

**Salinas River
Stream Maintenance Program
2017 Work Season**

***DRAFT* Annual Report**

To

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 annual maintenance activities of the Salinas River Stream Maintenance Program (SMP) for the 2017 maintenance season. The SMP incorporates a cooperative planning and design process among technical experts, agencies, municipalities, landowners, and growers to establish a flood risk reduction and habitat enhancement approach for the majority of the Salinas River and three tributaries. 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 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.

Stream maintenance activities began on Tuesday, October 3rd and finished by November 15th. Maintenance activities were performed in 4 of the 7 RMUs for a total of 5 new Maintenance Areas and retreatment of 12 previously treated Maintenance Areas. The total Maintenance Area treated equaled 90.2 acres with 22.1 acres of new vegetation treated and 68.1 acres of retreatment areas. Grading activities occurred in two Maintenance Areas with sediment removal occurring in one. Compensatory mitigation was achieved through arundo treatment and tree planting. The total area of arundo treatment equaled 70.4 acres with 19.3 acres of initial treatment and 51.1 acres of retreatment. In addition, 85 cottonwood trees were planted as mitigation.

Biological surveys for species of concern were conducted prior to work within specified time windows, and protective measures were followed during all project activities. All personnel involved in on-site work were trained in permit conditions, project protocols, and species identification by qualified staff. Woodrats were the most common species of concern found in the Project Area. Coast horned lizard was the only other Species of Special Concern found (although American badger burrows were seen), and no state- or federally- listed animals or plants were observed. No-disturbance buffers were placed around known and potential habitats like burrows and woodrat nests, and no permit violations occurred.

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 was developed following the same process as Phase 1 and included five additional RMUs within the SMP Program Area (river miles 2 to 94). The new RMUs are concentrated near Salinas, Soledad, Greenfield, King City and San Ardo. The 2016 work season was the first to include both Phase 1 and Phase 2, using a uniform approach over the entire Program area. The SMP will continue to be implemented under one set of permits.

1.2 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 U.S. Army Corps of Engineers (USACE) by March 31st of each year. A similar report will be prepared for the Regional Water Quality Control Board (RWQCB) by May 31st of each year.

1.3 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.

1.3.1 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 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*).

1.3.2 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.

1.3.3 California Department of Fish & Wildlife

Phase 1 of the SMP was authorized by Operation of Law 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. This is held by an limited liability corporation made up of participating landowners.

Phase 2 of the SMP was authorized under a Routine Maintenance Agreement (RMA) 1600-2016-0016-R4, approved October 14, 2016 and held by the Resource Conservation District of Monterey County (RCDMC). The RMA was amended and restated on June 16, 2017. The RCDMC is currently working on additional modifications to the RMA which may be in effect prior to the next maintenance season.

1.4 Annual Work Plan Approvals

Each year, the specific maintenance activities need to be approved prior to commencement of work, by each of the authorizing agencies. A plan detailing work proposed for the 2017 season was submitted to the USACE and the RWQCB on June 22, 2017. The National Marine Fisheries Service and U.S. Fish and Wildlife Service were sent a courtesy copy of the Work Plan although their authorization is facilitated through the USACE. In addition, California Department of Fish & Wildlife (CDFW) has a Verification Request Form process in place which is facilitated by the RCDMC.

1.4.1 U.S. Army Corps of Engineers

The proposed activities were authorized by the USACE on September 8, 2017 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 MAs:
 - RMU 1: MA 1.03 (access route)
 - RMU 3: MA 3.17
 - RMU 5: MAs 5.08, 5.09, 5.095
 - RMU 6: MA 6.12

- Sediment removal from San Lorenzo Creek (MA 1.38) is limited to 2,000 cubic yards annually.

1.4.2 State of California Regional Water Quality Control Board

The RWQCB issued a partial approval of the Work Plan on August 22, 2017. The approval covered all activities proposed except for sediment removal in MA 5.10 due to the placement of the proposed stockpile location. The RWQCB determined that the stockpile location was located in the greater channel of the Salinas River.

1.4.3 California Department of Fish & Wildlife

Verification Request Forms (VRFs) were approved by CDFW from August through October 2017, and maintenance activities were completed under 18 VRFs.

2 Pre-Maintenance Activities

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. 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.

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. A training workshop was held on August 30, 2017. The training covered techniques and procedures, pre-maintenance site preparation, and permit conditions. All project personnel attended a subsequent training on the same day related to protected species, their habitats and conservation measures specific to this Project, given by Dawn Reis of Ecological Studies. An additional training was offered on October 23, 2017 for participants working in the San Lorenzo Creek tributary (MA 1.38) to review additional requirements for sediment removal related to that maintenance activity.

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

Surveys for special status species and their habitats were conducted for all work areas in accordance with California Department of Fish & Wildlife and the U.S. Fish & Wildlife Service requirements no more than 30 days in advance of work commencement. The permits identify the following sensitive species to survey for during the Fall Work Season: American badger (*Taxidea taxus*), arroyo toad (*Anaxyrus californicus*), California legless lizard (*Aniella pulchra*), California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californienses*), coast horned lizard (*Phrynosoma blainvillii*), foothill yellow-legged frog (*Rana boylei*), Monterey dusky-footed woodrat (*Neotoma fuscipes luciana*), San Joaquin kit fox (*Vulpes macrotis mutica*), steelhead trout (*Oncorhynchus mykiss*), tidewater goby (*Eucyclogobius newberry*), two-striped garter snake (*Thamnophis hammondi*), western pond turtles (*Emys mariorata*), western spadefoot toad (*Spea hammondi*), burrowing owl (*Athene cunicularia*), yellowbilled cuckoo (*Coccyzus americanus*), least Bell's vireo (*Vireo bellii pusillus*), Monterey spineflower (*Chorizanthe pungens* var. *pungens*), and roosting bats. Focused surveys for potential impacts to yellowbilled cuckoo and least Bell's vireo were avoided by delaying the project until October, after the nesting season.

Two types of surveys were completed at each work site before work began: habitat assessment surveys

and pre-maintenance surveys. Both surveys occurred after the Responsible Party had flagged the work sites, within permit-specified buffer distances of work areas. Habitat assessment surveys were conducted by senior biologists from Dawn Reis Ecological Studies, and included conducting transect surveys for all special status species and their habitats. Pre-maintenance surveys were conducted by RCD biological monitors and included classifying vegetation types in Maintenance Areas, identifying and flagging wetlands and large native trees for avoidance, and also looking for sensitive wildlife and their habitats. If wetlands or standing water were present in or near the work areas, additional surveys for special status amphibians were conducted within 48 hours of work.

All surveys for San Joaquin kit fox, California red-legged frogs, and California tiger salamanders were completed by USFWS-approved biologists. Additionally, RCD biological monitors performed morning walk-throughs of the work areas each day work occurred, and in most cases were present during all work activities. In the event a special status individual or habitat was identified during any of the above-mentioned surveys, the location was marked and mapped with geographic information systems (GIS) and flagged in the field with the appropriate buffer size.

Except for nesting birds, all species listed in the permits were looked for in all work areas. Only Monterey dusky-footed woodrat and coast horned lizard were found. A total of 181 woodrat nest were observed either in or adjacent to the work area. All woodrat nests were avoided (left in place) with at least a 10 foot buffer. Ten coast horned lizards were observed, and two were captured and relocated 100 feet outside of the work area (please see the map for the relocation area). Several inactive mammal burrows were seen but the occupying species were not determined.

2.3.1 Tidewater Goby Survey Plan

No work was performed in RMU 7 during the 2017 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 USACE 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 opening in January 2017 and closed in October 2017. It remained open to the ocean for 263 days.

Sampling in the Salinas River is associated with the Salinas Valley Water Project fish monitoring requirements. No seining was performed in 2017, but water quality data was collected between April and October 2017 and is awaiting processing. Future monitoring reports will be forwarded to the U.S. Fish and Wildlife Service.

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3 Maintenance Activities Conducted in 2017

The Salinas River had significant flows during the previous winter season and conservation releases from the upstream reservoirs continued through the majority of the maintenance season. Therefore, there was water present in the low-flow channel at the beginning of the maintenance season. Some of the RMUs dried out completely before November 15th while other areas stayed wet. Work was not authorized within water or in wetlands.

Maintenance activities were conducted in 4 of the 7 RMUs in a total of 17 Maintenance Areas. All of these activities were authorized through the Annual Work Plan approvals. 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 3rd and was completed by November 15th at which time all 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 RMUs 1, 3, 4, and 6 for a total of 5 new Maintenance Areas and retreatment of 12 Maintenance Areas. Maintenance activities occurred in one Selective Treatment Area but the work was limited in area and types of activities. The specific maintenance activities are further 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. This includes expansion of previously treated areas. Retreatment of native vegetation is included in the total area column but not under the vegetation type columns. Those impacts were addressed in the annual report following the initial removal.

