Salinas River Stream Maintenance Program 2016 Work Season

Annual Report

То

United States Army Corps of Engineers

Regional General Permit 20, Corps File # 1996-22309S, Effective September 28, 2016



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Executive Summary

This report summarizes the 2016 activities of the Salinas River Stream Maintenance Program (SMP). The objective for the SMP is to reduce flood risk to land adjacent to the Salinas River while maintaining or enhancing natural habitat and ecological and hydrological processes. This is achieved through vegetation maintenance, sediment management, and non-native vegetation removal primarily in designated secondary or high flow channels outside of the low flow channel. This Annual Report provides regulatory agencies and interested parties with an overview of the work completed during the 2016 maintenance season and the program's compliance with the U. S. Army Corps of Engineers' permit conditions. It also allows the MCWRA to summarize and analyze the project success and impacts for future planning activities.

The 2016 work season was the first to include both Phase 1 and Phase 2, using a uniform approach over the entire Program area. Phase 1 includes two River Management Units (RMUs) along the Salinas River at river miles that were permitted in 2014 as a pilot program. Phase 2 of the SMP was developed the following year using the same process as Phase 1 and includes five additional RMUs within the SMP Program Area (river miles 2 to 94). Stream maintenance activities began on Thursday, October 1st and finished on November 15th. Maintenance activities were performed in 5 of the 7 RMUs for a total of 13 new Maintenance Areas and retreatment of 10 previously constructed secondary channels and arundo removal areas. The new vegetation maintenance area was 70.6 acres and 37.9 acres of retreated areas, for a total of 108.5 acres.

1 Introduction

1.1 Program Background

The Salinas River has experienced flooding events in recent years that have damaged agricultural crops along the river corridor. A flood maintenance program is desired by public and private entities to prevent damage from flood events. The Salinas River Stream Maintenance Program (SMP) began in 2014 with Phase 1, a multi-benefit demonstration project involving a cooperative planning and design process among public agencies, stakeholders, landowners and growers. The objective for the SMP is to reduce flood risk to land adjacent to the Salinas River while maintaining or enhancing natural habitat and ecological and hydrological processes. This is achieved through vegetation maintenance, sediment management, and non-native vegetation removal primarily in designated secondary or high flow channels outside of the low flow channel.

Phase 1 of the program occurred in two River Management Units (RMUs) along the Salinas River at river miles 22.7 to 29.2 and river miles 32.7 to 37.7. These are referred to as RMUs 4 and 5 (Gonzales and Chualar areas respectively). Phase 2 of the SMP has been developed following the same process as Phase 1 and includes five additional RMUs within the SMP Program Area (river miles 2 to 94). The 2016 work season was the first to include both Phase 1 and Phase 2, using a uniform approach over the entire Program area.

1.2 Authorizations

The Salinas River Stream Maintenance Program was approved by the Monterey County Water Resources Agency Board of Supervisors on July 29, 2014. The authorizations listed below were received to implement both phases of the Program for a period of up to ten years.

1.2.1 U.S. Army Corps of Engineers

The Department of the Army Regional General Permit (RGP) 20 for the Salinas River Stream Maintenance Program, Corps File No. 22309S, was executed on September 28, 2016 by the U.S. Army Corps of Engineers (USACE). The RGP is authorized under Section 404 of the Clean Water Act (33 U.S.C. Section 1344) through November 15, 2021. The National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) concurred with the USACE determination that the project was not likely to adversely affect the federally endangered San Joaquin kit fox (*Vulpes macrotis mutica*) and the federally threatened California tiger salamander (*Ambystoma californiense*), Monterey spineflower (*Chorizanthe pungens var. pungens*) and its critical habitat, the yellow-billed cuckoo (*Coccyzus americanus*), and the South-Central Coast (S-CCC) steelhead (*Oncorhynchus mykiss*). The USFWS issued a Biological Opinion on August 22, 2016 for the federally endangered least Bell's vireo (*Vireo bellii pusillus*) and tidewater goby (*Eucyclogobius newberryi*) and its critical habitat and the federally threatened California red-legged frog (*Rana draytonii*).

