# SAWA ANNUAL REGULATORY REPORT

## COVERING THE SANTA ANA WATERSHED ASSOCIATION MITIGATION PROJECTS FOR THE REPORTING PERIOD OF JULY 1<sup>ST</sup> 2016 – JUNE 30<sup>TH</sup>, 2017

Contact: Executive Director Hugh Wood (<u>hwood@sawatershed.org</u>) / 951-780-1012 x102





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## ABOUT SAWA

The Santa Ana Watershed Association is 501 c 3 non-profit corporation, comprised of five member special districts serving the Santa Ana River watershed. Those five special districts are Temecula Elsinore Anza Murrieta, Inland Empire, Riverside Corona, and San Jacinto Basin Resource Conservation Districts and the Orange County Water District. For nearly 20 years, the Santa Ana Watershed Association (SAWA) and its partners have been promoting a healthy Santa Ana River watershed for the wildlife and the people who inhabit it. The watershed spans approximately 2,800 square miles and ranges in elevation from 11,500 feet to sea level through five distinctive life zones. The watershed lies in one of Earth's 25 Biodiversity Hotspots—areas rich in flora and fauna that are threatened by human activity.

A major goal of SAWA is to restore the natural functions of the watershed through the enhancement and restoration of the native riparian community. This is accomplished by the removal of exotic species and the management of existing resources, including both habitat and wildlife species. The largest threat to the riparian habitat within the Santa Ana Watershed is the spread of invasive plant species, notably *Arundo donax*. This exotic plant is highly aggressive and has invaded much of the watershed, outcompeting native vegetation, consuming water disproportionate to that of native plant species and

having drastic impacts on the wildlife. Removing arundo is difficult and complex, requiring multiple treatments and intensive monitoring.

SAWA's comprehensive eradication efforts include identification and mapping of exotic species, initial biomass removal, post treatment, and intensive biological surveying during all stages of eradication. Most importantly, SAWA monitors the removal areas long after the arundo has been eradicated to ensure that native vegetation and wildlife are recovering and that there is no return of the invasive species. These intensive monitoring efforts are required to prevent re-growth that can lead to total re-infestation over time and to prevent any impacts to native species. Active restoration and enhancement is often employed when natural succession is not sufficient to ensure recovery of native habitat.

To date, SAWA has removed nearly 4,600 acres of arundo and other invasive plants throughout the watershed.

#### COLLABORATION

SAWA conducts environmental management projects, working collaboratively with governmental agencies, conservation organizations, and private citizens. SAWA implements facets of the Santa Ana River Watershed Program, continuously restoring natural functions and resources of the river and its tributaries.

The most notable collaborating agencies include the U.S. Army Corps of Engineers (USACOE), U.S. Fish & Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), U.S. Forest Service



ARUNDO REMOVAL AND TREATMENT IN THE PRADO BASIN.

(USFS), California Department of Water Resources (DWR), Riverside County Flood and Water Conservation District, Riverside Parks and Open Space District and the Regional Water Quality Control Board (RWQCB).

The Watershed Program formally began in 1995, with the signing of a landmark agreement between the OCWD, USACOE, and the U.S. Department of Interior for the U.S. Fish and Wildlife Service. This agreement allowed OCWD to conserve water behind Prado Dam but also recognized the need for watershed restoration by allowing a portion of the project mitigation to occur in the upper Santa Ana River watershed, many miles from the project site.

Habitat restoration, primarily through invasive plant species control, is the current focus of the Watershed Program because most of the funding obtained was earmarked for arundo control. The work with endangered species and other wildlife is necessary for compliance with the regulatory permits to do the invasive plant species work. Funds are obtained from grants and mitigation of projects which have an adverse impact on Santa

#### SAWA Annual Regulatory Report July 1, 2016 to June 30, 2017

Ana Watershed habitat, and the Watershed Program took on the funds and the mitigation responsibilities. For copies of the past annual mitigation report and annual Least Bell's Vireo monitoring reports visit SAWA's web site at www.sawatershed.org

Mitigation projects are designated and approved by the SAWA Board of Directors. This plan is carried out with a focus on ongoing maintenance and enhancement of river system function, eventually leading to whole watershed health. The work plan develops projects that further these goals.

This report reflects the 12-month period from July 1, 2016 to June 30, 2017, and supplements many other reports produced throughout the period. The next report will be issued in September 2018, and will cover the period July 1, 2017 through June 30, 2018.

In 2016/17, SAWA worked on 44 project locations in the Watershed under SAWA's CDFW 1600-2010-0004 permit. The following project site reports reflect the work performed under that programmatic permit.

# **CDFW REGION 5**

The reports contained herein cover SAWA projects funded by the In-lieu Fee program and mitigations, and are located within the California Department of Fish and Wildlife Region 5.

### CARBON CANYON AERA 7-1-16 THROUGH 6-30-17

#### **PROJECT BACKGROUND**

Carbon Canyon AERA runs along Carbon Canyon Creek, adjacent to the Carbon Canyon Discovery Center, near Brea, CA. Originally the 4-acre project area was infested with about 2 acres of giant reed (*Arundo donax*). SAWA placed one mitigation at this location, and removal work began in November 2012. Control efforts have continued in subsequent years to control the re-emergence of giant reed.

Table 1: Carbon Canyon AERA - Mitigations Placed at Project					
Permit Number	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Mitigation Type
1600-2009-0020-R5 (Op Law) SPL-2009-00292-JPL RWQCB Cert. 9/17/2009	North Diemer Access Road Project	Metropolitan Water District of Southern California	\$75,000 (12/4/09)	0.7	ILF: Enhancement
Totals			\$75,000	0.7	

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, one herbicide treatment occurred on 9/20/16. Species treated was giant reed. A total of 2 hours were spent on enhancement activities.

Table 2: Carbon Canyon AERA – Summary of Mitigation Activities				
Project placed in:	2012			
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated	
2012	2	Initial removal	giant reed	
2013	n/a	Treatment	giant reed	
1/1/14 to 6/30/14	None	n/a	n/a	
7/1/14 to 6/30/15	0.2	Treatment	giant reed	
7/1/15 to 6/30/16	None	n/a	n/a	
7/1/16 to 6/30/17	0.25	Treatment	giant reed	

*The methods used for removal:* All herbicide treatments were conducted using a foliar application with 4gallon back pack sprayers. A total of 6.4 ounces Rodeo (glyphosate) was used during this reporting period. A total of 2.56 ounce Agri-Dex was used as a surfactant and 1 ounce Quest was used as a water conditioner in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

The amount removed and/or treated: Approximately 0.25 acre of giant reed was treated.

*The frequency and timing of removal/treatment:* The project is monitored annually by the ISR crew. Nonnative plants are treated as they are encountered during this monitoring. Giant reed is treated when the biomass reaches 2 to 4 feet in height.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

*Monitoring Activities:* The annual bioassessment survey took place on 4/19/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. This site is included in SAWA's assessment surveys conducted three times annually during Least Bell's Vireo nesting season. Permit and mitigation were also reviewed. A total of 6.25 hours were spent on conservation, monitoring, and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains thin riparian habitat composed mainly of mulefat. The average tree height class is >10-15m and the average shrub height class is >2-5m. Overall plant coverage is at >75% with native coverage at >50-75% and non-native coverage at >25-50%. The dominant native species include 1-5% mulefat (*Baccharis salicifolia*), 1-5% Southern California black walnut (*Juglans californica*) and 1-5% blue elderberry (*Sambucus nigra* ssp. *caerulea*). The dominant non-native species include >15-25% blue gum tree (*Eucalyptus globules*), >15-25% non-native grasses, >15-25% poison hemlock (*Conium maculatum*) and 1-5% black mustard (*Brassica nigra*).

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including California Scrubjay (*Aphelocoma californica*), Song Sparrow (*Melospiza melodia*), California Towhee (*Pipilo crissalis*), House Wren (*Troglodytes aedon*), Phainopepla (*Phainopepla nitens*), Western Tanager (*Piranga ludoviciana*), Bullock's Oriole (*Icterus bullockii*), and California Quail (*Callipepla californica*). Additional species not detected during the survey, but that do occur in this area during the spring season are the endangered Least Bell's Vireo (*Vireo bellii pusillus*), and the Yellow Warbler (*Setophaga petechia*), a California species of special concern.

#### PROJECT STATUS AND REMEDIAL ACTION

The Carbon Canyon AERA Project is in its 5<sup>th</sup> year. Treatment methods used to eradicate the target species have been proven to be effective to control giant reed, which is nearly eradicated. The project requires another year of treatment, then will be re-evaluated to detine if the goals have been met. However other non-native species have taken over the void left behind. Additional funding to remove these other non-native species is recommended. Native planting will also help prevent non-native species from coming back, and help re-establish the native habitat.

#### FINANCIAL SUMMARY

Table 3: Carbon Canyon AERA Yearly Costs				
Reporting Period	Total Cost			
2012	\$29,452.84			
2013	\$2,919.20			
1/1/14 to 6/30/14	\$310.68			
7/1/14 to 6/30/15	\$504.83			
7/1/15 to 6/30/16	\$329.97			
7/1/16 to 6/30/17	\$556.19			

#### **GPS PHOTO POINTS**

Photos taken 10/28/12 (left) and 4/19/17 (right).





Photos taken 10/28/12 (left) and 4/19/17 (right).



MAP



## IRVINE LAKE (SANTIAGO CREEK) 7-1-16 THROUGH 6-30-17

#### PROJECT BACKGROUND

Irvine Lake is located in Santiago Canyon, east of Orange, CA. The project is bounded by the Santa Ana Mountains to the north-east and south, and SR-241 to the west. Originally the project was infested with 1.88 acres of giant reed (*Arundo donax*) along the shores of the lake. In 2013 the Santa Ana Watershed Association (SAWA) began removal work for four mitigations. Extensive management practices have been employed to ensure there is no measureable water pollution, and this project has demonstrated that such an operation can safely occur at a critical drinking water reservoir. Control efforts have continued in subsequent years to control the re-emergence of these species.

Table 1: Irvine Lake (Santiago Creek) - Mitigations Placed at Project					
Permit Number	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Mitigation Type
1600-2008-0314-R5 Op Law SPL-2008-01063-JPL	Fullerton Layover Facility Project	Orance County Transportation Agency	\$19,000 (4/1/09)	0.09	ILF: Restoration
2006-01866 RWQCB Cert. 7/22/09	Union Pacific Rialroad Company Track Improvement Project	Union Pacific Railroad Company	\$62,000 (7/30/09)	0.404	ILF: Restoration
SPL-2009-00674-JPL R8-2009-0047	Olinda Alpha Landfill Expansion	Orange County Waste & Recycling	\$75,000 (9/1/09)	1.0	ILF: Enhancement
1600-2008-0420-R5 Op Law SPL-2008-01145-MAS RWQCB Cert. 2/27/2009	Santiago Creek Bike Trail-Tustin Branch Trail	City of Orange	\$75,000 (10/1/10)	0.79	ILF: Enhancement
Totals			\$183,900	2.284	

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

*Enhancement Activities:* No work occurred during this reporting period.

Table 2: Irvine Lake (Santiago Creek) – Summary of Mitigation Activities					
Project placed in:	2012				
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated		
2013	1.88	Initial removal	giant reed		
1/1/14 to 6/30/14	None	n/a	n/a		
7/1/14 to 6/30/15	0.06	Treatment	giant reed		
7/1/15 to 6/30/16	0.06	Treatment	giant reed		
7/1/16 to 6/30/17	None	n/a	n/a		

The methods used for removal: No removal or treatment occurred during this reporting period. When removal and treatment does occur, a combination of methods have been utilized. Only manual removals using hand tools occurs in proximity to sensitive reservoir outlets. The cut and treat method is employed in areas where the water line was more than 25 feet away from giant reed patches. Herbicide spraying is limited to only large giant reed patches located far from the water line. Weekly water quality samples are collected before and during all removal activities.

*The amount removed and/or treated:* No removal or treatment occurred during this reporting period.

*The frequency and timing of removal/treatment:* No removal or treatment occurred during this reporting period.

*Disposal specifics:* No removal or treatment occurred during this reporting period.

*Monitoring Activities:* The annual bioassessment survey took place on 7/5/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. Permit and mitigation were also reviewed. A total of 11 hours were spent on conservation, monitoring, and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site surrounds a lake and is composed primarily of riparian habitat. The bioassessment surveyed the habitat from the lake edge up to, but not including, the adjacent oak woodland hills. The riparian habitat consists mainly of willow forest with mulefat understory. The average tree height class is >2-5 meters and the average shrub height class is 1-2 meters. Overall plant coverage is at >25-50% with native coverage at >5-15% and non-native coverage at >50-75%. The dominant native species include >5-15% horseweed (*Erigeron canadensis*), >5-15% Goodding's black willow (*Salix gooddingii*), >1-5% telegraph weed (*Heterotheca grandiflora*), 1-5% mulefat (*Baccharis*)

*salicifolia*), and <1% red willow (*Salix laevigata*). The dominant non-native species include >50-75% white sweet clover (*Melilotus alba*), >5-15% tamarisk (*Tamarix* sp.), >5-15% mustard (*Brassica* sp.), 1-5% non-native grasses, <1% tree tobacco (*Nicotiana glauca*), <1% giant reed, <1% sweet fennel (*Foeniculum vulgare*), and <1% milk thistle (*Silybum marianum*). The site is currently closed to the public. Habitat quality is moderate due to non-native plants.

Wildlife species: Observed wildlife species consist primarily of riparian species, including Mallard (Anas platyrhynchos), Great-blue heron (Ardea herodias), Black-necked Stilt (Himantopus mexicanus), Canada Goose (Branta canadensis), Greater Roadrunner (Geococcyx californianus), Killdeer (Charadrius vociferous), American Coot (Fulica americana), Western Grebe (Aechomphorus occidentalis), Snowy Egret (Egretta thula), Turkey Vulture (Cathartes aura), Red-tailed Hawk (Buteo jamaicensis), American Crow (Corvus brachyrhynchos), Mourning Dove (Zenaida macroura), Black Phoebe (Sayornis nigricans), Cassin's Kingbird (Tyrannus vociferans), Anna's Hummingbird (Calypte anna), Bushtit (Psaltriparus minimus), Acorn Woodpecker (Melanerpes formicivorus), European Starling (Sturnus vulgaris), Red-winged Blackbird (Agelaius phoeniceus), Bewick's Wren (Thryomanes bewickii), Common Yellowthroat (Geothlypis trichas), California Towhee (Melozone crissalis), Song Sparrow (Melodia melospiza), House Finch (Haemorhous mexicanus), Lesser Goldfinch (Spinus psaltria), covote (Canis latrans), American Bullfroq (Lithobates catesbeianus), Desert Cottontail (Sylvilagus audubonii), California Ground Squirrel (Otospermophilus beecheyi), and domestic cat (Felis catus). A California species of special concern, the Yellow-breasted Chat (Icteria virens), as well as a California fully protected species, the White-tailed Kite (Elanus leucurus) were detected on site. The state and federally listed endangered Least Bell's Vireo (Vireo bellii pusillus) was also observed on site. The Bald Eagle (Haliaeetus leucocephalus), a federally delisted species was also present.

#### PROJECT STATUS AND REMEDIAL ACTION

The Irvine Lake Project is in its 4<sup>th</sup> year. Treatment methods used to eradicate the target species have been proven to be effective to control giant reed, which is nearly eradicated. Within the scope of requirements for SAWA's In-Lieu Fee program, the project is on track to meeting the goals. Another year of treatment is required, then the project will be re-evaluated. However other non-native species have emerged around the lake. Additional funding to remove these other non-native species is recommended. Native planting will also help prevent non-native species from coming back, and help re-establish the native habitat.

#### FINANCIAL SUMMARY

Table 3: Irvine Lake (Santiago Creek) Yearly Costs				
Reporting Period	Total Cost			
2013	\$92,065.22			
1/1/14 to 6/30/14	\$142.70			
7/1/14 to 6/30/15	\$14,487.53			
7/1/15 to 6/30/16	\$2,221.91			
7/1/16 to 6/30/17	\$1,132.77			

#### **GPS PHOTO POINTS**

Photo point 1 - 433760, 3736912, heading 120; Photos taken 6/22/16 (left) and 7/5/17 (right).



Photo point 2 – 433760, 3736912, heading 205; Photos taken 6/22/16 (left) and 7/5/17 (right).



Photo point 3 – 433760, 3736912, heading 280; Photos taken 6/22/16 (left) and 7/5/17 (right).



Photo point 4 – 432689, 3738079, heading 53; Photos taken 6/22/16 (left) and 7/5/17 (right).



Photo point 5 – 432689, 3738079, heading 133; Photos taken 6/22/16 (left) and 7/5/17 (right).



MAP



## IRVINE PARK (SANTIAGO CREEK) 7-1-16 THROUGH 6-30-17

#### PROJECT BACKGROUND

Irvine Park is located in Santiago Canyon, east of Orange, CA. The 26-acre project is bounded by the Santa Ana Mountains to the north and east and south, SR-241 to the south, and Santiago Canyon Road to the west. Originally the invasive removal work was conducted by the Inland Empire Resource Conservation District (IERCD), as part of eight mitigations. In 2012 management of the project was handed over to the Santa Ana Watershed Association (SAWA). Control efforts have continued in subsequent years to control the re-emergence of these species.