Table 1: New Vegetation Impacts by Maintenance Area

Maint. Area #	<i>Total Area* (acres)</i>	<i>Arundo dominant</i>	<i>Sparse herbaceous</i>	<i>Early successional perennial riparian</i>	<i>Mid- successional willow</i>	<i>Early to mid- successional cottonwood forest</i>	<i>Low stature herbaceous wetland</i>
1.02	10.5	retreat	retreat	retreat	retreat	retreat	retreat
1.06	4.8	0.00	3.04	1.69	0.03	0	0
1.08	5.1	0.05	1.43	0.15	3.44	0	0
1.38	0	0	0	0	0	0	0
3.16	5.6	1.74	2.97	0.21	0.71	0	0
3.17	4.2	0.64	1.34	1.39	0.80	0	0
3.18	3.8	retreat	retreat	retreat	retreat	retreat	retreat
4.22	7.5	retreat	retreat	retreat	retreat	retreat	retreat
4.23	5.2	retreat	retreat	retreat	retreat	retreat	retreat
4.24	7.1	retreat	retreat	retreat	retreat	retreat	retreat
4.25	4.1	retreat	retreat	retreat	retreat	retreat	retreat
4.26	6.5	retreat	retreat	retreat	retreat	retreat	retreat
6.06	4.4	0.00	0.51	1.18	0.79	0	0
6.07	5.8	retreat	retreat	retreat	retreat	retreat	retreat
6.08	5.9	retreat	retreat	retreat	retreat	retreat	retreat
6.11	8.5	retreat	retreat	retreat	retreat	retreat	retreat
6.12	5.4	retreat	retreat	retreat	retreat	retreat	retreat

Table 2: New Vegetation Impacts by RMU

RMU	<i>Total Area* (acres)</i>	<i>Arundo dominant</i>	<i>Sparse herbaceous</i>	<i>Early successional perennial riparian</i>	<i>Mid- successional willow</i>	<i>Early to mid- successional cottonwood forest</i>	<i>Low stature herbaceous wetland</i>
1	20.4	0.05	4.47	1.84	3.47	0	0
2	0	0	0	0	0	0	0
3	13.6	2.38	4.31	1.60	1.51	0	0
4	34.6	retreat	retreat	retreat	retreat	retreat	retreat
5	0	0	0	0	0	0	0
6	30.0	0.00	0.51	1.18	0.79	0	0
7	0	0	0	0	0	0	0

Table 3: New Vegetation Impacts for Program Area

RMUs	<i>Total Area* (acres)</i>	<i>Arundo dominant</i>	<i>Sparse herbaceous</i>	<i>Early successional perennial riparian</i>	<i>Mid-successional willow</i>	<i>Early to mid-successional cottonwood forest</i>	<i>Low stature herbaceous wetland</i>
1-7	98.6	2.4	9.3	4.6	5.8	0	0

Note: * Total Area includes re-treated areas. Total new areas are 22.1 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 located within or near where maintenance activities occurred 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. 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.

Th following MAs were identified as potentially containing wetlands based on preliminary aerial mapping tools. Specific details for each site is listed in the table below.

Table 4: Wetland Identification

Maint. Area #	Wetlands Identification Results
1.03 (access)	Maintenance work was not performed in 2017
3.17	Maintenance work was limited in scope and avoidance measures were observed.
5.08	Maintenance work was not performed in 2017
5.09	Maintenance work was not performed in 2017
5.095	Maintenance work was not performed in 2017
6.12	Maintenance work was limited in scope and avoidance measures were observed.

3.2.3 Permanent Fill, Including Grading, Within USACE Jurisdiction

Limited grading and sediment removal occurred during the maintenance season. One stockpile location was established in the approved location outside of jurisdictional area. No open trenches or other excavations with a 6 inch depth were made during the maintenance season. The grading and excavation activities performed within the maintenance areas are shown in the tables below.

Table 5: Sediment Management Activities by Maintenance Area

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
1.06	4.77	0	0	7,696	bulldozing/smoothing
1.38	5.01	5.01	2,000	0	Bulldozing/ excavation

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	9.8	5.0	2,000	7,696
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
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	9.8	5.0	2,000	7,696

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

Impacts to certain native vegetation types require compensatory mitigation. The impacts are tabulated annually and the necessary compensatory mitigation are reported cumulatively after each maintenance season. The following season's work plan must include enough mitigation to compensate for the previous season's impacts. Therefore, compensatory mitigation activities may occur before the related

impacts or the season after the impact occurred. The following table outlines which impacts require compensatory mitigation as well as the ratios.

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" or greater of cottonwood, sycamore and alder)	3:1 Planting of cottonwood, sycamore or alder (based on individual trees)
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 Summary of Impacts

The initial impacts to specific native vegetation types requires mitigation. Subsequent maintenance activities at the same location do not require additional mitigation. The impacts are documented annually and cumulatively reported. Therefore, the following tables identify the impacts from the most recent maintenance season and from the entire permit term to date, by vegetation type.

Table 9: New Impacts Requiring Compensatory Mitigation

RMU	<i>Early successional perennial riparian (acres)</i>	<i>Mid-successional willow (acres)</i>	<i>Early to mid-successional cottonwood forest (trees)</i>	<i>Large Stature Willows (trees)</i>	<i>Low stature herbaceous wetland (acres)</i>
1	1.8	3.5	0	0	0
2	0	0	0	0	0
3	1.6	1.5	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	1.2	0.8	0	0	0
7	0	0	0	0	0
Totals	4.6	5.8	0	0	0

Table 10: Total Impacts for Permit Term Requiring Compensatory Mitigation

RMU	<i>Early successional perennial riparian (acres)</i>	<i>Mid-successional willow (acres)</i>	<i>Early to mid-successional cottonwood forest (trees)</i>	<i>Large Stature Willows (trees)</i>	<i>Low stature herbaceous wetland (acres)</i>
1	10.5	3.5	0	0	0
2	0	0	0	0	0
3	1.6	1.5	0	0	0
4	13.0	3.3	7	1	0
5	8.9	1.9	29	18	0
6	15.7	4.3	0	6	0
7	0	0	0	0	0
Totals	49.6	14.4	36	25	0

3.3.2 Arundo Treatment as Compensatory Mitigation

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 through mowing and mulching. Limited herbicide application was utilized during this maintenance season due to the dryness of the vegetation. Previous arundo removal areas were re-mowed as necessary.

Mitigation is performed preferentially by RMU or throughout the Program Area as needed. The following tables document the new and retreated arundo areas for the past maintenance season. Enough arundo areas have been identified and received initial treatment to account for all SMP impacts to date.

Table 11: New Arundo Treatment by RMU

RMU	<i>New Treatment</i>				<i>Retreatment</i>			
	<i>Mowing</i>		<i>Herbicide</i>		<i>Mowing</i>		<i>Herbicide</i>	
	<i>inside MAs (acres)</i>	<i>outside MAs (acres)</i>	<i>inside MAs (acres)</i>	<i>outside MAs (acres)</i>	<i>inside MAs (acres)</i>	<i>outside MAs (acres)</i>	<i>inside MAs (acres)</i>	<i>outside MAs (acres)</i>
1	0.1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	2.4	0	0	0	0.2	0	0	0
4	0	15.3	0	0.4	11.5	51.1	0	0
5	0	0	0	0	0	0	0	0
6	0	3.5	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0
Totals	2.5	18.8	0	0.4	11.7	51.1	0	0

3.3.3 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 in Section 5.

Table 12: New Tree Plantings by RMU

RMU	<i>Cottonwoods</i>	<i>Willows</i>	<i>Other Native Trees</i>
1	0	0	0
2	0	0	0
3	0	0	0
4	40	0	0
5	80	0	0
6	0	0	0
7	0	0	0
Totals	120	0	0

3.3.4 Status of Compensatory Mitigation

The mitigation activities began in year two of the program and will continue until all success criteria is achieved. The areas are being tracked individually but are reported cumulatively in order to determine programmatic compliance. The tables below document the total treatment areas and compares it to the compensatory mitigation requirement ratios in Table 8.

Table 13: Status of Required Arundo as Compensatory Mitigation

<i>RMU</i>	<i>Total ESPR Impacts (acres)</i>	<i>Total Arundo treated inside MAs (acres)*</i>	<i>Total MSW Impacts (acres)</i>	<i>Total Arundo Treatment Required Outside MAs (acres)</i>	<i>Total Arundo treated outside MAs (acres)</i>	<i>Additional Arundo Removal Required (acres)</i>
1-7	49.6	28.9	14.4	53.7	73.7	0

*Arundo treatment inside MAs is counted on an acre-for-acre basis for early successional perennial riparian impacts only.

Table 14: Status of Required Tree Planting Mitigation by RMU

RMU	<i>Number of non-willow trees ≥ 2" dbh removed</i>	<i>Number of willows ≥ 6" dbh removed</i>	<i>Total Number of Trees Required to Plant</i>	<i>Number of Trees Planted, species</i>	<i>Trees Required – Trees Planted</i>
1	0	0	0	0	-
2	0	0	0	0	-
3	0	0	0	0	-
4	7	1	23	50, cottonwoods 700, willows	-
5	29	18	123	275, cottonwoods	-
6	0	6	12	0	-
7	0	0	0	0	-
Totals	36	25	158	325 cottonwoods 700 willows	0

3.3.5 Success Criteria

Mitigation sites are monitored annually. 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. Due to extended drought conditions, there are no sites that are nearing the success criteria.