1.2.2 State of California Regional Water Quality Control Board

The Clean Water Act Section 401 Water Quality Certification for Discharge of Dredged and/or Fill Materials, Certification No. 32716WQ02, was approved on August 31, 2016 and is set to expire on November 30, 2025.

1.2.3 California Department of Fish & Wildlife

Phase 1 of the SMP was authorized under Notification of Lake or Streambed Alteration No. 1600-2014-0127-R4, Salinas River Multi-Benefit Demonstration Project, Salinas River – Monterey County, dated October 2, 2014.

Phase 2 of the SMP was authorized under a Routine Maintenance Agreement 1600-2016-0016-R4, approved October 14, 2016 and held by the Resource Conservation District of Monterey County (RCDMC). The RCDMC is currently working on modifications to the Routine Maintenance Agreement which may be in effect prior to the next maintenance season.

1.3 Annual Work Plan Approvals

The specific activities need to be approved prior to each maintenance season by the authorizing agencies. A plan detailing work proposed for the 2016 season was submitted to the US Army Corps of Engineers and the Regional Water Quality Control Board on June 7, 2016 (Phase 1) and September 1, 2016 (Phase 2). Some modifications to the Phase 2 Work Plan were made in October. California Department of Fish & Wildlife has a Verification Request Form process in place which is facilitated by the RCDMC.

1.3.1 U.S. Army Corps of Engineers

The proposed activities were approved by the U.S. Army Corps of Engineers (USACE) on October 28, 2016 with the addition of some special conditions in order to ensure compliance with the RGP authorization. Those conditions are outlined below:

- No impacts to wetland areas are proposed or authorized. All wetlands must be avoided, and documentation of wetland identification and avoidance measures must be provided in the annual report of completed projects, particularly for potential wetland areas that have been mapped in or near the following secondary channels:
 RMU 1: Channel 1.23
 RMU 3: Channels 3.17, 3.27
 RMU 4: Channel 4.24
 RMU 5: Channels 5.08, 5.09, 5.09b
 RMU 6: Channels 6.10, 6.12, 6.13, 6.14
 RMU 7: Channels 7.02, 7.04, 7.05, 7.06
- Proposed stockpile areas near channels 1.18, 1.19, 1.24, 1.25 must be moved to locations outside the OHWM and/or adjusted to avoid mapped wetland areas.
- Work may not commence in the following maintenance areas until maps with the required information (indicated in parentheses) have been submitted to and approved by USACE: Secondary Channel 7.06 (all project activities) Secondary Channel 6.06 (grading sediment management and stockpile locations)

• Sediment removal from San Lorenzo Creek (channel 1.37) is limited to 2,000 cubic yards annually.

1.3.2 State of California Regional Water Quality Control Board

The Regional Water Quality Control Board (RWQCB) approved the Work Plan for Phase 1 on July 5, 2016. The RWQCB issued a partial approval of the annual Work Plan for Phase 2 on October 21, 2016. Additional activities were authorized via an Addendum issued on October 27, 2016. In addition, the Central Coast Water Board approved proposed maintenance activities in maintenance area 6.12, provided that all maintenance activities are conducted as described in the October 26, 2016 Addendum to the 2016 Work Plan and as required in the Certification.

1.4 Purpose of the Annual Report

The Annual Report provides regulatory agencies, interested parties, and MCWRA an overview of work completed during the previous maintenance season as well as a summary of the program's compliance with the permit conditions. It also allows the MCWRA to summarize and analyze the project results for future planning activities. The Annual Report is due to the USACE by March 31st of each year. A similar report will be prepared for the RWQCB by May 31st of each year.

2 Pre-Maintenance Activities

This was the first year of SMP activities under the new authorizations. Successful implementation of the SMP required a diverse project team which included trained equipment operators, landowners, farm operators, biologists, ecologists, Arundo specialists, hydrologists, engineers, field staff, IT specialists, public relations staff, and legal staff. This team demonstrated a high level of coordination.

Specific Maintenance Areas were defined using modeling and mapping tools during the Program and permit development process. Those Maintenance Areas were further refined prior to implementation of maintenance activities based on current field conditions.