Table 1: Irvine Park (Santiago Creek) - Mitigations Placed at Project					
Permit Number	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Mitigation Type
1600-2007-0003-R5 2007-76-Y RWQCB Cert. 9/25/07	Santiago Canyon Creek Recharge Enhancement Project	Orange County Water District	\$50,000 (8/29/01)	1.0	ILF: Enhancement
199915117-YJC	Saddleback Meadows	California Quartet	\$100,000 (6/11/03)	2	ILF: Restoration
200300194-YJC	Frank R. Bowerman Landfill	County of Orange IWMD	\$16,200 (9/27/04)	0.324	ILF: Enhancement
1600-2004-0256-R5 200500154-JPL RWQCB Cert	Caliber Motors Satellite Sales Facility	Ellas Properties Inc	\$5,000 (12/28/04)	0.1	ILF: Enhancement
CDFW Op Law	Robert B. Diemer Filtration Plant Emergency Spillway Vegetation Clearing Project	Metropolitan Water District of So. Cal	\$25,000 (2/1/05)	0.45	Permittee-based Mitigation: Enhancement
5-028-00 200000736-YJC	Yorba Linda Heights Project	Pulte Home Corp	\$162,500 (2/1/05)	3.25	ILF: Enhancement
1600-2004-0060-R5	Southern California Regional Rail Bridge Project	So Cal Regional Rail Authority	\$75,000 (7/24/06)	1.02	Permittee-based Mitigation: Enhancement
Totals			\$433,700	8.144	

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

*Enhancement Activities:* No work occurred during this reporting period.

Table 2: Irvine Park (Santiago Creek) – Summary of Mitigation Activities				
SAWA management began in:		2012		
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated	
2012	1.3	Treatment	giant reed	
2013	n/a	Treatment	giant reed	
1/1/14 to 6/30/14	None	n/a	n/a	
7/1/14 to 6/30/15	None	n/a	n/a	
7/1/15 to 6/30/16	3.9	Treatment	giant reed	
7/1/16 to 6/30/17	None	n/a	n/a	

*The methods used for removal:* No removal or treatment occurred during this reporting period.

*The amount removed and/or treated:* No removal or treatment occurred during this reporting period.

*The frequency and timing of removal/treatment:* No removal or treatment occurred during this reporting period.

*Disposal specifics:* No removal or treatment occurred during this reporting period.

*Monitoring Activities:* The annual bioassessment survey took place on 6/20/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. This site is included in SAWA's assessment surveys conducted three times annually during Least Bell's Vireo nesting season. Permit and mitigation were also reviewed. A total of 9 hours were spent on conservation, monitoring, and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian habitat composed mainly of willow and sycamore forest with laurel sumac understory. The average tree height class is >10-15 meters and the average shrub height class is >1-2 meters. Overall plant coverage is at >50-75% with native coverage at >50-75% and non-native coverage at 1-5%. The dominant native species include >15-25% mulefat (*Baccharis salicifolia*), >15-25% Goodding's black willow (*Salix gooddingii*), >5-15% Western sycamore (*Platanus racemosa*), and >5-15% laurel sumac (*Malosma laurina*). The dominant non-native species include 1-5% mustard (*Brassica* sp.), 1-5% giant reed (*Arundo donax*), 1-5% gum tree (*Eucalyptus* sp.), 1-5% fountain grass (*Pennisetum setaceum*), <1% tree tobacco (*Nicotiana glauca*), and <1% castorbean (*Ricinus* 

*communis*). Riparian and surrounding coastal sage scrub provide high quality habitat for wildlife. Local disturbances include mountain bikers, horse trails, off-trail usage, and trash.

Wildlife species: Observed wildlife species consist primarily of riparian species, including American Crow (Corvus brachyrhynchos), Wrentit (Chamaea fasciata), House Wren (Troglodytes aedon), Acorn Woodpecker (Melanerpes formicivorus), Bushtit (Psaltriparus minimus), Cassin's Kingbird (Tyrannus vociferans), Bewick's Wren (Thryomanes bewickii), Blue-gray Gnatcatcher (Polioptila caerulea), Lesser Goldfinch (Spinus psaltria), Hooded Oriole (Icterus cucullatus), Ash-throated Flycatcher (Myiarchus cinerascens), Downy Woodpecker (Picoides pubescens), California Quail (Callipepla californica), Northern Mockingbird (Mimus polyglottos), Western Bluebird (Sialia mexicana), California Scrub-jay (Aphelocoma california), Red-tailed Hawk (Buteo jamaicensis), Greater Roadrunner (Geococcyx californianus), Nuttall's Woodpecker (Picoides nuttallii), Spotted Towhee (Pipilo maculatus), Song Sparrow (Melodia melospiza), Mourning Dove (Zenaida macroura), Black-headed Grosbeak (Pheucticus melanocephalus), Phainopepla (Phainopepla nitens), European Starling (Sturnus vulgaris), Snowy Egret (Egretta thula), Anna's Hummingbird (Calypte anna), California Towhee (Melozone crissalis), coyote (Canis latrans), desert cottontail (Sylvilagus audubonii), side-blotched lizard (Uta stansburiana), mule deer (Odocoileus hemionus), California ground squirrel (Otospermophilus beechevi), and Western Toad (Anaxyrus boreas). California species of special concern present on site include Yellow Warbler (Setophaga petechial) and Yellow-breasted Chat (Icteria virens), federally-listed threatened Coastal California gnatcatcher (Polioptila californica californica), and state and federally-listed endangered Least Bell's Vireo (Vireo bellii pusillus).

#### PROJECT STATUS AND REMEDIAL ACTION

The Irvine Park Project is in its 5<sup>th</sup> year. Treatment methods used to eradicate the target species have been proven to be effective to control giant reed, with minimal regrowth. The project goal is <1% giant reed over the total project area. Currently giant reed is documented at the lower end of the 1-5% range for coverage. The project requires another year of treatment, then will be re-evaluated to detmine if the goals have been met. In addition, other non-native species, such as fountain grass, have emerged as dominant non-native species. Additional funding to remove these other non-native species is recommended. Native planting will also help prevent non-native species from coming back, and help reestablish the native habitat.

#### FINANCIAL SUMMARY

Table 3: Irvine Park (Santiago Creek) Yearly Costs				
Reporting Period	Total Cost			
2012	\$2,906.89			
2013	\$1,371.66			
1/1/14 to 6/30/14	\$0			
7/1/14 to 6/30/15	\$0			
7/1/15 to 6/30/16	unavailable			
7/1/16 to 6/30/17	\$378.06			

#### **GPS PHOTO POINTS**

Photo point 1 – 430049, 3740294, heading 217; Photos taken 6/27/16 (left) and 6/20/17 (right).



Photo point 2 – 429885, 3740204, heading 354; Photos taken 6/27/16 (left) and 6/20/17 (right).



MAP



## SANTIAGO CREEK PHASE I 7-1-16 THROUGH 6-30-17

#### **PROJECT BACKGROUND**

Santiago Phase I is located in Santiago Canyon, upstream of Irvine Lake and east of Orange, CA. The project is bounded by the Santa Ana Mountains to the north and east, and Santiago Canyon Road to the south and west. Originally the 206-acre project was infested with giant reed (*Arundo donax*), castorbean (*Ricinus communis*), and Spanish broom (*Spartium junceum*). In 2012 the Santa Ana Watershed Association (SAWA) began removal work for one mitigation. After initial removal, native species, such as Fremont cottonwood (*Populus fremontii*), mulefat (*Baccharis salicifolia*), and willows (*Salix* spp.), were encouraged to re-colonize through control efforts. This succession benefits the local wildlife, as well as water quality and quantity. Control efforts have continued in subsequent years to control the re-emergence of these species.

Table 1: Santiago Creek Phase I - Mitigations Placed at Project					
Permit Number	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Mitigation Type
1600-2005-0284-R5 2002-00505-DPS RWQCB Cert. 12/20/05	Mountain Park Development Project	The Irvine Company	\$845,180 (1/24/06)	18.8	ILF: Enhancement
Totals			\$845,180	18.8	

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

Enhancement Activities: No work occurred during this reporting period.

Table 2: Santiago Creek Phase I – Summary of Mitigation Activities			
Project placed in:	2012		
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated
2012	23	Initial removal treatment	Spanish broom giant reed, perennial pepperweed, castorbean
2013	n/a	Treatment	giant reed
1/1/14 to 6/30/14	n/a	Treatment	giant reed
7/1/14 to 6/30/15	None	n/a	n/a
7/1/15 to 6/30/16	13	Treatment	giant reed
7/1/16 to 6/30/17	None	n/a	n/a

*The methods used for removal:* No removal or treatment occurred during this reporting period.

*The amount removed and/or treated:* No removal or treatment occurred during this reporting period.

*The frequency and timing of removal/treatment:* No removal or treatment occurred during this reporting period.

*Disposal specifics:* No removal or treatment occurred during this reporting period.

*Monitoring Activities:* The annual bioassessment survey took place on 6/14/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. This site is included in SAWA's assessment surveys conducted three times annually during Least Bell's Vireo nesting season. Permit and mitigation were also reviewed. A total of 6.75 hours were spent on conservation, monitoring, and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian habitat composed mainly of willow and cottonwood forest. The average tree height class is >15-20 meters and the average shrub height class is >1-2 meters. Overall plant coverage is at >50-75% with native coverage at >50-75% and non-native coverage at >15-25%. The dominant native species include >5-15% Fremont cottonwood, >5-15% Goodding's black willow (*Salix gooddingii*), 1-5% red willow (*Salix laevigata*), and 1-5% Western sycamore (*Platanus racemosa*). The dominant non-native species include >5-15% non-native grasses, >5-15% mustard (*Brassica* sp.), <1% tocolote (*Centaurea melitensis*), <1% yellow star thistle (*Cenaurea solstitialis*), 1-5%

gum tree (*Eucalyptus* sp.), 1-5% giant reed, 1-5% Russian thistle (*Salsola tragus*). <1% tamarisk (*Tamarix* sp.), <1% tree tobacco (*Nicotiana glauca*), and <1% castorbean. The riparian and surrounding coastal sage scrub provides high quality habitat.

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including Spotted Towhee (*Pipilo maculatus*), California Scrub-jay (*Aphelocoma californica*), House Wren (*Troglodytes aedon*), House Finch (*Haemorhous mexicanus*), Song Sparrow (*Melodia melospiza*), Tree Swallow (*Tachycineta bicolor*), Black-headed Grosbeak (*Pheucticus melanocephalus*), American Robin (*Turdus migratorius*), White-throated Swift (*Aeronautes saxatalis*), Red-tailed Hawk (*Buteo jamaicensis*), Turkey Vulture (*Cathartes auratus*), Phainopepla (*Phainopepla nitens*), California Towhee (*Melozone crissalis*), Oak Titmouse (*Baeolophus inornatus*), Common Yellowthroat (*Geothlypis trichas*), Acorn Woodpecker (*Melanerpes formicivorus*), Wrentit (*Chamaea fasciata*), Anna's Hummingbird (*Calypte anna*), Blue-gray Gnatcatcher (*Polioptila caerulea*), Mourning Dove (*Zenaida macroura*), Lesser Goldfinch (*Spinus psaltria*), coyote (*Canis latrans*), desert cottontail (*Sylvilagus audubonii*), side-blotched lizard (*Uta stansburiana*), Western toad (*Anaxyrus boreas halophilus*), and San Diego tiger whiptail (*Aspidoscelis tigris stejnegeri*). California species of special concern Yellow Warbler (*Setophaga petechial*) as well as federally-listed threatened Coastal California Gnatcatcher (*Polioptila californica californica*) were detected. State and federally-listed endangered Least Bell's Vireo (*Vireo bellii pusillus*) was also observed on site.

#### PROJECT STATUS AND REMEDIAL ACTION

The Santiago Phase I Project is in its  $11^{th}$  year since project management was given to SAWA. Treatment methods used to eradicate the target species have been proven to be effective to control giant reed, however the requirements for SAWA's In-Lieu Fee program have not been met. At this time in the life of the project, giant reed should be at <1% of the total project area. Currently there is 1-5% giant reed documented on the site. Additional removal and treatment will be necessary to remediate the current project status. In addition, other non-native species, such as thistles and mustard, have emerged as dominant non-native species. Additional funding to remove these other non-native species is recommended. Native planting will also help prevent non-native species from coming back, and help reestablish the native habitat.

Table 3: Santiago Creek Phase I Yearly Costs			
Reporting Period	Total Cost		
2012	\$2,354.77		
2013	\$3,873.38		
1/1/14 to 6/30/14	\$1,139.81		
7/1/14 to 6/30/15	\$0		
7/1/15 to 6/30/16	\$5,606.63		
7/1/16 to 6/30/17	\$417.61		

#### FINANCIAL SUMMARY

#### **GPS PHOTO POINTS**

Photo point 1 – 437237, 3736070, heading 182; Photos taken 9/5/13 (left) and 6/14/17 (right).



Photo point 3 – 437263, 3735729, heading 267; Photos taken 9/5/13 (left) and 6/14/17 (right).



Photo point 4 – 437200, 3736242, heading W; Photos taken 9/5/13 (left) and 6/14/17 (right).



MAP



## SANTIAGO CREEK PHASE II 7-1-16 THROUGH 6-30-17

#### PROJECT BACKGROUND

Santiago Phase II is located north-east of the intersection of SR-55 and Chapman Ave, in Orange, CA. The project site begins where the channelized portion of Santiago Creek ends, downstream to Chapman Ave. Originally the 19-acre project was infested with giant reed (*Arundo donax*). Initial removal began in 2007, with continued control efforts in subsequent years to control the re-emergence of these species.

Table 1: Santiago Creek Phase II - Mitigations Placed at Project					
Permit Number	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Mitigation Type
1600-2004-0187-R6 200300640-WJC RWQCB Cert. 8/24/05	May Ranch Phase 6 Residential Development Project	KB Home Coastal, Inc	\$453,000 (10/7/05)	9.06	ILF: Enhancement
1600-2005-0386-R5 200301268-YJC RWQCB Cert. 1/24/06	Boy Scounts of America Outdoor Education Camp	Boy Scouts of America	\$50,000 (2/27/06)	0.72	ILF: Enhancement
1600-2003-5167-R5	SR-22 HOV Lane Project	Orange County Transportation Authority	\$25,000 (9/28/05)	0.51	ILF: Enhancement
30-2005-32-DGW	Del Rio Project	North Orange Del Rio Land, LLC	\$35,000 (1/24/06)	0.04	ILF: Enhancement
Totals			\$563,000	10.33	

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, two herbicide treatments occurred on on 4/5/17 and 4/27/17. Species treated were giant reed, castorbean (*Ricinus communis*), and tree tobacco (*Nicotiana glauca*). A total of 69 hours were spent on enhancement activities.

Table 2: Santiago Creek Phase II – Summary of Mitigation Activities			
Project placed in:	2007		
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated
2007	0.5	Removal	giant reed
2008	0.8125	Treatment	giant reed, tamarisk
2009	0.75	Treatment	castorbean, palms, tamarisk
2010	n/a	Treatment	tamarisk, tree of heaven, castorbean
2011	None	n/a	n/a
2012	None	n/a	n/a
2013	n/a	Treatment	giant reed, tamarisk
1/1/14 to 6/30/14	None	n/a	n/a
7/1/14 to 6/30/15	n/a	Treatment	giant reed, castorbean, tree tobacco
7/1/15 to 6/30/16	0.95	Treatment	giant reed, castorbean, tree tobacco
7/1/16 to 6/30/17	0.6	Treatment	giant reed, castorbean, mustard, perennial pepperweed, milk thistle

The methods used for removal: All herbicide treatments were conducted using a foliar application with 4gallon back pack sprayers. A total of 16 ounces Garlon 4 Ultra and 164 ounces Round Up Promax were used during this reporting period. A total of 10 ounces Competitor was used as a surfactant and 54 ounces Quest was used as a water conditioner in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

*The amount removed and/or treated:* Approximately o.6 acre of giant reed was treated. Other non-native species that were treated as they were encountered included castorbean, milk thistle (*Silybum marianum*), mustard (*Brassica* sp.), and perennial pepperweed (*Lepidium latifolium*).

*The frequency and timing of removal/treatment:* The project is monitored annually by the ISR crew. Nonnative plants are treated as they are encountered during this monitoring. Giant reed is treated when the biomass reaches 2 to 4 feet in height.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

*Monitoring Activities:* The annual bioassessment survey took place on 6/20/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo

points. Detected wildlife species are also recorded. This site is included in SAWA's assessment surveys conducted three times annually during Least Bell's Vireo nesting season. Permit and mitigation were also reviewed. A total of 11.25 hours were spent on conservation, monitoring, and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian habitat composed mainly of willow forest with mulefat understory. The average tree height class is >10-15 meters and the average shrub height class is >2-5 meters. Overall plant coverage is at >25-50% with native coverage at >25-50% and non-native coverage at >25-50%. The dominant native species include >5-15% Goodding's black willow (*Salix gooddingii*), >1-5% mulefat (*Baccharis salicifolia*), 1-5% laurel sumac (*Malosma laurina*), 1-5% coast live oak (*Quercus agrifolia*), and 1-5% Western sycamore (*Platanus racemosa*). The dominant non-native species include >5-15% Brazilian pepper tree (*Schinus terebinthifolius*), >5-15% blue gum eucalyptus (*Eucalyptus globules*), 1-5% bottle brush (*Callistemon* sp.), 1-5% mustard, 1-5% thistles, 1-5% non-native grasses, 1-5% giant reed, <1% castorbean, and <1% Russian thistle (*Salsola australis*). This site provides low quality habitat due to homeless encampments, trails, and trash.

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including Mourning Dove (*Zenaida macroura*), Northern Mockingbird (*Mimus polyglottos*), House Finch (*Haemorhous mexicanus*), European Starling (*Sturnus vulgaris*), Northern Rough-winged Swallow (*Stelgidopteryx serripennis*), Black Phoebe (*Sayornis nigricans*), Wrentit (*Chamaea fasciata*), White-throated Swift (*Aeronautes saxatalis*), American Crow (*Corvus brachyrhynchos*), Killdeer (*Charadrius vociferous*), Greater Roadrunner (*Geococcyx californianus*), Mallard (*Anas platyrhynchos*), Hooded Oriole (*Icterus cucullatus*), Song Sparrow (*Melospiza melodia*), California Scrub-jay (*Aphelocoma californica*), Snowy Egret (*Egretta thula*), Western fence lizard (*Sceloporus occidentalis*), and California ground squirrel (*Otospermophilus beecheyi*).