4 Program Review

4.1 Impacts to Listed Species

Maintenance activities were designed to avoid direct and indirect impacts to listed species. There were no observations of any federally-listed species during the required pre-maintenance surveys. 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, wet river conditions, and subsequent reduced preparation time.

4.3 Effectiveness Monitoring

Topographic surveys were conducted down the centerline of select maintenance areas 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. There still may be high flows during this rainy season so no conclusions can be made 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.

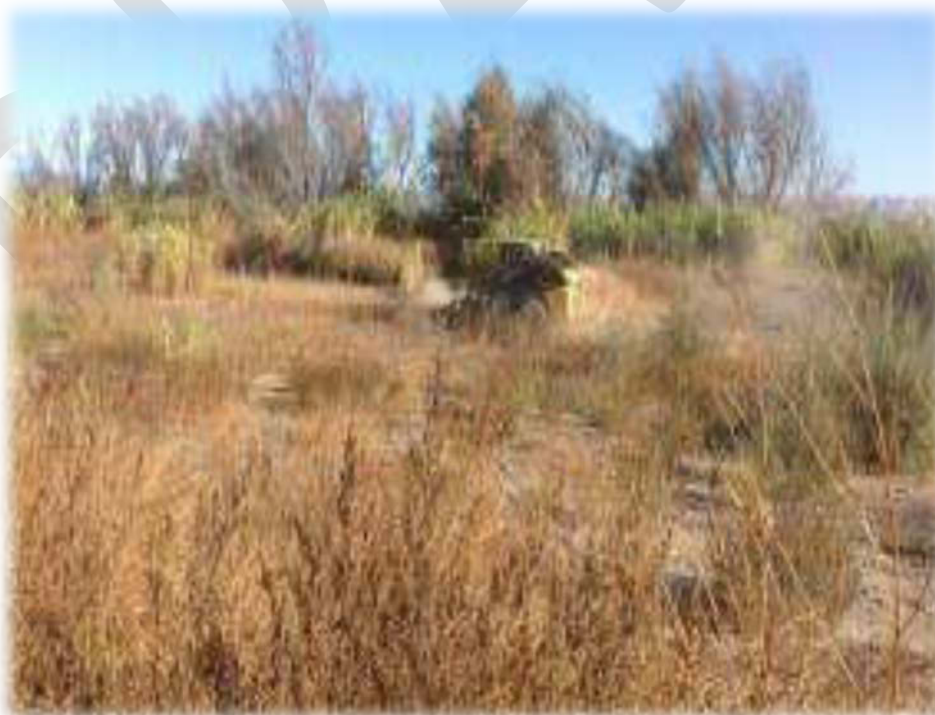
5 Photos of Typical Work Areas

Pre-maintenance Areas





Vegetation Removal





Arundo Removal



Selective Treatment Area Pre- and Post-work



Grading & Sediment Removal





Tree Planting



VRF # 0015



2017 SMP Project Activities

-  Vegetation Retreatment
-  Access Routes

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

Scale
1:4,000

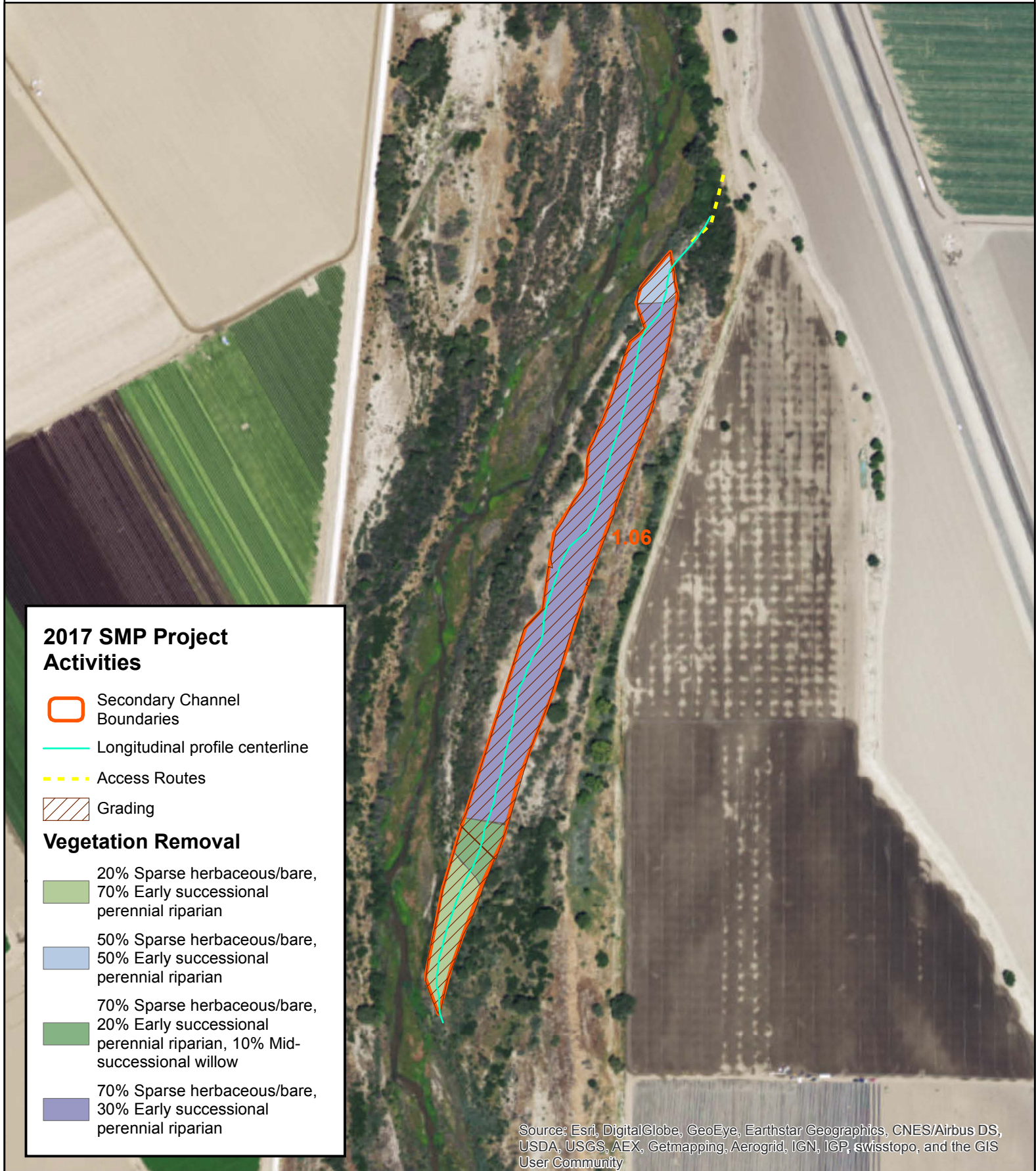


0 0.0375 0.075 0.15 Miles