2.1 Training

Training was required for all participants prior to the commencement of the work period in order to ensure that a uniform and consistent approach would be followed. The training workshops were held on October 4 and 7, 2016. The training covered techniques and procedures, pre-maintenance site preparation, and permit conditions. All project personnel were required to attend a subsequent training on protected species, their habitats and conservation measures specific to this Project, given by Dawn Reis of Ecological Studies.

2.2 Site Preparation

Participants flagged their proposed maintenance areas after the required training and prior to receipt of work authorizations. This flagging is color-coded based on the type of activity in the area. For example, existing access ways are flagged in yellow ribbon so that heavy-equipment operators will use the same site access each time and so biologists and inspectors can survey and access the area. The flagging also marks the boundary for each activity and includes red flagging for avoidance areas.

2.3 Biological Surveys

The USFWS required surveys for federal threatened or endangered species. The compliance with those requirements is outlined in the following table by Maintenance Area.

Table 1: Biological Resource Compliance

Maint. Area #	San Joaquin kit fox	California tiger salamander	Monterey spineflower	California red-legged frog	Yellow-billed cuckoo	Least Bell's vireo	Tidewater goby
1.02	Surveys conducted. One potential den found in MA. Two potential dens found 170 ft away from MA. 50 ft buffers placed around potential dens.	Service-approved biologist conducted surveys within 48 hrs of the start of work. Service- approved biologist present during maintenance activities.	Suitable habitat not present. Surveys not conducted.	Service-approved biologist conducted surveys within 48 hrs of the start of work. Service-approved biologist present during maintenance activities.	Work was conducted outside of April 15- September 30 window. Surveys not conducted.	Work was conducted outside of April 15- September 15 window. Surveys not conducted.	Channel not in RMU 7; conservation measures not needed.
1.03	Surveys conducted. One potential den found 245 ft away from maintenance area. 50 ft buffer placed around potential den.	Service-approved biologist conducted surveys within 48 hrs of the start of work. Service- approved biologist present during maintenance activities.	Suitable habitat not present. Surveys not conducted.	Service-approved biologist conducted surveys within 48 hrs of the start of work. Service-approved biologist present during maintenance activities.	Work was conducted outside of April 15- September 30 window. Surveys not conducted.	Work was conducted outside of April 15- September 15 window. Surveys not conducted.	Channel not in RMU 7; conservation measures not needed.
1.22	Surveys conducted. One potential den found near access road. 50 ft buffer placed around potential den.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Work was conducted outside of April 15- September 30 window. Surveys not conducted.	Work was conducted outside of April 15- September 15 window. Surveys not conducted.	Channel not in RMU 7; conservation measures not needed.
3.18	Surveys conducted. No potential dens found.	Suitable habitat not present. Channel is ~5 miles from critical habitat. Surveys not conducted, but may be conducted in future years after feedback from USFWS.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Work was conducted outside of April 15- September 30 window. Surveys not conducted.	Work was conducted outside of April 15- September 15 window. Surveys not conducted.	Channel not in RMU 7; conservation measures not needed.
3.19	Surveys conducted. No potential dens found.	Suitable habitat not present. Channel is ~5 miles from critical habitat. Surveys not conducted, but may be conducted in future years after feedback from USFWS.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Work was conducted outside of April 15- September 30 window. Surveys not conducted.	Work was conducted outside of April 15- September 15 window. Surveys not conducted.	Channel not in RMU 7; conservation measures not needed.
3.20	Surveys conducted. No potential dens found.	Suitable habitat not present. Channel is ~5 miles from critical habitat. Surveys not conducted, but may be conducted in future years after feedback from USFWS.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Work was conducted outside of April 15- September 30 window. Surveys not conducted.	Work was conducted outside of April 15- September 15 window. Surveys not conducted.	Channel not in RMU 7; conservation measures not needed.
6.06	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Service-approved biologist conducted surveys within 48 hrs of the start of work. Habitat deemed not suitable for CRLF.	Work was conducted outside of April 15- September 30 window. Surveys not conducted.	Work was conducted outside of April 15- September 15 window. Surveys not conducted.	Channel not in RMU 7; conservation measures not needed.
6.07	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Work was conducted outside of April 15- September 30 window. Surveys not conducted.	Work was conducted outside of April 15- September 15 window. Surveys not conducted.	Channel not in RMU 7; conservation measures not needed.
6.08	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Work was conducted outside of April 15- September 30 window. Surveys not conducted.	Work was conducted outside of April 15- September 15 window. Surveys not conducted.	Channel not in RMU 7; conservation measures not needed.
6.09	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Work was conducted outside of April 15- September 30 window. Surveys not conducted.	Work was conducted outside of April 15- September 15 window. Surveys not conducted.	Channel not in RMU 7; conservation measures not needed.
6.10	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Work was conducted outside of April 15- September 30 window. Surveys not conducted.	Work was conducted outside of April 15- September 15 window. Surveys not conducted.	Channel not in RMU 7; conservation measures not needed.
6.11	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Suitable habitat not present. Surveys not conducted.	Work was conducted outside of April 15- September 30 window. Surveys not conducted.	Work was conducted outside of April 15- September 15 window. Surveys not conducted.	Channel not in RMU 7; conservation measures not needed.
6.12	Suitable habitat not present. Surveys not conducted.	Service-approved biologist conducted surveys within 48 hrs of the start of work. Service- approved biologist present during maintenance activities.	Suitable habitat not present. Surveys not conducted.	Service-approved biologist conducted surveys within 48 hrs of the start of work. Service-approved biologist present during maintenance activities.	Work was conducted outside of April 15- September 30 window. Surveys not conducted.	Work was conducted outside of April 15- September 15 window. Surveys not conducted.	Channel not in RMU 7; conservation measures not needed.

