Agreement), which renders the PEIR document null and void in 2018. Accordingly, the City is currently engaged in a process to identify the components of an integrated Waterways Maintenance Plan (WMP) that will replace the MMP after 2018.

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2 PLANNED CHANNEL MAINTENANCE ACTIVITIES

Under the MMP, the SWD identifies and prioritizes channel maintenance work for the coming year that considers, as a primary objective, each channel segment's ability to meet SWD's flood risk management objectives. A list of priority channels is prepared that also considers environmental resources and mitigation opportunities, relevant water quality regulations and pollutant priorities in each watershed, public input, and budget constraints. Once the priority list has been determined, the City conducts a number of individual technical assessments that analyze potential impacts to biological, cultural, and water quality resources associated with each facility.

First, an Individual Hydraulic and Hydrology Assessment (IHHA) is completed to assess the current channel conveyance capacity, need for maintenance, determine the minimum amount of sediment and/or vegetation that must be removed to improve flood conveyance, and determine if any structures or actions are required to minimize impacts to water quality and/or provide improved erosion control during or after maintenance. When an IHHA is completed for a channel identifying the need for maintenance, an Individual Maintenance Plan (IMP) is developed to document the maintenance area and methods that will be used. Based upon the IMP, technical assessments for biological resources, historical resources, noise, and water quality are completed to determine potential environmental impacts and determine specific mitigation measures to minimize impacts in accordance with the PEIR.

Once these studies are completed, the individual channel projects are permitted through the City of San Diego Substantial Conformance Review (SCR) process as well as through environmental agencies such as the US Army Corps of Engineers, Regional Water Quality Control Board, California Department of Fish and Wildlife, and California Coastal Commission, as appropriate depending on the type of maintenance conducted and the location of the facility.

Channel maintenance activities may commence after all required permits and authorizations are obtained and pre-project permit conditions are met. Channel maintenance is generally restricted by the MMP and various regulatory permits to occur from September through February/March to avoid sensitive bird breeding seasons unless additional biological surveys are conducted and demonstrate no adverse impacts to nesting birds. In addition, wet weather and other factors may limit maintenance activities during the rainy season, typically October through April.

Summary maintenance information, including vegetation impacts and mitigation for channels maintained during the FY 2016 season are presented in Table 1 – MMP Facilities Maintained in Fiscal Year 2016 and Associated Mitigation. Figure 1 in Appendix A depicts an overview of the location of these facilities and Figure 2 shows associated mitigation.

Table 1
MMP Facilities- Planned Maintenance and Associated Mitigation Fiscal Year 2016

Map No.	Facility	Maintenance Date(s)	Maintenance Type	Vegetation Impacts (acres)	Vegetation Type	Mitigation
36, 37	Mission Bay High School & Pacific Beach Dr/Olney Dr Channels	3/7/2015 - Fall 2015 (Ongoing)	Sediment and Vegetation Removal	0.310	Freshwater Marsh	0.34 acre at El Cuervo Del Sur Wetlands Mitigation Site and 0.96 acre at Los Penasquitos Preserve Wetlands Enhancement Site
				0.300	Non-native Grasslands	
				0.340	Non-Native Vegetation	
				0.220	Disturbed Habitat	
				0.380	Developed Habitat	
				<i>1.550</i>	<i>Subtotal</i>	
138 a, b, c, 138, 139	Tijuana River Pilot Channel and Smuggler's Gulch	Sept 2015-ongoing	Sediment and Vegetation Removal	No new impacts. All work occurred within areas previously maintained.		Mitigated with first maintenance event. 1) 9.43 acres at Tijuana River Emergency Channel Maintenance Wetland Mitigation Project (i.e., mitigation for 1993 Pilot Channel Construction) and 2) 8.62 acres of Enhancement within and adjacent to maintenance footprint. No new mitigation proposed.
59, 60, 64	Alvarado Channel	Sept 2015-ongoing	Sediment and Vegetation Removal	0.630	Freshwater Marsh	3.55 acres of Riparian Rehabilitation and Enhancement as part of the Stadium Mitigation Plan
				0.450	Southern Willow Scrub	
				0.030	Natural Flood Channel	
				0.120	Disturbed Habitat	
				0.010	Non-Native Riparian	
				0.070	Non-native / Ornamental	
				<i>1.310</i>	<i>Subtotal</i>	
MMP Total Vegetation Impacts (acres)				2.86		

* Impacts contained wholly within existing channel maintenance footprint. No new impacts.



Table 2
MMP Facilities- Emergency Maintenance and Associated Mitigation Fiscal Year 2016

Map No.	Facility	Maintenance Date(s)	Maintenance Type	Vegetation Impacts (acres)	Vegetation Type	Mitigation
130a	Via De La Bandola Channel ¹	11/25/2015-12/6/2016	Removal of vegetation and sediment	0.101	Freshwater Marsh (concrete-lined)	Suitable site search underway
				0.020	non-native vegetation (concrete-lined)	
				0.090	Southern Willow Scrub (concrete-lined)	
				<i>0.211</i>	<i>Subtotal</i>	
67-68	Auburn Creek Channel	12/15/2015-1/12/2016	Removal of Vegetation and Sediment	0.050	Disturbed Wetland (Arundo)	Temporary impacts to 0.09 acre Natural Flood Channel involved restoring the channel to original condition. Mitigation not required for impacts to Arundo and unvegetated concrete lined channel.
				0.090	Natural Flood Channel	
				0.070	Developed, Unvegetated Concrete-Lined Channel	
				<i>0.210</i>	<i>Subtotal</i>	
70	Auburn Creek Channel	1/28/2016-2/12/2016	Removal of Vegetation and Sediment	0.010	disturbed Mule Fat Scrub	Suitable site search underway
				0.050	southern willow scrub	
				0.010	Disturbed Wetland (Arundo)	
				0.040	Natural Flood Channel	
				0.003	disturbed land	
				<i>0.113</i>	<i>Subtotal</i>	
77	Auburn Creek Channel	3/4/2016-3/5/2016	Removal of Vegetation and Sediment and Bank Repair	0.030	Riparian Scrub	Suitable site search for riparian scrub underway.. Mitigation not required for impacts to disturbed land.
				0.120	Natural Flood Channel	
				0.030	Disturbed land	
				<i>0.180</i>	<i>Subtotal</i>	
71	Chollas Creek	1/12/2016-4/22/2016	Removal of Vegetation and Sediment	0.020	<i>disturbed southern willow scrub</i>	Suitable site search underway
				0.060	<i>Natural Flood Channel</i>	
				0.110	<i>disturbed wetland (palms)</i>	

¹ Proposed to be added to the MMP.

Table 2
MMP Facilities- Emergency Maintenance and Associated Mitigation Fiscal Year 2016

Map No.	Facility	Maintenance Date(s)	Maintenance Type	Vegetation Impacts (acres)	Vegetation Type	Mitigation
				0.210	<i>disturbed wetland (palms) (CDFW jurisdiction)</i>	
				0.040	<i>southern willow scrub (CDFW jurisdiction)</i>	
				0.020	<i>disturbed land</i>	
91-93	Chollas Creek	12/30/2015-1/19/2016	Removal of Vegetation and Sediment	1.690	developed concrete lined channel	Suitable site search underway
				0.340	Natural Flood Channel	
				0.230	freshwater marsh	
				0.800	freshwater marsh (concrete-lined)	
				0.040	open water	
				0.060	open water (concrete-lined)	
				0.060	Disturbed Wetland (Arundo)	
				0.040	disturbed land	
				<i>3.260</i>	<i>Subtotal</i>	
130	Smythe Channel Emergency	2/3/2016-4/21/2016	Removal of Vegetation and Sediment	0.200	Freshwater marsh	A site has preliminarily been identified and is in the conceptual planning stage.
				0.390	Southern Willow Scrub	
				0.380	southern willow scrub (CDFW and City jurisdictional)	
				0.030	Non-native Grasslands	
				0.590	disturbed land	
				0.080	ornamental	
				<i>1.670</i>	<i>Subtotal</i>	

Table 2
MMP Facilities- Emergency Maintenance and Associated Mitigation Fiscal Year 2016

Map No.	Facility	Maintenance Date(s)	Maintenance Type	Vegetation Impacts (acres)	Vegetation Type	Mitigation
120-121	Cottonwood Channel	12/26/2015-1/2/2016	Removal of Vegetation and Sediment	0.060	disturbed southern willow scrub (concrete-lined)	Suitable site search underway
				0.060	disturbed freshwater marsh (concrete-lined)	
				0.030	disturbed wetland (palm-dominated; concrete-lined)	
				<i>0.150</i>	<i>Subtotal</i>	
115	Jamacha Channel	1/3/2016	Removal of Vegetation and Sediment	0.005	Disturbed Wetland	Suitable site search underway
				0.100	Disturbed Wetland (Arundo dominated)	
				0.040	Natural Flood Channel	
				<i>0.145</i>	<i>Subtotal</i>	
134	Nestor Creek Channel	2/5/2016-2/6/2016	Removal of Vegetation and Sediment	0.020	disturbed freshwater marsh	Suitable site search underway
122	Parkside Channel	12/23/15-12/26/15	Removal of Vegetation and Sediment	0.020	freshwater marsh (concrete-lined)	Suitable site search underway
				0.030	disturbed freshwater marsh (concrete-lined)	
				0.110	disturbed wetlands (palm dominated; concrete-lined)	
				<i>0.160</i>	<i>Subtotal</i>	

**Table 2
MMP Facilities- Emergency Maintenance and Associated Mitigation Fiscal Year 2016**

Map No.	Facility	Maintenance Date(s)	Maintenance Type	Vegetation Impacts (acres)	Vegetation Type	Mitigation
84	Washington Channel	1/20/16-1/30/16	Emergency Removal of Vegetation and Sediment	0.330	Developed, Unvegetated Concrete-Lined Channel	Suitable site search underway
				0.030	Concrete-lined disturbed wetland (palm-dominated)	
				0.020	disturbed freshwater marsh (concrete-lined)	
				0.250	Disturbed Wetland (Arundo dominated)	
				<i>0.630</i>	<i>Subtotal</i>	
11-12	Sorrento Creek	3/6/2016-6/16/2016	Emergency removal of debris and concrete repair	0.71	Developed Concrete Lined Channel	Mitigated with initial construction and first maintenance event. Mitigation was completed for the earthen portions at the El Cuervo Wetland Mitigation Site. Mitigation for concrete portions are mitigated at the El Cuervo Del Su and Los Penasquitos Canyon Preserve Enhancement sites.
				0.08	Disturbed Freshwater Marsh (earthen)	
				0.28	Freshwater Marsh (concrete)	
				0.04	Open water	
				0.12	Southern Willow Scrub	
				0.006	Natural Flood Channel	
				0.003	Disturbed Wetland (Arundo)	
				<i>0.630</i>	<i>Subtotal</i>	
MMP Total Vegetation Impacts (acres)				8.45		

* Impacts contained wholly within existing channel maintenance footprint. No new impacts.

Additional details regarding channels that were maintained during the FY 2016 season are provided in subsequent sections of this report. Appendix A includes location maps for facilities maintained during FY 2016.

A Master Storm Water Facility and Mitigation List reflecting facilities that have been maintained and impacts mitigated under the MMP for which no additional mitigation is required are included in Appendix B.

2.1 MISSION BAY HIGH SCHOOL AND PACIFIC BEACH/OLNEY STREET CHANNELS (MMP MAPS 36 AND 37)

In order to improve conveyance capacity, general maintenance of the Mission Bay High School (MBHS) and Pacific Beach Drive/Olney Drive (PBO) Channels required removal of vegetation, sediment, and trash over an 8,600 square foot area of the MBHS concrete-lined channel and a 16,146 square foot area in the PBO earthen channel (Figures 3 and 4). The most recent maintenance started March 7, 2015 and continued intermittently until February 2016. Initial maintenance and monitoring of the MBHS channel was completed on April 9, 2015, while maintenance of the PBO channel was delayed due to the discovery of an active Anna's hummingbird (*Calypte anna*) nest adjacent to the channel maintenance work area. A no-work buffer was established around the nest site until the young had fledged, and maintenance could resume later that month. A November 2015 inspection identified additional maintenance would be necessary to remove regrowth of vegetation in the PBO channel. This maintenance was delayed until February 2016 due to reduced availability of City staff resources and prioritization of emergency maintenance activities in other City-owned channel areas in response to anticipated storm conditions associated with El Niño climactic conditions. The channel was accessed through previously disturbed staging areas and appropriate best management practices (BMPs) were implemented as part of the MMP protocol.

The IHHA for the most recent maintenance describes vegetation and sediment accumulation observed during site visits in August 2012 and September 2013. Current conditions in the MBHS and PBO channel sections were slightly different than the IHHA. In 2012, sediment mixed with organic material was noted as having a depth of approximately three to four inches and well-established and dense freshwater marsh vegetation and non-native grasslands were observed within the MBHS channel. Additionally, the outlet of the existing 27-inch RCP storm drainpipe that discharges into the channel was significantly obstructed by the vegetation growth within the concrete channel and the side slope west of the MBHS channel. Ornamental vegetation, mainly unmaintained ice plant (*Carpobrotus edulis*), had overgrown to the degree that it had covered the channel's west side in its entirety and, in some instances, had covered the channel bottom and reached the east side of the channel. The PBO channel had similar vegetation growth, including iceplant growing from one side of the channel to the other, and sediment (also mixed with organic material) was recorded as approximately six to seven inches. In 2013, the sediment accumulation in the entire MBHS/PBO channel was unchanged, but the vegetation was noted as being significantly denser and taller since

the previous visit. Based upon photos in the IHHA, the pre-maintenance coverage for both vegetation and sediment was considered approximately 100%.

Mitigation for wetland impacts to the MBHS and PBO channels has been allocated within the Los Peñasquitos Canyon at the El Cuervo del Sur Wetland Creation Project and the Los Peñasquitos Canyon Wetlands Enhancement Project. Upland impacts to Non-native grassland will be mitigated through transfer of credits from the City's Marron Valley Cornerstone Lands Bank. Mitigation project status is discussed below in the Mitigation Projects section.

The project was compliant with all environmental permits and no remedial actions were required.

2.1.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

A site inspection in November 2015 identified the need for additional maintenance to remove vegetation in order to increase the conveyance capacity and reduce the risk of flooding to adjacent public and private property. In February 2016, prior to the end of the annual facility maintenance period, approximately 900 linear feet of vegetation was removed from the PBO channel. Routine inspection and assessment of this trapezoidal earthen channel is ongoing because the regrowth of vegetation contributes to conveyance restrictions. Photographs showing pre- and post- maintenance conditions of the channel are included in Appendix C.

The conveyance capacity of the MBHS Channel pre-project was determined to be nearly inoperable, as cross section analysis indicated near complete channel conveyance blockage from existing vegetation. The estimated conveyance capacity was approximately only 30% of the 1 year storm event. After maintenance, the MBHS Channel is estimated to convey storm flows up to the 2-year storm event. Pre-maintenance, the PBO Channel had a maximum conveyance capacity estimate of approximately the 2-year storm event. The PBO Channel's conveyance capacity after maintenance is estimated to have increased to approximately the 5-year storm event.

2.1.2 WATER QUALITY MONITORING SUMMARY

The MMP requires an Individual Water Quality Assessment (IWQA) analysis. The IWQA provides a quantitative framework for assessing maintenance-related water quality impacts by evaluating the potential pollutant removal capacity of a channel (in the pre-maintenance condition) with the potential benefits or impacts resulting from channel maintenance (i.e., removal of sediment and vegetation). This quantitative framework however was subject to legal challenge, and while it provides information regarding water quality impacts/benefits of maintenance, it can no longer be utilized as substantial evidence for CEQA. A summary of IWQA results is provided below for informational purposes.

Removal of sediment from within the channels results in removal of pollutants that could potentially contribute to a degradation in downstream water quality, human health impacts, and native vegetation impacts. It should be noted that dry weather runoff discharging from the MBHS and PBO channels is diverted by the Mission Bay Sewage Interceptor System (MBSIS) box to the sanitary sewer system (IWQA 2014). This dry weather runoff diversion system provides a unique water quality benefit for this channel area in that dry weather flows, which can contain urban pollutants from various sources, are diverted to the sanitary sewer prior to discharge to receiving waters. Accordingly, the potential dry weather pollutant removal function of vegetation removed as part of the maintenance activities is offset by the downstream diversion of dry weather flows to the sanitary sewer for the MBHS and PBO channels.

In accordance with the Coastal Development Permit (CDP) and SDP, the City is implementing a suite of water quality improvement activities including the distribution of pollution prevention outreach materials; targeted street sweeping; increased inspections of storm drains within the project's drainage area; and several special studies. It is anticipated that application of these activities within the priority channel drainage area will lead to long-term water quality benefits.

2.2 TIJUANA RIVER PILOT CHANNEL AND SMUGGLER'S GULCH(MMP MAPS 138, 139, 138A, B, AND C)

The purpose of periodic maintenance of the Tijuana River Pilot Channel (Pilot Channel) and Smuggler's Gulch (Figures 5 and 6) is to provide flood protection to surrounding properties and to assist in protection of the Tijuana River National Estuarine Research Reserve from impacts due to downstream transport of accumulated sediment, trash, and debris from areas upstream of the project area.

Maintenance was last conducted in the 2013-2014 season and consisted of excavating accumulated vegetation, sediment, and trash that significantly reduced the capacity of the channels to convey storm flows. The entire channel was not maintained at that time due to inundation of the channel during storms.

Within the portions of the channels that were previously maintained, vegetation cover went from 0% immediately following the last maintenance event to approximately 2% cover prior to the current (FY2016) maintenance event. The Pilot Channel was relatively unvegetated with no mature vegetation immediately prior to maintenance, and Smuggler's Gulch was very sparsely vegetated with herbaceous weeds such as Mexican Tea (*Dysphania ambrosioides*) and wild radish (*Raphanus sativus*). Approximately 5-7 feet of sediment was removed during the 2013-2014 maintenance event and approximately the same amount of sediment had accumulated in the channel prior to the current maintenance event.

The full length of Smuggler's Gulch (a historic agricultural ditch), was cleared of vegetation and excavated during the FY 2016 maintenance period. However, only a portion of the permitted 5,400 linear feet of the Pilot Channel length was able to be maintained due to inundation from rain events, and maintenance is still ongoing as of the writing of this report. Approximately 1,900 linear feet of the Pilot Channel, including three turnarounds, has been maintained so far in the FY 2016 maintenance period. The excavation of the Pilot Channel was to a 15 foot bottom width and a 23 foot top width; Smuggler's Gulch was excavated to a width (top and bottom) of 15 feet. Approximately 2.69 acres of jurisdictional wetlands/waters, consisting of mainly open channel and open water, were impacted during maintenance activities within the Pilot Channel. Photographs showing pre- and post- maintenance conditions of the channel are included in Appendix C. Figures 5 and 6 in Appendix A display pre-maintenance vegetation only, as channel maintenance is still ongoing.

Approximately 6,954 tons of material (i.e., sediment, trash, vegetation, and debris) was excavated from the Smuggler's Gulch and Pilot Channels during the 2015-2016 maintenance cycle and appropriately disposed of at the Miramar landfill. Some vegetation material remains on site due to a recently noted pest in the Tijuana River Valley– the Polyphagous Shot Hole Borer (PSHB) (*Euwallacea* sp.). . In order to minimize the spread of the PSHB and associated fungus, the City has coordinated with Dr. Akif Eskalen of the University of California Riverside (UCR), Department of Plant Pathology and Microbiology and the U.S. Fish and Wildlife Service to implement recommendations to cut and chip dead, infected plant material on site to <1 inch and then solarize under a clear tarp for several weeks to months, depending on season. .

The progress of this maintenance event was significantly slowed by winter El Niño rains. Due to channel configuration and hydrology, winter storms saturated the channel areas limiting access for heavy equipment used in maintenance. Due to the delay, a request was made to relevant environmental permitting agencies to continue work into the bird breeding season (i.e., past March 15) provided that monitoring protocols are followed to ensure protection of nesting and sensitive birds. Formal regulatory approval and implementation of detailed protocol survey mitigation measures have allowed the City to conduct maintenance activities as-needed and weather permitting throughout the calendar year. Thus work is ongoing and will likely continue to the start of the FY 2017 maintenance season for this site. The City is pursuing approval for work during the FY 2017 maintenance season via SCR and notifications to the appropriate permitting agencies.

The project was compliant with all environmental permits and no remedial actions were required.

Details on the mitigation efforts for this channel area, which include removal of invasive plant material within the channel footprint and adjacent to the channel, are presented in the Mitigation Projects section of this report.

2.2.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

The pre-project IHHA results indicated that, in the pre-project condition, the Pilot channel was at 5% of its calculated design capacity and could contain less than a 2-year storm event flow within its banks. With the sediment and vegetation removed, the conveyance capacity of the Pilot channel would increase from approximately 10 cubic feet per second (cfs) to approximately 200 cfs, although the channel would still contain less than a 2-year storm.

The IHHA results indicated that, in the pre-project condition, Smuggler's Gulch channel was at 89% of its calculated design capacity and could contain the 2-year storm event flow within its banks. With the sediment and vegetation removed, the conveyance capacity of Smuggler's Gulch channel would increase from 800 cfs to 900 cfs and convey the 2-year storm.

2.2.2 WATER QUALITY MONITORING SUMMARY

The IWQA for the project noted that a dry weather diversion structure was installed in March 2009 at the Smuggler's Gulch Channel crossing at the international border. This infrastructure prevents dry weather flows from entering Smuggler's Gulch and essentially eliminates direct dry weather input to the Pilot Channel.