Map created January 2018



VRF # 0017



Scale
1:4,000



0 0.0375 0.075 0.15 Miles

Map created January 2018



VRF # 0018



1:3,500



0 0.0325 0.065 0.13 Miles

Map created January 2018



VRF # 0022 - Overview



Scale
1:6,000

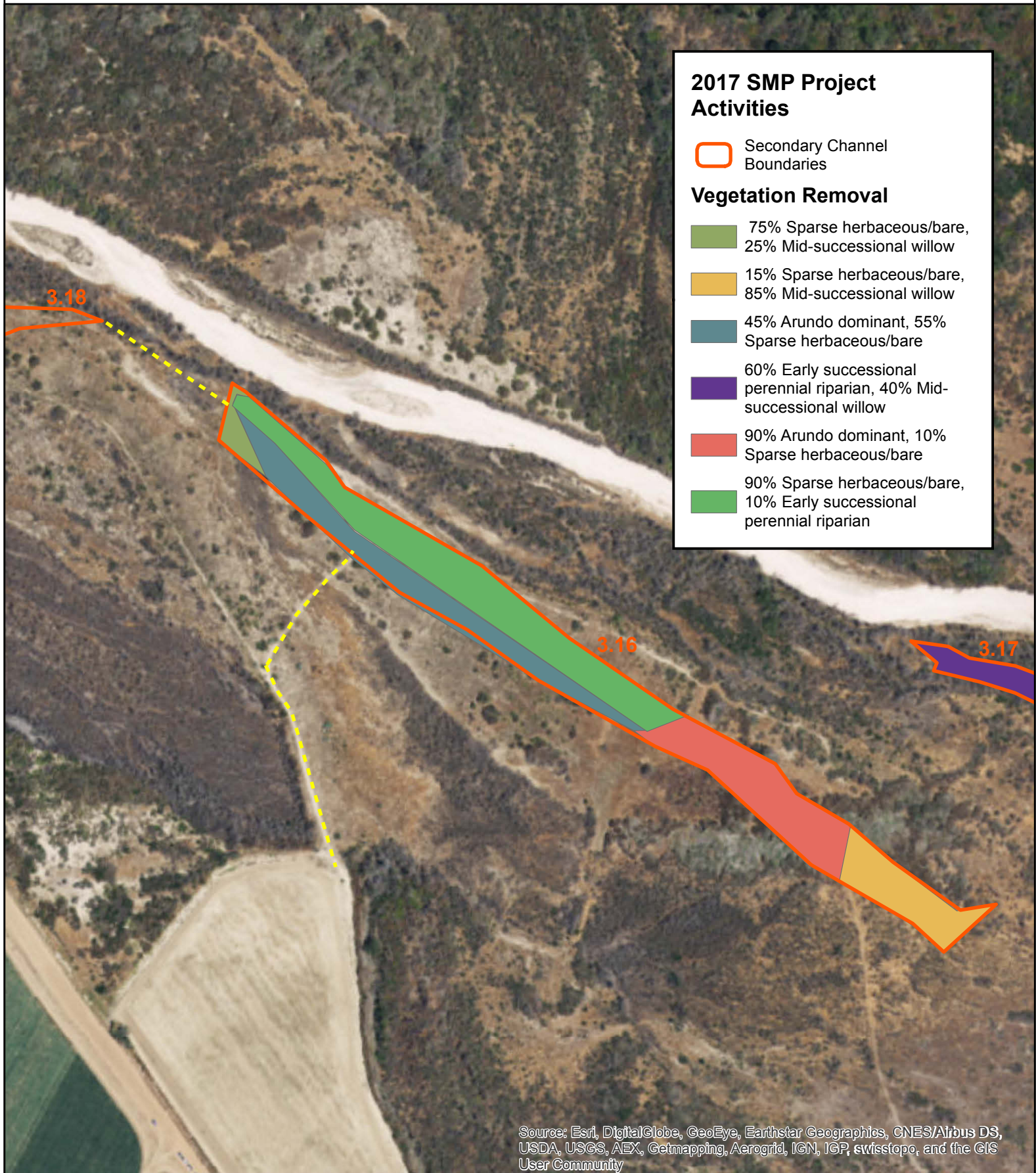


0 0.05 0.1 0.2 Miles

Map created January 2018



VRF # 0022 - Secondary Channel 3.16



Scale
1:3,500

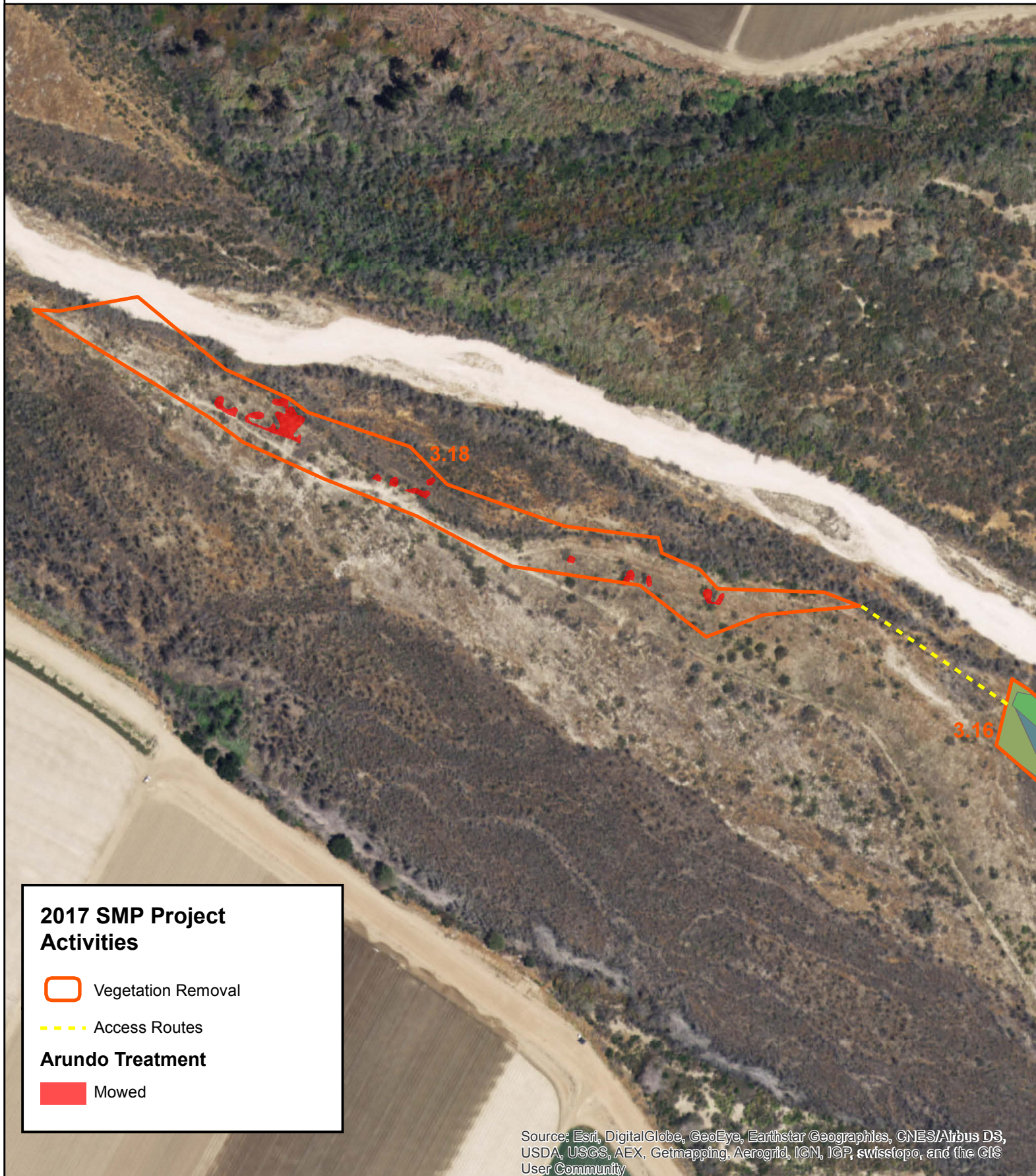


0 0.0325 0.065 0.13 Miles

Map created January 2018



VRF # 0022 - Secondary Channel 3.18



Scale
1:3,000

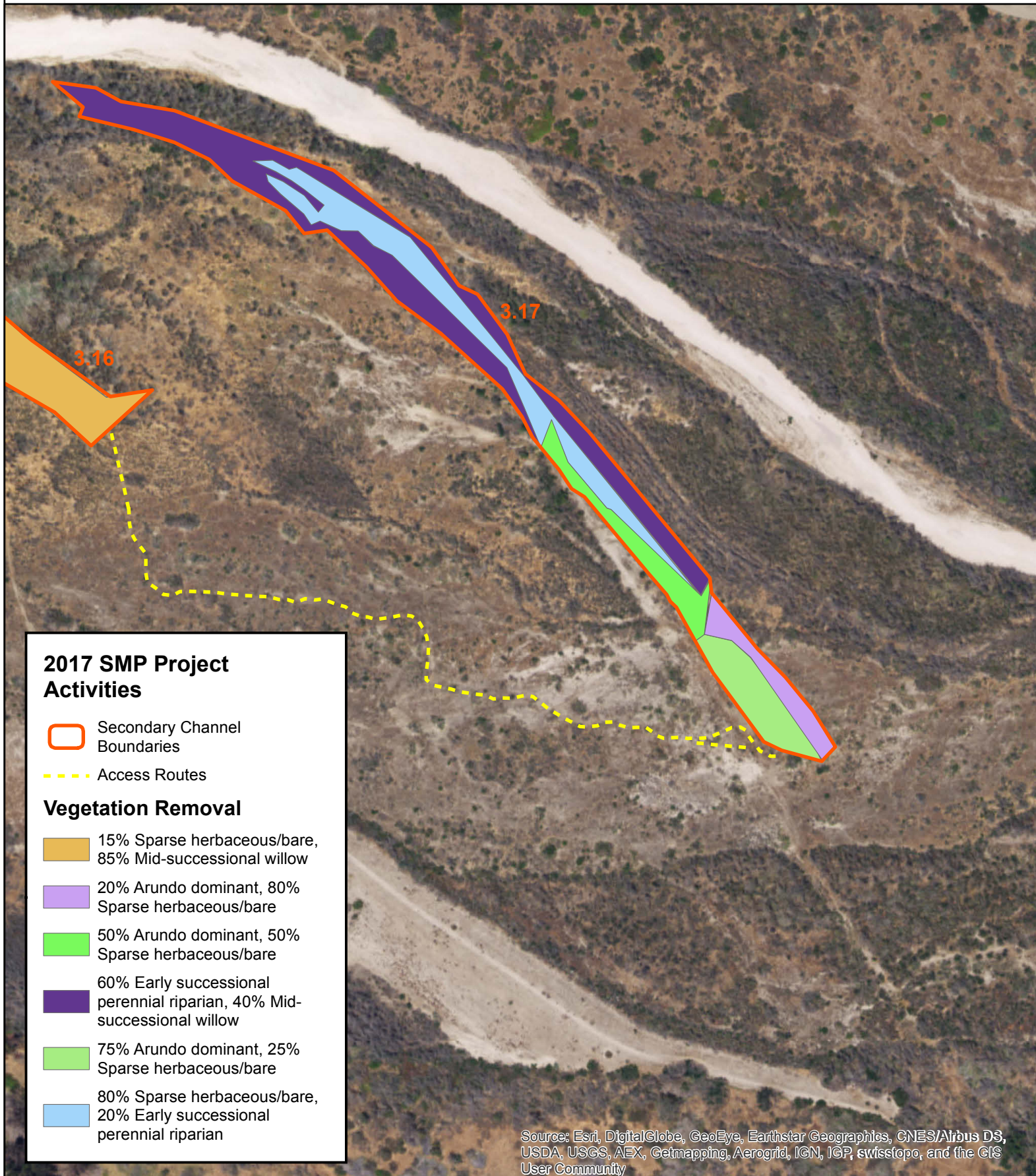


0 0.0275 0.055 0.11 Miles

Map created January 2018



VRF # 0023



Scale

1:3,000




0 0.0275 0.055 0.11 Miles


Map created January 2018




VRF # 0028


2017 SMP Project Activities


 Secondary Channel Boundaries

 Access Routes


Vegetation Removal


 10% Early successional perennial riparian, 90% Mid-successional willow


 10% Sparse herbaceous/bare, 90% Early successional perennial riparian


 10% Sparse herbaceous/bare, 90% Mid-successional willow


 100% Sparse herbaceous/bare


 25% Sparse herbaceous/bare, 75% Mid-successional willow