#### PROJECT STATUS AND REMEDIAL ACTION

The Santiago Creek Phase II Project is in its 9<sup>th</sup> year. Treatment methods used to eradicate the target species have been proven to be effective to control giant reed, however the requirements for SAWA's In-Lieu Fee program have not been met. At this time in the life of the project, giant reed should be at <1% of the total project area. Currently there is 1-5% giant reed documented on the site. Additional removal and treatment will be necessary to remediate the current project status. In addition, other non-native species, such as pepper tree, bottle brush, and thistles, have emerged as dominant non-native species. Additional funding to remove these other non-native species is recommended. Native planting will also help prevent non-native species from coming back, and help re-establish the native habitat.

Table 3: Santiago Creek Phase II Yearly Costs		
Reporting Period	Total Cost	
2008	\$3,900	
2009	\$3,800	
2010	\$1,798	
2011	\$0	
2012	\$0	
2013	\$1,439.18	
1/1/14 to 6/30/14	\$0	
7/1/14 to 6/30/15	\$2,459.17	
7/1/15 to 6/30/16	\$3,008.19	
7/1/16 to 6/30/17	\$3,921.39	

#### **GPS PHOTO POINTS**

Photo point 1 – 423552, 3739284, heading 6; Photos taken 6/1/10 (left) and 6/20/17 (right).



Photo point 2 – 423586, 3739304, heading 14; Photos taken 6/1/10 (left) and 6/20/17 (right).



Photo point 5 – 423888, 3739692, heading 268; Photos taken 6/1/10 (left) and 6/20/17 (right).



MAP


# **CDFW REGION 6**

The reports contained herein cover SAWA projects funded by the In-lieu Fee program and mitigations, and are located within the California Department of Fish and Wildlife Region 6.

# CALNEV PIPELINE 7-1-16 THROUGH 6-30-17

Report written and provided by the Inland Empire Resource Conservation District (IERCD). See attached Appendix A.

# CENTERPOINTE 7-1-16 THROUGH 6-30-17

Report written and provided by the Inland Empire Resource Conservation District (IERCD). See attached Appendix B.

# HABITAT FOR HAMNER 7-1-16 THROUGH 6-30-17

### PROJECT BACKGROUND

Habitat for Hamner is located along the Santa Ana River, downstream of Hamner Ave, in Corona, CA. Originally the 30-acre project was infested with about 15 acres of giant reed. Initial removal occurred in 2007. Control efforst continued in 2008, and SAWA was handed management of the project in 2009. The mitigation project was placed at this time to retain control over the removed vegetation and prevent re-infestation. In 2015 SAWA found two new landowners holding multiple parcels at the mitigation site, and treatments halted to gain new access agreements. The project area has since been reduced to 4.6 acres, which better reflects the mitigated acreage placed here.

Table 1: Habitat for Hamner - Mitigations Placed at Project					
Permit Number	Project Name	Permitte Name	Amount Received	Mitigated Acreage	Mitigation Type
1600-2008-0104-R6 SPL-2008-00785-JEM	JCSD Plant 1 100- year Flood Protection Project	Albert A. Webb Associates	\$120,000 (1/13/09)	2	ILF: Restoration
Totals			\$120,000	2	

### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

*Enhancement Activities:* No work occurred during this reporting period.

Table 2: Habitat for Hamner – Summary of Mitigation Activities				
Mitigation placed:	2009			
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated	
2007	26	Initial removal	giant reed	
2008	n/a	Treatment	giant reed	
2009	7.5	Treatment	giant reed, castorbean	
2010	4.75	Treatment	giant reed, perennial pepperweed, tree tobacco, bull thistle	
2011	12.75	Treatment	giant reed, perennial pepperweed, tree tobacco, bull thistle	
2012	0.3 to 1.5	Treatment	giant reed	
2013	6.5	Treatment	giant reed and other non-natives	
1/1/14 to 6/30/14	None	n/a	n/a	
7/1/14 to 6/30/15	1.5	Treatment	giant reed	
7/1/15 to 6/30/16	None	n/a	n/a	
7/1/16 to 6/30/17	None	n/a	n/a	

*Removal methods:* No removal or treatment occurred during this reporting period.

Amount removed and/or treated: No removal or treatment occurred during this reporting period.

*Frequency and timing of removal/treatment:* No removal or treatment occurred during this reporting period.

*Disposal specifics:* No removal or treatment occurred during this reporting period.

*Monitoring Activities:* The annual bioassessment survey took place on 4/14/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. This site is included in SAWA's monitored sites for Least Bell's Vireo (*Vireo bellii pusillus*). Permit and mitigation were also reviewed. A total of 43.25 hours were spent on monitoring and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and

tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian habitat composed of mainly willow forest with mulefat understory. The average tree height class is >15-20 meters and the average shrub height class is >2-5 meters. Overall plant coverage is at >50-75%, with native coverage at >50-75% and non-native coverage at >25-50%. The dominant native species include >15-25% Goodding's black willow (*Salix gooddingii*), >5-15% mulefat (*Baccharis salicifolia*), >5-15 other willow spp. (*Salix* spp.), and 1-5% hoary nettle (*Urtica dioica*). The dominant non-native species include >25-50% giant reed (*Arundo donax*) and >15-25% poison hemlock (*Conium maculatum*). Non-native vegetation has taken over where giant reed was previously removed, and many giant reed patches have re-emerged as a prominent species.

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including Common Yellowthroat (*Geothlypis trichas*), Lesser Goldfinch (*Spinus psaltria*), Black-headed Grosbeak (*Pheucticus melanocephalus*), and House Wren (*Troglodytes aedon*). The California species of special concern, Yellow Warbler (*Setophaga petechia*) and Yellow-breasted Chat (*Icteria virens*), were observed on site, as well as the state and federal endangered Least Bell's Vireo.

### PROJECT STATUS AND REMEDIAL ACTION

The Habitat for Hamner Project is in its 5<sup>th</sup> year. Maintenance work to control regrowth of invasive species has not occurred since 2014 due to landowner changes and access issues. This has resulted in the reemergence of giant reed and has prevented the mitigation goal of <1% non-native vegetation from being met. In addition to giant reed, poison hemlock has filled in the open space that was left by previously removed giant reed. Additional removal and treatment will be necessary to remediate the current project status. In addition, other non-native species, such as poison hemlock, have emerged as dominant non-native species. Additional funding to remove these other non-native species is recommended. Native planting will also help prevent non-native species from coming back, and help re-establish the native habitat.

### FINANCIAL SUMMARY

Table 3: Habitat for Hamner Yearly Costs				
Reporting Period	Total Cost			
2007	n/a			
2008	\$51,000			
2009	\$9,000			
2010	\$1,657			
2011	\$9,853.50			
2012	\$7,404.63			
2013	\$3,873.38			
1/1/14 to 6/30/14	\$0			
7/1/14 to 6/30/15	\$5,157.10			
7/1/15 to 6/30/16	\$764.12			
7/1/16 to 6/30/17	\$4,098.53			

#### **GPS PHOTO POINTS**

Photo point 1 – 448286, 3756437, heading S; Photos taken 8/28/07 (left) and 4/14/17 (right).



Photo point 2 – 448250, 3756432, heading SW; Photos taken 8/28/07 (left) and 4/14/17 (right). Giant reed regrowth is apparent in both photos.



Photo point 3 – 448043, 3756475, heading S; Photos taken 8/28/07 (left) and 4/14/17 (right). The latter photo shows poison hemlock taking over where giant reed had previously been removed.



MAP



# HWY 71 EUCALYPTUS 7-1-16 THROUGH 6-30-17

### PROJECT BACKGROUND

Hwy 71 Eucalyptus is located along SR-71 in Eastvale, CA, part of the Prado Basin. The original project was managed through the Orange County Water District (OCWD). Work on the 12-acre project site (Phase I) began in 2002 with the removal of *Eucalyptus* trees. Later Phase II added another 3 acres, then in 2006 an expansion of 14-acres (Phase III) was added to initiate control over additional non-native vegetation, such as giant reed (*Arundo donax*), tamarisk (*Tamarix* spp.), perennial pepperweed (*Lepidium latifolium*), tree tobacco (*Nicotiana glauca*), bull thistle (*Cirsium vulgare*), and milk thistle (*Silybum marianum*). In 2006 Phase III of this project was initiated with the removal of approximately 25 acres of *Eucalyptus*. In 2006 the Santa Ana Watershed Association (SAWA) was handed management responsibilities for the project. The original project included a native re-vegetation componenet, and the last installation occurred in 2010. Since 2014 on-site work has been halted due to the necessity to review permits and project status.

Table 1: Hwy 71 Eucalyptus Project - Mitigations Placed at Project					
Permit #'s	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Mitigation Type
1600-2004-0116-R6 Op Law 200401866-CLM	TTM 31955 and Foothill Parkway extension, Corona	Centex Homes (Far West Housing, LLC)	\$10,500 (9/26/05)	0.21	ILF: Creation (riparian)
1600-2005-0092-R6 Op Law 2005-01337-SJH 332012-07	TT 32997, Century American Development	Century American Development	\$376,000 (2/28/08)	7.52	ILF: Creation (Prado Basin)
CDFW #6-2002-039 RWQCB #02C-037	Murrieta Hot Springs Road Development	DKN Holdings, LLC	\$50,000 (1/25/06 & 1/27/06)	1.0	ILF: Enhancement
2008-312-SLP RGP 63 Emergency Permit #2008-312-G5	Burlington Northern Santa Fe Railway, mile post 64.11X, Devore	BNSF Railway Company	\$125,000 (7/13/10)	1	ILF: Creation (wetland/riparian)
Totals			\$561,500	9.73	

### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

*Enhancement Activities:* No work occurred during this reporting period, due to mitigation file review.

Table 2: Hwy 71 – Summary of Mitigation Activities				
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated	
_	5	Removal	Eucalyptus	
22066	n/a	Restoration	Mulefat, native trees and shrubs	
	7	Removal	<i>Eucalyptus</i> (Phase III)	
2007	n/a	Restoration	Mulefat, native trees (Phase II)	
2008	n/a	n/a	n/a	
2009	n/a	n/a	n/a	
2010	16.75	Treatment	<i>Eucalyptus</i> , giant reed, tamarisk, perennial pepperweed and other annuals	
2011	None	n/a	n/a	
2012	0.87	Treatment	<i>Eucaylptus</i> , tree of heaven, perennial pepperweed	
2013	n/a	Treatment	<i>Eucaylptus</i> , tree of heaven, perennial pepperweed	
1/1/14 to 6/30/14	None	n/a	n/a	
7/1/14 to 6/30/15	None	n/a	n/a	
7/1/15 to 6/30/16	None	n/a	n/a	
7/1/16 to 6/30 17	None	n/a	n/a	

*The methods used for removal:* No removal or treatment occurred during this reporting period.

Amount removed and/or treated: No removal or treatment occurred during this reporting period.

*Frequency and timing of removal/treatment:* No removal or treatment occurred during this reporting period. Activities will resume with the completion of mitigation file review.

*Disposal specifics:* No removal or treatment occurred during this reporting period.

*Monitoring Activities:* The annual bioassessment survey took place on 6/19/17 and 6/29/17, and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. Permit and mitigation files are also currently under review. A total of 21 hours were spent on conservation, monitoring, and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains upland riparian habitat composed mainly of elderberry and mulefat understory. The average tree height class is >15-20 meters and the average shrub height class is >2-5 meters. Overall plant coverage is at >75%, with native coverage at >50-75% and non-native coverage at >15-25%. The dominant native species include >15-25% blue elderberry (*Sambucus nigra* spp. *caerulea*), >15-25% mulefat (*Baccharis salicifolia*), and >15-25% common sunflower (*Helianthus annuus*). The dominant non-native species include >15-25% perennial pepperweed, >5-15% black mustard (*Brassica nigra*), 1-5% tree tobacco, and 1-5% gum tree.

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including Bushtit (*Psaltriparus minimus*), Bullock's Oriole (*Icterus bullockii*), Downy Woodpecker (*Picoides pubescens*), House Finch (*Haemorhous mexicanus*), Mourning Dove (*Zenaida macroura*), Lesser Goldfinch (*Psaltria spinus*), and Spotted Towhee (*Pipilo maculatus*). Two California species of special concern, Yellow-breasted Chat (*Icteria virens*) and Yellow Warbler (*Setophaga petechia*), were also detected on site. In addition, OCWD monitors and records the presence/absence of the endangered least Bell's vireo (*Vireo bellii pusillus*).

### PROJECT STATUS AND REMEDIAL ACTION

SAWA staff is currently reviewing the project files to determine the amount of gum tree that was originally removed, and the amount of mitigations that were placed. Staff is drafting a working plan to ensure that the mitigations placed are accurately tracked going forward, and all mitigation goals are met. The plan will determine success criteria and establish a timeline to reach those goals.

### FINANCIAL SUMMARY

Table 3: Hwy 71 Yearly Costs				
Reporting Period	Total Cost			
2006	n/a			
2007	n/a			
2008	n/a			
2009	n/a			
2010	\$6,048			
2011	\$0			
2012	\$809.20			
2013	\$1,254.61			
1/1/14 to 6/30/14	\$0			
7/1/14 to 6/30/15	\$90.94			
7/1/15 to 6/30/16	\$544.43			
7/1/16 to 6/30/17	\$1,582.10			

#### **GPS PHOTO POINTS**

Photo point 1 - 439943, 3753373 heading 255; Photos taken 6/16/16 (left) and 6/19/17 (right).



Photo point 2 – 439944, 3753772 heading 250; Photos taken 6/16/16 (left) and 6/19/17 (right).



MAP



# MOCKINGBIRD CANYON MCB 7-1-16 THROUGH 6-30-17

### **PROJECT BACKGROUND**

Mockingbird Canyon MCB is a conservation easement located in Mead Valley, CA, just south of Riverside. The project is bounded by Markham Avenue and Alder Avenue, as well as residential development. The 11.28-acre project was infested with giant reed (*Arundo donax*), perennial pepperweed (*Lepidium latifolium*), and other non-native plants. The easement was acquired in 2009 with the placement of five mitigations, and removal work began in early 2011. Control efforts have continued in subsequent years to control the re-emergence of these species. In 2011 and 2012 the Santa Ana Watershed Association (SAWA) planted native trees and shrubs to aid in habitat restoration and to meet mitigation guidelines.

Table 1: Mockingbird MCB - Mitigations Placed at Project					
Permit Number	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Mitigation Type
1600-2004-0145-R6 Op Law	Quincy Channel hydro- modification	Highpointe Moreno Valley II, LLP	\$75,000 (3/23/09)	1	ILF: Restoration
1600-2007-0106-R6 Op Law SPL-2007-00874-JPL RWQCB Cert 12/4/2007	Hawarden Development Project	Hawarden Development Corp	\$60,000 (1/27/09)	1	Permittee-based Mitigation: Restoration
SPL-2008-00254-YLC	San Sevaine Villas Affordable Housing Project	NorthTown Housing Development	\$60,000 (11/8/08 & 7/7/09)	0.5	Permittee-based Mitigation: Enhancement
1600-2008-0096-R6 SPL-2008-0923	Kitching Street Improvements Project	City of Moreno Valley	\$75,000 (6/18/09)	0.183	ILF: Restoration
1600-2008-0105-R6 SPL-2008-00814-SLP	Agua Mansa Commerce Center Project	AMB Property Corp.	\$112,500 (12/17/09)	0.54	ILF: Enhancement 5 years cowbird trapping
Totals			\$382,500	3.223	

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, only one herbicide treatment occurred on 4/10/17. Species treated were non-native herbaceous weeds, such as perennial pepperweed, mustard (*Brassica* sp.), and wild radish (*Raphanus raphanistrum*). A total of 121.5 hours were spent on enhancement activities.

Table 2: Mockingbird Canyon MCB – Summary of Mitigation Activities				
Project placed in:	2010			
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated	
2011	122 containers and pole cuttings	Restoration	Mulefat, red willow	
2012	n/a	Restoration	Hand watering. >80% survival	
2013	3.39	Treatment	Perennial pepperweed, mustard, tocalote	
1/1/14 to 6/30/14	1.5	Treatment	Perennial pepperweed, mustard, tocalote	
7/1/14 to 6/30/15	1	Treatment	Perennial pepperweed, mustard, tocalote	
7/1/15 to 6/30/16	1	Treatment	Perennial pepperweed, mustard, tocalote	
7/1/16 to 6/30/17	0.33	Treatment	Perennial pepperweed, mustard, wild radish	

*Removal methods:* All herbicide treatments were conduced using a foliar application with 4-gallon back pack sprayers. A total of 46 ounces of Round Up Promax were used during this reporting period. A total of 15 ounces of Quest was used as a water conditioner in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

*Amount removed and/or treated:* Approximately 0.33 acre of non-native annual weeds and grasses were treated.

*Frequency and timing of removal/treatment:* A single maintenance treatment was scheduled during this reporting period. Annual weeds must be treated prior to the seed-heads setting, so the soil seed bank cannot be replenished. This necessitates treatments in the spring during bird nesting season. Treatments are conducted in the presence of a qualified biologist to protect nesting birds.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

*Monitoring Activities:* The annual bioassessment survey took place on 6/6/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. This site is included in SAWA's monitored sites for Least Bell's Vireo (*Vireo bellii pusillus*). Permit and mitigation were also reviewed. A total of 44.25 hours were spent on conservation, monitoring, and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions:* The site contains riparian habitat composed mainly of willow and cottonwood forest with mulefat and coyote brush understory. This habitat is surrounded by patchy coastal sage scrub. The average tree height class is >15-20 meters and the average shrub height class is >2-5 meters. Overall plant coverage is at >50-75%, with the canopy layer at >25-50%. Native plant coverage is at >50-75% and non-native coverage at 1-5%. The dominant native species include >5-15% mulefat (*Baccharis salicifolia*), >5-15% blue elderberry (*Sambucus nigra* spp. *caerulea*), and 1-5% Goodingg's black willow (*Salix goodinggii*). The dominant non-native species include <1% tree tobacco (*Nicotiana glauca*).