2.3.1 Tidewater Goby Survey Plan

No work was performed in RMU 7 during the 2016 Maintenance Season. In future years when work is proposed in RMU 7 the following condition will apply: each year before the start of work in RMU 7 and no later than August 1, information on the current status of tidewater goby (e.g., presence, estimated number of individuals) in the Salinas River Lagoon will be submitted to the Service for review.

The Corps and MCWRA in cooperation with a Service-approved biologist will develop and implement a tidewater goby survey plan to document the presence, distribution, and abundance of the species within and adjacent to the Project area, including the Salinas River downstream of the Salinas River Diversion Facility (SRDF) and the Salinas River Lagoon. The survey plan will be developed in coordination with the National Marine Fisheries Service to avoid duplication of effort and excessive disturbance of habitat. The survey plan will be submitted to the Service for review and approval.

2.3.2 Water Quality Reports

Water quality monitoring of the Salinas River Lagoon typically occurs during the spring, summer, and fall months. There was no flow in the Salinas River after cessation of reservoir releases in late-October 2013, and no flow into the lagoon in 2016. The lagoon did not open during the winter of 2013-2014 and had remained closed until the recent opening in January 2017. Extensive growths of rooted aquatic vegetation and algae, as noted in 2013, continued to be present in the lagoon. Dissolved oxygen was at elevated levels, water clarity was high, and lagoon water temperature was very warm. Sampling was initiated on July 23, 2013 but was aborted due to excessive growths of benthic and floating algae that clogged the seine and jeopardized the health of captured fish, including tidewater goby. The excessive algal growths persisted in early October 2013 at the time of the fall sample period. It was determined in consultation with NOAA Fisheries and the USFWS that further sampling in 2014 would be suspended due to concerns with fish health and overall ineffectiveness of seining. Lagoon conditions in 2015 and 2016 also precluded any seining events, but limited water quality data has been gathered and will be included in future reports. As a result there has not been a *Salinas River Lagoon Monitoring Report* issued since 2013 and the next report is anticipated in late 2017 or early 2018.-

Sampling in the Salinas River is associated with the Salinas Valley Water Project fish monitoring requirements. The last time data was collected between November 2013 and April 2014. The critically dry conditions of that season resulted in no connectivity between the Salinas River and the lagoon during the monitoring period and no monitoring has been conducted since that time. Connectivity was not achieved again until January 2017. Monitoring will re-commence in the future. Future monitoring reports will be forwarded to the U.S. Fish and Wildlife Service.

3 Maintenance Activities Conducted in 2016

Maintenance activities were conducted in 5 of the 7 RMUs in a total of 23 Maintenance Areas. Maintenance occurred in the authorized areas that were approved in the Annual Work Plans. The Salinas River was mostly dry during the 2016 Maintenance Season except for in RMU 1 where some water was present in the low-flow channel. Work was not authorized within water or in wetlands. The maintenance activities are displayed in map format in Section 6 of this report.