 35% Early successional perennial riparian, 65% Mid-successional willow

 50% Early successional perennial riparian, 50% Mid-successional willow

 50% Sparse herbaceous/bare, 50% Early successional perennial riparian

 50% Sparse herbaceous/bare, 50% Mid-successional willow

 75% Early successional perennial riparian, 25% Mid-successional willow

Vegetation Retreatment

6.06

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

Scale

1:5,550



0 0.05 0.1 0.2 Miles

Map created January 2018



VRFs # 0029 and # 0037



Scale
1:4,500



0 0.0425 0.085 0.17 Miles

Map created January 2018



VRF # 0029



1:4,500



0 0.0425 0.085 0.17 Miles



Map created January 2018



VRF # 0030



2017 SMP Project Activities

-  Vegetation Retreatment
-  Access Routes

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

Scale
1:2,500

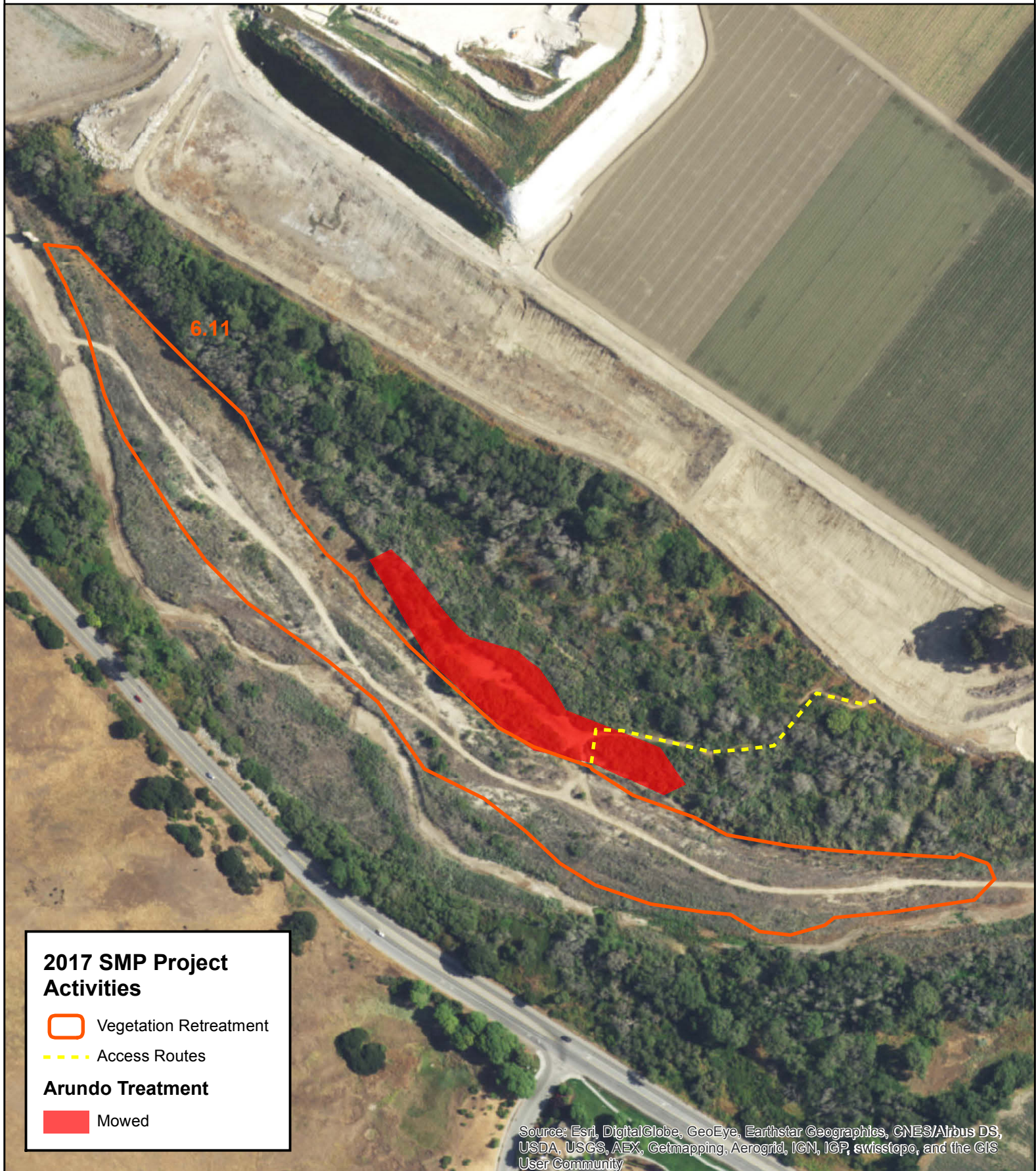


0 0.0225 0.045 0.09 Miles

Map created January 2018



VRFs # 0031 and # 0039



Scale
1:3,000



0 0.0275 0.055 0.11 Miles

Map created January 2018



VRF # 0031



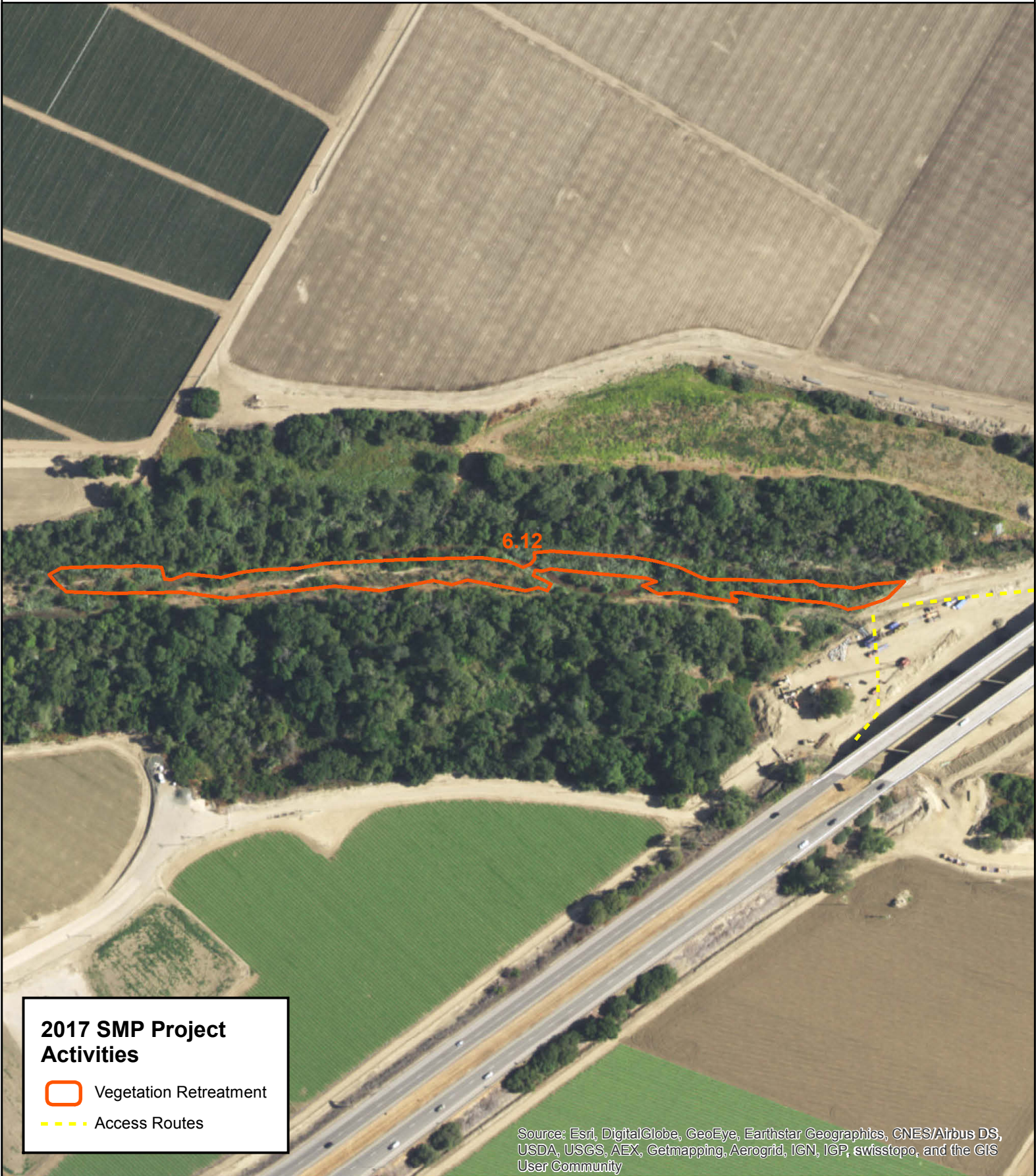
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0 0.0325 0.065 0.13 Miles