Due to the elimination of dry weather flow, combined with the fact that much of the Smuggler's Gulch is void of vegetation and the Pilot Channel harbors primarily non-native and invasive plant species, there is little potential for water quality impacts from channel maintenance resulting from the loss of pollutant assimilative capacity through vegetation removal. Given the unique conditions, including the intermittent/ephemeral stream flow of the project area, the IWQA employed a modified sampling strategy—sediment characterization. The results of the IWQA showed that there is a pollutant reduction benefit due to sediment removal as part of the project. Even so, the City, in accordance with the SDP and CDP, is implementing a suite of water quality improvement activities including the distribution of pollution prevention outreach materials prior to the start of channel maintenance activities; targeted street sweeping; increased inspections of storm drains within the project's drainage area; and several special studies. Coordination with the Tijuana River Valley Recovery Team is ongoing. It is anticipated that application of these activities within the priority channel drainage areas will lead to long-term water quality benefits.

Additionally, water quality monitoring has been required by the Water Quality Certification No. 09C-077 issued by the Regional Water Quality Control Board. As conditions permit, water quality samples are collected at three locations upstream and downstream of the maintenance area in accordance with the *Tijuana River Receiving Waters Monitoring and Quality Assurance Project Plan* (AMEC, May 2013) at two intervals: pre-maintenance and during maintenance.

In 2015, water quality samples were collected at the upstream and downstream Pilot Channel locations only, as Smugglers Gulch was dry throughout each monitoring event. Nutrient concentrations were consistently higher at the upstream Pilot Channel location than downstream. Alkalinity and chloride were higher at the downstream Pilot Channel location, likely due to the tidal influence in this area. The chlorophyll-a concentration was higher at the downstream Pilot Channel location. The Total Suspended Solids (TSS) concentration and turbidity at the upstream Pilot Channel location were 2.8 and 2.1 times higher, relative to the downstream location, respectively. Dissolved Oxygen was depressed at both Pilot Channel stations, however the upstream station had a severely depressed concentration. As more data is collected, statistical analyses will help identify meaningful trends over the course of the project.

As conditions permit, water quality samples will continue to be collected and analyzed annually for five years as required.

2.3 ALVARADO CHANNEL MAINTENANCE (MMP MAPS 59, 60, 64)

The Upper/Lower Alvarado Creek Maintenance Project included the mechanized removal of sediment, vegetation, trash and debris in several sections of Alvarado Creek – adjacent to San Diego State University (SDSU), south of Mission Gorge Place, and east and west of Fairmount Avenue (Figures 7-10). The maintenance is intended to restore the original conveyance capacity of these channels to provide flood control for the protection of life and property. Due to the potential for erosive velocities, a temporary check dam was installed at the downstream end of the maintenance area within the Upper Alvarado Creek to control anticipated erosive velocities immediately post-maintenance. The maintenance did not include any modification that would change the character, scope, or size of the original channel design, and would not increase the conveyance capacity of the channels beyond their as-built condition. Maintenance began on Sept 25, 2016 and was completed in July 2016.

Approximately 2,547 linear feet of the channel has been maintained. Approximately 1.31 acres of jurisdictional wetlands/waters were impacted in FY 2016, consisting of Freshwater Marsh, Southern Willow Scrub, Open Water, Non-native Riparian, Disturbed Habitat, and Non-native vegetation/Ornamental vegetation types. Photographs showing pre- and post- maintenance conditions of the channel are included in Appendix C.

Approximately 3,710 cubic yards (2,583 tons) of material (i.e., sediment, trash, vegetation, and debris) was removed during the FY 2016 maintenance period and appropriately disposed of at the Miramar landfill.

The progress of this maintenance event was significantly slowed by winter El Niño rains. Due to channel configuration and hydrology, winter storms saturate the channel area limiting access for

heavy equipment used in maintenance. Work was completed in July 2016 after nesting bird surveys were conducted and ensured no active nests were present within the work area.

Maintenance in the Upper/Lower Alvarado Creek was last conducted during the FY 2011 period through emergency actions. The emergency maintenance was required to respond to a sudden and unexpected occurrence of significant rainfall over a two-day period in December 2010, which caused flooding adjacent to Alvarado Channel. To reduce flood risk, the SWD removed sediment, debris and vegetation. From 2011 to 2015, additional sediment accumulated in the channel and vegetation regrowth reduced channel conveyance capacity and necessitated maintenance to reduce flood risk to adjacent property.

The project was compliant with all environmental permits and no remedial actions were required.

Mitigation has been allocated at the Stadium Mitigation Site. See the Mitigation Projects section within this report for more details.

2.3.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

The pre-project IHHA results identifies channel capacity by stream reach. Reaches owned by the City of San Diego were maintained. In Lower Alvarado, reaches 2A (LR2A) (west of Mission Gorge Road), 2B (LR2B) (east of Mission Gorge Road), and 4 (LR4) (south of Mission Gorge Place) were maintained (Figures 7 and 8). In the pre-project condition, LR2A and LR2B convey approximately the 2- to 5- year storm, and LR4 was estimated to be unable to convey the 2-year storm event. Sediment and vegetation removal was estimated to increase conveyance capacity in LR2A by 2300 cfs (135%), LR2B by 550 cfs (44%), and LR4 by 350 CFS (37%). Maintenance did not increase the capacity of the channel to be above a 2-year storm capacity throughout the length of the channel (i.e., through reaches 1 and 3), but significantly reduces flood risk throughout portions of channel maintained by the City. After maintenance, LR2A is estimated to convey approximately the 25- to 50-year storm event, while LR2B and LR 4 can convey approximately the 2- to 5-year storm event. In Lower Alvarado, hydraulics are constrained by the capacity of an existing triple box culvert under Fairmount Avenue, the undersized central earthen portion of the channel, and whether or not maintenance is conducted in adjacent privately-owned reaches.

In Upper Alvarado (the portion near SDSU), reach 2 (Upper Reach 2, or UR2) was maintained (Figures 9 and 10). In the pre-project condition, UR2 was able to convey approximately the 5- to 10-year storm event flow. With the sediment and vegetation removed, the conveyance capacity is estimated to increase to a 10- to 35-year storm. As part of maintenance, a temporary check dam was installed to comply with MMP requirements, as UR2 experiences erosive velocities during larger storms. The check dam reduces the conveyance capacity of the channel after maintenance to approximately a 5- to 10-year storm. The check dam will remain in place until the establishment of new vegetation, but

the fencing portion shall be removed during a storm if leaving it in place would cause harm to life or property. After adequate vegetation establishes, the check dam can be removed and the Upper Alvarado conveyance capacity will increase to approximately the 10- to 35-year storm.

2.3.2 WATER QUALITY MONITORING SUMMARY

For both Lower and Upper Alvarado, the estimated pollutant removal when maintained exceeds the estimated pollutant removal without maintenance for each constituent, with the exception of nitrate. Nitrate was found to have a potential impact greater than benefit, however, this potential temporary increase does not represent a significant impact to water quality. Periodic removal of vegetation prevents the reintegration of nitrate into the water via natural decomposition of vegetation that is carrying collected nitrate. In addition the regrowth phase of vegetation, facilitated by periodic vegetation removal, allows for optimal sorption rates of pollutants in the vegetation, including nitrate. Lastly, the measured water column nitrate concentration is below the suggested benchmarks established in the Water Quality Control Plan for the San Diego Basin (RWQCB, 1994).

The IWQA results indicate the proposed sediment removal during maintenance of the Lower Alvarado Channel would remove a larger pollutant load than that which is theoretically removed under existing conditions during dry weather flow, providing an overall water quality benefit. Accordingly, sediment excavation will prevent the resuspension and downstream transport of sediment-bound pollutants during wet weather, and regrowth of fresh water marsh species will further enhance pollutant removal from the channel, likely within one year. As noted above however, the Settlement Agreement provides for specific water quality improvement BMPs to be implemented for channels maintained under the MMP within the SDP framework, regardless of IWQA results.

In accordance with the SDP, the City is increasing the frequency of catch basin inspection and as-needed cleaning for one year after maintenance. For every segment that is cleared, the City shall conduct an inspection and cleaning if necessary of every catch basin within 100 feet of the maintained segment, and conduct additional quarterly inspections and as-needed cleaning.

3 EMERGENCY MAINTENANCE ACTIVITIES

During the 2015-2016 wet season, a strong El Niño climactic event brought significant rainfall to southern California. As such, channel maintenance performed as part of the MMP included emergency maintenance in ten MMP channel areas. Additional emergency maintenance activities were performed in storm water facilities not included in the MMP. Summaries of emergency maintenance activities for MMP channel areas are included in this report.

Emergency channel maintenance activities are generally limited to sediment, debris, and/or vegetation removal required to alleviate flow conveyance impediments determined to pose an imminent flood risk to human safety or properties located adjacent to the channel. Emergency channel maintenance activities may include removal of a clog or blockage within a channel, removing or widening a constriction point, removing accumulated vegetation and sediment that pose a significant decrease of channel capacity and/or may involve a variety of other activities including emergency infrastructure repair, depending on the nature of the emergency. Emergency maintenance is limited to the minimum work necessary to alleviate the emergency and is conducted in concert with appropriate biological and cultural resource monitoring procedures identified in the MMP.

Due to the emergency nature of the work, detailed pre-maintenance channel hydrology and hydraulic information is generally not readily available. Determination of emergency conditions is generally derived from field observations of current conditions conducted by City engineers, documentation of channel conveyance/flooding issues from previous storm events and assessment of channel as-built and other available data. In general, pre-maintenance water quality assessment data is not available or collected prior to emergency maintenance activities. Additionally, available information related to emergency channel maintenance activities varies among sites depending on the channel configuration and available baseline information, timing of emergency work and nature of maintenance activities conducted as part of emergency work. Accordingly, available information presented in the descriptions below varies by channel location.

3.1 AUBURN CREEK CHANNEL EMERGENCY (MMP MAP 67-68)

The Auburn Creek emergency maintenance project included the mechanized removal of sediment, vegetation, trash and debris in several sections of MMP maps 67 and 68. Assessments by City staff and engineers were conducted for several sections of concern during the week of November 16th, 2015. In the section north of Wightman Street (MMP Map 67; Figures 11 and 12), the City's assessment determined that sediment and non-native vegetation had accumulated upstream of Wightman Street had constricted capacity into a single box culvert (5'x8') under Wightman Street. Erosive impacts from past storms likely involving backwater effects were evident within the existing cobble and non-native vegetation and erosion impacts from flooding were visible along

the adjacent slope, which supports a residential parking lot to the west. Based on recent communication with residents, it appeared that a few adjacent properties had flooded recently.

The City's assessment in the channel section south of Wightman Street (Figures 13 and 14), and fed from the single box culvert that carries water under the roadway, determined that sediment build up and growth of non-native *Arundo* had impacted the narrow channel conditions and diminished capacity further exacerbating a backwater effect. This backwater effect caused flows to back-up upstream exaggerating the imminent flood risk to adjacent residences and also contributed to the flooding threats discussed in the first section north of Wightman Street.

Emergency maintenance of the channel occurred December 15, 2015 through January 12, 2016 and included the removal of non-native vegetation, debris, and sediment within the two identified sections to alleviate an imminent flood risk. Impact areas from emergency maintenance activities, as defined under the MMP regulatory framework, included 0.07 acres of developed concrete-lined channel and 0.09 acres of natural channel. Total impacts to ACOE/CDFW/RWQCB jurisdictional areas were 0.16 acres (701 linear feet) of non-wetland waters of the U.S. An additional 0.05 acre (no additional linear feet) of *Arundo*-dominated disturbed wetland, located above the Ordinary High Water Mark, under CDFW-jurisdiction only was also removed. No native vegetation communities were impacted as part of the emergency maintenance. Off-site mitigation for removal of *Arundo* and temporary impacts to the unvegetated portions of channel is not required. City crews restored the pre-existing cobble to the bottom of the channel at the end of the project.

Emergency maintenance was conducted on approximately 701 linear feet of channel. The area north of Wightman (MMP Map 67) included 427 linear feet and south of Wightman (MMP Map 68) included 274 linear feet of channel. A total of 108 tons of vegetation and debris was removed.

A CEQA notice of exemption and City of San Diego emergency permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance² is in progress. USACE, RWQCB, and CDFW were notified prior to work beginning. USACE verified coverage of the emergency work through Regional General Permit (RGP) 63 for emergency activities. The RWQCB confirmed enrollment in the water quality certification program for the RGP.

It is unknown when the last maintenance event in the channel occurred. Based on pre-project conditions, the emergency maintenance area was covered approximately 80% with vegetation, predominately *Arundo*, growing in unevenly accumulated sediment.

No remedial actions were required for this project.

² City of San Diego Municipal Code §143.0101

3.1.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

Prior to emergency maintenance, the section of Auburn Creek channel identified in MMP Map 67 north of Wightman Street was estimated to convey the 25- to 50-year storm event. A preliminary pre-project drainage estimate indicated that the as-built capacity of the channel could contain the 100-year storm event. A full hydrologic analysis of the site was not completed post-project, so the overall capacity of Map 67 is unknown.

In Map 68 south of Wightman Street, prior to emergency maintenance the channel was estimated to convey the 100-year storm event with a maximum capacity of approximately 794 cfs. A pre-project drainage assessment indicated that the as-built capacity of the channel could contain the 100-year storm event, and that capacity would increase to 1,084 cfs after the emergency maintenance effort. However, only a small portion of the channel was cleared of *Arundo* to address the immediate flood risk to adjacent homes. Since maintenance was not conducted throughout the entire channel and a full hydrologic analysis was not completed post-project, the overall capacity of Map 68 is unknown.

3.1.2 WATER QUALITY MONITORING SUMMARY

Due to the emergency nature of the activity, no water quality monitoring was conducted. In accordance with the SDP, the City is increasing the frequency of catch basin inspection and as-needed cleaning for one year after maintenance. For every segment that is cleared, the City shall conduct an inspection and cleaning if necessary of every catch basin within 100 feet of the maintained segment. Additional inspections and cleaning will be conducted as-needed on a quarterly basis for a period of one year after maintenance.

3.2 AUBURN CREEK CHANNEL EMERGENCY (MMP MAP 70)

The Auburn Creek emergency maintenance project included the mechanized removal of sediment, vegetation, trash and debris in MMP Map 70. Assessments by City staff conducted on November 11, 2015 determined that sediment, cobble, and vegetation had densely and unevenly accumulated upstream and was reducing channel capacity (Figures 15 and 16). Further, adjacent property owners indicated to City staff that the adjacent properties had flooded during recent rain events. The City determined the residential properties adjacent to the channel were under imminent threat of damage from storm flows, given the channel's condition. The channel conditions prior to emergency maintenance combined with the prediction of an ongoing El Niño weather pattern and heavy winter storms constituted an emergency situation requiring immediate action to reduce flood risk to adjacent public and private property within City jurisdiction.

The portion of Auburn Creek Channel contained in MMP Map 70 is characterized as earthen-bottom with concrete banks and extends between Fairmount Avenue and Home Avenue. Maintenance activities began just southeast of 4425 Home Avenue at the Fairmount Avenue culvert outlet and

continued approximately 280 feet southwest. Average channel bottom width was approximately 12-25 feet. Impacts resulting from emergency maintenance include 0.04 acre of natural flood channel (temporary), 0.01 acre of disturbed mulefat scrub, and 0.05 acre of southern willow scrub. An additional 0.01 acre of disturbed wetland (*Arundo* dominated), located above the Ordinary High Water Mark (OHWM) and under CDFW-jurisdiction only, was also impacted. Total impacts from the project to ACOE/CDFW/RWQCB jurisdictional areas were 0.11 acre (279 linear feet) of non-wetland and wetland waters of the U.S. Post-project, the cobble bottom of the channel was restored in place. A total of 182 tons of material was removed from the channel.

The date of the last maintenance event is unknown. Based on pre-project conditions, the channel was covered approximately 25% with vegetation growing in unevenly accumulated sediment.

A CEQA notice of exemption and City of San Diego emergency permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress. USACE, RWQCB, and CDFW were notified prior to work beginning. USACE verified coverage of the emergency work through Regional General Permit (RGP) 63. The RWQCB confirmed enrollment in the water quality certification program for the RGP.

No remedial actions were taken with regard to this facility; the project was compliant with all permits.

Mitigation for impacts to riparian scrub has not yet been identified for this emergency. No existing mitigation banks or sites have suitable credits available at this time. A search for suitable wetland mitigation opportunities is underway.

3.2.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

Prior to emergency maintenance, the Auburn Creek channel identified in MMP Map 70 was estimated to convey approximately 270 cfs, or the 5-year storm. A pre-project drainage assessment indicated that the as-built capacity of the channel was designed to convey the 100-year storm event, approximately 1,200 cfs. However, in line with a primary impact minimization goal of the MMP, the minimum portion of the channel was cleared of sediment and vegetation to address the imminent flood risk to adjacent properties. Since maintenance was not conducted throughout the entire channel and a full hydrologic analysis was not completed post-project, the overall capacity of Map 70 is unknown.

3.2.2 WATER QUALITY MONITORING SUMMARY

Due to the emergency nature of the project, no water quality monitoring was conducted. In accordance with the SDP, the City is increasing the frequency of catch basin inspection and as-needed cleaning for one year after maintenance. For every segment that is cleared, the City shall conduct an inspection and cleaning if necessary of every catch basin within 100 feet of

the maintained segment. Additional inspections and cleaning will be conducted as-needed on a quarterly basis for a period of one year after maintenance.

3.3 AUBURN CREEK CHANNEL EMERGENCY (MMP MAP 77)

The Auburn Creek emergency maintenance project included the repair and stabilization of creek bank and mechanized removal of sediment, vegetation, trash and debris a section of MMP Map 77 (Figures 17 and 18). Assessments by City staff conducted on February 19, 2016, in response to a complaint of a sidewalk failure, determined that repair to the eroded eastern bank of the channel was necessary. The repair work was necessary to prevent further erosion and undermining of Federal Boulevard and associated sidewalk and direct flows away from the bank and toward the concrete box culvert. Excavation and removal of vegetation, sediment, and debris that had unevenly accumulated and likely caused the bank erosion was also required. It was understood that these activities would reduce flood risk to adjacent roads and property but would not increase overall channel capacity.

With the immediate forecast of rain, and given the strong El Niño weather pattern, immediate action was required. Work began on March 4, 2016 and was completed on March 5, 2016. The emergency channel maintenance area totaled 0.18 acres, located along the western side of 3940 Federal Boulevard, which stretches approximately 360 feet from northeast to southwest along Home Avenue.

Emergency work consisted of 3 components along a total length of approximately 270 linear feet. A slope repair of the eastern bank of the channel occurred from the Federal Boulevard culvert inlet to 125 linear feet upstream. This segment of the channel, along with an additional 110 linear feet upstream of the slope repair, was cleared (sediment and vegetation removal) as part of this emergency maintenance within the full approximately 23-foot channel bed width. Within an additional 35 linear feet upstream of the channel maintenance area, debris and two large uprooted trees were accessed and removed (no sediment or living vegetation was removed).

The emergency slope repair and channel maintenance areas supported 0.03 acre of disturbed southern willow scrub and 0.12 acre of natural flood channel; for a total of 0.15 acre (235 linear feet) of non-wetland waters of the U.S. An additional 0.03 acre of disturbed land (non-jurisdictional) area was affected by the slope repair work. City crews repaired the eroded eastern bank of the channel by placing 1/4-ton rip-rap and clean fill dirt along the bank, up to the wingwall of the Federal Boulevard culvert.

A total of 686 tons of material was removed from the channel.

The date of the last maintenance event is unknown. Based on pre-project conditions, the channel was covered approximately 25% with vegetation growing unevenly.

A CEQA notice of exemption and City of San Diego emergency permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress. USACE, RWQCB, and CDFW were notified prior to work beginning. USACE verified coverage of the emergency work through Regional General Permit (RGP) 63. The RWQCB confirmed enrollment in the water quality certification program for the RGP.

No remedial actions were required; the project was compliant with all permits.

Mitigation for impacts to riparian scrub has not yet been identified for this emergency. No existing mitigation banks or sites have suitable credits available at this time. A search for suitable wetland mitigation opportunities is underway.

3.3.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

Subsequent to the emergency maintenance, conveyance capacity of the Auburn Creek channel identified in MMP map 77 was estimated by City staff. The maintenance activities were estimated to provide only a nominal increase channel capacity, approximately a 2.4% increase. No change in capacity was expected for the repair work on the eroded eastern bank. As described above, the purpose of the sediment, debris and vegetation removal was to direct flows away from the eastern bank and toward the concrete box culvert to prevent bank erosion.

3.3.2 WATER QUALITY MONITORING SUMMARY

Due to the emergency nature of the project, no water quality monitoring was conducted. In accordance with the SDP, the City is increasing the frequency of catch basin inspection and as-needed cleaning for one year after maintenance. For every segment that is cleared, the City shall conduct an inspection and cleaning if necessary of every catch basin within 100 feet of the maintained segment. Additional inspections and cleaning will be conducted as-needed on a quarterly basis for a period of one year after maintenance.

3.4 VIA DE LA BANDOLA (PROPOSED MMP MAP 130 A) EMERGENCY CHANNEL MAINTENANCE

Although this channel was maintained under emergency permit authorization and is not currently an identified channel under the City MMP, the City plans to submit a proposal to have it included as part of the MMP as Map 130a (Figures 19 and 20). Therefore, mitigation measures and reporting requirements within the MMP were followed as closely as was practical during the emergency maintenance.