3.1 Work Season Dates

The work season began on October 1st for Phase 1 and October 31st for Phase 2. All work was halted by the end of daylight on November 15th and equipment and related items were removed from the sites. Typical work hours were daily from 7am to 5 pm during daylight hours. No work was performed at night.

3.1.1 Rainfall Restrictions

No rain event of 0.25 inches or greater in a 24-hour period occurred during the work period.

3.2 Completed Maintenance Activities

Maintenance activities were performed in 5 of the 7 RMUs in a total of 13 new Maintenance Areas, in 10 previously constructed secondary channels, and arundo removal areas were re-treated. Maintenance activities occurred in one Selective Treatment Area but the work was limited in area and types of activities. All of the specific maintenance activities are described below.

3.2.1 Native Vegetation Management

Native vegetation was removed within the designated maintenance areas. Disturbance of emergent vegetation did not occur in areas with suitable habitat for California red-legged frogs or for tidewater gobies. All new impacts associated with vegetation removal are quantified in the tables below by vegetation types for each maintenance area, each RMU, and the Program Area.

Table 2: Vegetation Impacts by Maintenance Area

Maint. Area #	Total Area (acres)	Arundo dominant	Sparse herbaceous	Early successional perennial riparian	Mid- successional willow	Early to mid- successional cottonwood forest	Low stature herbaceous wetland	Un- vegetated
1.02	10.5	0	3.15	7.35	0	0	0	0
1.03	3.0	0	0.15	1.35	0	0	0	1.50
1.22	2.5	0	2.50	0	0	0	0	0
3.18	3.8	0.19	2.28	0	0	0	0	1.33
3.19	2.6	0.13	1.69	0	0	0	0	0.78
3.20	2.8	0	1.40	0	0	0	0	1.40
4.17	1.9	retreat	retreat	retreat	retreat	retreat	retreat	retreat
4.18	1.5	retreat	retreat	retreat	retreat	retreat	retreat	retreat
4.22	7.5	retreat	retreat	retreat	retreat	retreat	retreat	retreat
4.23	5.2	retreat	retreat	retreat	retreat	retreat	retreat	retreat
4.24	7.1	retreat	retreat	retreat	retreat	retreat	retreat	retreat
4.25	4.1	retreat	retreat	retreat	retreat	retreat	retreat	retreat
4.26	6.5	retreat	retreat	retreat	retreat	retreat	retreat	retreat
5.08	1.8	retreat	retreat	retreat	retreat	retreat	retreat	retreat
5.09	1.4	retreat	retreat	retreat	retreat	retreat	retreat	retreat
5.09b	0.9	retreat	retreat	retreat	retreat	retreat	retreat	retreat
6.06	5.8	0.06	0.29	3.45	0.58	0	0	1.46
6.07	5.8	0	2.90	0.58	0	0	0	2.32
6.08	5.9	0	2.36	1.48	0	0.30	0	1.77
6.09	10.2	0.51	4.59	4.08	0	0.51	0	0.51
6.10	4.7	0	1.65	0.94	0.24	0.24	0	1.65
6.11	7.6	0	1.90	0.38	0	0	0	5.32
6.12	5.4	0	0.27	2.43	2.70	0	0	0

Table 3: Vegetation Impacts by RMU

RMU	Total Area (acres)	Arundo dominant	Sparse herbaceous	Early successional perennial riparian	Mid- successional willow	Early to mid- successional cottonwood forest	Low stature herbaceous wetland	Un- vegetated
1	16.0	0.0	5.8	8.7	0	0	0	1.5
2	0	0	0	0	0	0	0	0
3	9.2	0.3	5.4	0	0	0	0	3.5
4	33.8	retreat	retreat	retreat	retreat	retreat	retreat	retreat
5	4.1	retreat	retreat	retreat	retreat	retreat	retreat	retreat
6	45.4	0.6	14.0	13.3	3.5	1.0	0	13.0
7	0	0	0	0	0	0	0	0

Table 4: Vegetation Impacts for Program Area

RMUs	Total Area* (acres)	Arundo dominant	Sparse herbaceous	Early successional perennial riparian	Mid- successional willow	Early to mid- successional cottonwood forest	Low stature herbaceous wetland	Un- vegetated
1-7	108.5	0.9	25.1	22.0	3.5	1.0	0	18.0

Note: * Total Area includes re-treated areas. Total new areas are 70.6 acres. Vegetation categories do not include the retreated areas.