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including Bushtit (*Psaltriparus minimus*), Phainopepla (*Phainopepla nitens*), Mourning Dove (*Zenaida macroura*), Red-tailed Hawk (*Buteo jamaicensis*), California Towhee (*Melozone crissalis*), Northern Mockingbird (*Mimus polyglottos*), California Scrub-jay (*Aphelocoma californica*), and Black-headed Grosbeak (*Pheucticus melanocephalus*). The state and federally-listed endangered Least Bell's Vireo is also present on site.

#### PROJECT STATUS AND REMEDIAL ACTION

The Mockingbird Canyon MCB Project is in its 8<sup>th</sup> year. Within the scope of the project's performance standards, the goals in regards to non-native species have been met and additional removal is not required at this time. However, continued maintenance and monitoring is recommended to maintain the site free of non-native species. Ninety percent riparian coverage may be unattainable at this arid location.

Table 3: Mockingbird Canyon MCB Yearly Costs				
Reporting Period	Total Cost			
2011	\$2,387.06			
2012	\$11,168.31			
2013	\$5,307.29			
1/1/14 to 6/30/14	\$1,004.48			
7/1/14 to 6/30/15	\$3,497.86			
7/1/15 to 6/30/16	\$4,177.29			
7/1/16 to 6/30/17	\$15,245.42			

#### FINANCIAL SUMMARY

### PHOTOS

### The following photos were taken 8/5/13.





The following photos were taken 6/6/17.



MAP



# QUAIL RUN PHASE II 7-1-16 THROUGH 6-30-17

### **PROJECT BACKGROUND**

Quail Run Phase II is located at the Quail Run Park in Riverside, CA. The project is bounded by Central Avenue and Sycamore Canyon Boulevard, as well as residential development. Originally the 23-acre project was infested with 1.67 acres of giant reed (*Arundo donax*) and 0.9 acres of castorbean (*Ricinus communis*). In 2012 the Santa Ana Watershed Association (SAWA) received agency approval to begin work. Invasive removal for eight mitigations occurred in September 2013. Control efforts have continued in subsequent years to control the re-emergence of these species. In January 2015 SAWA planted 1-meter pole cuttings to aid in habitat restoration where the giant reed was removed.

Table 1: Quail Run Phase II - Mitigations Placed at Project					
Permit #'s	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Mitigation Type
1600-2004-0009-R6 Op Law 200400654-GS 36-2004-04-DGW	Crafton Hills Repair Project	Department of Water Resources	\$33,000 (12/14/10)	0.25	ILF: Restoration
SPL-2004-899-WJC	First Street and Potrero Avenue Roadway Improvement Project	City of Beaumont	\$25,000 (5/22/10)	0.15	ILF: Enhancement
SPL-2007-01094-FBV	Stagecoach Park Project	City of Corona	\$50,000 (1/6/06)	0.48	ILF: Enhancement
SPL-2009-00139-VCC	I-215 West Perimeter Drainage Improvement Project	Donahue Schriber Realty Group	\$33,000 (7/20/10)	0.112	ILF: Enhancement
1600-2009-0138-R6 SPL-2009-00750-JPL R8-2010-054	Florida Promenade Specific Plan Amendment	Hemet Hospitality Investments	\$62,000 (11/22/10)	0.48	ILF: Enhancement
1600-2010-0089-R6 Op Law	Bundy Canyon Plaza Project	Bundy I-15, LP	\$33,000 (1/19/12)	0.14	Permittee-based Mitigation: Enhancement
SPL-2007-00128-SLP	Alabama Street Arch Culvert Construction Project	San Bernardino County Flood Control District	\$25,000 (3/30/11)	0.25	ILF: Enhancement
1600-2011-0007-R6 Op Law SPL-2011-00236 332011-12	Line Section-51 Pipeline Erosion Repair Project	Kinder Morgan Energy Partners	\$25,000 (10/22/11)	0.25	ILF: Restoration
Totals			\$286,000	2.112	

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

Enhancement Activities: During this reporting period, herbicide treatments occurred on 9/27/16, 2/1/17, 3/8/17, and 4/17/17. Species treated were giant reed and castorbean. A total of 103.5 hours were spent on enhancement activities.

Table 2: Quail Run Phase II – Summary of Mitigation Activities				
Project placed in:	2013			
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated	
2013	2.57	Initial Removal	giant reed and other non-native vegetation	
1/1/14 to 6/30/14	None	n/a	n/a	
7/1/14 to 6/30/15	1.61	Treatment	giant reed and castorbean	
7/1/15 to 6/30/16	1.46	Treatment	giant reed and castorbean	
7/1/16 to 6/30/17	1	treatment	giant reed, castorbean, tamarisk, tree tobacco	

*Removal methods*: All herbicide treatments were conducted using a foliar application with 4-gallon back pack sprayers. A total of 10 ounces of Garlon 3A, 50 ounces of Rodeo (glyphosate), and 86 ounces Round Up Promax were used during this reporting period. A total of 4 ounces Agri-Dex and 10 ounces Competitor were used as surfactants, and 34 ounces Quest was used as a water conditioner in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew. Due to the close proximity to a perennial stream all herbicides used were approved for aquatic use by the Environmental Protection Agency. The herbicide selected for treatments to non-native vegetation was EPA aquatically approved glyphosate at a 5% solution in water.

Amount removed and/or treated: Approximately 0.4 acre of giant reed and approximately 1.15 acre of castorbean were treated. In addition, tamarisk (*Tamarix* spp.) and tree tobacco (*Nicotiana glauca*) were treated as they were encountered.

*Frequency and timing of removal/treatment:* The project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered during this monitoring. Castorbean must be treated prior to the seed-heads setting, so the soil seed bank cannot be replenished. This necessitates treatments in the spring during bird nesting season. Treatments are conducted in the presence of a qualified biologist to protect nesting birds.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

*Monitoring Activities:* The annual bioassessment survey took place on 6/14/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. This site is included in SAWA's assessment surveys conducted three times annually during Least Bell's Vireo nesting season. Permit and mitigation were also reviewed. A total of 24 hours were spent on conservation, monitoring, and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian habitat composed of mainly willow and sycamore forest with mulefat and poison oak understory. The habitat is patchy and surrounded by sparse coastal sage scrub. The average tree height class is >10-15 meters and the average shrub height class is >2-5 meters. Overall plant coverage is at >50-75%, with native coverage at >50-75% and non-native coverage at 1-5%. The dominant native species include >25-50% willow species (*Salix* spp.), >15-25% mulefat (*Baccharis salicifolia*), >5-15% Western sycamore (*Platanus racemosa*), and >5-15% poison oak (*Toxicodendron diversilobum*). The dominant non-native species include 1-5% giant reed and 1-5% castorbean. New native plant growth is beginning to fill in the understory where invasive species were previously removed.

*Wildlife species:* Observed wildlife species consist primarily of riparian and coastal sage scrub species, including Song Sparrow (*Melodia melospiza*), House Finch (*Haemorhous mexicanus*), Lesser Goldfinch (*Spinus psaltria*), Anna's Hummingbird (*Calypte anna*), Nuttall's Woodpecker (*Picoides nuttallii*), California Towhee (*Melozone crissalis*), Greater Roadrunner (*Geococcyx californianus*), Mourning Dove (*Zenaida macroura*), Black Phoebe (*Sayornis nigricans*), California quail (*Callipepla californica*), black-headed grosbeak (*Pheucticus melanopcephalus*), house wren (*Troglodytes aedon*), white-throated swift (*Aeronautes saxatalis*), Western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), granite spiny lizard (*Sceloporus orcutti*), rosy boa (*Licanhura orcutti*), coyote (*Canis latrans*). A California species of special concern, the orange-throated whiptail (*Aspidoscelis hyperythra*), was observed on site. No Least Bell's Vireo were detected on the site during the 2017 breeding season.

#### PROJECT STATUS AND REMEDIAL ACTION

The Quail Run Phase II Project is in its 4th year. Treatment methods used to eradicate the target species have been proven to be effective to control giant reed, with minimal regrowth. The project goal is <1% giant reed over the total project area. Currently giant reed is documented at the lower end of the 1-5% range for coverage. The project requires continued treatment and monitoring, then will be re-evaluated to detmine if the goals have been met. Castorbean is currently documented at 1-5%, including several large castorbean plants growing on the upstream end of the project site. Removal of these plants and continued treatmented and monitoring will be required to eradicate castorbean. Native riparian pole cuttings were planted in the 2014-2015 reporting period, and are helping to establish the canopy. However, the understory still requires some development. Additional plantings with native shrubs might be required to further assist the understory development.

### FINANCIAL SUMMARY

Table 3: Quail Run Phase II Yearly Costs				
Reporting Period	Total Cost			
2013	\$66,850.00			
1/1/14 to 6/30/14	\$136.45			
7/1/14 to 6/30/15	\$9,191.89			
7/1/15 to 6/30/16	\$6,207.02			
7/1/16 to 6/30/17	\$5,910.44			

#### **GPS PHOTO POINTS**

Photo point 1 – 470439, 3757468, heading 184; Photos taken 9/17/13 (left) and 6/14/17 (right).



Photo point 2 – 470497, 3757468, heading 137; Photos taken 9/17/13 (left) and 6/14/17 (right).



Photo point 3 – 470593, 3757438, heading 123; Photos taken 9/17/13 (left) and 6/14/17 (right).



Additional photos taken 6/14/17, demonstrating the patchy habitat found on the site (left) and giant reed regrowth (right).



Additional photos taken 6/14/17, demonstrating large castorbean plants on the upstream portion of the site. These plants will need to be removed to eradicate the species.



MAP



# RACEWAY FORD 7-1-16 THROUGH 6-30-17

### PROJECT BACKGROUND

Raceway Ford is located between Sycamore Canyon Boulevard and I-215, in Riverside, CA. Originally the 3.5-acre project was infested with about 0.25 acre of giant reed (*Arundo donax*). In 2006, after the permittee received a violation notice from the California Regional Water Quality Control Board, the Santa Ana Watershed Association (SAWA) was approached to oversee the removal and control of giant reed on the site. Control efforts have continued in subsequent years to control the re-emergence of this psecies.

Table 1: Raceway Ford Project - Mitigations Placed at Project							
Permit Number	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Purpose of Funds		
RWQCB Cert. 5/20/05	Raceway Ford Project	McCallan Properties, LLC	\$60,000 (12/27/05 & 11/15/06)	0.25	ILF: Enhancement		
Totals			\$25,000	0.25			

### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred on 2/8/17 and 3/8/17. Species treated were giant reed, castorbean (*Ricinus communis*), and tamarisk (*Tamarix* spp.). A total of 27.5 hours were spent on enhancement activities.

Table 2: Raceway Ford – Summary of Mitigation Activities					
Project placed in:	2006				
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated		
2006	0.25	Initiatial removal	giant reed		
2007	n/a	Treatment	giant reed		
2008	n/a	Treatment	giant reed		
2009	n/a	Treatment	giant reed		
2010	0.35	Treatment	giant reed , tamarisk, tree tobacco		
2011	n/a	Treatment	giant reed		
2012	None	n/a	n/a		
2013	n/a	Treatment	giant reed		
1/1/14 to 6/30/14	n/a	Treatment	giant reed		
7/1/14 to 6/30/15	None	n/a	n/a		
7/1/15 to 6/30/16	None	n/a	n/a		
7/1/16 to 6/30/17	0.1	Treatment	giant reed , castorbean, tamarisk		

The methods used for removal: All herbicide treatment were conducted using a foliar application with 4gallon back pack sprayers. A total of 25 ounces Garlon 3A and 6 ounces Rodeo (glyphosate) were used during this reporting period. A total of 2 ounces Agri-Dex and 25 ounces Competitor were used as surfactants, and 1 ounce Quest was used as a water conditioner in these treatments. The treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

*The amount removed and/or treated:* Approximately 0.1 acre of giant reed, castorbean, and tamarisk were treated.

*The frequency and timing of removal/treatment:* The project site is monitored annually by the ISR crew. Non-native plants are treated as they are encountered during this monitoring.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

*Monitoring Activities:* The annual bioassessment survey took place on 6/15/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. Permit and mitigation were also reviewed. A total of 18.25 hours were spent on conservation, monitoring, and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains sparse riparian habitat composed mainly of willow with mulefat understory. The habitat is patchy and surrounded by sparse coastal sage scrub. The average tree height class is >5-10 meters and the average shrub height class is >1-2 meters. Overall plant coverage is at >25-50%, with native coverage at >75% and non-native coverage at <1%. The dominant native species include >5-15% willows (*Salix* spp.), >1-5% Fremont cottonwood (*Populus fremontii*), and >1-5% mulefat (*Baccharis salicifolia*). The dominant non-native species include 1-5% tamarisk, and < 1% gum tree (*Eucalyptus* sp.).

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including House Finch (*Haemhorous mexicanus*), Lesser Goldfinch (*Psaltria spinus*), and Mourning Dove (*Zenaida macroura*). This survey was conducted in the afternoon when wildlife is less active, thus this list should not be considered all inclusive.

#### PROJECT STATUS AND REMEDIAL ACTION

The Raceway Ford Project is in its 11<sup>th</sup> year. Treatment methods used to eradicate the target species have been proven to be effective to control giant reed, which has been completely eradicated. Within the scope of the original agreement, the project goals have been met and no additional removal is required at this time. However other non-native species have emerged on site. Additional funding to remove these other non-native species is recommended.

### FINANCIAL SUMMARY

Table 3: Raceway Ford Yearly Costs				
Reporting Period	Total Cost			
2006	n/a			
2007	n/a			
2008	n/a			
2009	n/a			
2010	\$1,217			
2011	n/a			
2012	\$0			
2013	n/a			
1/1/14 to 6/30/14	n/a			
7/1/14 to 6/30/15	\$0			
7/1/15 to 6/30/16	\$413.56			
7/1/16 to 6/30/17	\$2,403.26			

#### **GPS PHOTO POINTS**

Photos taken 6/14/17.







Photos taken 9/21/15.



# SAWA Annual Regulatory Report July 1, 2016 to June 30, 2017

Photos taken 3/22/11.



MAP



# REACH 3B SAN TIMOTEO 7-1-16 THROUGH 6-30-17

Report written and provided by the Inland Empire Resource Conservation District (IERCD). See attached Appendix C.

# SBVCD–SAN BERNARDINO 7-1-16 THROUGH 6-30-17

### **PROJECT BACKGROUND**

San Bernardino Valley College District (SBVCD) San Bernardino is located along the Santa Ana River, just upstream from the I-10/I-215 interchange in San Bernardino, CA. Originally the 43-acre project was infested with non-native weeds such as giant reed (*Arundo donax*) and tamarisk (*Tamarix* spp.). In 2011 the Santa Ana Watershed Association (SAWA) began invasive removal for this mitigation. Control efforts have continued in subsequent years to control the re-emergence of these species.

#### Table 1: SBVCD San Bernardion Project - Mitigations Placed at Project

Permit Number	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Purpose of Funds
1600-2007-0039-R6 2007-379-SLP RWQCB Cert. 8/13/07	Crafton Hills College Master Plan Phase I	San Bernardino Community College District	\$300,000 (3/27/08)	3.75	Permittee-based Mitigation: Enhancement
Totals			\$300,000	3.75	

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred on 8/8/16, 8/9/16, 8/10/16, 8/11/16, and 4/4/17. Species treated were giant reed, castorbean (*Ricinus communis*), and tamarisk. A total of 16 hours were spent on enhancement activities.
Table 2: SBVCD San Bernardino – Summary of Mitigation Activities						
Project placed in:	2011					
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated			
2011	n/a	Initial removal	giant reed and other non-native species			
2012	n/a	n/a	n/a			
2013	n/a	n/a	n/a			
1/1/14 to 6/30/14	None	n/a	n/a			
7/1/14 to 6/30/15	1.29	Treatment	giant reed, perennial pepperweed, tree of heaven, castorbean, tamarisk			
7/1/15 to 6/30/16	1.29	Treatment	giant reed, castorbean			
7/1/16 to 6/30/17	0.5	Treatment	giant reed, castorbean, tamarisk			

*Removal methods:* All herbicide treatments were conduced using foliar application with 4-gallon back pack sprayers. A total of 3 ounces of Rodeo (glyphosate) was used during this reporting period. A total of 2 ounces Agri-Dex was used as a surfactant and 1 ounce Quest was used as a water conditioner in these treatments. These treatements were conducted by SAWA's Invasive Species Removal (ISR) crew.

*Amount removed and/or treated:* Approximately 0.5 acres of giant reed, castorbean, and tamarisk were treated.

*Frequency and timing of removal/treatment:* The project site is monitored annually and non-native plants are treated as encountered. The ideal timing for treatments are prior to seed-heads setting, so the soil seed bank cannot be replenished. This necessitates treatments in the spring during bird nesting season. Treatments are conducted in the presence of a qualified biologist to protect nesting birds.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and alloed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

**Monitoring Activities:** The annual bioassessment survey took palce on 4/5/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. Permit and mitigation were also reviewed. A total of 11.5 hours were spent on conservation, monitoring, and management activities.

# CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and

tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian habitat composed of mainly willow and cottonwood forest with mulefat understory. The average tree height class is >10-15 meters and the average shrub height class is >1-2 meters. Overall plant coverage is at >75%, with native coverage at >75% and non-native coverage at >5-15%. The dominant native species include >25-50% Fremont cottonwood (*Populus fremontii*), >15-25% mulefat (*Baccharis salicifolia*), and >15-25% Goodding's black willow (*Salix gooddingii*). The dominant non-native species include <1% tree tobacco (*Nicotiana glauca*), <1% giant reed, <1% black mustard (*Brassica nigra*), and <1% gum tree (*Eucalyptus* sp).

*Wildlife species:* Observed wildlife species consist primarily of riparian species including Song Sparrow (*Melospiza melodia*), Anna's Hummingbird (*Calypte anna*), Common Yellowthroat (*Geothlypis trichas*), Red-shouldered Hawk (*Buteo lineatus*), House Finch (*Haemorhous mexicanus*), and Spotted Towhee (*Pipilo maculatus*). The state and federally-listed endangered Least Bell's Vireo (*Vireo bellii pusillus*) and state species of concern Wilson's Warbler (*Cardellina pusilla*) and Yellow Warbler (*Setophaga petechia*) were also observed on site.

### PROJECT STATUS AND REMEDIAL ACTION

The SBVCD San Bernardino Project is in its 6<sup>th</sup> year. Treatment methods to eradicate the target species have been proven to be effective. There are very few non-natives present on site and no additional removal is required at this time. Continued monitoring for new emergences of non-native species will be sufficient to maintain the status of this project.

Table 3: SBVCD San Bernardino Yearly Costs						
Reporting Period	Total Cost					
2011	\$3,669.50					
2012	\$73.22					
2013	\$1,293.32					
1/1/14 to 6/30/14	\$O					
7/1/14 to 6/30/15	\$3,347.27					
7/1/15 to 6/30/16	\$1,763.51					
7/1/16 to 6/30/17	\$2,139.81					

#### FINANCIAL SUMMARY

#### **GPS PHOTO POINTS**

Photo point 2 – 473341, 3769809, heading N; Photos taken 6/13/16 (left) and 4/5/17 (right).



Photo point 4 – 473468, 3769851, heading N; Photos taken 6/13/16 (left) and 4/5/17 (right).



Photo point 3 – 473223, 3769759, heading NE; Photos taken 11/29/11 (left) and 4/5/17 (right).



Legend **GPS Photo Points** San Bernardino College District Mitigation Boundary - ~ 43 Acres N/ 44 Auto San Bernardino College District 43 Acres 3 % Arundo donax = 1.29 Acres of Removal **Utigetion Boundary** 350 FS 175 0 350 Meters Hunis NAD 83 10/6/15 JL San Bernardino College Dist. Map produced by SAWA Naterman aterman Ave 100

MAP

# SBVCD– PRADO 7-1-16 THROUGH 6-30-17

### **PROJECT BACKGROUND**

San Bernardino Valley College District (SBVCD) Prado is located in the Prado Basin, Riverside County, CA, off a dirt access road just below the Prado Recreation Dog Park. The creation component of the SBVCD mitigation was placed at this site in 2015, with removal work expected to begin in winter 2016. However, no work has been performed at this site. This location is currently being examined and evaluated for suitability of this mitigation.

Table 1: SBVCD Prado Project - Mitigations Placed at Project						
Permit Number	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Mitigation Type	
1600-2007-0039-R6 2007-379-SLP RWQCB Cert. 8/13/07	Crafton Hills College Master Plan Phase I	San Bernardino Community College District	\$300,000 (3/27/08)	0.35	Permittee-based Mitigation: Creation (wetland)	
Totals			\$300,000	0.35		

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

*Enhancement Activities:* No work occurred during this reporting period.

Table 2: SBVCD Prado – Summary of Mitigation Activities						
Project placed in:	2015					
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated			
7/1/14 to 6/30/15	None	n/a	n/a			
7/1/15 to 6/30/16	None	n/a	n/a			
7/1/16 to 6/30/17	None	n/a	n/a			

*Removal methods:* No removal or treatment occurred during this reporting period.

Amount removed and/or treated: No removal or treatment occurred during this reporting period.

*Frequency and timing of removal/treatment:* No removal or treatment occurred during this reporting period.

*Disposal specifics:* No removal or treatment occurred during this reporting period.

**Monitoring Activities:** The annual bioassessment survey took place on 6/19/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. Permit and mitigation are currently under review. A total of 1.25 hours were spent on monitoring and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: The site is composed mainly of open agriculture fields surrounded by eucalyptus and riparian habitat. The average tree height class is >10-15 meters and no shrub layer. Overall plant coverage is at >50-75%, with native coverage at >25-50% and non-native coverage at >25-50%. The dominant native species include >5-15% common sunflower (*Helianthus annuus*) and >5-15% alkali heliotrope (*Heliotropium curassavicum*). The dominant non-native species include >5-15% *Eucalyptus* sp., >5-15% perennial pepperweed (*Lepidium latifolium*), and 1-5% annual grasses.

*Wildlife species:* Observed wildlife species consisted of Yellow Warbler (*Setophaga petechia*), a species of concern, House Finch (*Haemorhous mexicanus*) and Ash-throated Flycatcher (*Myiarchus cinerascens*). This survey was conducted in the afternoon when wildlife is less active, thus this list should not be considered all-inclusive.

#### PROJECT STATUS AND REMEDIAL ACTION

As of this reporting period, no work has been performed at this location. It is currently being examined and evaluated for suitability of this mitigation. If determined unsuitable for wetland creation, the mitigation will have to be moved to a better location.

#### **GPS PHOTO POINTS**

Photo point 1 – 439952, 3753388, heading 70; Photos taken 6/16/16 (left) and 6/19/17 (right).



Photo point 2 – 439945, 3753363, heading 70; Photos taken 6/16/16 (left) and 6/19/17 (right).



Photo point 3 – 440002, 3753352, heading 255; Photos taken 6/16/16 (left) and 6/19/17 (right).



MAP



# SAR I-210 TO I-10/I-215 INTERCHANGE 7-1-16 THROUGH 6-30-17

### PROJECT BACKGROUND

SAR I-210 to I-10/I-215 Interchange covers approximately 930 acres along the Santa Ana River (SAR) in San Bernardino County. The project area starts at the I-210 overpass in Highland, CA, and runs downstream to the I-10/I-215 interchange in San Bernardino, CA. Originally the was infested with castorbean (*Ricinus communis*), tamarisk (*Tamarix* spp.), and other non-native invasive species. In 2010, removal work for one mitigation began. Control efforts have continued in subsequent years to control the re-emergence of these species.

Table 1: SAR I-210 to I-215 Interchange Project - Mitigations Placed at Project						
Permit Number	Project Name	Permitte Name	Amount Received	Mitigated Acreage	Mitigation Type	
1600-2005-0309-R5 2005-01214-CLM	Friends Christian High School Project	Friends Christian High School	\$135,000 (11/4/09)	2.4	ILF: Enhancement	
Totals			\$135,000	2.4		

### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred on 3/15/17, 3/16/17, 3/21/17, 3/27/17, 4/3/17, and 4/4/17. Species treated included giant reed (*Arundo donax*), castorbean, tamarisk, and Spanish broom (*Spartius junceum*). A total of 197 hours were spent on enhancement activities.

Table 2: SAR I-210 to Interchange – Summary of Mitigation Activities					
Project placed in:	2010				
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated		
2010	n/a	Initial removal	Castorbean (1600 plants), tamarisk (600 plants), other non-natives		
2011	n/a	Treatment	giant reed, castorbean		
2012	n/a	Treatment	giant reed, castorbean, tree of heaven, tamarisk		
2013	None	n/a	n/a		
1/1/14 to 6/30/14	None	n/a	n/a		
7/1/14 to 6/30/15	9.3	Treatment	giant reed, tamarisk, castorbean, Spanish broom		
7/1/15 to 6/30/16	18.6	Treatment	giant reed, tamarisk, castorbean, Spanish broom		
7/1/16 to 6/30/17	9.3	Treatment	giant reed, castorbean, Spanish broom, tamarisk		

*Removal methods:* All herbicide treatments were conduced using a foliar application with 4-gallon back pack sprayers. A total of 54 ounces Garlon 4 Ultra, 4 ounces Garlon 3A, and 50 ounces Rodeo (glyphosate) were used during this reporting period. A total of 33 ounces Agri-Dex and 58 ounces Competitor were used as surfactants, and 23 ounces Quest was used as a water conditioner in these treatments. These treatments were conduced by SAWA's Invasive Species Removal (ISR) crew.

Amount removed and/or treated: Approximately 9.3 acres of giant reed, castorbean, Spanish broom, tamarisk, and other non-native weeds were treated.

*Frequency and timing of removal/treatment:* This project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered udring hits monitoring. Annual non-native weeds must be treated prior to the seed-heads setting, so the soil seed bank cannot be replenished. This necessitates treatments in the spring during bird nesting season. Treatments are conducted in the presence of a qualified biologist to protect nesting birds.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

*Monitoring Activities:* The annual bioassessment survey took place on 4/5/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo

points. Detected wildlife species are also recorded. Permit and mitigation were also reviewed. A total of 35.75 hours were spent on conservation, monitoring, and management activities.

# CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains sparse riparian scrub habitat composed mainly of cottonwood and willow forest with mulefat understory. The average tree height class is >5-10 meters and the average shrub height class is >1-2 meters. Overall vegetative cover is >50-75%, with native coverage at >50-75% and non-native coverage at >15-25%. The dominant native species include >15-25% Fremont cottonwood (*Populus fremontii*), >5-15% Goodding's black willow (*Salix gooddingii*), and 1-5% mulefat (*Baccharis salicifolia*). The dominant non-native species include <1% castorbean, <1% tree tobacco (*Nicotiana glauca*), and 1-5% gum tree (*Eucalyptus* sp.)

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including Song Sparrow (*Melodia melospiza*), Orange-crowned Warbler (*Vermivora celata*), Anna's Hummingbird (*Calypte anna*), Red-tailed Hawk (*Buteo jamaicensis*), and the Northern Rough-winged Swallow (*Stelgidopteryx serripennis*). Two state and federal endangered Least Bell's Vireos (*Vireo bellii pusillus*), were documented within this project site.

### PROJECT STATUS AND REMEDIAL ACTION

The SAR I-210 to Interchange Project is in its 7<sup>th</sup> year. Within the scope of requirements for SAWA's In-Lieu Fee program, the project goals are met. Non-native invasive plants such as Arundo, castorbean, and tamarisk are at <1% coverage over the total site. Continued monitoring and maintenance will keep these plants controlled for the duration of the project.

# FINANCIAL SUMMARY

Table 3: SAR I-210 to Interchange Yearly Costs					
Reporting Period	Total Cost				
2010	n/a				
2011	n/a				
2012	\$1,548.14				
2013	\$4,972.79				
1/1/14 to 6/30/14	\$0				
7/1/14 to 6/30/15	\$13,129.04				
7/1/15 to 6/30/16	\$13,986.61				
7/1/16 to 6/30/17	\$11,000.44				

#### **GPS PHOTO POINTS**

Photo point 3 – 477527, 3771409, heading NE; Photos taken 9/16/15 (left) and 4/5/17 (right).



Photo point 4 – 480751, 3772655, heading E; Photos taken 9/16/15 (left) and 4/5/17 (right).



Photo point 2 – 475986, 3771119, heading W; Photos taken 6/13/16 (left) and 4/5/17 (right).



MAP



# SAR I-215 INTERCHANGE TO RIALTO CHANNEL 7-1-16 THROUGH 6-30-17

# PROJECT BACKGROUND

SAR I-10/I-215 Interchange to Rialto Channel covers approximately 375 acres along the Santa Ana River (SAR) in San Bernardino and Riverside Counties. The project area starts at the I-10/I-215 interchange in San Bernardino, CA, and runs downstream to the Rialto Channel, just past the RIX treatment plant. In 2003 the initial removal for 60 acres of giant reed (*Arundo donax*) interspersed with castorbean (*Ricinus communis*) occurred. Another removal of 500 acres of giant reed and tamarisk (*Tamarix* spp.) was completed in 2004. Nineteen mitigations have been placed at this project to maintain control of invasive species and prevent future infestations. Control efforts have continued in subsequent years to control the re-emergence of these species.

Table 1: SAR I-215 Interchange to Rialto Channel Project - Mitigations Placed at Project					
Permit #'s	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Mitigation Type
2006-00825-SHJ RWQCB Cert. 11/7/06	WL Homes Tracts 28886 and 28886-1	WL Homes, LLC	\$50,000 (12/13/06)	0.25	ILF: Enhancement
6-2002-283	n/a	GFR Enterprises	\$17,000 (12/02)	1.0	Restoration
6-008-98	n/a	Forecast Homes	\$35,000 (9/03)	1.0	Restoration
CDFW Notification	Specific Plan No. 301 and EIR No. 423	Menifee Development LLC	\$8,500 (11/03/03)	0.5	Restoration
RWQCB Cert.	Cougar Ranch Development Tract 30388	Cougar Ranch LLC	\$54,000 (1/16/04)	1.08	ILF: Enhancement
1600-2003-5111-R6	Eastvale Storm Drain	Regency Cornerstone Invest, LLC	\$3,125 (1/30/04)	0.25	ILF: Enhancement
200301492-JPL	Lemnar Homes	US Home	\$11,250 (5/20/04)	0.81	ILF: Enhancement
206-01404-JPL	Proposed Tract 32996, Lake Elsinore	Wesco Homes & Development	\$25,000 (12/8/06)	0.2	ILF: Enhancement
1600-2007-0073-R6 2007-00549-JPL	Van Buren Bridge Replacement Project	Riverside County Transportation Department	\$60,000 (1/23/08)	0.87	ILF: Restoration
2006-01249-SJH	I-215 Improvements Project	California Department of Transportation	\$50,000 (1/29/08)	0.5	ILF: Enhanement
1600-2006-0175-R6 200601732-JPL 362006-26-APF	Santa Ana River Trail Phase 1	San Bernardino Regional Parks Department	\$360,000 (3/21/07)	5.75	ILF: Restoration

Table 1 continued						
Permit #'s	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Mitigation Type	
20061265-JPL	Iowa Street Medical Condo Project	Iowa Street Partners	\$50,000 (1/16/07)	1	ILF: Enhancement	
200500862-SJH	Rider Street Improvements Project	City of Perris	\$81,500 (5/23/05)	1.63	ILF: Enhancement	
200500907-DPS	Eastgate Business Center Storm Drain	Industrial Developments International	\$20,000 (11/3/05)	0.4	ILF: Enhancement	
200501536-SJH	Ethanac Road Shopping Center	Cahan Properties	\$40,000 (5/12/06 & 5/25/06)	1	ILF: Restoration	
200600313-CLM	Pulte Homes Residential Development	Pulte Homes	\$60,000 (7/13/06)	1	ILF: Enhancement	
200300727-DPS	Garbani Property Residential Development	Granite Homes	\$35,000 (2/16/06)	.24	ILF: Restoration	
200501187-DPS	Tequesquite Trunk Sewer Protection Project	City of Riverside, Public Works	\$50,000 (12/22/06)	0.3	ILF: Restoration	
200301477-DLC	Tract 30662	Chaparral Valley LLC	\$68,000 (12/30/03)	4	ILF: Enhancement	
Totals			\$1,078,375	21.7		

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatment occurred on 4/17/17, 4/27/17, 5/25/17, and 5/30/17. Species treated included giant reed, castorbean, tamarisk, tree of heaven (*Ailanthus altissima*), and tree tobacco (*Nicotiana glauca*). A total of 121.5 hours were spent on enhancement activities.

Table 2: SAR I-215 to Rialto Channel – Summary of Mitigation Activities					
SAWA manage	ement began in:	2006			
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated		
2012 and prior	This project area was n mainstem prior to this	as not reported separately from other project sites along the SAR his year.			
2013	None	n/a	n/a		
1/1/14 to 6/30/14	None	n/a	n/a		
7/1/14 to 6/30/15	None	n/a	n/a		
7/1/15 to 6/30/16	1.36	Treatment	giant reed, tamarisk, castorbean, Spanish broom		
7/1/16 to 6/30/17	1	Treatment	giant reed, castorbean, tamarisk, tree of heaven, tree tobacco		

*Removal methods:* All herbicide treatments were conduced using a foliar application with 4-gallon back pack sprayers. A total of 13 ounces Garlon 4 Ultra, 8 ounces Rodeo (glyphosate), and 48 ounces Round Up Promax were used during this reporting period. A total of 13 ounces Competitor was used as a surfactant and 22 ounces Quest was used as a water conditioner in these treatments. These treatments were conduced by SAWA's Invasive Species Removal (ISR) crew.

Amount removed and/or treated: Approximately 11 acres of giant reed, castorbean, tamarisk, tree of heaven, and other non-native weeds were treated.

Frequency and timing of removal/treatment: This project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered udring hits monitoring. Annual non-native weeds must be treated prior to the seed-heads setting, so the soil seed bank cannot be replenished. This necessitates treatments in the spring during bird nesting season. Treatments are conducted in the presence of a qualified biologist to protect nesting birds.

Disposal specifics: Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

Monitoring Activities: The annual bioassessment survey took place on 6/6/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. Permit and mitigation were also reviewed. A total of 45.75 hours were spent on conservation, monitoring, and management activities.

# CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian habitat composed of mainly cottonwood and willow forest with mulefat understory. The average tree height class is >10-15m and the average shrub height class is >1-2m. Overall plant coverage is >25-50%, with native coverage at >50-75% and non-native coverage at >15-25%. The dominant native species include >15-25% Fremont cottonwood (*Populus fremontii*), >15-25% Goodding's black willow (*Salix gooddingii*), >5-25% mulefat (*Baccharis salicifolia*), and >15-25% California buckwheat (*Eriogonum fasciculatum*). The dominant non-native species include 1-5% castorbean, 1-5% non-native grasses, <1% tree tobacco, <1% giant reed, and <1% tamarisk.