Assessments by City crews were conducted during the first week of November 2015 and determined that the overall sediment build up combined with dense stands of vegetation in the channel was causing severe reduction of channel capacity. The south side of the Via de la Bandola channel abuts private residences that have experienced and reported flooding during past rain events. In light of the condition of the concrete-lined channel observed during the November 2015 assessment, and with the prediction of El Niño storms and expected heavy rains during the 2015-2016 wet season, the City determined that the properties adjacent to the channel were under imminent threat of severe damage from storm flows. Emergency maintenance included the removal of all existing vegetation and sediment within a trapezoidal concrete-lined channel that extends approximately 670 feet with a bottom width of 6 feet and a top width of 24 feet. On November 25, 2015, emergency maintenance crews began the removal work and the channel was fully cleared and cleaned on December 6, 2015. Approximately 0.10 acres of freshwater marsh (concrete-lined), 0.02 acres of non-native vegetation (concrete-lined), and 0.09 acres of southern willow scrub (concrete-lined) were impacted as part of emergency maintenance activities.

Temporary construction-related BMPs were implemented to prevent/minimize impacts during performance of emergency maintenance activities such as access/staging, vegetation and sediment removal and post-maintenance clean-up of the project area. BMPs were implemented by trained personnel, and included: installation of temporary gravel bag dams upstream and downstream of the maintenance area to prevent flows from entering or exiting the maintenance area, and to prevent potential sediment transport from the channel work area to areas downstream; pumps to bypass the water around maintenance work areas, as needed; and a vac-truck was staged at the downstream end of the work areas and utilized as necessary to prevent downstream flow of silt or sediment from the project site. No work occurred during the breeding or nesting season of any sensitive species.

The date of the last maintenance event is unknown. Based on pre-project conditions, the channel was approximately 70% covered with vegetation and sediment.

Staff removed approximately 121 loads of vegetation, sediment, and aggregate materials. A total of 1,045 tons of material were removed from the channel.

A notice of exemption and emergency permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress. USACE, RWQCB, and CDFW were notified prior to work beginning. USACE verified coverage of the emergency work through Regional General Permit (RGP) 63. The RWQCB confirmed enrollment in the water quality certification program for the RGP.

No remedial actions were required; the project was compliant with all permits.

Mitigation for impacts has not yet been identified for this emergency. No existing mitigation banks or sites have suitable credits available at this time. A search for suitable wetland mitigation opportunities is underway.

3.4.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

Pre-emergency maintenance, the Via de la Bandola channel was estimated to have a reduced capacity of up to 50%. Post-emergency maintenance, the channel is able to function as designed (100-year capacity).

3.4.2 WATER QUALITY MONITORING SUMMARY

Due to the emergency nature of the project, no water quality monitoring was conducted. In accordance with the SDP, the City is increasing the frequency of catch basin inspection and as-needed cleaning for one year after maintenance. For every segment that is cleared, the City shall conduct an inspection and cleaning if necessary of every catch basin within 100 feet of the maintained segment, and conduct additional inspections and cleaning if necessary every three months.

3.5 CHOLLAS CREEK EMERGENCY CHANNEL MAINTENANCE (MMP MAPS 91-93)

The Chollas Creek emergency maintenance project included emergency repair and protection activities and the mechanized removal of sediment, vegetation, trash and debris in several sections of MMP Maps 91 (Figures 21 and 22) and 93 (Figures 23 and 24). The emergency repair and protection activities were conducted under emergency permit authorization.

Assessments by City crews were conducted on November 11, 2015. In the northern section of the channel along South Gregory Street (MMP Map 91), the assessment determined that accumulated sediment and vegetation upstream of the Ocean View Boulevard bridge had reduced capacity of the channel and increased flood risk to adjacent property. The assessment in the southern channel section (MMP Map 93), which is located directly downstream of MMP Map 91, determined that sediment accumulation had narrowed the channel in several locations, reducing conveyance capacity and increasing flood risk. Communication with adjacent residents substantiated that several properties, including 818 S. Gregory Street, had flooded during recent rain events. The City determined the residential properties adjacent to the channel were under imminent threat of potential severe damage from storm flows, given the channel's condition. Further, the National Avenue bridge was estimated to have a 40% reduction in flow capacity from the as-built capacity. This reduction in capacity under the bridge was causing a backwater effect upstream of the bridge, further increasing the imminent flood risk to adjacent properties and also contributing to the flooding potential discussed in the northern section (MMP Map 91).

Emergency maintenance of the channel was conducted from December 30, 2015 through January 19, 2016 and included the removal of accumulated sediment and vegetation along the length of both channel sections. The length of the channel is a combination of a trapezoidal concrete-lined channel (MMP Map 91) and an earthen natural flood channel (MMP Map 93). Emergency maintenance was conducted from the area of sediment build up just north of the I-15 southbound Ocean View Boulevard exit, south approximately 2,900 feet downstream with an average bottom width of approximately 50 feet. A 0.11 acre area of coastal salt marsh located in the southern section of the proposed maintenance area was avoided during emergency maintenance activities and was not impacted.

Land cover and vegetation that were impacted as a result of emergency maintenance include 1.69 acres of developed concrete-lined channel, 0.34 acre of natural flood channel (earthen bottom), 0.23 acre of freshwater marsh (earthen bottom), 0.80 acre of freshwater marsh (concrete-lined), 0.04 acre of open water (earthen bottom), 0.06 acre of open water (concrete-lined), and 0.06 acre of disturbed wetland (*Arundo*-dominated). Total impacts to jurisdictional areas were 3.22 acres (2,899 linear feet) of wetland and non-wetland waters of the U.S. An additional, 0.04 acre of disturbed land (non-jurisdictional uplands) was graded to re-establish the channel.

A loader, dozer, and excavator were used to remove accumulated sediment and vegetation. Due to the accumulation of sediment, the smaller tracksteer/bobcat was used to clear material from beneath the National Avenue Bridge (MMP Map 93). The debris was then loaded into dump trucks in the access/staging areas and taken to a temporary stockpiling area, prior to being hauled off for legal disposal.

Temporary construction-related BMPs were implemented to prevent/minimize impacts during performance of emergency maintenance activities such as access/staging, vegetation and sediment removal, temporary stockpiling, and post-maintenance clean-up of the project area. A temporary sand bag dam was installed at the upstream end of the maintenance area and pumps were used as necessary to bypass water out of the work area and create dry work conditions. A filter bag was utilized at the hose outlet of the bypass water pump to reduce turbidity and/or downstream discharge of sediment. In addition, a temporary earthen berm was installed at the downstream end of the maintenance area to allow work to be performed near and under the National Avenue Bridge, and to prevent unrestricted flows from exiting the maintenance area. All BMPs were implemented by trained personnel. Additional BMPs/mitigation measures related to protection of water quality are described in the Water Quality Assessment section. All work was monitored by a qualified biologist, archaeologist, and Native American monitor. All equipment and materials were removed following completion of work. No work occurred during the breeding or nesting season of any sensitive species.

A CEQA notice of exemption and City of San Diego emergency permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress. USACE, RWQCB, and CDFW were notified prior to the start of work. USACE verified coverage of the emergency work through RGP 63. The RWQCB confirmed enrollment in the water quality certification program for the RGP.

A total of 5,862 tons of vegetation and debris was removed.

The concrete-lined channel was last maintained winter 2011. Based on pre-project conditions, the channel was covered approximately 60% with vegetation growing in unevenly accumulated sediment.

No remedial actions were required for this project.

Mitigation for direct impacts to 0.80 acre of freshwater marsh (concrete-lined) and 0.23 acre of freshwater marsh (earthen) has not yet been identified. No existing mitigation banks or sites have suitable credits available at this time. A search for suitable wetland mitigation opportunities is underway.

3.5.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

Prior to emergency maintenance, the Chollas Creek channel identified in MMP Maps 91-93 was estimated to have a reduced capacity of up to 40%. Post-emergency maintenance, the channel was maintained to as-built condition, and is able to function as designed.

3.5.2 WATER QUALITY MONITORING SUMMARY

Due to the emergency nature of the activity, no water quality monitoring was conducted. In accordance with the SDP, the City is increasing the frequency of catch basin inspection and as-needed cleaning for one year after maintenance. For every segment that is cleared, the City shall conduct an inspection and cleaning if necessary of every catch basin within 100 feet of the maintained segment. Additional inspections and cleaning will be conducted as-needed on a quarterly basis for a period of one year after maintenance.

3.6 COTTONWOOD CHANNEL EMERGENCY MAINTENANCE (MMP MAPS 120-121)

The Cottonwood channel emergency maintenance project included the mechanized removal of sediment, vegetation, trash and debris in several sections of MMP Maps 120 (Figures 25 and 26) and 121 (Figures 27 and 28). Assessments by City crews were conducted during the first week of November 2015 and determined that overall vegetation accumulation, combined with the large amounts of exotic vegetation within the channel and the high likelihood of this vegetation being

dislodged from the concrete-lined channel bottom during predicted heavy flows, posed an imminent threat of potential clogging downstream sections and associated severe damage from storm flows, given the channel's condition. The entire length of the Cottonwood channel in this area abuts City roads and private residences; some of which have experienced and reported flooding during past rain events. In light of the condition of the concrete-lined channel observed during the November 2015 assessment, and with the prediction of El Niño storms and expected heavy rains during the 2015-2016 storm season, the City determined that the properties adjacent to the Cottonwood Channel were under imminent threat of severe damage from storm flows.

Emergency maintenance included the removal of accumulated vegetation and sediment within an approximately 2,216 feet portion of the trapezoidal concrete-lined channel with a bottom width of approximately 11 feet. Emergency maintenance of the channel was conducted from December 26, 2015 through January 2, 2016.

A Skid-steer/Bobcat was the primary tool used to clear sediment and vegetation within the channel. This equipment was placed into the channel by the Gradall at the access/staging areas along Nordica Avenue, Cottonwood Street, and Osborn Street as shown on MMP Maps 120 and 121, The Skid-steer/Bobcat then pushed material to an area within the channel where the Gradall, which was staged outside of the channel, was able to remove and load the material into dump trucks. Debris was then taken to an authorized landfill (Miramar) for disposal. All work was monitored by a qualified biologist and equipment was removed from the site at the end of the project.

During maintenance, downstream of 43rd Street, a sandbag berm and a bypass pump were used just east of the culvert at 42nd Street to prevent water and excess sediment from traveling downstream. No maintenance occurred in the channel west of Osborn Street because that section was relatively clear of material and did not pose an imminent threat to adjacent properties.

Vegetation impacts were limited to concrete-lined sections of the channel where vegetation has grown on accumulated sediment. Approximately 0.06 acre of Riparian Scrub (disturbed southern willow scrub), 0.06 acre of disturbed freshwater marsh, and 0.03 acre of disturbed wetlands (palm-dominated) vegetation was impacted as part of emergency maintenance activities.

A CEQA notice of exemption and City of San Diego emergency permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress. USACE, RWQCB, and CDFW were notified prior to the start of work. USACE verified coverage of the emergency work through RGP 63. The RWQCB confirmed enrollment in the water quality certification program for the RGP.

A total of 625 tons of material were removed from the channel.

It is unknown when the last maintenance event in the channel occurred. Based on pre-project conditions, vegetation growing in pockets of unevenly accumulated sediment covered approximately 25% of the channel.

No remedial actions were taken with regard to this facility; the project was compliant with all permits.

Mitigation for impacts has not yet been identified for this emergency. No existing mitigation banks or sites have suitable credits available at this time. A search for suitable wetland mitigation opportunities is underway.

3.6.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

Prior to emergency maintenance activities, sections of the Cottonwood Creek channel identified in MMP Maps 120-121 were estimated to have a reduced capacity of up to 40%. Post- maintenance, the channel is able to function within the as-built design which is estimated at a 25 to 50-year capacity.

3.6.2 WATER QUALITY MONITORING SUMMARY

Due to the emergency nature of the activity, no water quality monitoring was conducted. In accordance with the SDP, the City is increasing the frequency of catch basin inspection and as-needed cleaning for one year after maintenance. For every segment that is cleared, the City shall conduct an inspection and cleaning if necessary of every catch basin within 100 feet of the maintained segment. Additional inspections and cleaning will be conducted as-needed on a quarterly basis for a period of one year after maintenance.

3.7 JAMACHA CHANNEL EMERGENCY MAINTENANCE (MMP MAP 115)

The Jamacha channel emergency maintenance project included the mechanized removal of sediment, vegetation, trash and debris in several sections of MMP Map 115 (Figures 29 and 30). Assessments by City crews were conducted on December 11, 2015 and December 18, 2015 and determined that sediment accumulation had narrowed the channel in several locations resulting in an approximately 50% reduction in flow capacity.. The reduced channel capacity and accumulation of exotic vegetation (primarily *Arundo*), were anticipated to cause a backwater effect that posed an imminent flood risk to adjacent residences. There have been repeated reports of residential flooding adjacent to the Jamacha channel in this area during prior rain events. In light of the condition of the earthen bottom drainage channel observed during the December 2015 assessments, and with the prediction of El Niño storms and expected heavy rains during the 2015-2016 storm season, the City determined that the residential properties adjacent to this section of the Jamacha Channel were under imminent threat of severe damage from storm flows.

Emergency maintenance included the removal of accumulated sediment and vegetation from a portion (approximately 277 feet) of the earthen bottom drainage channel. Crews originally planned to reestablish the north bank of the channel at an average of 2:1 slope. During maintenance activities, the decision was made in the field to retain the existing, slightly steeper slope rather than re-establish the 2:1 slope. On January 3, 2016 emergency maintenance crews began work and channel maintenance was completed on the same day.

A mini Excavator and Gradall were the primary tools used to maneuver and clear sediment and vegetation from the channel. The mini excavator accessed the channel from an access and staging area adjacent to 69th street. The Gradall was staged outside of the channel. The mini Excavator transported sediment and vegetation to the Gradall, which then loaded the material into dump trucks. The material was either temporarily stockpiled (BMPs were used at stockpiling location) on-site within the access/staging area or taken directly to Miramar Landfill for disposal. No sandbag berms or pumping equipment were used during maintenance as the channel remained dry during the work. All work was monitored by a qualified biologist and equipment was removed from the site at the end of the project.

Temporary construction-related BMPs were implemented by trained personnel to prevent/minimize impacts during performance of emergency maintenance activities such as access/staging, vegetation and sediment removal, temporary stockpiling, and post-maintenance clean-up of the project area. No work occurred during the breeding or nesting season of any sensitive species.

Approximately 0.005 acres of disturbed wetland vegetation, 0.10 acre of disturbed wetland (*Arundo*-dominated) vegetation, and 0.04 acre of natural flood channel were affected as part of emergency maintenance activities. Total impacts to jurisdictional areas are 0.145 acres of wetland and non-wetland waters of the U.S.

A total of 490 tons of material were removed from the channel.

A CEQA notice of exemption and City of San Diego emergency permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress. USACE, RWQCB, and CDFW were notified prior to the start of work. USACE verified coverage of the emergency work through RGP 63. The RWQCB confirmed enrollment in the water quality certification program for the RGP.

The last maintenance event in the channel occurred December 16, 2014 and consisted of the removal of two approximately 100 square foot *Arundo* patches in the same area where emergency maintenance was completed. Based on pre-project conditions, the channel was approximately 70% covered with vegetation growing in unevenly accumulated sediment.

No remedial actions were taken with regard to this facility; the project was compliant with all permits.

Mitigation for impacts has not yet been identified for this emergency. No existing mitigation banks or sites have suitable credits available at this time. A search for suitable wetland mitigation opportunities is underway.

3.7.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

Prior to emergency maintenance activities, sections of the Jamacha channel identified in MMP Map 115 were estimated to have a significantly reduced capacity. Post- maintenance, the channel is able to function similar to the as-built condition.

3.7.2 WATER QUALITY MONITORING SUMMARY

Due to the emergency nature of the activity, no water quality monitoring was conducted. In accordance with the SDP, the City is increasing the frequency of catch basin inspection and as-needed cleaning for one year after maintenance. For every segment that is cleared, the City shall conduct an inspection and cleaning if necessary of every catch basin within 100 feet of the maintained segment. Additional inspections and cleaning will be conducted as-needed on a quarterly basis for a period of one year after maintenance.

3.8 NESTOR CREEK EMERGENCY MAINTENANCE (MMP MAP 134)

The Nestor Creek channel emergency maintenance project included the mechanized removal of sediment, vegetation, trash and debris in MMP Map 134 (Figures 31 and 32). Emergency maintenance was required in the portion of MMP Map 134 located between Palm Avenue and Cedar Street, west of Thermal Avenue. Assessments by City crews determined that sediment and debris accumulation had narrowed the channel in several locations resulting in a reduction in flow capacity from the as-built condition. The reduced channel capacity and accumulation of vegetation were anticipated to pose an imminent flood risk to adjacent residences.

Emergency maintenance activities took place on February 5 and 6, 2016. The maintenance extended 65 linear feet within the channel area comprised of an earthen bottom with rip rap banks. Maintenance was performed with an excavator that cleared sediment, trash and debris from the channel area. A pump was placed at the upstream end of the maintenance work to divert flowing water around the maintenance area during excavation activities. The excavator dumped the material into trucks which transported it for legal disposal. Emergency maintenance activities impacted 0.02 acre of disturbed freshwater marsh within the channel.

A CEQA notice of exemption and City of San Diego emergency permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress.

USACE, RWQCB, and CDFW were notified. USACE verified coverage of the emergency work through RGP 63. The RWQCB confirmed enrollment in the water quality certification program for the RGP.

A total of 32 tons of vegetation and debris was removed.

It is unknown when the last maintenance event in the earthen riprap portion of the channel occurred, but a concrete-lined portion of the channel downstream of the emergency maintenance area was maintained in 2011. Based on pre-project conditions, the channel had approximately 75% vegetation coverage growing in unevenly accumulated sediment.

No remedial actions were required for this project.

A wetland creation/restoration site is in preliminary design to mitigate for impacts to 0.02 acres of Freshwater Marsh in the Otay watershed.

3.8.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

Prior to emergency maintenance activities, this section of the channel was estimated to have a significantly reduced capacity. Post-maintenance, the channel is able to function similar to the as-built design which is estimated at a 50 to 100-year storm event capacity.

3.8.2 WATER QUALITY MONITORING SUMMARY

Due to the emergency nature of the activity, no water quality monitoring was conducted. In accordance with the SDP, the City is increasing the frequency of catch basin inspection and as-needed cleaning for one year after maintenance. For every segment that is cleared, the City shall conduct an inspection and cleaning if necessary of every catch basin within 100 feet of the maintained segment. Additional inspections and cleaning will be conducted as-needed on a quarterly basis for a period of one year after maintenance.

3.9 PARKSIDE CHANNEL EMERGENCY MAINTENANCE (MMP MAP 122)

The Parkside Channel emergency maintenance project included the mechanized removal of sediment, vegetation, trash and debris in MMP Map 122 (Figures 33 and 34). Initial assessments conducted by City crews during the first week of November 2015 determined that overall vegetation accumulation, combined with the large amount of invasive exotic vegetation within the channel, posed an imminent risk of clogging downstream sections and increased flood risk. City crews estimated there was a high likelihood that accumulated vegetation could be dislodged from the concrete-lined channel bottom during predicted heavy flows. The north and western sides of the Parkside Channel abut City roads and private residences. In light of the condition of the concrete-lined channel observed during the November 2015 assessment, and with the prediction of El Niño

storms and expected heavy rains during the 2015-2016 wet season, the City determined that the properties and City infrastructure adjacent to the Parkside Channel were under imminent threat of severe damage from storm flows.

Emergency maintenance included the removal of vegetation and sediment within an approximately 1,201 feet long section of trapezoidal concrete-lined channel with a bottom width of 12 feet and a top width of 35 feet. Emergency maintenance of the channel was conducted from December 23, 2015 through December 26, 2016.

During maintenance, a skid steer, bobcat, and loader were the primary tools used to push material within the channel to the Gradall for removal, which was staged outside the channel on Parkside Avenue. Once removed, the material was loaded into dump trucks and taken to the Miramar Landfill for disposal. This equipment accessed the channel from 6512 Parkside Avenue. No sandbag berms or pumping equipment were used during maintenance as the channel remained dry during all work. All work was monitored by a qualified biologist and equipment was removed from the site at the end of the project.

Temporary construction-related BMPs were implemented to prevent/minimize impacts during performance of emergency maintenance activities such as access/staging, vegetation and sediment removal and post-maintenance clean-up of the project area. BMPs were implemented by trained personnel. No work occurred during the breeding or nesting season of any sensitive species.

Approximately 0.02 acre of freshwater marsh, 0.03 acre of disturbed freshwater marsh, and 0.11 acre of disturbed wetlands (palm-dominated) vegetation were impacted as part of emergency maintenance activities.

A CEQA notice of exemption and City of San Diego emergency permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress. USACE, RWQCB, and CDFW were notified prior to the start of work. USACE verified coverage of the emergency work through RGP 63. The RWQCB confirmed enrollment in the water quality certification program for the RGP.

A total of 180 tons of material were removed.

It is unknown when the last maintenance event in the channel occurred. Based on pre-project conditions, the channel had approximately 25% vegetation coverage growing in unevenly accumulated sediment.

No remedial actions were taken with regard to this facility; the project was compliant with all permits.

Mitigation for impacts has not yet been identified for this emergency. No existing mitigation banks or sites have suitable credits available at this time. A search for suitable wetland mitigation opportunities is underway.