Map created January 2018





2017 SMP Project Activities

-  Vegetation Retreatment
-  Access Routes

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

Scale
1:3,000



0 0.0275 0.055 0.11 Miles

Map created January 2018





Scale
1:1,750



0 0.015 0.03 0.06 Miles

Map created January 2018



VRF # 0037



1:4,500

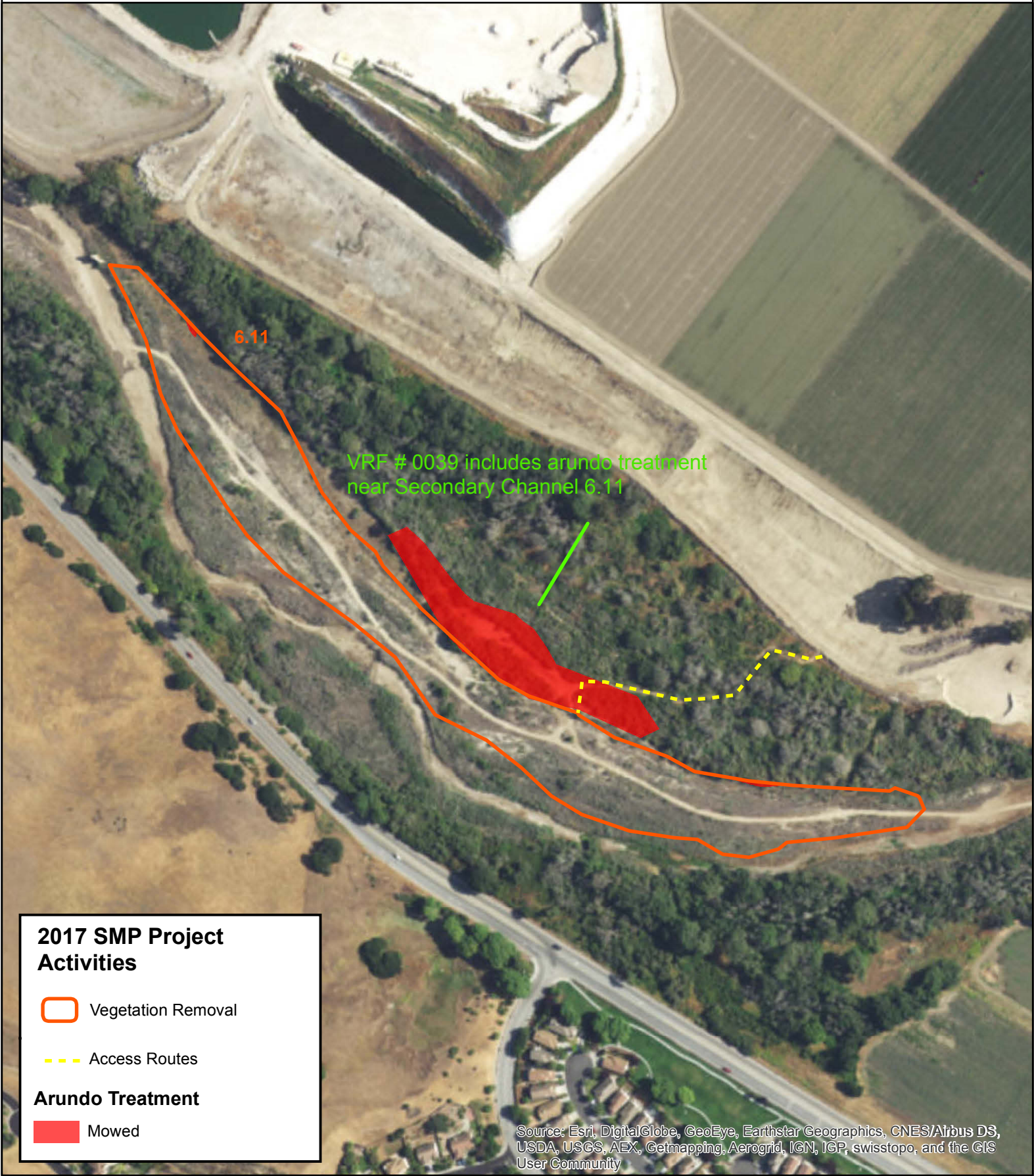


0 0.0425 0.085 0.17 Miles

Map created January 2018



VRF # 0039



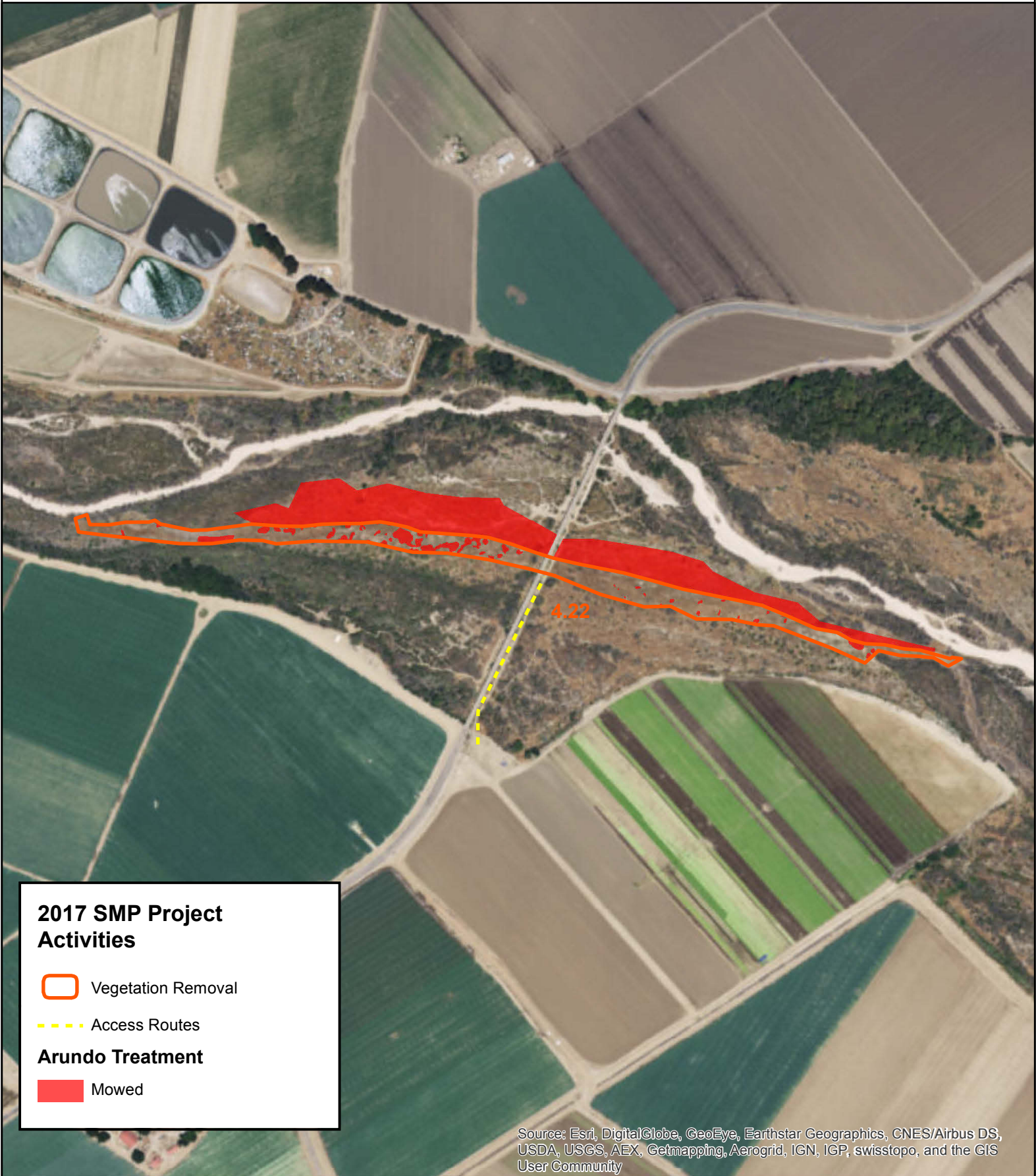
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0 0.0325 0.065 0.13 Miles