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including Common Raven (*Corvus corax*), Mourning Dove (*Zenaida macroura*), House Finch (*Haemorhous mexicanus*), Northern Mockingbird (*Mimus polyglottos*), American Kestrel (*Falco sparverius*), Red-tailed Hawk (*Buteo jamaicensis*), and California ground squirrel (*Oteospermophilus beecheyi*). The state and federal endangered Least Bell's Vireo (Vireo bellii pusillus) was documented on this project site.

#### PROJECT STATUS AND REMEDIAL ACTION

The SAR I-215 Interchange to Rialto Channel Project is in its 11<sup>th</sup> year. Within the scope of requirements for SAWA's In-Lieu Fee program, the project goals have not yet been met. At this time in the life of the project, giant reed and castorbean should be at <1% of the total project area. Currently there is 1-5% of castorbean documented on the site, although the giant reed is well controlled and only one patch remains. Additional removal and treatment will be necessary to remediate the current project status.

Table 3: SAR I-215 to Rialto Channel Yearly Costs					
Reporting Period	Total Cost				
2012 and prior	Not available for this specific project.				
2013	\$83.80				
1/1/14 to 6/30/14	\$0				
7/1/14 to 6/30/15	\$70.61				
7/1/15 to 6/30/16	\$1,626.26				
7/1/16 to 6/30/17	\$248.02				

#### FINANCIAL SUMMARY

#### **GPS PHOTO POINTS**

Photo point 1 – 467532, 3766719, heading NE; Photos taken 6/1/16 (left) and 6/6/17 (right).



Photo point 4 – 471333, 3768578, heading NW; Photos taken 6/1/16 (left) and 6/6/17 (right).



Photo point 2 – 468579, 3767504, heading NW; Photos taken 7/23/15 (left) and 6/6/17 (right).



Photo point 3 – 470023, 3767104, heading N; Photos taken 7/23/15 (left) and 6/6/17 (right).



Photo taken 6/6/17.



MAP



# SUNNYSLOPE 7-1-16 THROUGH 6-30-17

### **PROJECT BACKGROUND**

Sunnyslope is located along the Sunnyslope Channel, a tributary to the Santa Ana River, in Riverside, CA. The project is located on 9.28 acres within riparian habitat downstream of the Louis Robidoux Nature Center. Originally this project was established to restore the creek for Santa Ana Sucker (*Catostomus santaanae*) habitat. Invasive removal for three mitigations occurred in 2013. Control efforst have continued in subsequent years to control the re-emergence of these species.

Table 1: Sunnyslope Project - Mitigations Placed at Project						
Permit Number	Project Name	Permittee name	Amount Received	Mitigated Acreage	Mitigation Type	
1600-2011-0165-R6 Op Law SPL-2011-00570-SME 33-2011-07	North Norco Channel Flood Control Improvements Project	Realty Bancorp Equitites, Inc	\$82,500 (6/5/13)	1.1	ILF: Active Restoration	
1600-2007-0213-R6 Op Law SPL-2008-00242 33-2007-43	Walgreen's Project	Arlington-Van Buren Investment, LLC	\$156,000 (2/24/10)	2.08	ILF: Enhancement	
SPL-2008-00358-FBV RWQCB Cert. 11/3/09	Sycamore Creek Area Project	Starfield Sycamore Investors, LLC	\$33,000 (1/28/10)	0.15	ILF: Enhancement	
Totals			\$271,500	3.33		

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred on 8/1/16, 8/2/16, 8/3/16, and 8/4/16. Species treated were giant reed (*Arundo donax*), castorbean (*Ricinus communis*), and tamarisk (*Tamarix* spp.). A total of 219 hours were spent on enhancement activities.

Table 2: Sunnyslope – Summary of Mitigation Activities				
Project placed in:	2012			
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated	
2012	Pole cuttings	Restoration	mulefat	
2013	4	Initial removal	giant reed, tamarisk	
1/1/14 to 6/30/14	None	n/a	n/a	
7/1/14 to 6/30/15	0.93	Treatment	giant reed, tamarisk	
7/1/15 to 6/30/16	0.93	Treatment	giant reed, tamarisk	
7/1/16 to 6/30/17	0.5	Treatment	giant reed, castorbean, tamarisk, tree of heaven	

*Removal methods:* All herbicide treatments were conducted using a foliar application with 4-gallon back pack sprayers. A total of 24 ounces Habitat (Imazapyr) and 76 ounces Rodeo (glyphosate) were used during this reporting period. A total of 38 ounces Agri-Dex and 42 ounces Competitor were used as surfactants, and 19.5 ounces Quest was used as a water conditioner in these treatments. These treatments were conduced by SAWA's Invasive Species Removal (ISR) crew.

Amount removed and/or treated: Approximately 0.5 acre of giant reed, and tamarisk were treated. In addition, 10 tree of heaven (*Ailanthus altissima*) were also treated.

*Frequency and timing of removal/treatment:* The project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered during this monitoring. Treatment activities are conducted outside of bird nesting season and Santa Ana sucker spawning season to minimize impacts. Giant reed is treated when the biomass reaches 2 to 4 feet in height.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

*Monitoring Activities:* The annual bioassessment survey took place on 6/7/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. This site is included in SAWA's monitored sites for Least Bell's Vireo (*Vireo bellii pusillus*). Permit and mitigation were also reviewed. A total of 15.5 hours were spent on conservation, monitoring, and management activities.

# CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian habitat composed mainly of willow and cottonwood forest with mulefat understory. The average tree height class is >10-15 meters and the average shrub height class is >2-5 meters. Overall vegetative cover is at >50-75%, with native coverage at >50-75% and non-native coverage at 1-5%. The dominant native species include >25-50% willows (*Salix* sp.), >5-15% Fremont cottonwood (*Populus fremontii*), and >1-5% Western sycamore (*Platanus racemosa*). The dominant non-native species include 1-5% giant reed, 1-5% gum tree (*Eucalyptus* sp.), >1-5% milk thistle (*Silybum marianum*). This site has been infected with the polyphagous shot-hole borer (PSHB) and is losing canopy coverage as a result.

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including House Finch (*Haemorhous mexicanus*), Lesser Goldfinch (*Spinus psaltria*), Western Kingbird (*Tyrannus verticalis*), Bushtit (*Psaltriparus minimus*), Black-headed Grosbeak (*Pheucticus melanocephalus*), Common Yellowthroat (*Geothlypis trichas*), Anna's Hummingbird (*Calypte anna*), Black Phoebe (*Sayornis nigricans*), Nuttall's Woodpecker (*Picoides nuttallii*), Spotted Towhee (*Pipilo maculatus*), Northern Flicker (*Colaptes auratus*), Cooper's Hawk (*Accipiter cooperi*), Northern Mockingbird (*Mimus polyglottos*), Black-chinned Hummingbird (*Archilochus alexandri*), western fence lizard (*Sceloporus occidentalis*), coyote (*Canis latrans*), feral pig (*Sus scrofa*), and California ground squirrel (*Oteospermophilus beecheyi*). California species of special concern found on this site include the Yellow Warbler (*Setophaga petechial*). This site also hosts the state and federally-listed endangered Least Bell's Vireo. The creek also provides a breeding site for federally-listed endangered Santa Ana sucker (*Catostomus santaanae*).

### PROJECT STATUS AND REMEDIAL ACTION

The Sunnyslope Project is in its 4th year. Within the scope of requirements for SAWA's In-Lieu Fee program, the project goals have not yet been met. At this time in the life of the project, giant reed should be at <1% of the total project area. Currently there is 1-5% of giant reed documented on the site. Additional removal and treatment will be necessary to remediate the current project status. Other non-native species, such as milk thistle, have emerged as dominant non-native species. Additional funding to remove these other non-native species is recommended. Although there is canopy and understory development, the Polyphagous Shot-hole Borer (PSHB) has infected the site and canopy has begun dying. Additional native plantings might be required to improve habitat quality in light of PSHB activity.

# FINANCIAL SUMMARY

Table 3: Sunnyslope Yearly Costs			
Reporting Period	Total Cost		
2011	\$2,085.99		
2012	\$121.17		
2013	\$68,183.59		
1/1/14 to 6/30/14	\$1,984.54		
7/1/14 to 6/30/15	\$9,223.77		
7/1/15 to 6/30/16	\$945.51		
7/1/16 to 6/30/17	\$10,342.02		

#### **GPS PHOTO POINTS**

Photo point 2 – 460044, 3759244, heading 41 degrees; Photos taken 1/29/13 (left) and 6/7/17 (right).



Photo point 3 – 459937, 3758994, heading 147; photos taken 5/9/16 (left) and 6/7/17 (right).



Photo point 4 – 460077, 3759303, heading 170; photos taken 5/9/16 (left) and 6/7/17 (right).



The following photos were taken 6/7/17 and show the regrowth of giant reed on the site.



The following photo was taken 6/7/17 and shows the emergence of other non-native vegetation, such as milk thistle.



Legend - 60% Arundo, - 10% Tamarish ~ 70% Arundo, ~ 5% Tamarisk ~ 3% Arundo, ~ 1% Tamarisk ~ 10% Arundo, ~ 10% Tamarisk 60% Arundo, ~ 5% Tamarisk ~ 15% Arundo, ~ 15% Tamarish ~ 30% Arundo. ~ 10% Tamarisi - 5% Arundo, - 5% Tamarisk - 50% Arundo. - 5% Tamarisk Sunny Slope Mitigation 200 .48 85 1 76 ( 100 Total Pi 0 Infestation Acreage = roject Pedley Rd PEDLEY AVON eage = ~ 200 Meters T Arlington Ave Riverside Muni Airport Locator Mapellown + Flabob RUBIDOUX Brockton Ave R Harket St Chicago Avd NAD 83 4-29-14 JL SunnySlopeMitigation Map produced by SAWA University Colum owa

MAP

# TEMESCAL WASH 3M 2.8-ACRE OLD STONE HEIGHTS 7-1-16 THROUGH 6-30-17

# PROJECT BACKGROUND

Temescal Wash 3M 2.8-acre Old Stone Heights is located in the Temescal Wash, in El Cerrito, CA, south of Corona, CA. The project site is bounded by Minnesota Rd to the north, the FST Main Quarry Plant to the east, and residential areas to the southwest. Originally the project site was infested with giant reed (*Arundo donax*) and other non-native invasive plants. In 2014 the Santa Ana Watershed Association (SAWA) began removal work for two mitigations. Control efforts have continued in subsequent years to control the re-emergence of these species.

Table 1: Temescal Wash 3M 2.8-A Old Stone Heights Project - Mitigations Placed at Project					
Permit Number	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Mitigation Type
332007-18	Parcel Map 30626	Old Stone Heights, LLC	\$66,510.44 (7/21/14)	2.8	Permitte-based Mitigation: Enhancement
Totals			\$66,510.44	2.8	

# PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred on 8/24/16, 8/25/16, 2/23/17, 3/9/17, and 4/11/17. Species treated included giant reed, castorbean (*Ricinus communis*), perennial pepperweed (*Lepidium latifolium*), palms, and annual non-native weeds, such as mustard (*Brassica* spp.). A total of 174.5 hours were spent on enhancement activities.

Table 2: Temescal Wash 3M 2.8-A Old Stone Heights— Summary of Mitigation Activities				
Project placed in:	2014			
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated	
7/1/14 to 6/30/15	2.86	Initial removal	giant reed, tamarisk, castorbean, mustard, perennial pepperweed	
7/1/15 to 6/30/16	2.74	Treatment	giant reed, tamarisk, castorbean	
7/1/16 to 6/30/17	0.14	Treatment	giant reed, castorbean, mustard, palms, perennial pepperweed	

*Removal methods:* Non-native vegetation was treated using several methods. Foliar application was conducted using 4-gallon backpack sprayers. Palms were treated using a drill-and-frill method or a frill-and-fill method, both using small 50-ounce sprayers and machete. A total of 222 ounces Rodeo

(glyphosate) and 361 ounces Round Up Promax were used during this reporting period. A total of 137 ounces Agri-Dex was used as a surfactant and 189 ounces Quest was used as a water conditioner in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

Amount removed and/or treated: Approximately 0.14 acre of giant reed, castorbean, perennial pepperweed, and mustard and other annual non-native weeds were treated. In addition, 18 palm trees were treated.

*Frequency and timing of removal/treatment:* The project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered during this monitoring. Annual weeds must be treated prior to the seed-heads setting, so the soil seed bank cannot be replenished. This necessitates treatments in the spring during bird nesting season. Treatments are conducted in the presence of a qualified biologist to protect nesting birds.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

*Monitoring Activities:* The annual bioassessment survey took place on 6/27/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. This site is included in SAWA's monitored sites for Least Bell's Vireo (*Vireo bellii pusillus*). Permit and mitigation were also reviewed. A total of 33.5 hours were spent on conservation, monitoring, and management activities.

# CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian habitat composed of mainly willow forest with elderberry understory. The average tree height class is >10-15 meters and the average shrub height class is >2-5 meters. Overall plant coverage is at >50-75%, with native coverage at >25-50% and non-native coverage at >25-50%. The dominant native species include >5-15% Goodding's black willow (*Salix gooddingii*), 1-5% blue elderberry (*Sambucus nigra* ssp. *caerulea*), <1% red willow (*Salix laevigata*), and <1% Western sycamore (*Platanus racemosa*). The dominant non-native species include >5-15%. Peruvian pepper tree (*Schinus molle*), >5-15% Sahara mustard (*Brassica tournefortii*), 1-5% castorbean, <1% giant reed, and <1% tree tobacco (*Nicotiana glauca*).

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including Lesser Goldfinch (*Spinus psaltria*) and Bushtit (*Psaltriparus minimus*), and the state and federally-listed endangered Least Bell's Vireo (*Vireo bellii pusillus*). This survey was conducted in the afternoon when wildlife is less active, thus this should not be considered an all-inclusive list.

# PROJECT STATUS AND REMEDIAL ACTION

The Temescal 3M 2.8-Acre Old Stone Heights project is in its 3rd year. Within the scope of the project's performance standards, the project is on track. Continued maintenance and monitoring will be required to prevent the re-emergence of targeted species. Additional removal of castorbean may be required,

with 1-5% documented on site. In addition, other non-native species, such as pepper tree, have emerged as dominant non-native species. Additional funding to remove these other non-native species is recommended.

#### FINANCIAL SUMMARY

Table 3: Temescal Wash 3M 2.8-A Old Stone Heights Yearly Costs			
Reporting Period	Total Cost		
7/1/14 to 6/30/15	\$6,297.80		
7/1/15 to 6/30/16	\$3,238.99		
7/1/16 to 6/30/17	\$9,524.38		

#### **GPS PHOTO POINTS**

Photo point 1 – 452640, 3744704, heading 207; Photos taken 5/25/16 (left) and 6/27/17 (right).



Photos pre- and post-removal, taken on 3/10/15 (left) and 6/2/15 (right).



Photos pre- and post-removal, taken on 3/10/15 (left) and 6/2/15 (right).



MAP



# TEMESCAL WASH PHASE V 115-ACRE 7-1-16 THROUGH 6-30-17

# PROJECT BACKGROUND

The Temescal Canyon project is located on approximately 115 acres along Temescal creek in El Cerrito of the County of Riverside. The project is located approximately 14 mi south of Sherborn St and ends on the north side of Cajalco Rd. The project is bounded by an active rock quarry along the majority of its perimeter. Originally the 115-acre project was infested with large patches of giant reed (*Arundo donax*) and tamarisk (*Tamarix spp.*). Initial removal occurred in 2001 and was monitored for re-growth for five years before being turned over to the Sana Ana Watershed Association (SAWA) in 2006 for continued monitoring and control of target species. SAWA has subsequently treated castorbean (*Ricinus communis*), perennial pepperweed (*Lepidium latifolium*), and other nonnative species as needed.

Table 1: Temescal Wash Phase V Project - Mitigations Placed at Project					
Permit Number	Project Name	Permitte Name	Amount Received	Mitigated Acreage	Mitigation Type
1600-2010-0149-R6 Op Law SPL-2010-00522-CLD 332010-29	Temescal Canyon Business Park	Temescal Office Partners, LP	\$33,000 (6/26/12)	0.25	ILF: Restoration
200401-500-SMJ RWQCB Cert. 8/24/04	Storm Drain Improvements at Corydon St and Melinda Ln, Lake Elsinore	Riverside County Transportation Department	\$3,125 (10/28/04)	.1	ILF: Enhancement
1600-2005-0039-R6 2005-00978-DPS	Construction of Five Storm Drain Outlet Structuress in Salt Creek for Tract #30808	Community Park 124, LLC	\$25,000 (12/21/05 & 1/19/06)	0.3	ILF: Enhancement
Totals			\$61,125	1.55	

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred on 8/25/16, 8/29/16, 8/30/16, and 8/31/16. Species treated were giant reed and castorbean. A total of 118 hours were spent on enhancement activities.

Table 2: Temescal Wash Phase V – Summary of Mitigation Activities			
SAWA management began in:		2006	
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated
2012	This project area was not reported separately from other project sites in Temescal Canyon.		
2013	None	n/a	n/a
1/1/14 to 6/30/14	n/a	n/a	n/a
7/1/14 to 6/30/15	None	n/a	n/a
7/1/15 to 6/30/16	6.9	Treatment	giant reed, tamarisk
7/1/16 to 6/30/17	1.75	Treatment	giant reed, castorbean, tree tobacco

*Removal method:* All herbicide treatments were conducted using a foliar application with 4-gallon back pack sprayers. A total of 204 ounces Rodeo (glyphosate) was used during this reporting period. A total of 101 ounces Agri-Dex was used as a surfactant and 50 ounces Quest was used as a water conditioner in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

Amount removed and/or treated: Approximately 1.75 acre of giant reed, castorbean, and tree tobacco (*Nicotiana glauca*) were treated.