3.9.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

Prior to emergency maintenance activities, sections of the channel were estimated to have a reduced conveyance capacity approximately equal to the 2-year storm event. Post- maintenance, the channel is able to function within the as-built design which is estimated at a 50 to 100-year storm event capacity.

3.9.2 WATER QUALITY MONITORING SUMMARY

Due to the emergency nature of the activity, no water quality monitoring was conducted. In accordance with the SDP, the City is increasing the frequency of catch basin inspection and as-needed cleaning for one year after maintenance. For every segment that is cleared, the City shall conduct an inspection and cleaning if necessary of every catch basin within 100 feet of the maintained segment. Additional inspections and cleaning will be conducted as-needed on a quarterly basis for a period of one year after maintenance.

3.10 WASHINGTON EMERGENCY CHANNEL MAINTENANCE (MMP MAP 84)

The Washington Channel emergency maintenance project included the mechanized removal of sediment, vegetation, trash and debris in MMP Map 84 (Figures 35 and 36). Assessments by City crews were conducted on November 19 and December 29, 2015. The City's assessments determined that sediment and vegetation had accumulated in various sections within the channel, constricting flows and increasing the risk of flooding. The channel is primarily concrete-lined with a small earthen-bottom section at the west end.

The emergency maintenance area extended 2,505 feet. The bottom width varies between approximately 5 feet in the concrete-lined portion to approximately 60 feet in the earthen portion of the channel. The top widths vary between approximately 11 feet in the concrete-lined portion to 70 feet in the earthen portion of the channel. Based on evaluation of conditions prior to the maintenance activities, it was determined the commercial properties downstream of the channel were under imminent threat of potential severe damage from storm flows. The build-up of sediment and vegetation within the channel before the emergency maintenance combined with the prediction of continued El Niño weather patterns and heavy winter storms, constituted an emergency situation requiring immediate action to reduce flood risk to surrounding areas.

Emergency maintenance of the channel included the removal of all existing sediment and vegetation along the entire length of the channel (MMP Map 84). The emergency maintenance began just east of the 1792 West Washington Street parking lot, extended east along West

Washington Street. Emergency maintenance of the channel was conducted from January 20, 2016 through January 30, 2016.

Vegetation impacts were limited to concrete-lined sections of the channel where vegetation has grown on accumulated sediment. Vegetation and land cover impacts comprised approximately 0.33 acres of concrete channel area, 0.03 acres of disturbed wetland (palm-dominated), 0.02 acres of disturbed freshwater marsh, and 0.25 acres of disturbed wetland (*Arundo*-dominated).

A Skid Steer/Bobcat, Loader, and dump trucks were the primary tools used to remove material from the channel. The Skid Steer/Bobcat entered the channel from the staging areas and pushed vegetation and sediment to the Loader. The Loader scooped material from the channel and loaded it into dump trucks. The debris was taken directly to the Miramar Landfill for disposal. All work was monitored by a qualified biologist. An archaeologist and Native American monitor were also present during maintenance activities when needed.

Adjacent access/staging areas were located in existing developed areas. Adequate BMPs were placed in those areas to prevent sedimentation and erosion from occurring.

Work was conducted during dry periods; however, there were trace amounts of standing water in the channel. A pump system was used to bypass this water around the work area and downstream. Additionally, crews set up small sandbag berms to prevent any incidental upstream flows from entering the earthen section of the work area. All equipment and materials were removed following completion of work.

A CEQA notice of exemption and City of San Diego emergency permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress. USACE, RWQCB, and CDFW were notified prior to the start of work. USACE verified coverage of the emergency work through RGP 63. The RWQCB confirmed enrollment in the water quality certification program for the RGP.

A total of 1,321 tons of material were removed from the channel.

Maintenance last occurred at the site on October 21, 2015 and consisted of the removal of several palm trees which had damaged a fence surrounding the channel. Based on pre-project conditions, the channel was approximately 40% covered with vegetation growing in unevenly accumulated sediment.

No remedial actions were required; the project was compliant with all permits.

Mitigation for impacts has not yet been identified for this emergency. No existing mitigation banks or sites have suitable credits available at this time. A search for suitable wetland mitigation opportunities is underway.

3.10.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

Prior to emergency maintenance activities, the channel conveyance capacity was estimated to be reduced by approximately 50%. Post-maintenance, the channel is able to function within the as-built design which is estimated to be the 100-year storm event conveyance capacity.

3.10.2 WATER QUALITY MONITORING SUMMARY

Due to the emergency nature of the activity, no water quality monitoring was conducted. In accordance with the SDP, the City is increasing the frequency of catch basin inspection and as-needed cleaning for one year after maintenance. For every segment that is cleared, the City shall conduct an inspection and cleaning if necessary of every catch basin within 100 feet of the maintained segment. Additional inspections and cleaning will be conducted as-needed on a quarterly basis for a period of one year after maintenance.

3.11 SMYTHE EMERGENCY CHANNEL MAINTENANCE (MMP MAP 130)

The Smythe Channel emergency maintenance project included the mechanized and manual removal of sediment, vegetation, trash and debris in MMP Map 130 (Figures 37 and 38). The emergency maintenance area extends west from a three-box culvert outlet under Picador Boulevard approximately 1,392 linear feet to a below-grade single box-culvert under Del Sur Boulevard. The channel segment has an earthen bottom and bottom width of approximately 20 feet with an average top width of 47 feet. Assessments by City staff conducted on November 13th and December 17th, 2015 determined that accumulated sediment, freshwater marsh, and riparian scrub (southern willow scrub) vegetation had accumulated throughout the length of the channel, had reduced conveyance capacity and were contributing to increased flood risk.

Emergency maintenance of the channel consisted of the removal of accumulated sediment and vegetation along the entire length of the channel area. Land cover and vegetation impacted by the project included 0.39 acres of riparian scrub (southern willow scrub) and 0.20 acres of freshwater marsh. Total impacts to ACOE/RWQCB/CDFW jurisdictional areas was 0.59 acre (1,392 linear feet) of wetland waters of the U.S. within the emergency maintenance section. There was an additional 0.38 acre of riparian scrub (southern willow scrub) impacted that was above the OHWM and under CDFW and City jurisdiction only. In addition to these jurisdictional impacts, 0.59 acre of disturbed land, 0.08 acre of ornamental/non-native vegetation, and 0.03 acre non-native grassland (non-jurisdictional uplands) were impacted to access and re-establish the channel.

Access to the channel area was established from both Del Sur Boulevard and Picador Boulevard along the cleared access road on the north side of the channel segment. An earthen berm was built directly downstream of the three box culvert outlet on the east end of the channel in order to prevent upstream flows from entering the work area. A pump diversion system was then installed to allow these flows to be diverted along the channel bank and downstream of the maintenance work.

Equipment cleared vegetation from the access road along the north bank of the channel. Hand crews entered and began manually removing trees and vegetation along the bottom and banks of the channel. The Gradall/Excavator and extended-arm Gradall then worked from the northern bank access road and reached into the channel to clear sediment, remaining vegetation, and debris and loaded it directly into dump trucks. Once the material was loaded into dump trucks, it was taken directly to Miramar Landfill for disposal.

Following initial sediment and vegetation removal from the channel, a contractor was hired by the City to remove debris from the upstream three-box culvert using hand tools and vector trucks. The Contractor conducted final minor grading to create positive downstream flow in the east end of the channel from the three-box culvert outlet to the first grade control structure (concrete energy-dissipator). All work was monitored by a qualified biologist. An archaeologist and Native American monitor were also present during maintenance activities when needed.

Access/staging areas were located in adjacent existing developed or disturbed areas. Adequate BMPs (i.e., steel plates, fiber rolls, water diversion, etc.) were placed in those areas in order to prevent sedimentation and erosion. All work was conducted under dry conditions.

A CEQA notice of exemption and City of San Diego emergency permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress. USACE, RWQCB, and CDFW were notified prior to the start of work. USACE verified coverage of the emergency work through RGP 63. The RWQCB confirmed enrollment in the water quality certification program for the RGP.

A total of 3,188 tons of material were removed from the channel.

It is unknown when the last maintenance event in the channel occurred. Based on pre-project conditions, the channel was approximately 75% covered with vegetation growing in unevenly accumulated sediment.

No remedial actions were taken with regard to this facility; the project was compliant with all permits.

Mitigation planning is in progress for this project. A site in the Tijuana River Valley has been preliminarily identified as an opportunity for mitigation for this project.

3.11.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

Prior to emergency maintenance activities, the Smythe channel identified in MMP Map 130 was estimated to have a reduced conveyance capacity approximately equal to the 2-year storm event. Post-maintenance, the channel is able to function within the as-built design which is estimated at the 25-year storm event capacity.

3.11.2 WATER QUALITY MONITORING SUMMARY

Due to the emergency nature of the activity, no water quality monitoring was conducted. In accordance with the SDP, the City is increasing the frequency of catch basin inspection and as-needed cleaning for one year after maintenance. For every segment that is cleared, the City shall conduct an inspection and cleaning if necessary of every catch basin within 100 feet of the maintained segment. Additional inspections and cleaning will be conducted as-needed on a quarterly basis for a period of one year after maintenance.

3.12 CHOLLAS CREEK CHANNEL EMERGENCY MAINTENANCE (MMP MAP 71)

The Chollas Creek Channel emergency maintenance project included emergency repair and protection activities and the mechanized removal of sediment, vegetation, trash and debris in several sections of MMP Maps 71 (Figures 39 and 40). The Chollas Creek Channel (Map 71) is located east of the Interstate 15 freeway and Rolando Boulevard, south of University Avenue, west of 6523 University Avenue and Aragon Drive, and north of Vista Grande Drive. The channel is located on the northeast corner of the intersection of Rolando Boulevard and Vista Grande Drive. The focal channel segment has an earthen bottom and mostly earthen sides, although portions of the bank on the west end of the channel consist of rip rap and a section on the east end of the channel has concrete-lined banks. The section west of Rolando Boulevard is concrete-lined and was not included as part of this emergency channel work. Two large diameter box culverts empty into the channel from the east and the channel conveys flows between commercial properties on the north side and residential properties on the south side down to a double box culvert underneath Rolando Boulevard. Assessments by City staff conducted on November 11, 2015 determined that sediment and vegetation had accumulated significantly along the entire length of the Chollas Creek Channel (MMP Map 71). The volume of sediment and vegetation accumulation in the Map 71 area posed an imminent flood threat to properties adjacent to the channel from constriction and slowing of downstream flows as well as from potential clogging of the downstream culvert if large amounts of vegetation and debris were to become dislodged during heavy flows.

Emergency work consisted of a single earthen channel segment approximately 800 linear feet in length. The maintenance area began just west of 6523 University Ave and Aragon Drive. Work

continued west the entire length of the channel, with an average bottom width of approximately 15 feet, ending at the inlet that carries flows west under Rolando Boulevard. Land cover and vegetation communities impacted during maintenance included 0.02 acres of riparian scrub (disturbed southern willow scrub), 0.06 acres of natural flood channel, and 0.11 acres of disturbed wetland (palm-dominated). Total impacts to jurisdictional areas are 0.19 acres (800 linear feet) of wetland waters of the U.S. channel. An additional 0.21 acre of disturbed wetland (palm-dominated), 0.02 acre of disturbed land and 0.04 acre of riparian scrub (disturbed southern willow scrub) above the OHWM was also impacted. The riparian scrub (disturbed southern willow scrub) above the OHWM is under jurisdiction only by CDFW.

When flows became too heavy to be held by a temporary upstream check dam, a gas pump and hose system was deployed at the upstream channel outlet and the downstream flows were diverted around the maintenance area. Ground water that entered the work area was not allowed to pass downstream or was pumped to a section of the channel where there was positive flow to the west prior to the start of work. Any residual standing water within the work area was allowed to dissipate or evaporate prior to start of work, when practicable. A sandbag berm was installed at the downstream end of the channel under Rolando Boulevard in order to prevent any incidental flows coming from channel work areas from carrying sediment or pollutants downstream. All adjacent access/staging areas were located in existing developed or disturbed areas. Adequate BMPs (i.e., gravel bags, steel plates, fiber rolls, etc.) were placed in those areas in order to prevent sedimentation and erosion.

All work was monitored by a qualified biologist and equipment was removed from the site at the end of the project.

A notice of exemption and emergency permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress. USACE, RWQCB, and CDFW were notified prior to the start of work. USACE verified coverage of the emergency work through RGP 63. The RWQCB confirmed enrollment in the water quality certification program for the RGP.

It is unknown when the last maintenance event in the channel occurred. Based on pre-project conditions, the channel was covered approximately 100% with vegetation growing in unevenly accumulated sediment.

No remedial actions were required for this project.

Mitigation planning is in progress for direct impacts to 0.02 acres of riparian scrub (disturbed southern willow scrub). No existing mitigation banks or sites have suitable credits available at this time. However, a search for suitable mitigation sites is underway.

3.12.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

Prior to emergency maintenance activities, the Chollas Creek channel identified in MMP Map 71 was estimated to have a reduced conveyance capacity approximately equal to the 2-year storm event. Post-maintenance, the channel is able to function within the as-built design which is estimated at the 50-year storm event capacity.

3.12.2 WATER QUALITY MONITORING SUMMARY

Due to the emergency nature of the activity, no water quality monitoring was conducted. In accordance with the SDP, the City is increasing the frequency of catch basin inspection and as-needed cleaning for one year after maintenance. For every segment that is cleared, the City shall conduct an inspection and cleaning if necessary of every catch basin within 100 feet of the maintained segment. Additional inspections and cleaning will be conducted as-needed on a quarterly basis for a period of one year after maintenance.

3.13 SOLEDAD CREEK/SORRENTO VALLEY EMERGENCY MAINTENANCE (MMP MAPS 11 & 12)

The Soledad Creek/Sorrento Valley (Sorrento) Channel emergency maintenance project included the mechanized removal of sediment, vegetation, trash and debris in MMP Maps 11 and 12 (Figures 41-44). The facility is an earthen- and concrete-lined storm water channel located between Roselle Street and Sorrento Valley Road. Sorrento Valley Boulevard runs perpendicular over the channel in approximately the center of the maintenance area in the City's appealable area of the Coastal Overlay Zone; Torrey Pines Community Planning Area; Council District 1; Peñasquitos watershed (Attachment 1). The maintenance area is not located in The City of San Diego's Multi-Habitat Planning Area (MHPA).

A portion of the emergency maintenance was to remove vegetation and sediment from approximately 500 LF of concrete and earthen channel. Work was conducted between March 3, 2016 to March 6, 2016 at the transition area between the earthen and concrete channel prior to an anticipated storm event on March 6-7, 2016 (Figures 41 and 42). Heavy equipment removed an estimated 2,750-3,250 cubic yards (1,240 tons) of material debris within the transition area and loaded it into dump trucks to be hauled to the Miramar landfill for disposal. The ingress/egress to the channel is via two established Access/Staging areas:

1. The vacant disturbed lot at 11025 Roselle Street
2. Adjacent disturbed parking area and paved street at 10749 Roselle Street

In addition to the 1,240 tons of sediment and vegetation removed from the transition area, approximately 300 linear feet (0.43 acres) of concrete repair work was conducted upstream between April 19, 2016 through June 16, 2016 within the southeastern end of the 63 foot wide concrete

channel (Figures 43 and 44) in order to ensure the integrity of the lining during heavy storms. Steel plates and a temporary access ramp were installed from the southeastern Access/Staging area to the bottom of the channel to allow concrete repair equipment to enter the Reach 3 channel. The primary equipment necessary for this work included a concrete saw, backhoe, bulldozer, bobcat/tracksteer, excavator, concrete laser screed, concrete conveyor truck, and dump trucks. The existing reinforced concrete floor panels were removed and new concrete forms were set and wire mesh welded together in the new panel locations. New concrete panels were installed. Concrete slurry was used to backfill voids behind the existing concrete slope walls. The voids were created by erosion from runoff from the adjacent parking lot. All equipment and debris was removed from the channel following this work, including additional sediment from upstream that was used to create the temporary access ramp as part of the concrete repair work.

A notice of exemption and emergency permit were issued for the project, and subsequent permitting in accordance with the Environmentally Sensitive Lands Ordinance is in progress. USACE, RWQCB, and CDFW were notified in writing prior to the start of maintenance, and the USACE authorized the emergency activity through RGP 63. The RWQCB confirmed enrollment in the water quality certification program for the RGP.

The last maintenance event in the concrete-lined channel segment of Map 11 & 12 occurred in the spring of 2015. The earthen bottom channel segment of Map 11 & 12, where it transitions downstream from the concrete-lined area, has not been maintained since spring of 2011. Based on pre-project conditions, it was covered approximately 100% with vegetation growing in unevenly accumulated sediment.

No remedial actions were required for this project.

One-time mitigation has already been completed for maintenance impacts in the earthen channel portion of Map 11 as described in the El Cuervo Wetland Area Final Conceptual Wetland Mitigation and Monitoring Plan Los Peñasquitos Canyon Preserve, prepared by Dudek & Associates and dated March 2000. Additional mitigation for maintenance impacts in the concrete channel portion of Map 11 is being implemented within the Los Peñasquitos watershed and includes a total of 6.64 acres (3,750 LF) of wetland enhancement and 2.3 acres (560 LF) of wetland establishment as described in the Los Peñasquitos Canyon Preserve Conceptual Wetland Enhancement Plan dated October 24, 2013, prepared by URS and the El Cuervo del Sur Conceptual Wetland Habitat Mitigation and Monitoring Plan dated October 24, 2013 prepared by URS Corporation. See the Mitigation Projects section for more details.

3.13.1 CONVEYANCE CAPACITY RESULTING FROM MAINTENANCE

Prior to emergency maintenance activities, the Sorrento (Maps 11-12) Channel was estimated to have a reduced conveyance capacity approximately equal to the 2-year storm event. Post-maintenance, the channel is able to function within the as-built design which is estimated at the 25-year storm event capacity.

3.13.2 WATER QUALITY MONITORING SUMMARY

Due to the emergency nature of the activity, no water quality monitoring was conducted. In accordance with the Coastal Development Permit (CDP) and SDP, the City is implementing a suite of water quality improvement activities including the distribution of pollution prevention outreach materials; targeted street sweeping; increased inspections of storm drains within the project's drainage area; and several special studies. It is anticipated that application of these activities within the priority channel drainage area will lead to long-term water quality benefits.

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4 MITIGATION PROJECTS

In accordance with applicable local, state, and federal regulations as well as the PEIR, one-time mitigation is required for significant biological impacts resulting from implementation of the MMP. To mitigate these impacts, the City is planning and implementing mitigation in various watersheds where past, current, or future impacts have or may occur. This section describes projects in various stages of design and implementation, which are depicted in Figure 2 of Appendix A.

4.1 TIJUANA RIVER EMERGENCY CHANNEL MAINTENANCE MITIGATION

The Tijuana River Emergency Channel Maintenance project occurred in the early 1990's and resulted in construction of the Pilot Channel. Mitigation for the Tijuana River Emergency Channel Maintenance occurred in the mid-1990's and consisted of the creation of a 13.21 acre site, 9.43 acres of which was wetlands creation to compensate for the construction of the Pilot Channel. The mitigation was completed in 2001 with sign-off from all applicable environmental regulatory agencies.

On March 19, 2015, Dudek conducted an assessment of the site to verify the mitigation area was still meeting USFWS performance standards. During the site walkthrough, least Bell's vireo (*Vireo belli pusillus*), a federally endangered bird species, were detected vocalizing on site. In addition, a mosaic of native riparian and wetland vegetation communities has been established. While the site exhibits natural changes as dictated by field conditions, the location and composition of vegetation communities is substantially consistent with the project design, and the site remains suitable for supporting the continued utilization by least Bell's vireo (Dudek, April 2015).

4.2 TIJUANA RIVER VALLEY CHANNEL MAINTENANCE MITIGATION PROJECT

In addition to the creation of wetlands described above, wetland enhancement is being conducted as additional mitigation for the continued maintenance in the Pilot Channel and Smuggler's Gulch (MMP Maps 138, 139, 138a, b, and c), including the 2013-2014 and 2015-2016 channel maintenance activities. The wetland enhancement occurs in two locations per the regulatory permits: 1) Adjacent/Out-of-Channel; and 2) In-Channel. The Out-of-Channel mitigation area is adjacent to the channel maintenance areas. The mitigation site is within the Tijuana River Valley Regional Park on City and County of San Diego property.

The 4.31 acre In-Channel mitigation was initiated in September 2013 with the maintenance event which removed non-native vegetation within the channel. Non-native invasive control was also performed through herbicide application to giant reed (*Arundo donax*), castor bean (*Ricinus communis*) and salt cedar (*Tamarix ramosissima*). In FY 2016, channel maintenance helped control the non-natives that had been growing within the channel.

The 4.31 acre Out-of-Channel mitigation was also initiated in September 2013, and involved herbicide treatment and biomass removal of the same three target species. During FY 2016, biomass removal and follow-up herbicide treatment continued as-needed in October, November, March, and June. The treatment area includes the minimum required 4.31 acres of out-of-channel mitigation, plus an extra 0.43 acres has been treated as a contingency to ensure the mitigation requirements for minimum acreage is met, totaling 4.74 acres. Biomass removal and herbicide treatments will continue in fall 2016.

4.3 LOS PENASQUITOS CANYON PRESERVE WETLANDS ENHANCEMENT

The Los Peñasquitos Canyon Preserve Wetland Enhancement Project was designed to remove 8.5 acres of non-native species found within and adjacent to jurisdictional waters in Lopez canyon, as well as support the well-being of native species of plants and animals in order to provide 6.64 acres of mitigation credit. This area had been targeted due to its large, contiguous growth of garland daisy which posed a threat to state- and federally-listed willow monardella (*Monardella linoioides*), which is also present in this portion of Lopez Canyon.