Map created January 2018





Scale
1:7,000

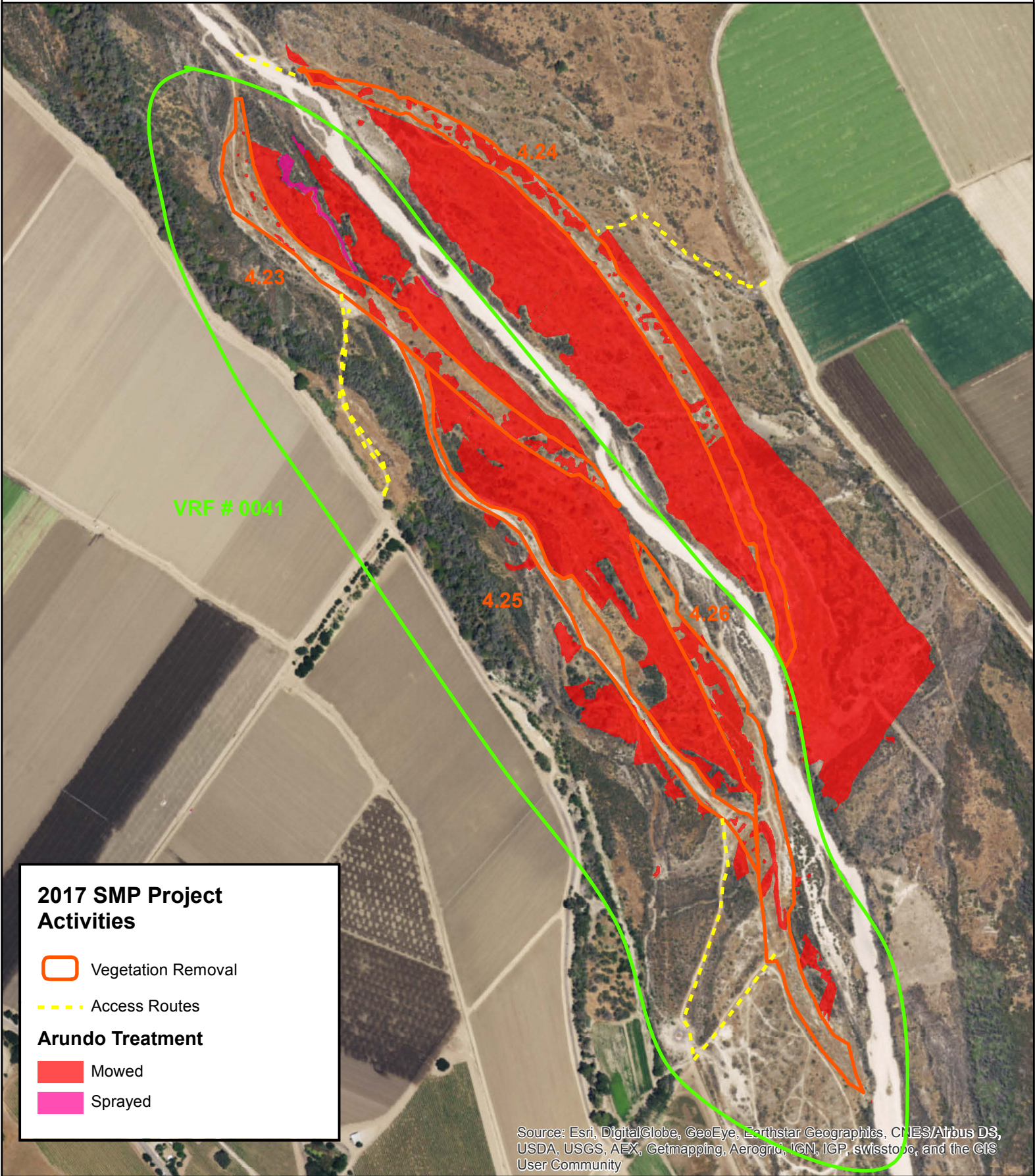


0 0.05 0.1 0.2 Miles

Map created January 2018



VRF # 0041



Scale
1:6,750

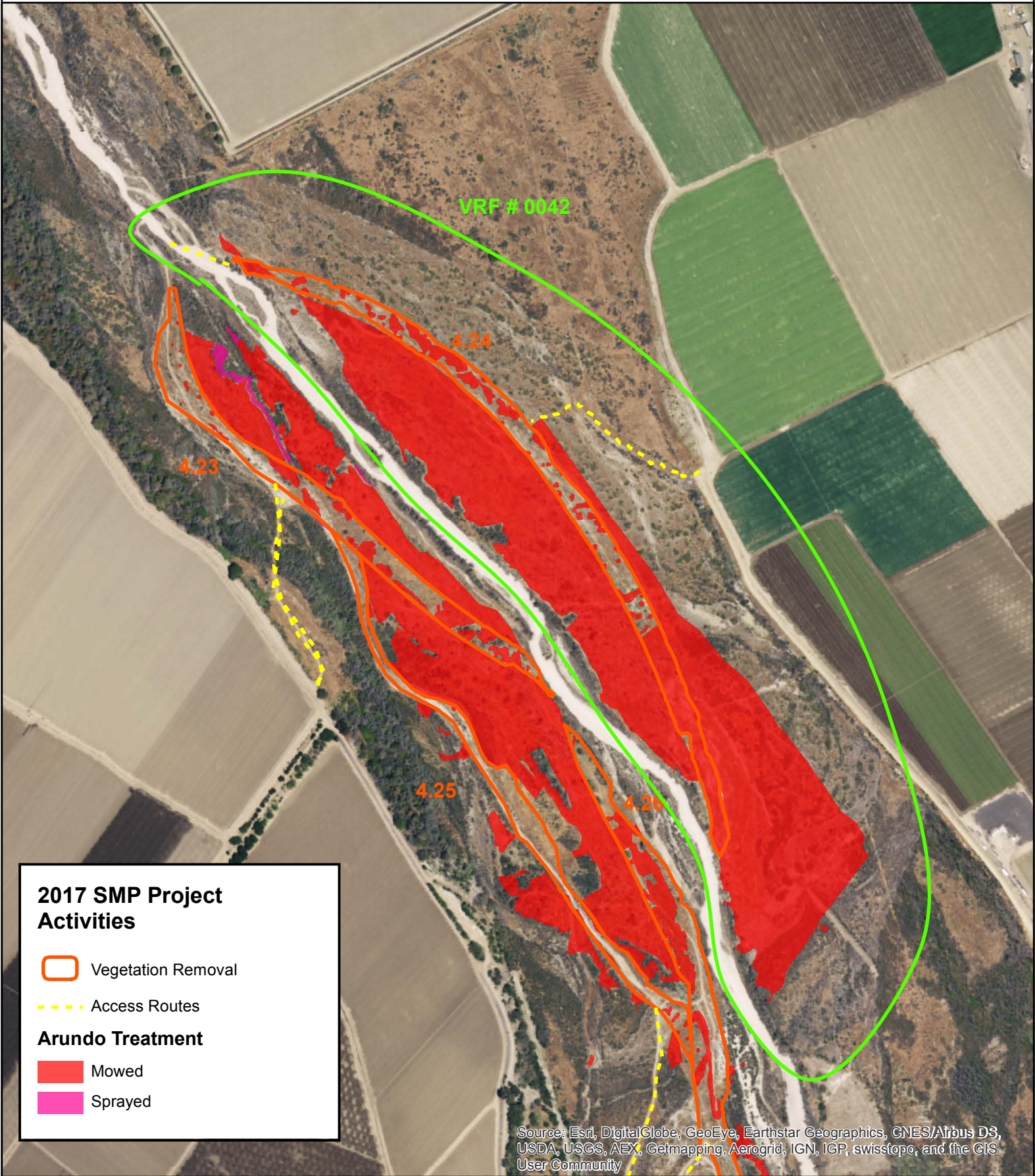


0 0.05 0.1 0.2 Miles

Map created January 2018



VRF # 0042



Scale
1:6,750



0 0.05 0.1 0.2 Miles

Map created January 2018



VRF # 0044



Scale
1:2,000



0 0.0175 0.035 0.07 Miles