*Frequency and timing of removal/treatment:* The project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered during this monitoring. Castorbean must be treated piror to the seed-heads setting, so the soil seed bank cannot be replenished.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

**Monitoring Activities:** The annual bioassessment survey took place on 6/27/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. This site is included in SAWA's monitored sites for Least Bell's Vireo (*Vireo bellii pusillus*). Permit and mitigation were also reviewed. A total of 23.75 hours were spent on conservation, monitoring, and management activities.

# CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian habitat composed of mainly willow forest with mulefat understory. The average tree height class is >10-15 meters and the average shrub height class is 1-2 meters. Overall plant coverage is at >75%, with native coverage at >50-75% and non-native coverage at >15-25%. The dominant native species include >50-75% Goodding's black willow (*Salix gooddingii*), >5-15% Fremont cottonwood (*Populus fremontii*), and >5-15% mulefat (*Baccharis salicifolia*). The dominant non-native species include >50-75% gum tree (*Eucalyptus* spp.), 1-5% castorbean, 1-5% poison hemlock (*Conium maculatum*), 1-5% black mustard (*Brassica nigra*), and 1-5% giant reed.

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including Bewick's Wren (*Thryomanes bewickii*), Lesser Goldfinch (*Psaltria spinus*), House Finch (*Haemorhous mexicanus*), Black Phoebe (*Sayornis nigricans*), Spotted Towhee (*Pipilo maculatus*), Common Yellowthroat (*Geothlypis trichas*), California Towhee (*Melozone crissalis*), and Nuttall's Woodpecker (*Picoides nuttalli*). A California species of special concern, Yellow Warbler (*Setophaga petechia*), and the state and federal endangered Least Bell's Vireo were also detected on site.

# PROJECT STATUS AND REMEDIAL ACTION

The Temescal Wash Phase V Project is in its 11th year. Within the scope of requirements for SAWA's In-Lieu Fee program, the project goals have not yet been met. At this time in the life of the project, giant reed and castorbean should be at <1% of the total project area. Currently there is 1-5% of both species documented on the site. Additional removal and treatment will be necessary to remediate the current project status. In addition, other non-native species, such as poison hemlock and mustard, have emerged as dominant non-native species. Additional funding to remove these other non-native species is recommended.

Table 3: Temescal Wash Phase V Yearly Costs				
Reporting Period	Total Cost			
2012 and prior	Not available for this specific project.			
2013	\$0			
1/1/14 to 6/30/14	\$395.98			
7/1/14 to 6/30/15	\$0			
7/1/15 to 6/30/16	\$19,137.62			
7/1/16 to 6/30/17	\$5,927.84			

#### FINANCIAL SUMMARY
#### **GPS PHOTO POINTS**

Photo point 1 – 452426, 3745825, heading 332; Photos taken 5/25/16 (left) and 6/27/17 (right).



Photo point 3 – 452022, 3745703, heading 54; Photos taken 5/25/16 (left) and 6/27/17 (right).



Photo point 2 – 452020, 3745704, heading 310; Photo taken 6/27/17.





# WOLFSKILL-GILMAN 7-1-16 THROUGH 6-30-17

## PROJECT BACKGROUND

Wolfskill-Gilman is located along Laborde Canyon in the San Jacinto Valley. Originally the 23-acre project was infested with tamarisk (*Tamarix* spp.). In 2012 the Santa Ana Watershed Association (SAWA) received agency approval to begin work, and invasive removal for four mitigations began. Control efforts have continued in subsequent years to control the re-emergence of this species. About 1700 native plants were planted on site in 2013 to reach the restoration goals.

Table 1: Wolfskill Gilman - Mitigations Placed at Project					
Permit Number	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Mitigation Type
1600-2008-0138-R6	SR-91 Eastbound Lane Addition Between SR-241 and SR-71 Project	California Department of Transportation	\$234,000 (12/1/11)	2.66	Permittee-based Mitigation: Restoration
1600-2009-0060-R6 Op Law	Ironwood Avenue Road Widening Project	City of Moreno Valley	\$33,000 (6/30/10)	0.25	Permittee-based Mitigation: Enhancement
1600-2009-0115-R6	Ironwood Avenue and Indian Avenue Detention Basin Improvements Project	City of Moreno Valley	\$148,500 (6/28/10)	1.98	Permittee-based Mitigation: Enhancement (tamarisk removal)
1600-2012-0024-R6 SPL-2010-00944-SCH 302012-05	I-215 Widening fron Scott Road to Nuevo Road Project	Riverside County Transportation Commission	\$310,478 (12/14/12)	2.988	Permittee-based Mitigation: Restoration
Totals			\$725,978	7.878	

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred on 7/7/16, 7/11/16, 7/12/16, 7/13/16, 9/8/16, 9/27/16, 3/1/17, 3/2/17, 3/9/17, 3/13/17, 3/14/17, 6/27/17, 6/28/17, and 6/29/17. Additional enhancement activities, such as hand-pulling, occurred on 5/15/17, 5/16/17, 5/17/17, 5/22/17, 5/23/17, and 5/24/17. Species treated were tamarisk and Russian thistle (*Salsola tragus*) and other annual non-native weeds. A total of 712 hours were spent on enhancement activities.

Table 2: Wolfskill Gilman – Summary of Mitigation Activities				
Project placed in:	2012			
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated	
2012	7.87	Initial removal	tamarisk	
2013	9	Treated	tamarisk and non-native annual weeds	
		Planting	1700 native plants	
1/1/14 to 6/30/14	9	Treated	tamarisk and non-native annual weeds	
		Planting	Watering as needed	
7/1/14 to 6/30/15	4	Treated	tamarisk and non-native annual weeds	
7/1/15 to 6/30/16	1.15	Treated	tamarisk and non-native annual weeds	
7/1/16 to 6/30/17	1.25	Treated	tamarisk, Russian thistle, and non- native annual weeds	

*Removal methods:* All herbicide treatments were conducted using basal bark treatment using either a 25% solution of Garlon 4 Ultra and water. A total of 12 ounces of Garlon 4 Ultra, 200.25 ounces of Milestone, 834 ounces of Rodeo (glyphosate), 957 ounces of Round UP Promax, and 121 ounces of Transline were used during this reporting period. A total of 594 ounces of Agri-dex and 12 ounces of Competitor were used as surfactants, and 666 ounces of Quest was used as a water conditioner in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew. In addition to herbicide treatments, some weeds were pulled by hand.

Amount removed and/or treated: Approximately 1.25 acre of tamarisk, Russian thistle, and other nonnative annual weeds were treated.

*Frequency and timing of removal/treatment:* Ideally treatments for tamarisk are conducted in the fall in order to take advantage of a higher translocation rate toward the root zone. This translocation of herbicide will kill the roots and improve control. The project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered during this monitoring. Annual weeds must be treated prior to the seed-heads setting, so the soil seed bank cannot be replenished. This necessitates treatments in the spring during bird nesting season. Treatments are conducted in the presence of a qualified biologist to protect nesting birds.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

**Monitoring Activities:** The annual bioassessment survey took place on 6/28/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. SAWA and RCA's efforts to prevent OHV access has been mostly successful with minimal OHV activity observed in this reporting period. Due to the numerous trails located around the project site evidence of OHV activity is still present, mostly occurring near the upper reaches of the project. During periods of high winds trash (mostly plastic bags) has been observed blowing into the site from the adjacent dump. When the bags are encountered they are collected. RCA is currently researching a solution to the issue. Permit and mitigation were also reviewed. A total of 68 hours were spent on conservation, monitoring, and management activities.

# CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains a diverse list of species typical of coastal sage scrub habitat. The average tree height class is >2-5 meters and the average shrub height class is 1-2 meters. Overall plant coverage is at >25-50%, with native coverage at >75% and non-native coverage at 1-5%. The dominant native species include 1-5% fourwing saltbush (*Atriplex canescens*), 1-5% mulefat (*Baccharis salicifolia*), 1-5% California buckwheat (*Eriogonum fasciculatum*), and 1-5% blue elderberry (*Sambucus nigra* spp. *caerulea*.). The dominant non-native species include 1-5% Russian thistle.

*Wildlife species:* Observed wildlife species consist primarily of coastal sage scrub species, including Spotted Towhee (*Pipilo maculatus*), Bewick's Wren (*Thryomanes bewickii*), Nuttall's Woodpecker (*Picoides nuttallii*), Black-headed Grosbeak (*Pheucticus melanocephalus*), Phainopepla (*Phainopepla nitens*), California Thrasher (*Toxostoma redivivum*), California Towhee (*Melozone crissalis*), California Quail (*Callipepla californica*), Mourning Dove (*Zenaida macroura*), House Finch (*Haemorhous mexicanus*), Western Kingbird (*Tyrannus verticalis*), Wrentit (*Chamaea fasciata*), Northern Mockingbird (*Mimus polyglottos*), and Lesser Goldfinch (*Spinus psaltria*). California species of special concern encountered on site were California Gnatcatcher (*Polioptila californica*), Loggerhead Shrike (*Lanius ludovicianus*), and Orange-throated Whiptail (*Aspidoscelis hyperythra beldingi*). The project site provides habitat for mammal species such as mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), mountain lion (*Puma concolor*), and gopher (*Thomomys bottae*). Evidence of non-native feral pigs (*Sus scrofa*) has been documented on-site.

# PROJECT STATUS AND REMEDIAL ACTION

The Wolfskill-Gilman Project is in its 6<sup>th</sup> year. Within the scope of the project's performance standards, this project has not met the goals for this year. Currently Russian thistle is documented at 1-5%. Additional removal and treatment is required to bring this species down to <1% of the total site. Continued maintenance and monitoring for other species will be required to prevent re-emergence. Additional planting is required to meet the goal of 90% coverage with native woody species. Canopy and understory development is low and may require additional native planting to aid in restoration of this site.

# FINANCIAL SUMMARY

Table 3: Wolfskill Gilman Yearly Costs				
Reporting Period	Total Cost			
2012	\$51,528.69			
2013	\$132,856.77			
1/1/14 to 6/30/14	\$19,148.30			
7/1/14 to 6/30/15	\$20,633.51			
7/1/15 to 6/30/16	\$19,782.46			
7/1/16 to 6/30/17	\$17,281.83			

#### **GPS PHOTO POINTS**

Photo point 1 – 498097, 3747898, heading 93; Photos taken 10/4/12(left) and 6/28/17 (right). This portion shows the mitigation for the I-215 widening project.



Photo point 2 – 498111, 3747960, heading 55; Photos taken 10/4/12(left) and 6/28/17 (right). This portion shows the mitigation for the I-215 widening project.



Photo point 3 – 498107, 3747924, heading 32; Photos taken 9/23/12 (left) and 6/28/17 (right). This portion shows the mitigation for the Indian Ave project.



Photo point 4 – 498053, 3748107, heading 34; Photos taken 9/23/12 (left) and 6/28/17 (right). This portion shows the mitigation for the Indian Ave project.



Photo point 5 – 498026, 3748216, heading 48; Photos taken 9/23/12 (left) and 6/28/17 (right). This portion shows the mitigation for the Indian Ave project.



Photo point 11 – 497983, 3749253, heading 318; Photos taken 11/27/12 (left) and 6/28/17 (right). This portion show the mitigation for the Ironwood Ave project.



Photo point 12 – 497901, 3749404, heading 149; Photos taken 11/27/12 (left) and 6/28/17 (right). This portion shows the mitigation for the CA-91 widening project.



Photo point 13 – 497748, 3749748, heading 19; Photos taken 11/27/12 (left) and 6/28/17 (right). This portion shows the mitigation for the CA-91 widening project.



Photo point 14 – 497756, 3748970, heading 207; Photos taken 11/27/12 (left) and 6/28/17 (right). This portion shows the mitigation for the CA-91 widening project.



Legend Ironwood Ave - Removal Only I-215 - Rest and Removal Hwy 91 Widening - Rest and Removal Indian Ave Detention Basin - Removal Only NE Wolfskill Gilman Mitigations 500 250 0 500 Meters larch RRIS Moreno Valley Ramona Expy Nuevo Locator Map SAN JACINTO BEAUMONT NAD 83 4-30-14 JL Wolfskill-Driscol Mits Map produced by SAWA BANNING

# WOLFSKILL 1.47 7-1-16 THROUGH 6-30-17

# PROJECT BACKGROUND

Wolfskill 1.47 is located along Laborde Canyon in the San Jacinto Valley. Originally the 1.47-acre project was infested with tamarisk (*Tamarix* spp.). In 2014 the Santa Ana Watershed Association (SAWA) received agency approval to begin work, and invasive removal for one mitigation began. Control efforts have continued in subsequent years to control the re-emergence of this species.

# Table 1: Wolfskill 1.47 Project - Mitigations Placed at Project

Permit Number	Project Name	Permittee Name	Amount Received	Mitigated Acreage	Purpose of Funds
1600-2012-0210-R6 Op Law 332012-36	I-215/Newport Road Interchange Improvement Project	Riverside County Transportation Department	\$200,234.90	1.47	Permittee-based Mitigation: Restoration
Totals			\$200,234.90	1.47	

# PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred on 7/7/16, 7/11/16, 3/1/17, and 6/29/17. Additional enhancement activities, such as hand pulling, occurred on 1/11/17, 2/27/17, and 5/15/17. Species treated were tamarisk and non-native annual weeds. These treatments primarily targeted tamarisk and Russian thistle (*Salsola tragus*) and other non-native annual weeds. A total of 173.75 hours were spent on enhancement activities.

Table 2: Wolfskill 1.47 – Summary of Mitigation Activities				
Project placed in:	2014			
Reporting Period	Amount Removed or Treated (in acres)	Type of Activity	Species Removed or Treated	
7/1/14 to 6/30/15	0.5	Initial treatment	tamarisk and non-native annual weeds	
7/1/15 to 6/30/16	0.5	Treatment	tamarisk and non-native annual weeds	
7/1/16 to 6/30/17	0.3	Treatment	Russian thistle, tamarisk, and non- native annual weeds	

*Removal methods:* All herbicide treatments were conducted using basal bark treatment using either a 25% solution of Garlon 4 Ultra and water. A total of 47 ounces of Garlon 4 Ultra, 42 ounces of Milestone, 165 ounces of Rodeo (glyphosate), 58 ounces of Round UP Promax, and 19 ounces of Transline were used during this reporting period. A total of 123 ounces of Agri-dex and 47 ounces of Competitor was used as a surfactant, and 80 ounces of Quest was used as a water conditioner in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew. In additional to herbicide treatments, some weeds were pulled by hand.

Amount removed and/or treated: Approximately 0.3 acre of tamarisk, Russian thistle, and other annual non-native weeds were treated.

*Frequency and timing of removal/treatment:* Ideally treatments for tamarisk are conducted in the fall in order to take advantage of a higher translocation rate toward the root zone. This translocation of herbicide will kill the roots and improve control. The project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered during this monitoring. Annual weeds must be treated prior to the seed-heads setting, so the soil seed bank cannot be replenished. This necessitates treatments in the spring during bird nesting season. Treatments are conducted in the presence of a qualified biologist ot protect nesting birds.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

**Monitoring Activities:** The annual bioassessment survey took place on 6/28/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. SAWA and RCA's efforts to prevent OHV access has been mostly successful with minimal OHV activity observed in this reporting period. Due to the numerous trails located around the project site evidence of OHV activity is still present, mostly occurring near the upper reaches of the project. During periods of high winds trash (mostly plastic bags) has been observed blowing into the site from the adjacent dump. When the bags are encountered they are collected. RCA is currently researching a solution to the issue. Permit and mitigation were also reviewed. A total of 42 hours were spent on conservation, monitoring, and management activities.

# CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains a diverse list of species typical of coastal sage scrub habitat. The average shrub height class is 1-2 meters; There is no canopy layer on this project site. Overall plant coverage is at >25-50%, with native coverage at >50-75% and non-native coverage at >15-25%. The dominant native species include >5-15% California buckwheat (*Eriogonum fasciculatum*), 1-5% fourwing saltbush (*Atriplex canescens*), 1-5% deerweed (*Acmispon glaber*), and 1-5% blue elderberry (*Sambucus nigra* spp. *caerulea*). The dominant non-native species include >15-25% Russian thistle, and <1% stinknet (*Oncosiphon piluliferum*).

*Wildlife species:* Observed wildlife species consist primarily of coastal sage scrub species, including Spotted Towhee (*Pipilo maculatus*), California Towhee (*Melozone crissalis*), House Finch (*Haemorhous*)

*mexicanus*), and Blue Grosbeak (*Passerina caerulea*). Project site provides habitat for mammal species such as mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), mountain lion (*Puma concolor*), and gopher (*Thomomys bottae*). Evidence of non-native feral pigs (*Sus scrofa*) has been documented on-site.

#### PROJECT STATUS AND REMEDIAL ACTION

The Wolfskill 1.47 Project is in its  $3^{rd}$  year. Within the scope of the project's performance standards, this project has not met the goals for this year. Currently Russian thistle is documented at >15-25%. Additional removal and treatment is required to bring this species down to <1% of the total site. Continued maintenance and monitoring for other species will be required to prevent re-emergence. In addition, planting with native trees will be required to meet the goal of canopy development with understory.

#### FINANCIAL SUMMARY

Table 3: Wolfskill 1.47 Yearly Costs				
Reporting Period	Total Cost			
7/1/14 to 6/30/15	\$4,679.34			
7/1/15 to 6/30/16	\$10,496.51			
7/1/16 to 6/30/17	\$35,079.49			

#### **GPS PHOTO POINTS**

Photo point 1 – 498059, 3747665, heading 12; Photos taken 1/13/15 (left) and 6/28/17 (right).



Photo point 2 – 498084, 3747648, heading 335; Photos taken 1/13/15 (left) and 6/28/17 (right).