Over the past year, significant progress has been achieved, and the project has exceeded all Year 1 standards indicated in the Final Los Peñasquitos Canyon Preserve Wetland Enhancement Plan. Target and non-native species cover is less than 1 percent, and native plants are growing within previously cleared areas. Native species cover is 14%, and the Year 1 standard is greater than 5%. During the process of removing the invasives, there were no impacts to the willow monardella or other biologically sensitive species. Reseeding efforts have been successfully conducted in order to revegetate the site with native plant species. The five year maintenance and monitoring period started on June 23, 2015, which marked the completion of the installation phase of the project. Invasive species removal and monitoring will continue at regular intervals.

The project provides wetlands enhancement mitigation for the following channel maintenance locations:

- Sorrento Reaches 3 and 7, MMP Maps 9, 11, 12
- Mission Bay High School and Pacific Beach/Olney Streets, MMP Maps 36, 37
- Tripp and Industrial Court, MMP Maps 6, 6a

4.4 EL CUERVO DEL SUR WETLANDS MITIGATION

This wetlands creation project is designed to establish 2.30 acres of wetlands on a currently non-wetland area within the Los Peñasquitos Canyon Preserve as described in the *El Cuervo del Sur Conceptual Wetland Habitat Mitigation and Monitoring Plan* dated October 24, 2013 prepared by URS Corporation. The site has been designed in two phases, however, only Phase I is being carried forward to implementation at the present time. This mitigation project is adjacent to previous City

mitigation projects (El Cuervo, El Cuervo Norte) along Los Peñasquitos Creek in the Los Peñasquitos Canyon Preserve. The project will involve creation of a depressional wetland area within the floodplain through grading and excavation; planting with a mix of herbaceous wetland, riparian scrub and riparian transitional species; installation of a temporary irrigation system; and a five year maintenance and monitoring period.

The project provides wetlands creation mitigation for the following channel maintenance locations:

- Sorrento and Soledad Creek Reaches 3 and 7, MMP Maps 9, 11, 12
- Mission Bay High School and Pacific Beach/Olney Streets, MMP Maps 36, 37
- Tripp and Industrial Court, MMP Maps 6, 6a

The construction contract was awarded in August 2015. Construction started in late September 2015 at the conclusion of the sensitive bird breeding season. Planting and irrigation installation will be completed in the fall of 2016.

4.5 EL CUERVO WETLANDS MITIGATION

The El Cuervo Wetland Mitigation Project (El Cuervo) was implemented in 2001 to compensate for jurisdictional impacts associated with the initial and future channel maintenance within the Sorrento Creek earthen maintenance area. The El Cuervo site is located within the Los Peñasquitos Canyon Preserve, approximately 1 mile east of the Interstate 5/805 split and north of Sorrento Valley Boulevard. The site is located near the confluence of Lopez Creek and Los Peñasquitos Creek, just east of the historic El Cuervo Adobe.

The mitigation consists of creation/enhancement of 0.4 acre salt marsh habitat at Famosa Slough and creation/enhancement of 12.5 acres riparian habitat as described in the *El Cuervo Wetland Area Final Conceptual Wetland Mitigation and Monitoring Plan Los Peñasquitos Canyon Preserve*, prepared by Dudek & Associates and dated March 2000. Of this, 9.8 acres was off-site mitigation for the Sorrento Creek project. Installation of the El Cuervo Wetland mitigation project was completed on October 4, 2001, at which time the five-year long-term maintenance and monitoring period was initiated. By the end of the fifth year, in October 2006, the project had met its final performance standards, and was subsequently signed-off by permitting regulatory agencies.

4.6 STADIUM (SAN DIEGO RIVER) MITIGATION BANK PURCHASE

The Public Utilities Department's Stadium (San Diego River) Mitigation site is located within the floodplain of the San Diego River between I-15 and I-805. The project site is approximately 57 acres and is currently dominated by a high number of non-native species. The project proposes to restore native habitat to the area by removing non-natives, installing native plants, and maintaining and

monitoring the site for a minimum of five years. Site construction is anticipated to begin in fall 2016 (City of San Diego, 2015).

The Storm Water Division has reserved 8.528 acres of mitigation credits at this site through a Memorandum of Understanding with the Public Utilities Department. The credits are anticipated to be used for the following channel maintenance locations:

- Murphy Canyon Channel Maintenance (Map 58)
- Alvarado Creek Channel Maintenance (Maps 59, 60, 64)

4.7 RANCHO JAMUL WETLAND MITIGATION BANK PURCHASE

The Rancho Jamul Wetland Mitigation Bank, located on CDFW lands in unincorporated county lands near Jamul, is proposed to be expanded by approximately 26 acres (Phase IIB) and involves additional stream and wetland re-establishment and enhancement along Jamul Creek and its tributaries. The final permitting and agreements with all regulatory agencies is in progress. The Storm Water Division has purchased 3.3 acres of pre-released wetlands mitigation credits associated with this expansion from the bank sponsor for future projects that occur within the approved service area, consisting of multiple watersheds.

4.8 OTAY RIVER WETLAND MITIGATION SITE

The Otay River Wetland Mitigation Site project consists of implementing wetlands creation and enhancement of habitat, involving replacement of eucalyptus woodland and restoration of southern-cottonwood willow riparian forest habitats, located along the Otay River within the Otay watershed. The plan will include a minimum of 0.54 acre of mitigation. Of this total, 0.20 acre will be used to mitigate for past maintenance within Nestor Creek (MMP Maps 131, 133, and 134). The 0.34 acre balance is planned to be used as advance permittee-responsible compensatory mitigation for future City projects that occur in the Otay watershed.

The Draft Habitat Mitigation and Monitoring Plan is in preliminary design review. Preliminary design was started in 2015, but the site is currently being evaluated to maximize the mitigation opportunities, including opportunities to provide mitigation for the emergency channel maintenance that happened earlier in 2016. Final design and CEQA review is scheduled for completion by December 2016, followed by preparation and submittal of required regulatory permit applications before the end of summer 2017.

5 CONCLUSIONS AND FUTURE PROJECTS

Over the FY 2016 maintenance period, sixteen channels were maintained and over 23,000 tons of trash, sediment, and debris was removed from flood control channels. Over 51 acres of wetlands mitigation has been required and is in various stages of progress to compensate for wetlands impacts associated with channel maintenance related to the MMP. Water quality mitigation is being implemented as required by the SDP and CDP. The maintenance activities conducted under the MMP maintained compliance with all regulatory permits.

For the FY 2017 season, the Storm Water Division is pursuing permits to maintain the following facilities:

- Tijuana River Pilot Channel and Smuggler's Gulch MMP Maps 138 a, b, c and 139 (continued maintenance)
- Sorrento and Soledad Creek Maps 9-12

A preliminary assessment of sensitive biological and cultural resources to be impacted as a result of the anticipated FY 2017 channel maintenance projects is included in Appendix D. The City will continue to implement the MMP by planning channel maintenance and mitigation activities, pursuing environmental permits, conducting appropriate technical assessments, and conducting channel maintenance.

The current MMP and associated authorizations, including the Program Environmental Impact Report (PEIR), will expire in September 2018. To prepare for channel and other drainage facility maintenance authorizations beyond 2018, the City has begun developing a replacement plan, known as the Waterways Maintenance Plan (WMP). The process for developing the WMP will take up to two years and will be part of the storm water division's holistic storm water management strategy with the goal to maintain and restore healthy waterways.

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- RICK. 2015e. Summary of Findings for the Annual Drainage Channel Field Assessment and Maintenance Prioritization Project for Chollas Creek Channel Map 71. August 4, 2015.
- RICK. 2015f. Summary of Findings for the Annual Drainage Channel Field Assessment and Maintenance Prioritization Project for Cottonwood Channel. August 4, 2015.
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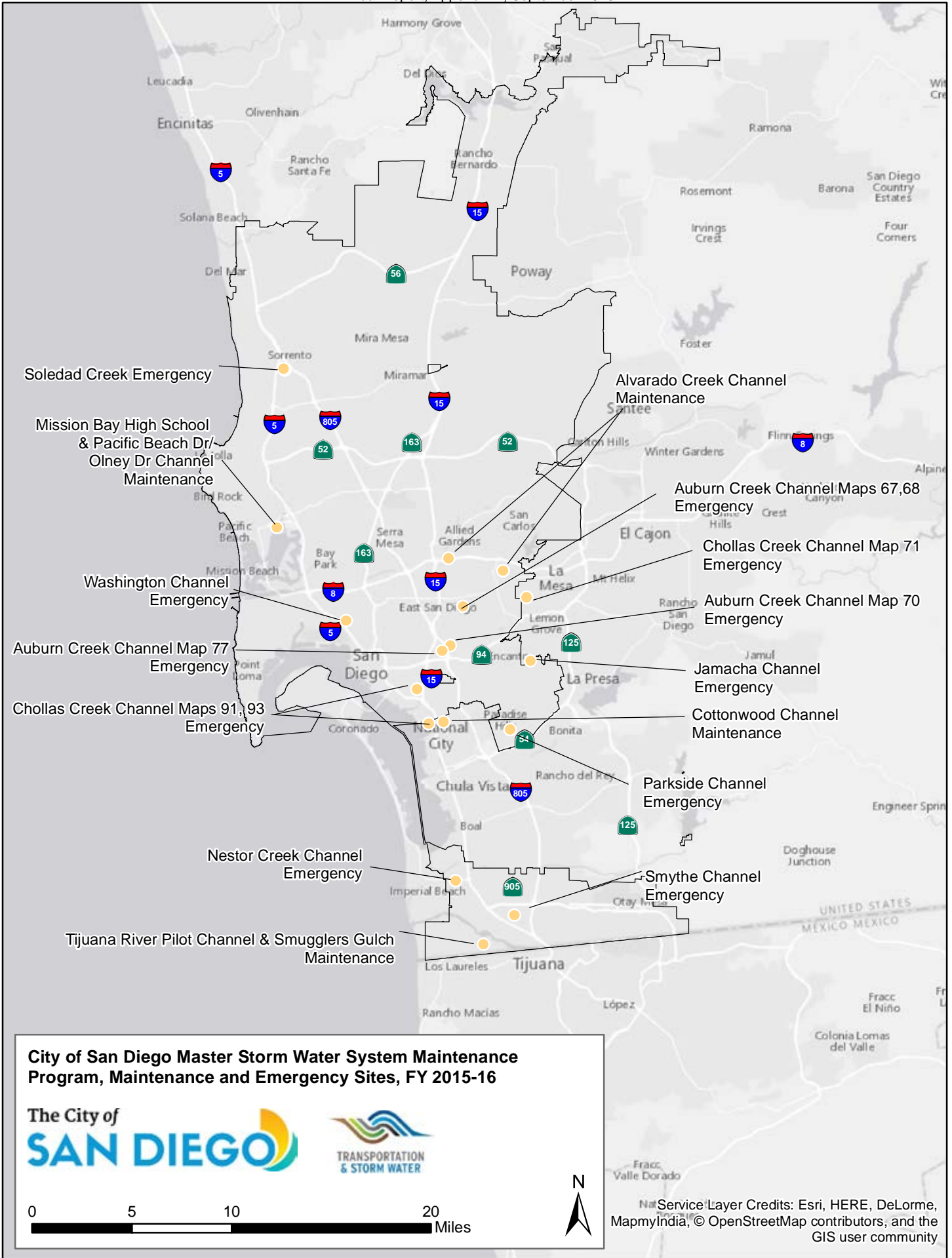
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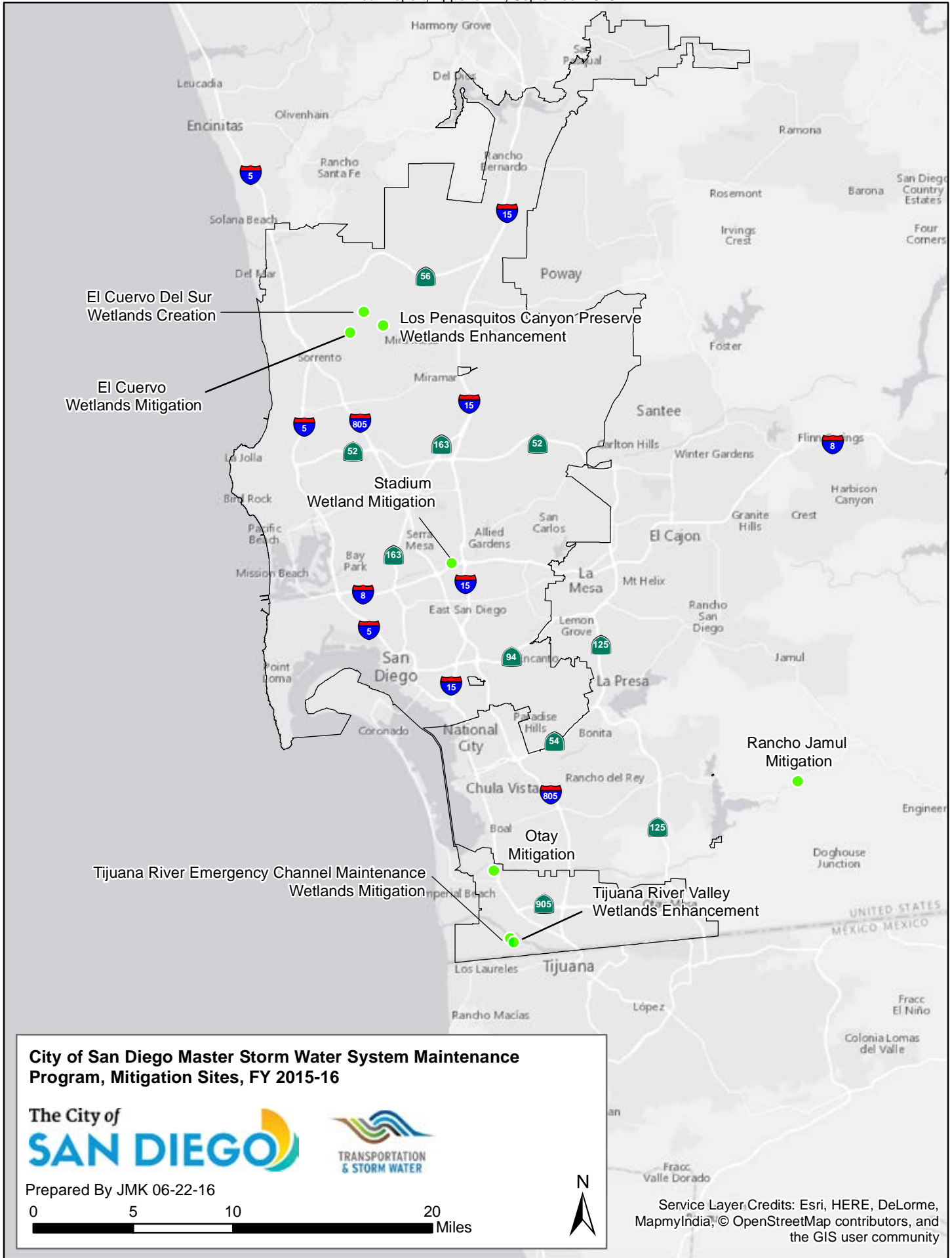
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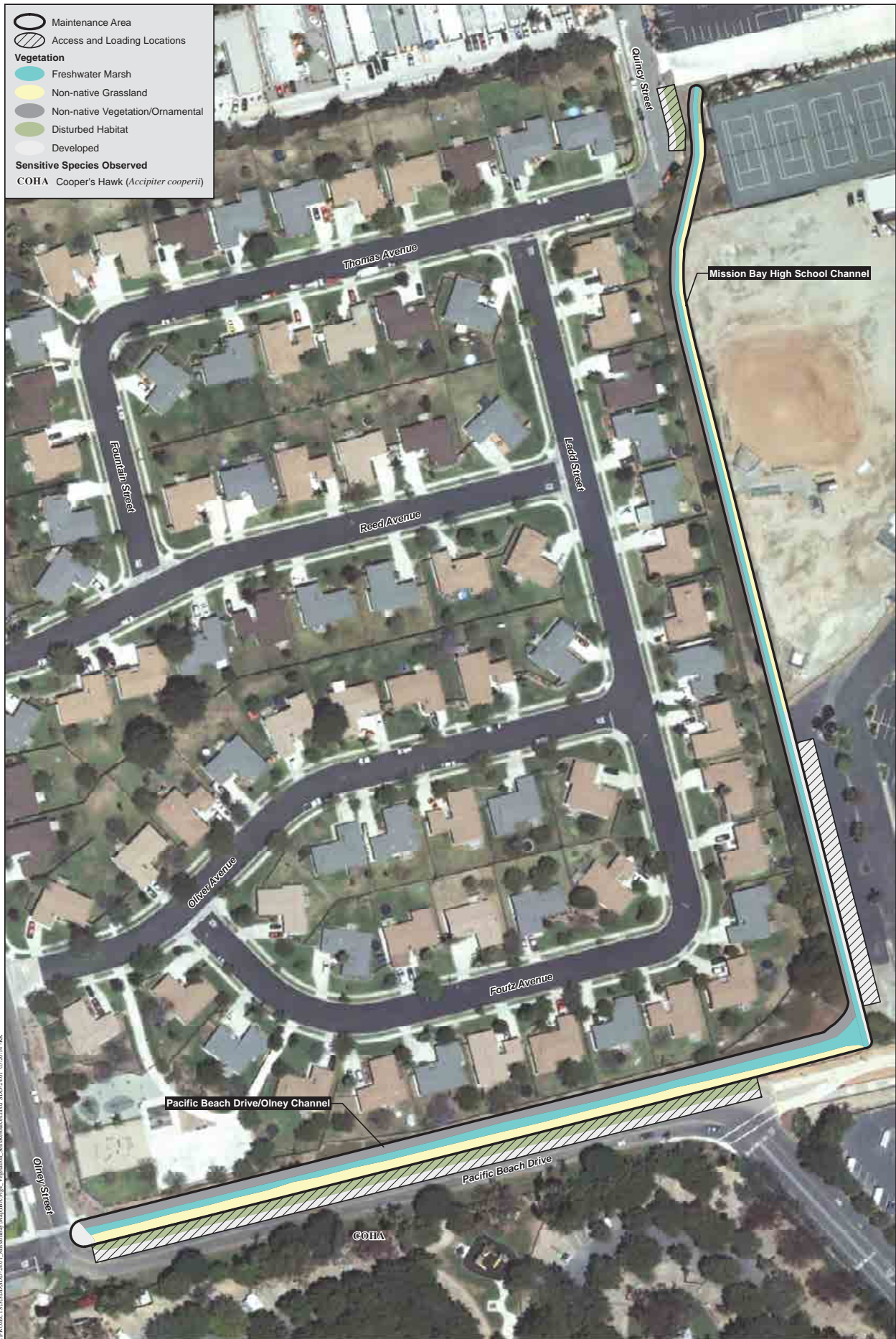
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APPENDIX A

Pre- and Post-Maintenance Maps







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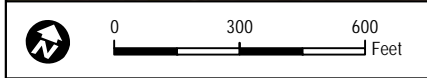
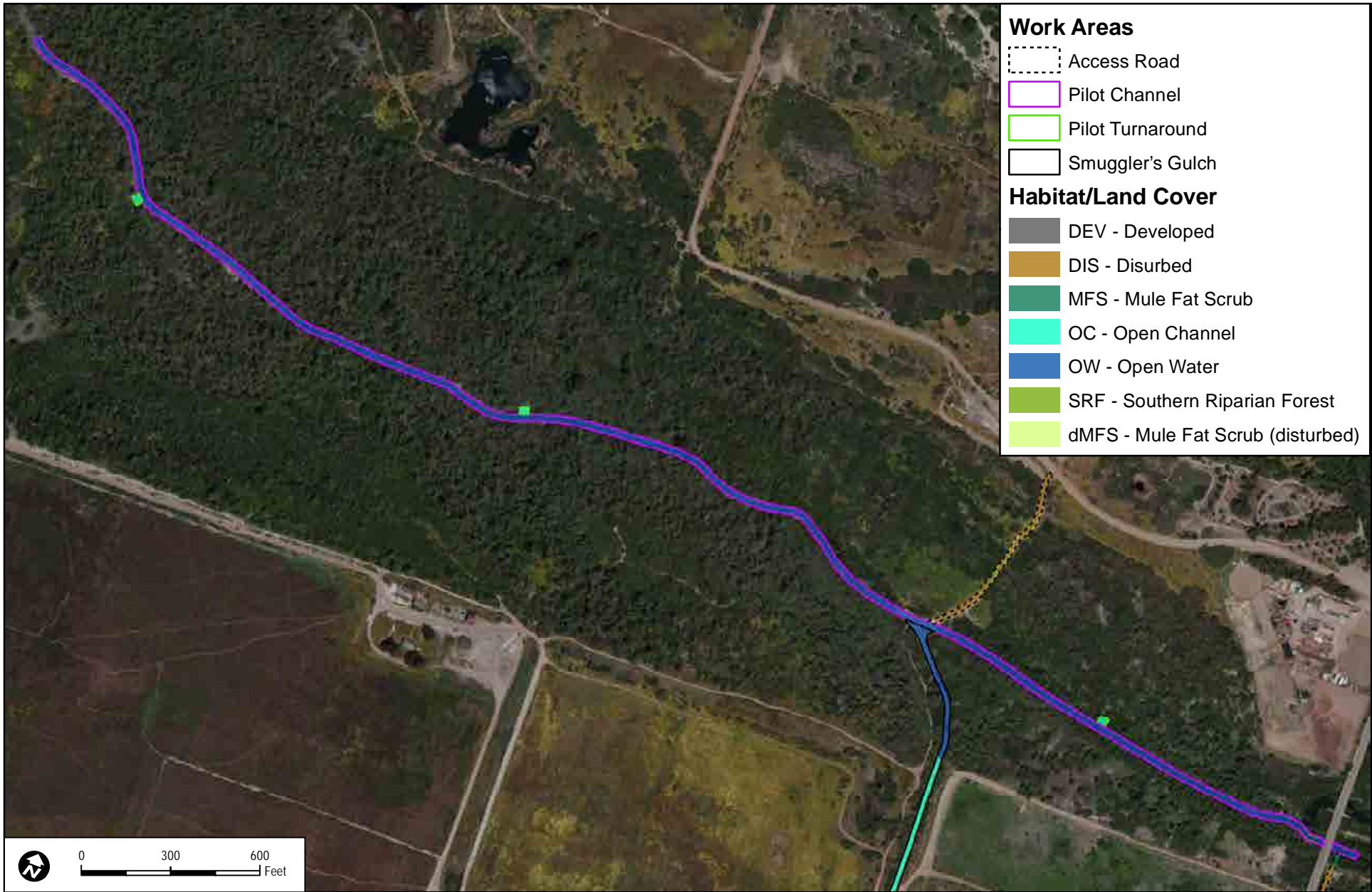
Pre-Maintenance Vegetation and Sensitive Biological Resources