Map created February 2018



VRF # 0045



Scale
1:3,000

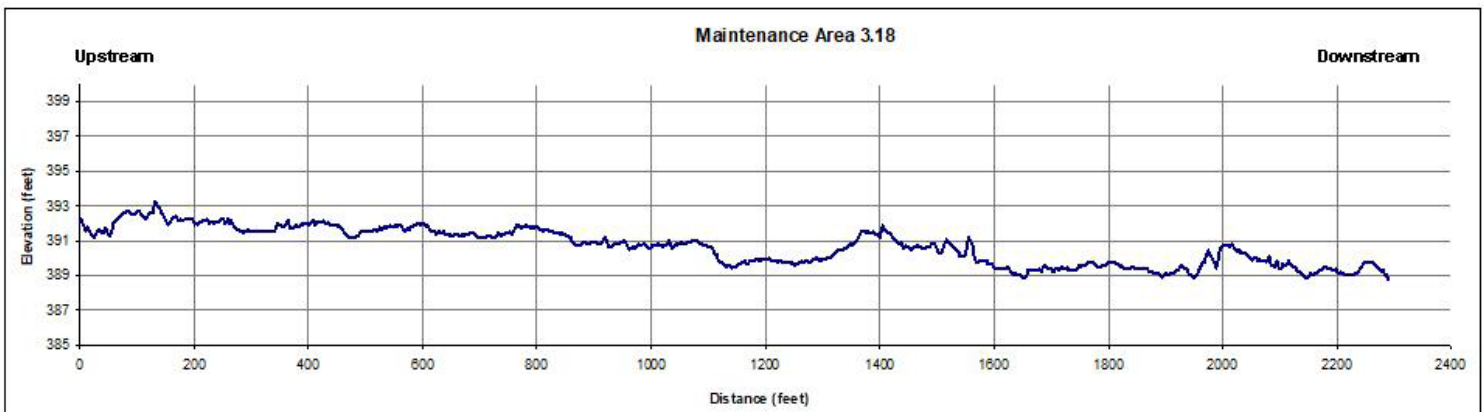
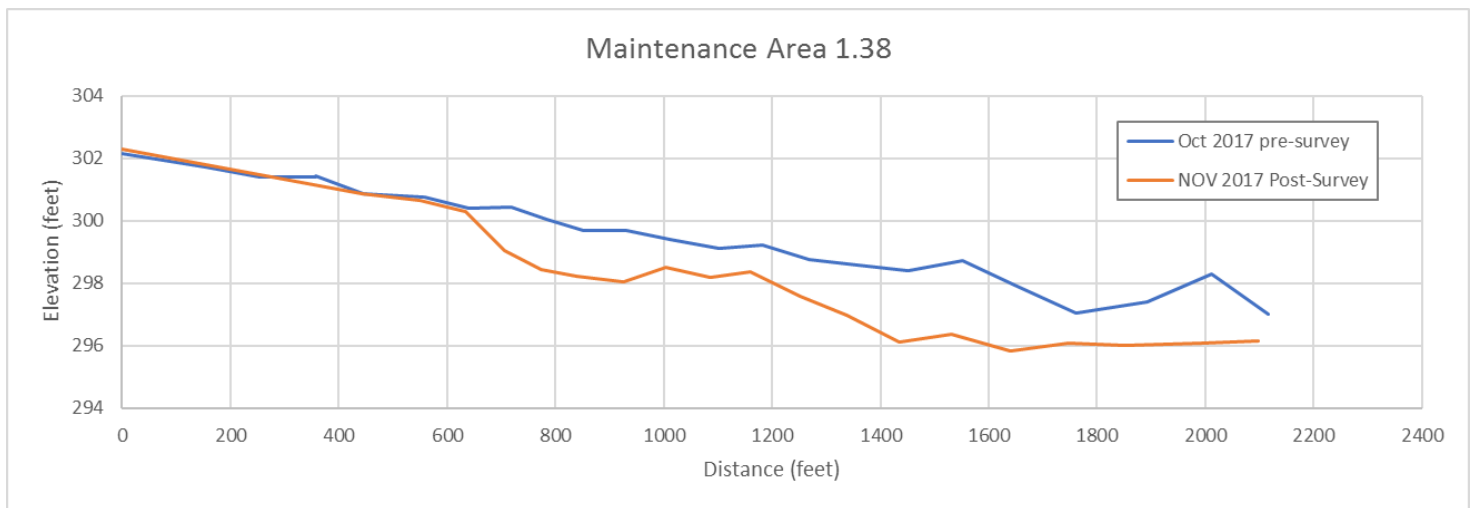
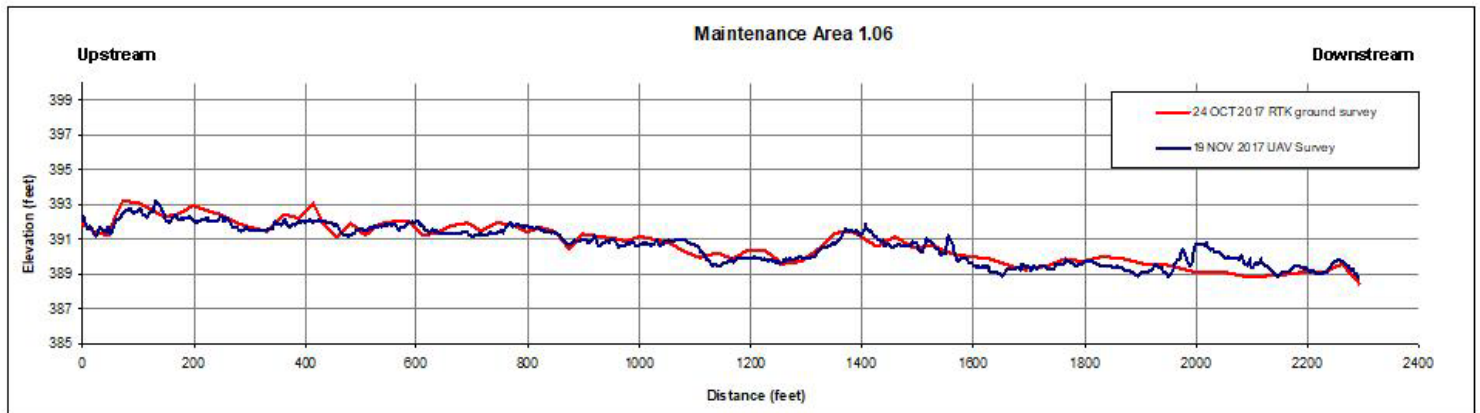


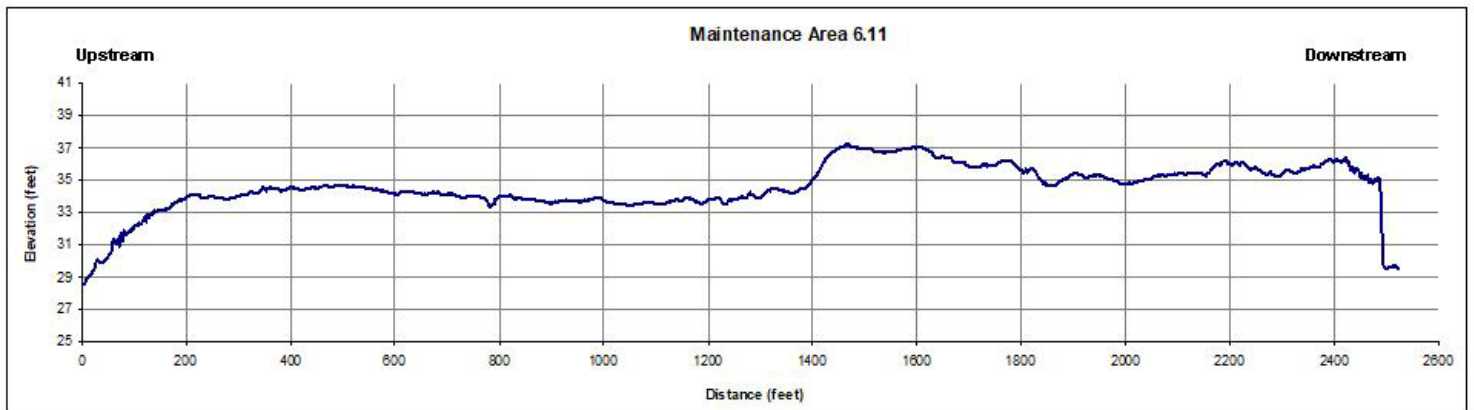
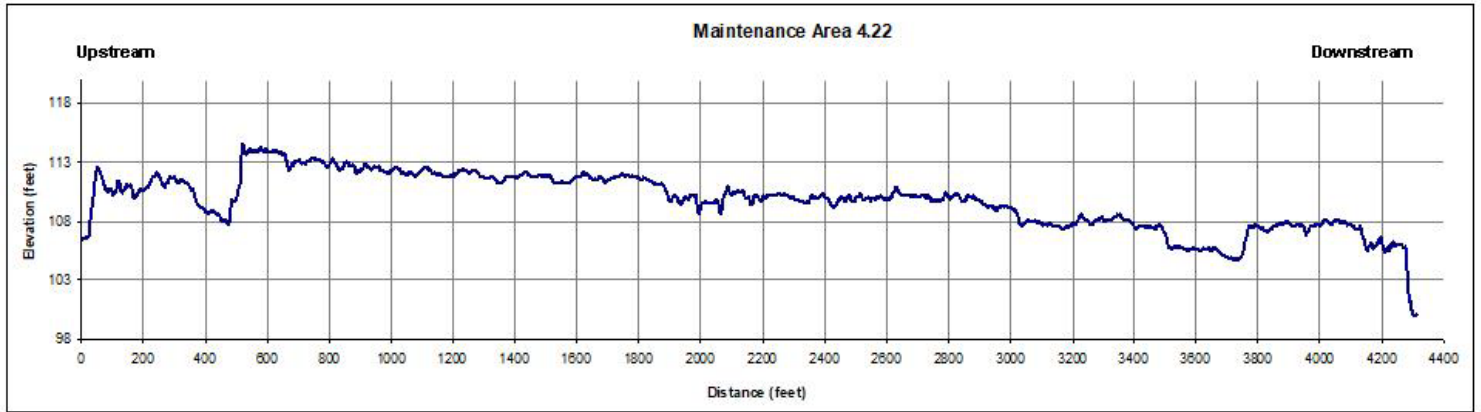
0 0.0275 0.055 0.11 Miles

Map created February 2018



7 Longitudinal Profiles





8 Certification of Compliance

DRAFT