3.2.2 Wetlands Identification and Avoidance

No wetlands were impacted during the maintenance season. Areas where wetland plants were present were marked both by GPS coordinates and red tape during pre-maintenance surveys. Additional monitoring during maintenance activities occurred to ensure avoidance and final locations of wetland plants were confirmed after maintenance activities were completed. Areas that were previously mapped as wetlands using aerial tools were field verified. If no wetland vegetation was present then these areas were assumed not to be wetlands. Maps showing revised wetland locations based on field reconnaissance are located in Section 6. Wetland areas that were previously mapped using aerial tools, outside secondary channel locations, were not verified and therefore are still marked as wetlands on the maps.

3.2.3 Permanent Fill, Including Grading, Within USACE Jurisdiction

No sediment removal occurred and no stockpile locations were utilized during the maintenance season. No open trenches or other excavations with a 6 inch depth were made during the maintenance season. There was some grading performed within the maintenance areas as shown in the tables below.

Maint. Area #	Total Area Graded (acres)	Un-vegetated Area Graded (acres)	Volume of Sediment Removal (cy)	Volume of Sediment Displaced by Grading (cy)	Grading Methods Used
1.02	7.81	0	0	6,300	bulldozing/smoothing
1.03	2.52	1.69	0	2,033	bulldozing/smoothing
1.22	2.50	0	0	2,017	bulldozing/smoothing
3.19	0.44	0.20	0	355	discing/bulldozing/smoothing
3.20	0.31	0.19	0	250	discing/bulldozing/smoothing
5.08	1.8	0	0	1,452	chisel plow
5.09	1.4	0	0	1,129	chisel plow
5.09b	0.9	0	0	726	chisel plow
6.06	5.48	1.46	0	4,421	bulldozing/smoothing
6.10	4.51	1.65	0	3,638	discing/bulldozing/smoothing
6.11	7.58	5.32	0	6,115	discing/bulldozing/smoothing

Table 5: Sediment Management Activities by Maintenance Area

Table 6: Sediment Management Activities by RMU

RMU	Total Area Graded (acres)	Un-vegetated Area Graded (acres)	Volume of Sediment Removal (cy)	Volume of Sediment Displaced by Grading (cy)
1	12.8	1.7	0	10,350
2	0	0	0	0
3	0.8	0.4	0	605
4	0	0	0	0
5	4.1	0	0	3,307
6	17.6	8.4	0	14,173
7	0	0	0	0

Table 7: Sediment Management Activities for Program Area

RMUs	Total Area Graded (acres)	Un-vegetated Area Graded (acres)	Volume of Sediment Removal (cy)	Volume of Sediment Displaced by Grading (cy)
1-7	35.3	10.5	0	28,435

3.2.4 New Access

No new ramps were constructed and no vegetation was removed to make access ways. All maintenance activities utilized existing access ways.

3.3 Compensatory Mitigation

Some impacts to native vegetation from maintenance activities require compensatory mitigation. The mitigation activities typically occur the season after the impact occurred. The following ratios shown in Table 8 determine required mitigation.

Table 8: Compensatory Mitigation Ratios

Vegetation Type	Required Mitigation
Arundo-dominated Removal	none
Sparse Herbaceous with or without Arundo	none
Early Successional Perennial Riparian	1:1 Arundo Removal within secondary channel
	0.5:1 Arundo removal outside secondary channel
Mid-Successional Willow (less than 6")	3:1 Arundo Removal outside secondary channel
Early and Mid-Successional Cottonwood (2"	3:1 Planting of cottonwood, sycamore or alder
or greater of cottonwood, sycamore and	(based on individual trees)
alder)	
Large Stature Willows (6" or greater)	2:1 Planting of cottonwood, sycamore or alder
	(based on individual trees)
Low Stature Herbaceous Wetland	1:1 restoration

3.3.1 Invasive Plant Removal

This maintenance season followed a multi-year drought and most plant species were water stressed or dead. The targeted invasive species for removal is arundo. The browning arundo was removed by mowing and mulching. Herbicide application was not utilized during this maintenance season due to the dryness of the vegetation. Previous arundo removal areas were re-mowed as necessary. The success of the invasive plant removal will be reported by area as they reach the targeted percent cover or after five years from initial removal, whichever occurs sooner.