STORM WATER FACILITY MAPS 36 AND 37 (MISSION BAY HIGH SCHOOL AND PACIFIC BEACH DRIVE/OLNEY STREET CHANNELS)

Annual Report, Figure 3



Annual Report, Figure 4

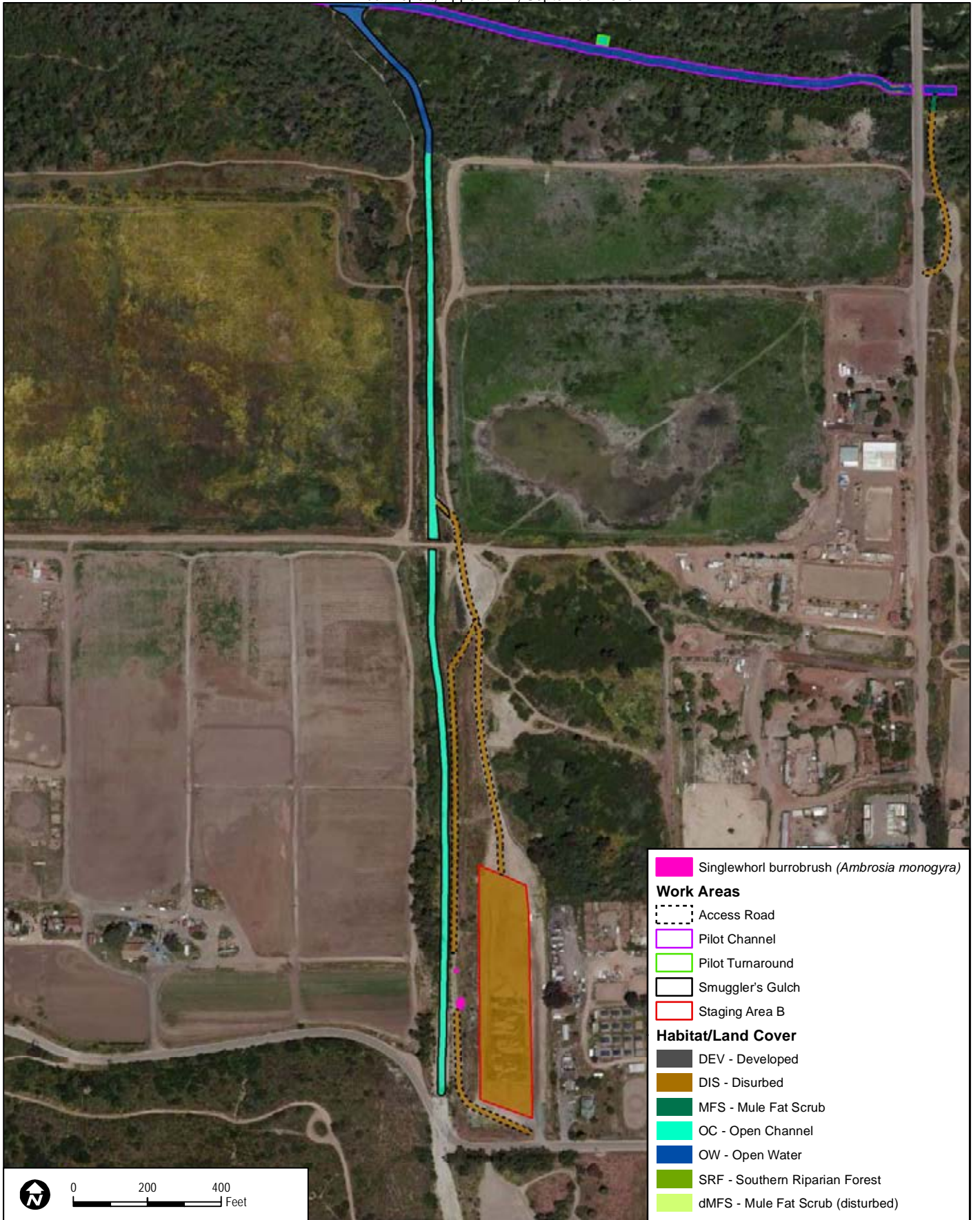


DUDEK
8685

SOURCE: BING Maps 2015

Pre-Maintenance Biological Resources

Tijuana River Pilot Channel and Smuggler s Gulch Channel Maintenance Project



DUDEK

SOURCE: BING 2015

Pre-Maintenance Biological Resources

8685

Tijuana River Pilot Channel and Smuggler s Gulch Channel Maintenance Project



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Pre-Maintenance Vegetation and Sensitive Biological Resources, Lower Alvarado

STORM WATER FACILITY MAPS 59, 60, AND 64
 (UPPER/LOWER ALVARADO CREEK CHANNELS)





Post-Maintenance Conditions 2016, Lower Alvarado

STORM WATER FACILITY MAPS 59, 60 AND 64
(UPPER/LOWER ALVARADO CREEK CHANNELS)



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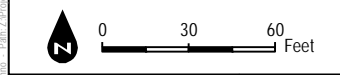
Pre-Maintenance Vegetation and Sensitive Biological Resources, Upper Alvarado

STORM WATER FACILITY MAPS 59, 60, AND 64
(UPPER/LOWER ALVARADO CREEK CHANNELS)

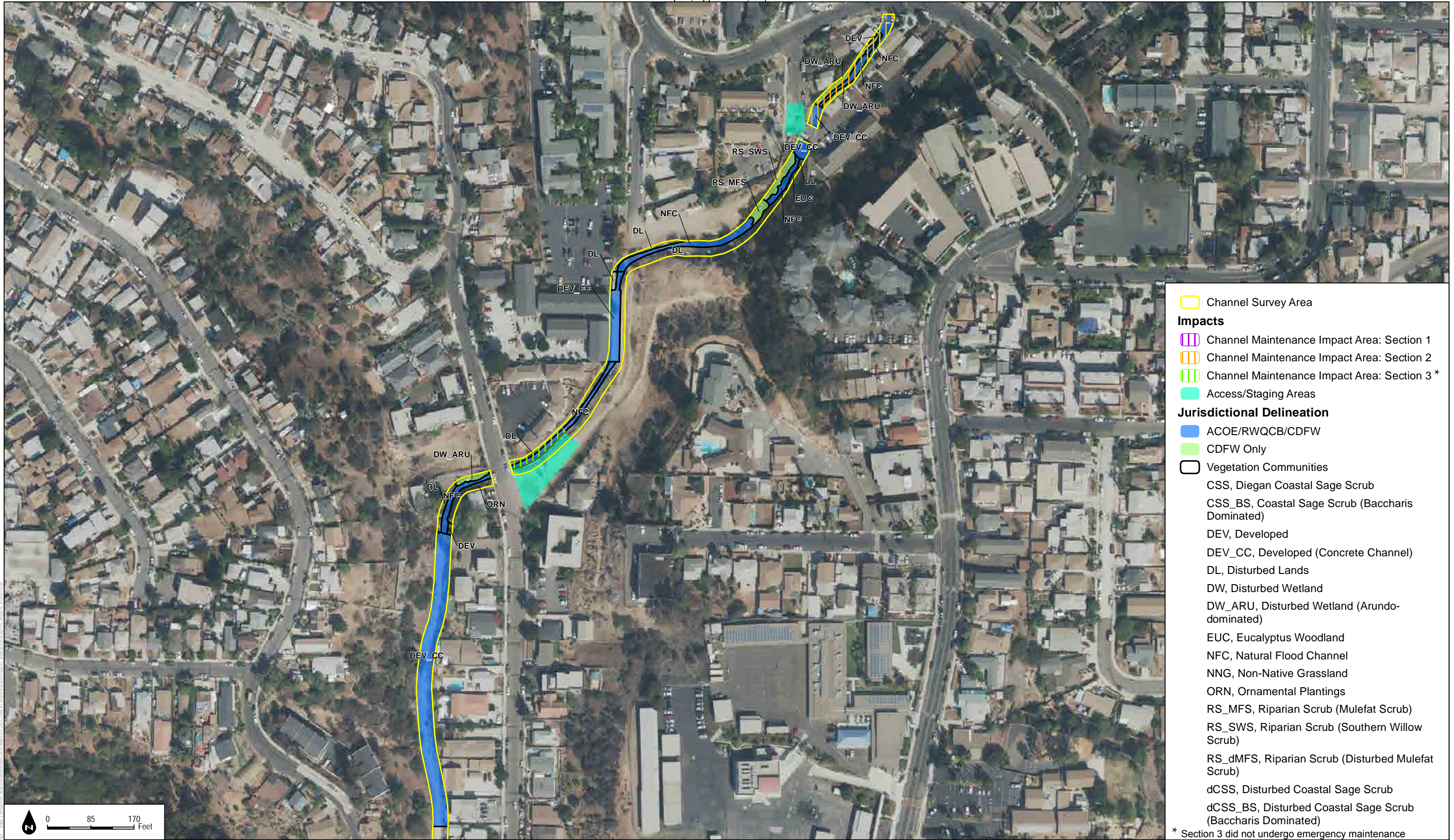


Post-Maintenance Conditions 2016, Upper Alvarado

STORM WATER FACILITY MAPS 59, 60 AND 64
(UPPER/LOWER ALVARADO CREEK CHANNELS)







Channel Survey Area

Impacts

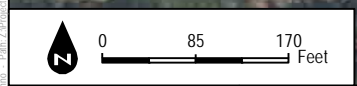
- Channel Maintenance Impact Area: Section 1
- Channel Maintenance Impact Area: Section 2
- Channel Maintenance Impact Area: Section 3 *
- Access/Staging Areas

Jurisdictional Delineation

- ACOE/RWQCB/CDFW
- CDFW Only
- Vegetation Communities

CSS, Diegan Coastal Sage Scrub
 CSS_BS, Coastal Sage Scrub (Baccharis Dominated)
 DEV, Developed
 DEV_CC, Developed (Concrete Channel)
 DL, Disturbed Lands
 DW, Disturbed Wetland
 DW_ARU, Disturbed Wetland (Arundo-dominated)
 EUC, Eucalyptus Woodland
 NFC, Natural Flood Channel
 NNG, Non-Native Grassland
 ORN, Ornamental Plantings
 RS_MFS, Riparian Scrub (Mulefat Scrub)
 RS_SWS, Riparian Scrub (Southern Willow Scrub)
 RS_dMFS, Riparian Scrub (Disturbed Mulefat Scrub)
 dCSS, Disturbed Coastal Sage Scrub
 dCSS_BS, Disturbed Coastal Sage Scrub (Baccharis Dominated)

* Section 3 did not undergo emergency maintenance

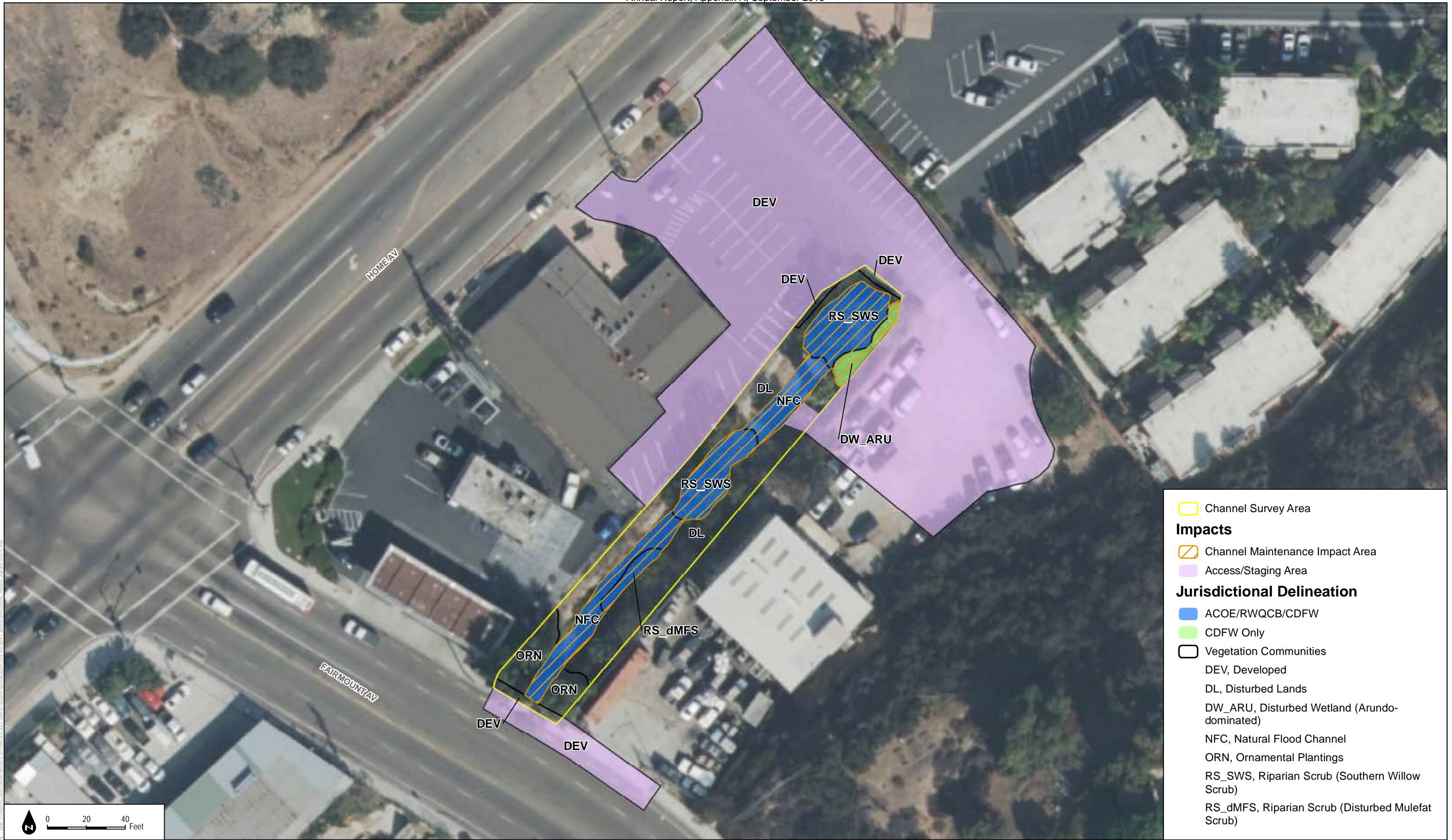


SOURCE: SANDAG Imagery 2015; Helix 2015; City of San Diego 2015



Auburn Creek (MMP Map 68) - Emergency Channel Maintenance





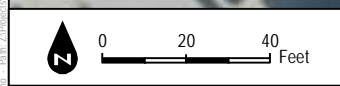
Channel Survey Area

Impacts

- Channel Maintenance Impact Area
- Access/Staging Area

Jurisdictional Delineation

- ACOE/RWQCB/CDFW
- CDFW Only
- Vegetation Communities
 - DEV, Developed
 - DL, Disturbed Lands
 - DW_ARU, Disturbed Wetland (Arundo-dominated)
 - NFC, Natural Flood Channel
 - ORN, Ornamental Plantings
 - RS_SWS, Riparian Scrub (Southern Willow Scrub)
 - RS_dMFS, Riparian Scrub (Disturbed Mulefat Scrub)



SOURCE: SANDAG Imagery 2015; Helix 2015; City of San Diego 2015



Auburn Creek Channel (MMP Map 70) - Emergency Channel Maintenance

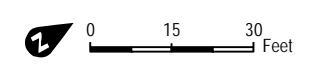
MMP Map 70
Pre-Maintenance Auburn Creek Channel Biological Resources and Impacts



Annual Report, Figure 16



Channel Survey Area
Jurisdictional Delineation
 ACOE/RWQCB/CDFW
Impacts
 Channel Maintenance Area
 Debris Removal
 Potential Diversion Berm
 Slope Repair
 Access/Staging
 Vegetation Communities
 DL, Disturbed Lands
 EUC, Eucalyptus Woodland
 NFC, Natural Flood Channel
 ORN, Ornamental Plantings
 RS_SWS, Riparian Scrub (Southern Willow Scrub)
 RS_dSWS, Riparian Scrub (disturbed Southern Willow Scrub)

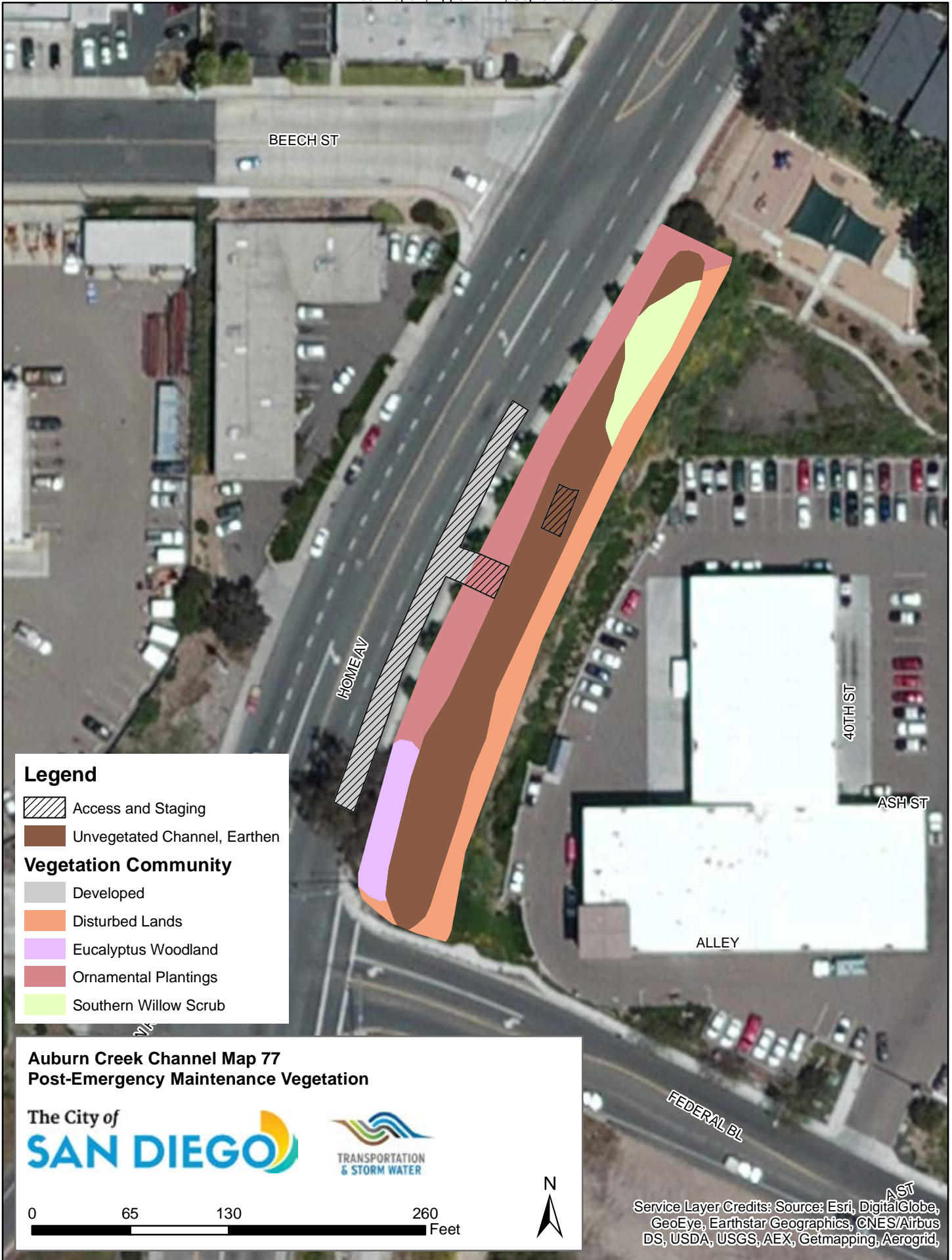


SOURCE: SANDAG Imagery 2015; Helix 2015; City of San Diego 2015



Auburn Creek Channel (MMP Map 77) - Emergency Channel Maintenance

MMP MAP 77
Pre-Maintenance Auburn Creek Channel Biological Resources and Impacts



Annual Report, Figure 18



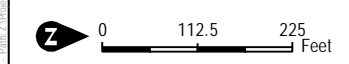
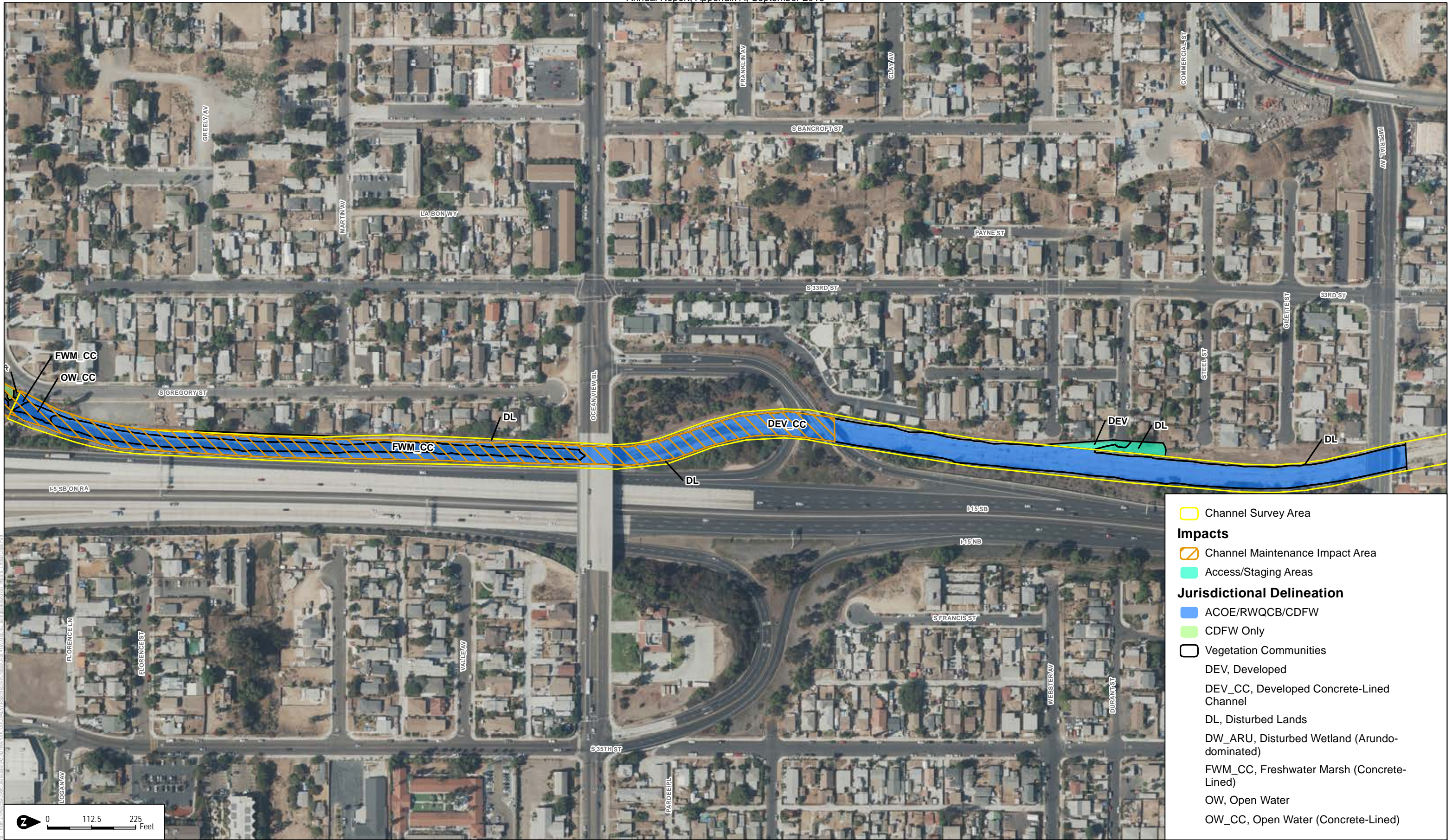
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	Channel Limits
	Impacts
Vegetation	
	Fresh Water Marsh
	Fresh Water Marsh - Disturbed
	Southern Willow Scrub
	Non-native Vegetation
	Developed
Sensitive Biological Resources	
None	

Pre-Maintenance Vegetation and Sensitive Biological Resources

VIA DE LA BANDOLA CHANNEL





SOURCE: SANDAG Imagery 2015; Helix 2015; City of San Diego 2015



Chollas Creek (MMP Map 91) - Emergency Channel Maintenance

Pre-Maintenance Biological Resources and Impacts

Annual Report, Figure 21





- Channel Survey Area
- Impacts**
- Channel Maintenance Impact Area
- Access/Staging Areas
- Jurisdictional Delineation**
- ACOE/RWQCB/CDFW
- CDFW Only
- Vegetation Communities
- CSM, Coastal Salt Marsh
- DEV, Developed
- DEV_CC, Developed Concrete-Lined Channel
- DL, Disturbed Lands
- DW_ARU, Disturbed Wetland (Arundo-dominated)
- FWM, Freshwater Marsh
- FWM_CC, Freshwater Marsh (Concrete-Lined)
- NFC, Natural Flood Channel
- ORN, Ornamental Plantings
- OW, Open Water
- OW_CC, Open Water (Concrete-Lined)

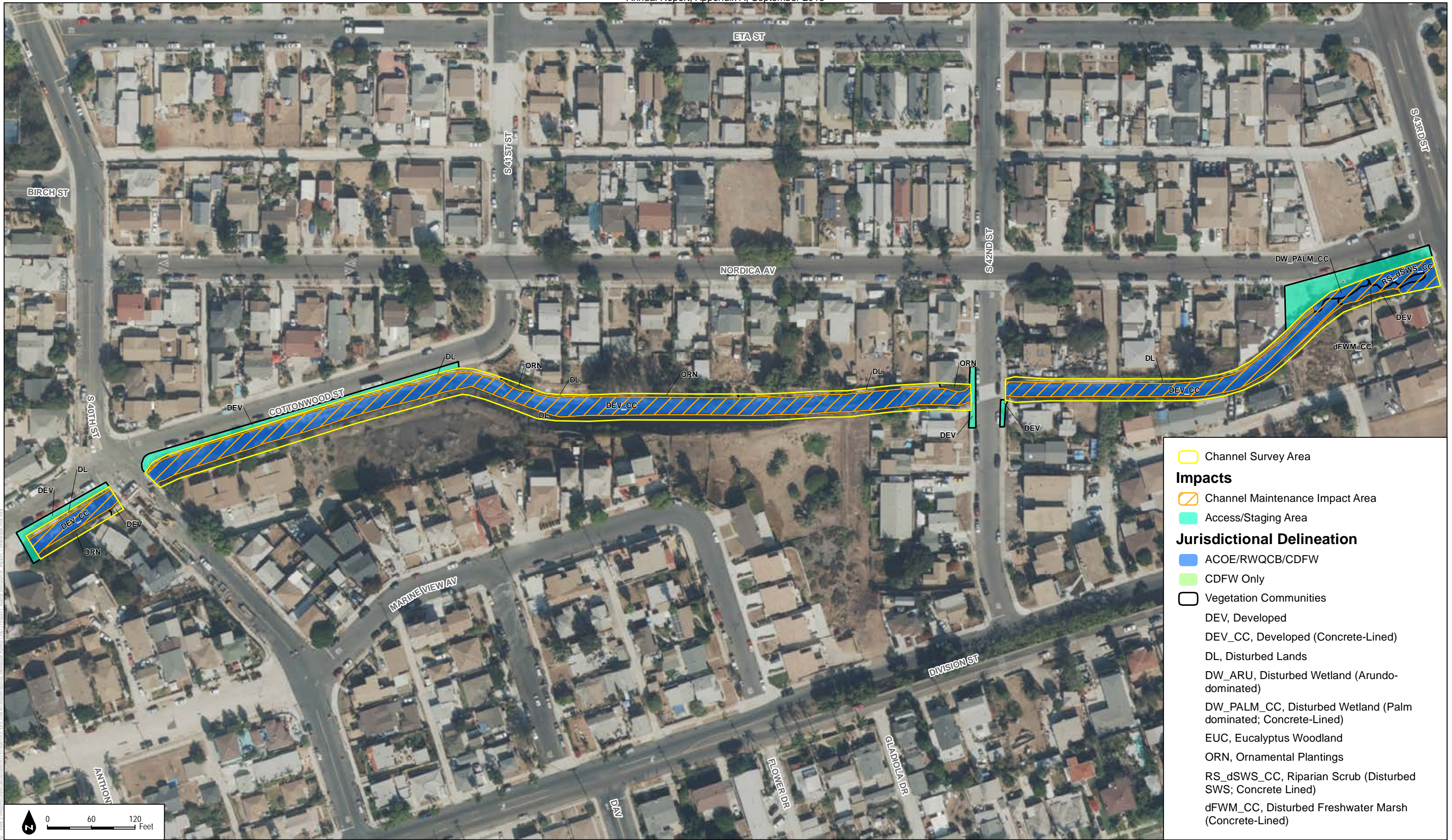
SOURCE: SANDAG Imagery 2015; Helix 2015; City of San Diego 2015



Chollas Creek (MMP Map 93) - Emergency Channel Maintenance

Pre-Maintenance Biological Resources and Impacts

Annual Report, Figure 23

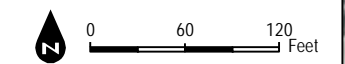


Channel Survey Area
 Channel Survey Area

Impacts
 Channel Maintenance Impact Area
 Access/Staging Area

Jurisdictional Delineation
 ACOE/RWQCB/CDFW
 CDFW Only
 Vegetation Communities

DEV, Developed
 DEV_CC, Developed (Concrete-Lined)
 DL, Disturbed Lands
 DW_ARU, Disturbed Wetland (Arundo-dominated)
 DW_PALM_CC, Disturbed Wetland (Palm dominated; Concrete-Lined)
 EUC, Eucalyptus Woodland
 ORN, Ornamental Plantings
 RS_dSWS_CC, Riparian Scrub (Disturbed SWS; Concrete Lined)
 dFWM_CC, Disturbed Freshwater Marsh (Concrete-Lined)



SOURCE: SANDAG Imagery 2015; Helix 2015; City of San Diego 2015



Cottonwood Channel (MMP Map 120 & 121) - Emergency Channel Maintenance

MMP Map 120

Pre-Maintenance Biological Resources and Impacts

Annual Report, Figure 25



COTTONWOOD ST

OSBORN ST

MARINE VIEW AV



Channel Survey Area

Impacts

- Channel Maintenance Impact Area
- Access/Staging Area

Jurisdictional Delineation

- ACOE/RWQCB/CDFW
- CDFW Only
- Vegetation Communities

DEV, Developed

DEV_CC, Developed (Concrete-Lined)

DL, Disturbed Lands

DW_ARU, Disturbed Wetland (Arundo-dominated)

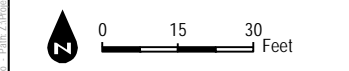
DW_PALM_CC, Disturbed Wetland (Palm dominated; Concrete-Lined)

EUC, Eucalyptus Woodland

ORN, Ornamental Plantings

RS_dSWS_CC, Riparian Scrub (Disturbed SWS; Concrete Lined)

dFWM_CC, Disturbed Freshwater Marsh (Concrete-Lined)

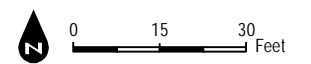




Annual Report, Figure 28



Channel Survey Area
Impacts
 Channel Maintenance Impact Area
 Access/Staging Area
Jurisdictional Delineation
 ACOE/RWQCB/CDFW
 CDFW Only
 Vegetation Communities
 DL, Disturbed Lands
 DW, Disturbed Wetlands
 DW_ARU, Disturbed Wetland (Arundo-dominated)
 NFC, Natural Flood Channel
 ORN, Ornamental Plantings



SOURCE: SANDAG Imagery 2015; Helix 2015; City of San Diego 2015



Jamacha Channel (MMP Map 115) - Emergency Channel Maintenance

MMP Map 115
Pre-Maintenance Biological Resources and Impacts

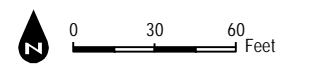
Annual Report, Figure 29







Annual Report, Figure 32



SOURCE: SANDAG Imagery 2015; Helix 2015; City of San Diego 2015



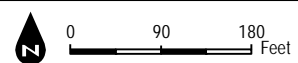
Parkside Channel (MMP Map 122) - Emergency Channel Maintenance

MMP Map 122

Pre-Maintenance Biological Resources and Impacts

Annual Report, Figure 33





SOURCE: SANDAG Imagery 2015; Helix 2015; City of San Diego 2015



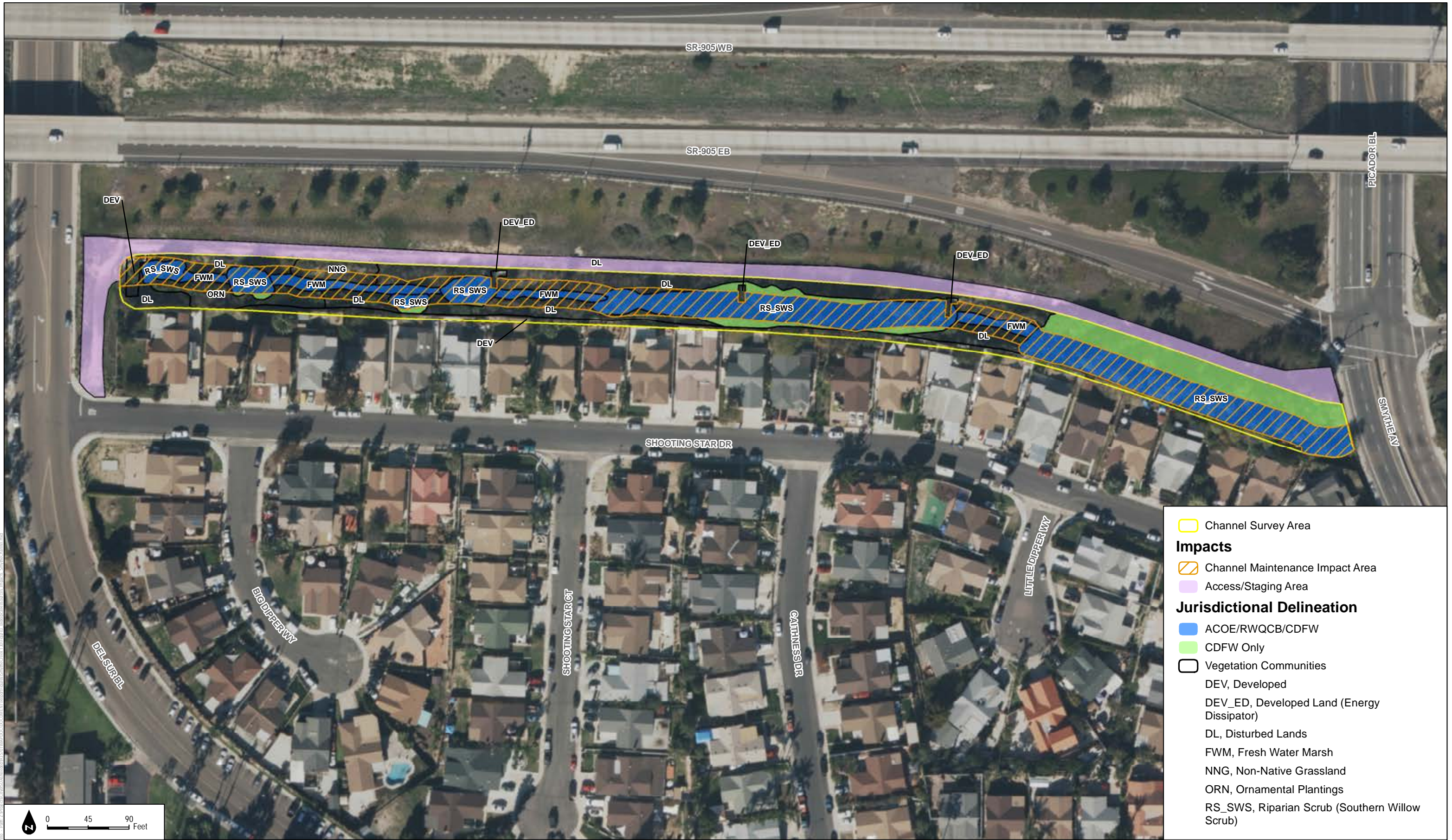
Washington Channel (MMP Map 84) - Emergency Channel Maintenance

MMP MAP 84

Pre-Maintenance Biological Resources and Impacts

Annual Report, Figure 35





Channel Survey Area
Impacts
 Channel Maintenance Impact Area
 Access/Staging Area
Jurisdictional Delineation
 ACOE/RWQCB/CDFW
 CDFW Only
 Vegetation Communities
 DEV, Developed
 DEV_ED, Developed Land (Energy Dissipator)
 DL, Disturbed Lands
 FWM, Fresh Water Marsh
 NNG, Non-Native Grassland
 ORN, Ornamental Plantings
 RS_SWS, Riparian Scrub (Southern Willow Scrub)

SOURCE: SANDAG Imagery 2015; Helix 2015; City of San Diego 2015



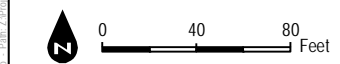
Smythe Channel (MMP Map 130) - Emergency Channel Maintenance

MMP Map 130
Pre-Maintenance Biological Resources and Impacts





Channel Survey Area
Impacts
 Channel Maintenance Impact Area
 Access/Staging Area
Jurisdictional Delineation
 ACOE/RWQCB/CDFW
 CDFW Only
 Vegetation Communities
 DEV, Developed
 DL, Disturbed Lands
 DW_PALM, Disturbed Wetland (Palm dominated)
 NFC, Natural Flood Channel
 RS_dSWS, Riparian Scrub (disturbed Southern Willow Scrub)



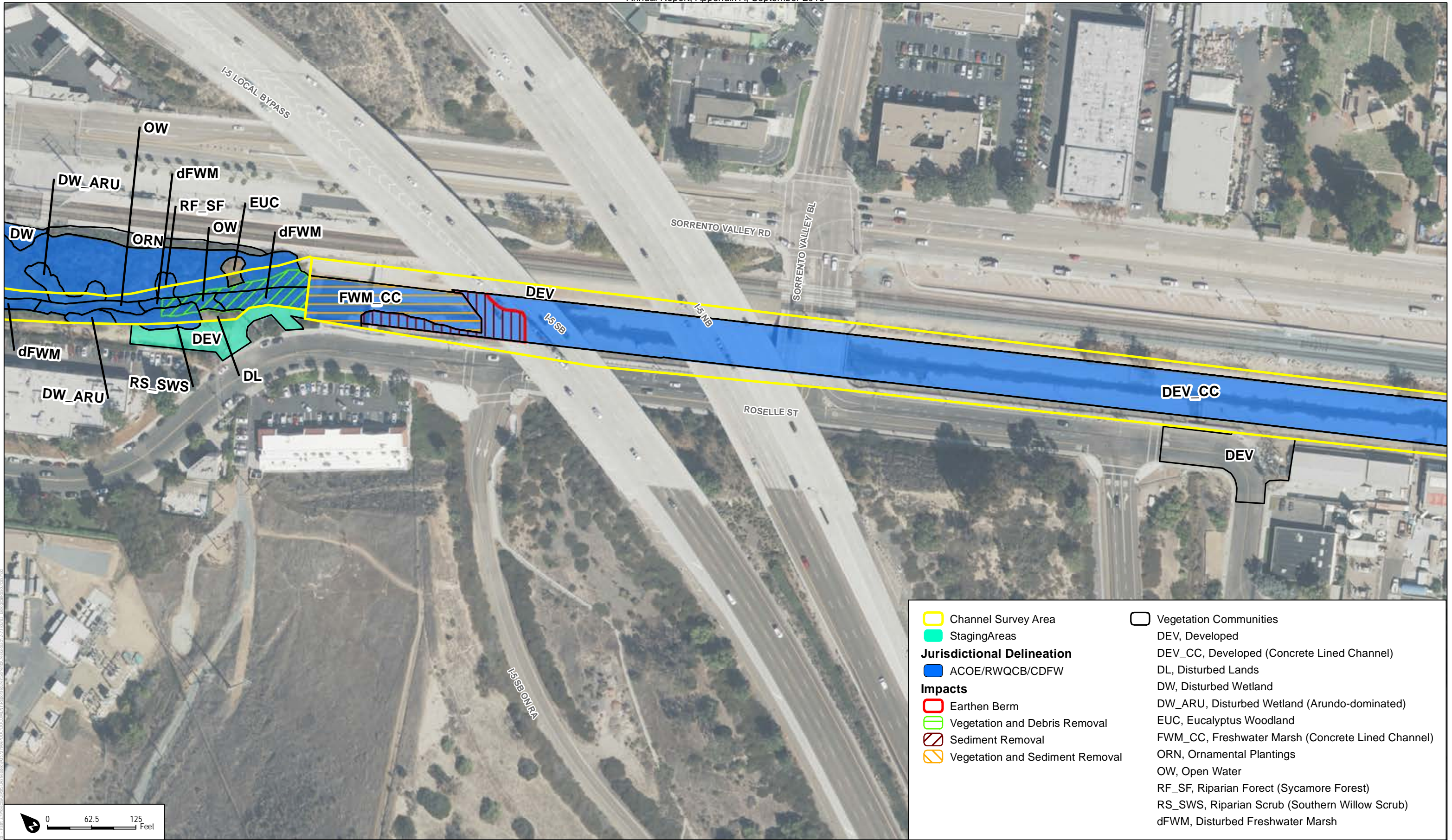
SOURCE: SANDAG Imagery 2015; Helix 2015; City of San Diego 2015



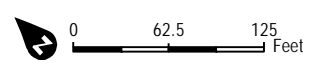
Chollas Creek Channel (MMP Map 71) - Emergency Channel Maintenance

MMP Map 71
Pre-Maintenance Biological Resources and Impacts





Channel Survey Area	Vegetation Communities
Staging Areas	DEV, Developed
Jurisdictional Delineation	DEV_CC, Developed (Concrete Lined Channel)
ACOE/RWQCB/CDFW	DL, Disturbed Lands
Impacts	DW, Disturbed Wetland
Earthen Berm	DW_ARU, Disturbed Wetland (Arundo-dominated)
Vegetation and Debris Removal	EUC, Eucalyptus Woodland
Sediment Removal	FWM_CC, Freshwater Marsh (Concrete Lined Channel)
Vegetation and Sediment Removal	ORN, Ornamental Plantings
	OW, Open Water
	RF_SF, Riparian Forest (Sycamore Forest)
	RS_SWS, Riparian Scrub (Southern Willow Scrub)
	dFWM, Disturbed Freshwater Marsh



SOURCE: SANDAG Imagery, 2016.