Mitigation is performed preferentially by RMU or throughout the Program Area as needed. The following tables document the new arundo removal activities, retreatment of previously treated areas and the status of required versus treated arundo.

Table 9: Arundo Treatment by RMU

RMU	New Arundo treated outside MAs (acres)	New Arundo treated inside MAs (acres)	Retreatment of Arundo outside MAs (acres)	Retreatment of Arundo inside MAs (acres)	Arundo previously treated outside MAs (acres)	Arundo previously treated inside MAs (acres)
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0.4	0	0	0	0
4	18.1	0	32.2	12.5	49.6	13.4
5	0	0	0	0	0.3	12.1
6	0	0	0	0	0	0
7	0	0	0	0	0	0

Table 10: Status of Arundo Mitigation by RMU

RMU	Total Required Arundo Removal	Total Arundo treated outside MAs (acres)	Total Arundo treated inside MAs (reduced by ½, acres)*	Additional Arundo Removal Required
1	4.4	0	0	4.4
2	0	0	0	0
3 0		0	0.2	0
4 16.3		67.7	6.7	0
5	10.2	0.3	6.1	3.8
6	17.5	0	0	17.5
7	0	0	0	0

*In channel Arundo removal only counts towards early successional perennial riparian impacts

Table 11: Status of Arundo Mitigation for Program Area

RMUs	Total Required Arundo Removal	Total Arundo treated outside MAs (acres)	Total Arundo treated inside MAs (reduced by ½, acres)	Additional Arundo Removal Required
1-7	48.4	70.0	13.0	0

3.3.2 Native Tree Species Plantings

Native trees are typically planted during the rainy season to enhance their rate of success. There had been a delay in tree planting due to the extended drought period, though some trees have recently been planted in RMUs 4 and 5. The success of native tree species plantings will be monitored in future years. Photos of the tree planting are located in Section 5.

Table 12: Status of Tree Planting Mitigation by RMU

RMU	Total Required Tree Planting	Number of non- willow trees ≥ 2″ dbh removed	Number of willows ≥ 6″ dbh removed	Number of Trees Planted, species	Trees Required – Trees Planted
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	23	7	1	10, cottonwoods 700, willows	0
5	123	29	18	115, cottonwoods	8
6	12	0	6	0	6
7	0	0	0	0	0

4 Program Review

4.1 Impacts to Listed Species

Maintenance activities were designed to avoid direct and indirect impacts to listed species. Required pre-maintenance surveys did not observe any listed species. Biological Monitors performed all necessary inspections before work began each day and were present during maintenance activities. A Service-approved biologist was on-site as necessary and on-call daily.

4.2 Project Design Changes

All work was in compliance with the permit applications, permit terms and conditions, and annual authorizations. Less work was performed than proposed in the approved Work Plan due to the late receipt of authorizations and subsequent reduced preparation time.

4.3 Effectiveness Monitoring

Topographic surveys were conducted down the centerline of select secondary channels both pre- and post-maintenance activities. This data is representative of each RMU and will be used over time to determine how the maintenance areas are functioning and to assess the sediment transport characteristics of the maintenance areas. The resultant longitudinal profiles are available in Section 7 of this report.