Pre-Maintenance Biological Resources and Impacts





- Channel Survey Area
- Staging Areas
- Impact Areas
- Temporary Access Ramp
- Access Path
- Jurisdictional Delineation**
- ACOE/RWQCB/CDFW
- Vegetation Communities**
- DEV, Developed
- DEV_CC, Developed (Concrete Lined Channel)
- DL, Disturbed Lands
- DW, Disturbed Wetland
- DW_ARU, Disturbed Wetland (Arundo-dominated)
- EUC, Eucalyptus Woodland
- NFC, Natural Flood Channel
- ORN, Ornamental Plantings
- OW, Open Water
- RF_SF, Riparian Forest (Sycamore Forest)
- RS_SWS, Riparian Scrub (Southern Willow Scrub)
- dFWM, Disturbed Freshwater Marsh

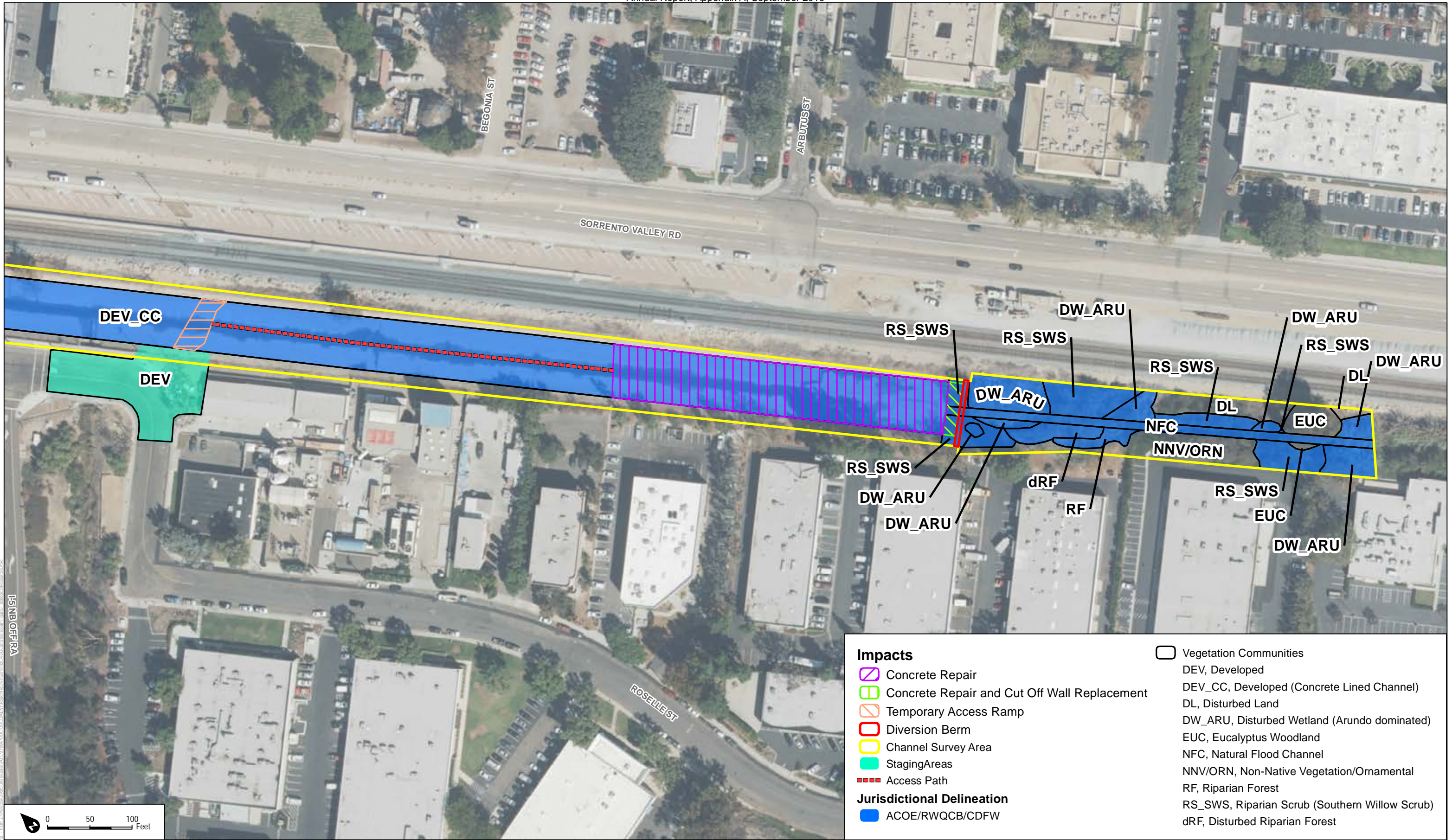
0 62.5 125 Feet

SOURCE: SANDAG Imagery, 2016.

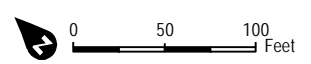


Sorrento Valley 2016 Emergency Channel Maintenance (Reaches 2-3)

Post-Project Biological Resources



IS/NB/OF/RA

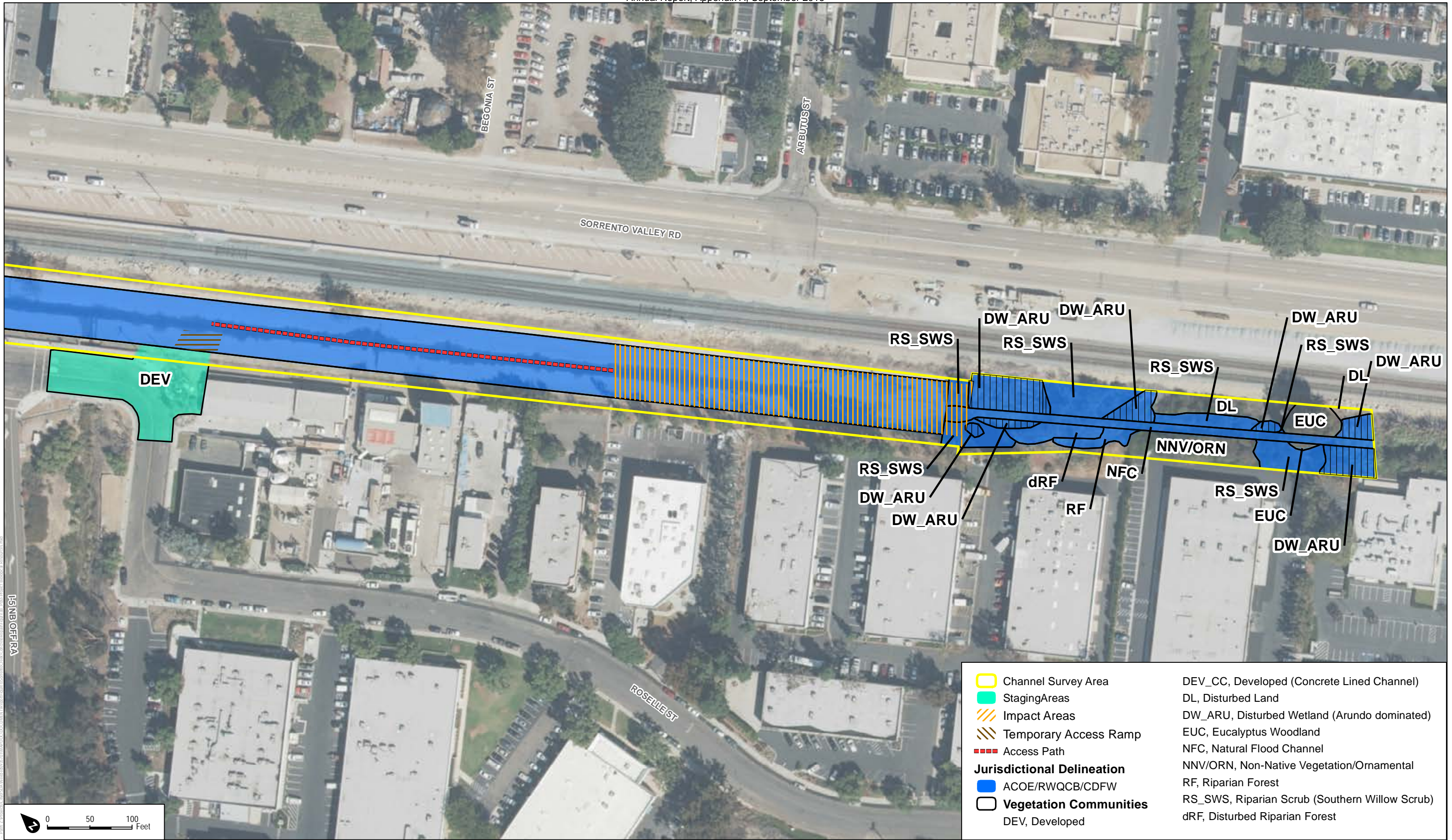


SOURCE: SANDAG Imagery, 2016.



Sorrento Valley 2016 Concrete Repair (Reach 3)

Pre-Maintenance Biological Resources and Impacts



- | | |
|-----------------------------------|--|
| Channel Survey Area | DEV_CC, Developed (Concrete Lined Channel) |
| Staging Areas | DL, Disturbed Land |
| Impact Areas | DW_ARU, Disturbed Wetland (Arundo dominated) |
| Temporary Access Ramp | EUC, Eucalyptus Woodland |
| Access Path | NFC, Natural Flood Channel |
| Jurisdictional Delineation | NNV/ORN, Non-Native Vegetation/Ornamental |
| ACOE/RWQCB/CDFW | RF, Riparian Forest |
| Vegetation Communities | RS_SWS, Riparian Scrub (Southern Willow Scrub) |
| | dRF, Disturbed Riparian Forest |

SOURCE: SANDAG Imagery, 2016.



Sorrento Valley 2016 Concrete Repair (Reach 3)

Post-Project Biological Resources

APPENDIX B

Master Storm Water Facility and Mitigation List

Map No.	Facility	Date of Most Recent Maintenance	Type of Most Recent Maintenance	Mitigation Site	Mitigation Location	Mitigation Type	Mitigation Acreage	Mitigation Status
138a,b,c, 138, 139	Tijuana River Pilot Channel and Smuggler's Gulch	2015-2016	Planned Maintenance; Vegetation and Sediment Removal	Tijuana River Valley	Adjacent to Site	Wetlands Creation	9.43	Complete in 2001
				Tijuana River Valley	Adjacent to Site	Wetlands Enhancement	8.62	Maintenance and Monitoring Year 2
9, 11, and 12	Sorrento Creek	portions 2014-2015; portion 2016	Planned Maintenance; Vegetation and Sediment Removal	El Cuervo Del Sur	Off Site in Watershed	Wetlands Creation	1.91	Construction
				LPC Preserve Wetlands Enhancement	Off Site in Watershed	Wetlands Enhancement	5.53	Maintenance and Monitoring Year 1
				El Cuervo	Off Site in Watershed	Wetlands Creation	9.8	Complete in 2006
58	Murphy Canyon Creek	2014-2015	Planned Maintenance; Vegetation and Sediment Removal	Stadium Wetland Mitigation Project	Adjacent to Site	Wetlands Restoration	4.28	Credits Reserved
36-37	Mission Bay High School & Pacific Beach Dr/Olney Dr Channels	Spring 2015- Spring 2016	Planned Maintenance; Vegetation and Sediment Removal	El Cuervo Del Sur	Off Site in Watershed	Wetlands Creation	0.34	Construction
				LPC Preserve Wetlands Enhancement	Off Site in Watershed	Wetlands Enhancement	0.96	Maintenance and Monitoring Year 1
				Habitat Acquisition Fund	Offsite	Payment into Habitat Acquisition Fund	0.15	In progress*
54	San Carlos Creek Channel Emergency	Fall 2014	Emergency Maintenance; Debris Removal	TBD	TBD	TBD	TBD	Site suitability search
64a**	Reservoir Drive Channel Emergency	Fall 2014	Emergency Maintenance; Vegetation and Sediment Removal	TBD	TBD	TBD	TBD	Site suitability search
129	Smythe Channel Emergency	Fall 2014	Emergency Maintenance; Vegetation and Sediment Removal	N/A	N/A	N/A	N/A	No mitigation required
59, 60, 64	Alvarado Channel	Fall 2015- ongoing	Planned Maintenance; Sediment and Vegetation Removal	Stadium Wetland Mitigation Project	Off Site in Watershed	Wetlands Restoration	3.55	Credits Reserved
130a**	Via De La Bandola Channel	11/25/2015-12/6/2015	Emergency Maintenance; Debris Removal	TBD	TBD	TBD	0.67	Site suitability search
67-68	Auburn Creek Channel	12/15/2015-1/12/2016	Emergency Maintenance; Vegetation and Sediment Removal	Onsite	Onsite	Onsite restoration	0.09	Complete
70	Auburn Creek Channel	1/28/2016-2/12/2016	Emergency Maintenance; Vegetation and Sediment Removal	TBD	TBD	TBD	0.10	Site suitability search
77	Auburn Creek Channel	3/4/2016-3/5/2016	Emergency Maintenance; Vegetation and Sediment Removal and Repair to Bank	TBD	TBD	TBD	0.06	Site suitability search
71	Chollas Creek	1/12/2016-4/22/2016	Emergency Maintenance; Vegetation and Sediment Removal	TBD	TBD	TBD	0.04	Site suitability search
91-93	Chollas Creek	12/30/15-01/19/16	Emergency Maintenance; Vegetation and Sediment Removal	TBD	TBD	TBD	2.06	Site suitability search
130	Smythe Channel Emergency	2/3/2016-4/21/2016	Emergency Maintenance; Vegetation and Sediment Removal	Tijuana River Valley Watershed	Offsite in Watershed	Restoration & Enhancement	3.11	Proposed
				Habitat Acquisition Fund	Offsite	Payment into Habitat Acquisition Fund	0.03	Proposed
120-121	Cottonwood Channel	12/26/2016-1/1/2016	Emergency Maintenance; Vegetation and Sediment Removal	TBD	TBD	TBD	0.42	Site suitability search
115	Jamacha Channel	1/3/2016-1/3/2016	Emergency Maintenance; Vegetation and Sediment Removal	TBD	TBD	TBD	0.12	Site suitability search
134	Nestor Creek Channel	02/05/16-02-06-16	Emergency Maintenance; Vegetation and Sediment Removal	Otay River Wetland Mitigation Site	Offsite in Watershed	Wetlands Restoration	0.02	Design
122	Parkside Channel	12/23/2015-12/26/2015	Emergency Maintenance; Vegetation and Sediment Removal	TBD	TBD	TBD	0.2	Site suitability search
84	Washington Channel	1/20/2016-1/30/2016	Emergency Maintenance; Vegetation and Sediment Removal	TBD	TBD	TBD	0.08	Site suitability search
Total Acres							51.57	

* Will be completed at the end of the project

** Amendment to add this map to MMP in process

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APPENDIX C

Pre- and Post-Maintenance Photos

PRE-AND POST-MAINTENANCE PHOTOGRAPHS (MMP)



Photo 1. Pacific Beach Dr/Olney Street Channel Map 37 Pre-Maintenance 2/21/2016



Photo 2. Pacific Beach Dr/Olney Street Channel Map 37 Post-Maintenance 2/21/16



Photo 3. Tijuana River Valley Pilot Channel and Smuggler's Gulch Pre-Maintenance 9/14/15



Photo 4. Tijuana River Valley Pilot Channel and Smuggler's Gulch During Maintenance 12/3/15



Photo 5. Alvarado Channel (MMP Maps 59, 60, 64) Pre-Maintenance 8/18/15



Photo 6. Alvarado Channel (MMP Maps 59, 60, 64) Post-Maintenance 10/03/15



Photo 7. Auburn Creek Channel (MMP Maps 67 & 68) Pre-Maintenance 11/11/15



Photo 8. Auburn Creek Channel (MMP Maps 67 & 68) Post-Maintenance 06/13/16



Photo 9. Auburn Creek Channel (MMP Map 70) Pre-Maintenance 11/11/15



Photo 10. Auburn Creek Channel (MMP Map 70) Post-Maintenance 3/24/16



Photo 11. Auburn Creek Channel (MMP Map 77) Pre-Maintenance 03/21/16



Photo 12. Auburn Creek Channel (MMP Map 77) Post-Maintenance 4/18/16



Photo 13. Via de la Bandola Channel (MMP Map 130a) Pre-Maintenance 11/5/15



Photo 14. Via de la Bandola Channel (MMP Map 130a) Post-Maintenance 12/6/15



Photo 15. Chollas Creek Channel (MMP Map 91) Pre-Maintenance 12/2/15



Photo 16. Chollas Creek Channel (MMP Map 91) Post-Maintenance 01/16/16



Photo 17. Chollas Creek Channel (MMP Map 93) Pre-Maintenance 11/12/15



Photo 18. Chollas Creek Channel (MMP Map 93) Post-Maintenance 01/18/16



Photo 19. Cottonwood Channel (MMP Maps 120-121) Pre-Maintenance 12/4/15



Photo 20. Cottonwood Channel (MMP Maps 120-121) Post-Maintenance 1/1/16



Photo 21. Jamacha Channel (MMP Map 115) Pre-Maintenance 12/11/15



Photo 22. Jamacha Channel (MMP Map 115) Post-Maintenance 1/5/16



Photo 23. Nestor Creek Channel (MMP Map 134) Pre-Maintenance 11/13/16



Photo 24. Nestor Creek Channel (MMP Map 134) Post-Maintenance 2/5/16



Photo 25. Parkside Channel Pre-Maintenance 12/4/15



Photo 26. Parkside Channel Post-Maintenance 12/26/15



Photo 27. Washington Channel Pre-Maintenance 1/20/16



Photo 28. Washington Channel Post-Maintenance 2/1/16



Photo 29. Smythe Channel (MMP Map 130) Pre-Maintenance 1/7/16



Photo 30. Smythe Channel (MMP Map 130) Post-Maintenance 4/26/16



Photo 31. Chollas Creek Channel (MMP Map 71) Pre-Maintenance 12/22/15



Photo 32. Chollas Creek Channel (MMP Map 71) Post-Maintenance 5/11/16



Photo 33. Sorrento Valley (Soledad Creek) Map 11 Channel Emergency Maintenance Pre-Maintenance 1/25/16



Photo 34. Sorrento Valley (Soledad Creek) Map 11 Channel Emergency Maintenance Post-Maintenance 3/5/16



Photo 35. Sorrento Valley (Soledad Creek) Map 12 Emergency Concrete Repair Pre-Maintenance 2/5/16



Photo 36. Sorrento Valley (Soledad Creek) Map 12 Emergency Concrete Repair During/
Post-Maintenance 6/13/16

APPENDIX D

**2016–2017 List of Storm Water Facilities
Anticipated to be Maintained and
Preliminary Estimate of Biological and
Cultural Resources to be Impacted**

Biological

Map No.	Facility	Proposed Maintenance Type	Vegetation Impacts (acres)	Mitigation
138 a, b, c, 138, 139	Tijuana River Pilot Channel and Smuggler's Gulch	Continuation of Sediment and Vegetation Removal	No additional impacts	Mitigated with first maintenance event. 1) 9.43 acres at Tijuana River Emergency Channel Maintenance Wetland Mitigation Project (i.e. mitigation for 1993 Pilot Channel Construction) and 2) 8.62 acres of Enhancement within and adjacent to maintenance footprint. No new mitigation proposed.
9-12	Sorrento Reach 7: 11000 Roselle St - 11100 Flintkote St; Sorrento Reach 3: Soledad Creek 1-2 of 7	Routine	No additional impacts	Mitigated with first maintenance event. 1.91 acres at El Cuervo Del Sur Wetlands Mitigation Site and 5.53 acres at Los Penasquitos Preserve Wetlands Enhancement
MMP Total Vegetation Impacts (acres)			No additional impacts	

Cultural

Map No.	Facility	Proposed Maintenance Type	Cultural Resources Impacts
138 a, b, c, 138, 139	Tijuana River Pilot Channel and Smuggler's Gulch	Sediment and Vegetation Removal	None
9-12	Sorrento (Roselle St and Soledad Creek)	Routine	None

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