4.4 Adaptive Management

Adaptive management may be necessary if significant flows (25,450 cfs or greater at the Spreckels stream gage) occur during the previous rainy season. These needs should be evaluated near the end of the rainy season in order to be prepared for the following year's maintenance. At this time, flows have activated the Maintenance Areas but they are less than the 5-year flow. Waters have not yet receded and there may be more high flows during this rainy season so no conclusions can be made at this time. The peak flows that have occurred at each gaging station by the time of this report are as follows:

- Bradley (USGS 11150500) 13,600 cfs on 2/8/17
- Soledad (USGS 11151700) 8,800 cfs on 2/24/17
- Chualar (USGS 11152300) 11,800 cfs on 2/21/17
- Spreckels (USGS 11152500) 11,700 cfs on 2/22/17 (the data is still provisional at this time)

4.5 Certification of Compliance

MCWRA understands that this report may be reviewed by the resource agencies for compliance with the terms of the RGP. In addition, field site visits may be performed on representative sites by the employees of these resource agencies as part of their compliance evaluation. The USACE has provided a Certification of Compliance Form in their Annual Work Plan approval to verify that the applicant complied with the terms and conditions of the RGP. This certification is provided in Section 8.

5 Photos of Typical Work Areas

Pre-maintenance Areas





Arundo Removal



Selective Treatment Area Pre- and Post-work



Vegetation Removal



Grading





Post-work Avoidance Areas (wood rat nests & wetlands shown with red flagging)

Tree Planting



6 Maps of Maintenance Activities



Scale 1:4,000



0.0325 0.065

0

0.13

0.195

Miles

Scale 1:3,500

0 0.0275 0.055

0.11 0.165

Miles

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Map created February 2017

Airbus DS

orraphics

ye, Earthste

Getmapping, Aerogrid, IGN, IGP, swisstop

Previous Arundo mitigation

Source: Esrl, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Alfbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Scale 1:2,000

0.015 0.03

0

0.09 Miles

0.06

0 0.0375 0.075

0.15

0.225

Miles

1:2,500

0.04 0.08 February 2017

Miles

Scale 1:2,500

0.02 0.04

0.12 Miles

0.08

1:2,000

0.015 0

0.03

0.09 Miles

0.06

February 2017

1:2,500

0

0.02 0.04 0.08 0.12 Miles February 2017

Source: Esrl, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Scale 1:6,500

0.3 ■ Miles

Scale 1:3,500

0 0.0275 0.055

0.165 Miles

0.11

1:4,000

0.0325 0.065 0

0.195 Miles

0.13

February 2017

Scale 1:4,500

0 0.0375 0.075

0.15

0.225

Miles

0.03 0.06

0.18 Miles

0.12

Scale 1:3,000

0.025 0.05

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0.15 Miles

0.1

Scale 1:2,000

0.015 0.03

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0.09 Miles

0.06

Scale 1:2,000

0

0.015 0.03

0.09 Miles

0.06

Scale 1:5,000

0.04 0.08

0.24 Miles

0.16

Scale 1:4,500

0 0.0375 0.075

0.225

Miles

0.15

Scale 1:4,500

0 0.0375 0.075

0.15

0.225

Miles

Scale 1:4,000

0.0325 0.065

0

0.195 Miles

0.13

Miles

0 0.0325 0.065

0.13 0.195

1:7,000

0.0425 0.085 0.17

Miles

7 Longitudinal Profiles

RMU 1 - 1.03 SEDIMENT PROFILE

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											1
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20-	-00	21-	00	22-	-00	23-	-00	24	+00	25	5 + 00

RMU 1 - 1.22 SEDIMENT PROFILE

RMU 3 - 3.19 SEDIMENT PROFILE

RMU 3 - 3.20 SEDIMENT PROFILE

RMU 6 - 6.08A SEDIMENT PROFILE

RMU 6 - 6.06B SEDIMENT PROFILE

			-+-		
15+00	16+00	17400	18+00	19400	20-00
13100	10+00	17 200	10 100	13 700	20+00

RMU 6 - 6.10 SEDIMENT PROFILE

RMU 6 - 6.11 SEDIMENT PROFILE

00 + +	21+00	22+00	23+00	24+00	25+00	26-

8 Certification of Compliance

Enclosure 8

Permittee: Elizabeth Krafft, Monterey County Water Resources Agency

File Number: 1996-22309S (2016 SMP)

Certification of Compliance for Regional General Permit 20

"I hereby certify that the work authorized by the above referenced File Number and all required mitigation have been completed in accordance with the terms and conditions of this Regional General Permit authorization."

(Permittee)

(Date)

Return to:

Greg Brown U.S. Army, Corps of Engineers San Francisco District Regulatory Division, CESPN-R-S 1455 Market Street San Francisco, CA 94103-1398