Photo point 3 – 498154, 3747822, heading 242; Photos taken 1/13/15 (left) and 6/28/17 (right).



SAWA Annual Regulatory Report July 1, 2016 to June 30, 2017



# **CDFW REGION 6 CONTRACTS**

The reports contained herein cover projects for which SAWA has been contracted, and are located within the California Department of Fish and Wildlife Region 6.

# CCIP I 7-1-16 THROUGH 6-30-17

#### PROJECT BACKGROUND

Chino Creek Integrated Project 1 (CCIP I) is located in the middle of Prado Basin along the north and south banks of Mill Creek. The project is bounded by a recreational gun range, game bird hunting fields, and Orange County Water District's Prado Wetlands. Originally the 75-acre project was infested with 50-acres of invasive plants including giant reed (*Auruno donax*), gum tree (*Euclayptus* sp.), and perennial pepperweed (*Lepidium latifolium*). Following initial removal, the project requires the Santa Ana Watershed Association (SAWA) to conduct 5 years of spraying and monitoring, followed by an additional 20 years of monitoring to evaluate the success of the restoration. In 2010 the necessary public agencies were notified regarding the scope and duration of the project; initial removal began late 2011 and finished early 2012. Plantings were installed in 2012 and control efforts occurred in 2013 and subsequent years.

## PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred on 8/31/16, 9/1/16, and 9/6/16. Species treated were giant reed and castorbean (*Ricinus communis*). A total of 140 hours were spent on enhancement activities.

The methods used for removal: All herbicide treatments were conducted using a foliar application with 4gallon back pack sprayers. A total of 138 ounces Round Up Promax was used during this reporting period. A total of 35 ounces Quest was used as a water conditioner in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

*The amount removed and/or treated:* Approximately 2.75 acres of giant reed and 0.5 acre of castorbean were treated.

*The frequency and timing of removal/treatment:* The project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered during this monitoring. Castorbean must be treated piror to the seed-heads setting, so the soil seed bank cannot be replenished.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

*Monitoring Activities:* The annual bioassessment survey took place on 6/20/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. Permit and mitigation were also reviewed. A total of 2.25 hours were spent on conservation, monitoring, and management activities.

# CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian habitat composed mainly of willow forest with mulefat understory. The average tree hetight class is >10-15m and the average shrub height class is 1-2 meters. Overall plant coverage is at >75%, with native coverage at >75% and non-native coverage at >25-50%. The dominant native species include >50-75% Goodding's black willow (*Salix gooddingii*), >5-15% arroyo willow (*Salix lasiolepis*), 1-5% mulefat (*Baccharis salicifolia*), and 1-5% hoary nettle (*Urtica dioica*). The dominant non-native species include >25-50% poison hemlock (*Conium maculatum*), 1-5% golden crownbeard (*Verbesina encelioides*), and <1% giant reed. This site is infected with the polyphagous shothole borer (PSHB), with noticeable loss of canopy cover as a result. This is evident when comparing photos from 2016 to 2017.

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including House Finch (*Haemhorous mexicanus*), Lesser Goldfinch (*Spinus psaltria*), Black-headed Grosbeak (*Pheucticus melanocephalus*), Common Yellowthroat (*Geothlypis trichas*), American Crow (*Corvus brachyrhynchos*), and Nuttall's Woodpecker (*Picoides nuttallii*). California species of special concern detected during this survey include the Yellow Warbler (*Setophaga petechia*) and Yellow-breasted Chat (*Icteria virens*). The state and federal endangered Least Bell's Vireo (*Vireo bellii pusillus*) is also present on this site.

## PROJECT STATUS AND RECOMMENDED ACTION

The project is in its 6<sup>th</sup> year and has been largely successful at reducing non-native plants within the project site. However, loss of native canopy cover due to PSHB has allowed for an increase in growth of nonnative plants within the understory, particularly perennial pepperweed; additional actions are needed to manage a resurgence of nonnatives within the project area. Possible actions might include additional treatments with herbicide and the installation of pole cuttings to increase native plant cover. If active restoration is pursued through the planting of native species, the plant palette should consist of species not affected by PSHB.

#### **GPS PHOTO POINTS**

Photo point 1 – 442124, 3754175, heading 44; Photos taken 6/9/16 (left) and 6/20/17 (right).



Photo point 2 – 442159, 3754157, heading 200; Photos taken 6/9/16 (left) and 6/20/17 (right).



Photo point 3 – 441877, 3754027, heading 36; Photos taken 6/9/16 (left) and 6/20/17 (right).



Photo point 4 – 441877, 3754027, heading 108; Photos taken 6/9/16 (left) and 6/20/17 (right).



Photo point 5 – 441705, 3753649, heading 150; Photos taken 6/9/16 (left) and 6/20/17 (right). Canopy loss due to PSHB is apparent.





# CARBON CANYON FIRE SAFE COUNCIL 7-1-16 THROUGH 6-30-17

#### PROJECT BACKGROUND

SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff.

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** Prior to initiating work a site assessment was conducted by the Santa Ana Watershed Association's (SAWA) habitat restoration services manager. The goal of the project was to remove non-native plant species and remove dead plant biomass to lower the fire threat to the local community. SAWA's invasive species removal and restoration crew began biomass removal and herbicide applications on 9/19/16. The biomass removal and treatments were conducted over a four-day period: 9/19/16, 9/20/16, 9/21/16, and 9/29/16. The primary non-native species treated was giant reed (*Arundo donax*), tamarisk (*Tamarix* ssp.) and castorbean (*Ricinus communis*). Once the non-native biomass was removed an aquatically approved herbicide was applied to the cut-stumps. All biomass was hauled above the high water mark to decompose. A total of 216 hours were spent on enhancement activities.

*Removal methods:* Treatments of non-native vegetation were conducted using the cut- stump method. An aquatically approved herbicide was applied to the cut stumps. A total of 3 ounces Garlon 4 Ultra and 59 ounces Rodeo (glyphosate) were used during this reporting period. A total of 32 ounces Agri-Dex, 3 ounces Competitor, and 16 ounces Quest was used as a water conditioner during these treatments.

Amount removed and/or treated: Approximately 3.5 acres of giant reed and 0.1 acre of tamarisk were removed.

*Frequency and timing of removal/treatment:* There was only enough money in the grant to cover an initial treatment to the project area. All work was completed by 9/30/16.

*Disposal specifics:* Treated biomass was cut and hauled above the high water mark and left to dry and decompose in place.

*Monitoring Activities:* Photo documentation and mapping took place during the course of this project. A total of 10 hours were spent on monitoring and management activities.

#### PROJECT STATUS AND RECOMMENDED ACTION

SAWA was only contracted for the initial removal on this project site. On-going treatments will be necessary to make sure non-native species don't re-invade the site.

#### PHOTOS

Photos were taken 9/2016.

Photos below were taken heading due north. Left photo shows giant reed growing adjacent to the riparian vegetation. Right photo shows the same view after removal.



Photos below were taken heading due south. Left photo shows giant reed growing adjacent to the riparian vegetation. Right photo shows the same view after removal.





# CITY OF CHINO HILLS 2016 CARBON CANYON 7-1-16 THROUGH 6-30-17

## PROJECT BACKGROUND

SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff.

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred in September of 2016. The only species treated was tree of heaven (*Ailanthus altissima*). Post treatment the biomass was cut down and removed. A total of 46 hours were spent on enhancement activities.

The methods used for removal: All herbicide treatments were conducted using a basal bark treatment method using 50-ounce spray bottles. A total of 16 ounces of Habitat and 16 ounces of Competitor were used during this reporting period. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

*The amount removed and/or treated:* The total project acreage was ~ 2.1 acres with ~5% cover of tree of heaven bringing the total amount treated to ~.1 acres.

*The frequency and timing of removal/treatment:* The City of Chino Hills hired SAWA as a contractor to specifically treat tree of heaven and remove dead ladder fuels to reduce the fuel load in the project area.

*Disposal specifics:* Biomass was hauled to an approved green waste facility.

*Monitoring Activities:* A bio-monitor was not required due to the fact that we were conducting the work outside of the migratory bird season. All sensitive areas were flagged and avoided.

#### PROJECT STATUS AND REMEDIAL ACTION

SAWA was hired as a contractor for this project and is hopeful funding to conduct future treatments is available.

# PHOTOS











# CITY OF CHINO HILLS: ENGLISH CHANNEL 7-1-16 THROUGH 6-30-17

## PROJECT BACKGROUND

SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff. SAWA staff conducted biomass reduction to ~ 1.68 acres within both the City of Chino Hills 1.45 Acre English Channel Mitigation Site and within the 4.73 Acre Enhancement Area. In addition, SAWA conducted herbicide application to non-native species throughout the two sites.

# PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** Prior to work a site assessment was conducted to determine the non-native species and to design a work plan for both the enhancement area and the 1.45 acre English Channel Mitigation Site. It was determined that all the dead non-native biomass should be mowed using weed eaters. All living non-native biomass was treated with herbicide applications. SAWA staff also removed some dead native biomass and stacked the remaining dead biomass to be used as habitat for wildlife. The primary application method was either cut-stump treatment with an EPA aquatically approved triclopyr product or foliar application with an EPA aquatically approved glyphosate product. Work occurred on 10/26/16, 10/27/16, and 10/31/16. A total of 205 hours were spent on enhancement activities.

*Removal methods:* Non-native vegetation was treated using several methods. Foliar application was conducted using 4-gallon backpack sprayers. Cut-stump treatments utilized small 50-ounce sprayers. Palms were treated using a drill-and-frill method or a frill-and-fill method, both using small 50-ounce sprayers and machete. A total of 24 ounces Garlon 3A and 18 ounces Rodeo were used during this reporting period. A total of 2.5 ounces Agri-Dex and 26.5 ounces Competitor were used as srufactants during these treatments. All herbicide applications were conducted by SAWA's ISR crew.

Amount removed and/or treated: The site was monitored and non-native vegetation cover was treated as it was encountered. The non-native cover varied greatly by area and the total project area was ~6.18 acres. A total of approximately 1.68 acres of biomass reduction occurred within the two project areas. The following species were treated throughout the two sites: 8 fig trees (*Ficus carica*), 4 tree tobacco (*Nicotiana glauca*), 4 ash trees (*Fraxinus ssp.*) 48 California fan palm (*Washingtonia filifera*), milk thistle (*Silybum marianum*), black mustard (*Brassica nigra*) and Russian thistle (*Salsola tragus*).

*Frequency and timing of removal/treatment:* Treatments occurred from October 26 through November 1, 2016.

*Disposal specifics:* Treated biomass was hauled off-site and disposed of at an approved licensed facility.

*Monitoring Activities:* Photo documentation and mapping took place during the course of this project. A total of four 55-gallon trash bags full of trash were collected from the two sites. A total of 104 hours were spent on conservation, monitoring, and management activities.

# CURRENT SITE CONDITIONS

*Current site conditions*: The dominant native species within the project were: Fremont cottonwood (*Populus fremontii*), mulefat (*Baccharis salicifolia*), hoary nettle (*Urtica dioica*), blue elderberry (*Sambucus nigra* sp. *caerulea*) and willow species (*Salix* spp.).

#### PROJECT STATUS AND RECOMMENDED ACTION

SAWA was contracted by the City of Chino Hills to only remove and treat non-native species within the 1.45 acre English Channel Mitigation and within the 4.73-acre enhancement area. Future treatments will be necessary to ensure that the non-native seed bank is exhausted and the natives are given adequate time to get re-established.

## PHOTOS

# Photo taken 11/1/16: Non-native biomass prior to mowing with line trimmers.



Photo taken 11/1/16: Non-native biomass post mowing with line trimmers.



Photo taken 11/1/16: Palms treated within the project boundary.



Photo taken 11/1/16: Ash tree treated using frill and fill method.





# CITY OF CHINO HILLS: HICKORY CREEK 7-1-16 THROUGH 6-30-17

## PROJECT BACKGROUND

SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff.

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred in May and June of 2016. The species treated were bristly oxtongue (*Helminthotheca echioides*), Lamb's quarters (*Chenopodium album*), Russian thistle (*Salsola tragus*), gum tree (*Eucalyptus ssp.*), prickly lettuce (*Lactuca serriola*), castorbean (*Ricinus communis*), spotted spurge (*Euphorbia maculate*) and white sweet clover (*Melilotus albus*). Prior to application all biomass was cut and hauled to an approved green waste facility. In addition to being hired to treat the non-natives SAWA will be assisting the City's mitigation project by conducting irrigation and planting activities. A total of 782.25 hours were spent on enhancement activities.

*The methods used for removal:* All herbicide treatments were conducted using a foliar application with four-gallon back pack sprayers. A total of 138 ounces of Rodeo, 141 ounces of Round Up Pro Max and 96 ounces of Quest were used during this reporting period. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

*The amount removed and/or treated:* The total project acreage was ~ 7.4 acres with ~25-50% cover of the non-native species. The mitigation project is 2 acres.

*The frequency and timing of removal/treatment:* The City of Chino Hills hired SAWA as a contractor to specifically assist with their mitigation project for a total of four years.

*Disposal specifics:* Biomass was hauled to an approved green waste facility.

*Monitoring Activities:* No bioassessment was conducted at this site. Wildlife species were noted incidentally.

#### PROJECT STATUS AND REMEDIAL ACTION

SAWA was hired as a contractor for this project to assist with the success of their Hickory Creek project. Funding has been approved for SAWA to continue work for a total of four years. Continued treatments will prevent the re-emergence of non-native plants.

# PHOTOS





# CITY OF CHINO HILLS: MORNINGSIDE PARK 7-1-16 THROUGH 6-30-17

## PROJECT BACKGROUND

SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff. SAWA staff conducted biomass reduction to ~2.08 acres within the City of Chino Hills Morningside Park. The work was being requested to allow for better access for vector control activities.

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** Prior to work a site assessment was conducted to determine the non-native species and to design a work plan that would allow better access for vector control, but wouldn't negatively affect the native habitat. In addition, all non-native species encountered were treated. In addition to treating the non-native biomass throughout the site SAWA staff removed some cattails (*Typha latifolia*) for vector control access. The primary application method was either cut-stump treatment with an EPA aquatically approved Diquat dibromide product or foliar application with an EPA aquatically approved places.

*Removal methods:* Non-native vegetation was treated using several methods. Foliar application was conducted using 4-gallon backpack sprayers. Cut-stump treatments utilized small 50-ounce sprayers. Palms were treated using a drill-and-frill method or a frill-and-fill method, both using small 50-ounce sprayers and machete. A total of 4 ounces Diquat and 50 ounces Rodeo (glyphosate) were used during this reporting period. A total of 24 ounces Agre-Dex and 38 ounces Competitor were used as surfactants, and 4 ounces Quest was used as a water conditioner during these treatments. All herbicide applications were conducted by SAWA's ISR crew.

Amount removed and/or treated: The site was monitored and non-native vegetation cover was treated as it was encountered. The non-native cover varied greatly by area and the total project area was ~2.08 acres. The total biomass removed and treated was ~0.04 acres. Treated species included palms ssp., mustard (*Brassica* spp.), sow thistle (*Sonchus* asper), honeysuckle (*Lonicera* ssp.), Pampas grass (Cortaderia selloana) and wild radish (*Raphanus* sativus).

*Frequency and timing of removal/treatment:* Treatments occurred in March 2016

*Disposal specifics:* Treated biomass was hauled off-site and disposed of at an approved licensed facility.

*Monitoring Activities:* Photo documentation and mapping took place during the course of this project. A total of 29.5 hours were spent on monitoring and management activities.

#### CURRENT SITE CONDITIONS

*Current site conditions*: The dominant native species within the project were: cattails, hoary nettle (*Urtica dioica*), and willow species (*Salix* spp.).
#### PROJECT STATUS AND RECOMMENDED ACTION

SAWA was contracted by the City of Chino Hills to only remove and treat non-native species within the 2.08 acre Morningside Park. Future treatments will be necessary to ensure that the non-native seed bank is exhausted and the natives are given adequate time to get re-established.

# PHOTOS

Photo taken 3/20/17: Non-native honeysuckle after treatment.

Photo taken 3/20/17: Non-native pampass grass after treatment.

Photo taken 3/20/17: Trimming of cattails for vector control access.





Photo taken 3/20/17: A few of the palms pre-treatment.



MAP



# CITY OF LAKE FOREST: SERRANO NATURE PARK 7-1-16 THROUGH 6-30-17

# PROJECT BACKGROUND

SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff. SAWA staff conducted biomass reduction and non-native plant removal to ~ 3.12 In addition, SAWA conducted herbicide application to non-native species throughout the two sites.

# PROEJCT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** Prior to work a site assessment was conducted to determine the non-native species and to design a work plan. A total of ~0.317 acres of non-native biomass were removed and treated. In addition to treating the non-native biomass throughout the site SAWA staff removed some dead native biomass and disposed of it at an approved green waste facility. The primary application method was cut-stump treatment with an EPA aquatically approved triclopyr product. A total of 70 hours weres pent on enhancement activities.

*Removal methods:* Non-native vegetation was treated with a cut-stump method utilizing small 50-ounce sprayers. A total of 8 ounces Garlon 3A and 6 ounces Rodeo (glyphosate) were used during this reporting period. A total of 2.5 ounces Quest was used as a water conditioner and 1.6 ounces Competitor was used as a surfactant during these treatments. All herbicide applications were conducted by SAWA's ISR crew.

Amount removed and/or treated: The site was monitored and non-native vegetation cover was treated as it was encountered. The non-native cover varied greatly by area and the total project area was ~3.12 acres. The total biomass removed and treated was ~0.312 acres. Treated species included Brazilian pepper tree (*Schinus mucronulata*), tree tobacco (*Nicotiana glauca*), tree of heaven (*Ailanthus altissima*), California fan palm (*Washingtonia filifera*) and castorbean (*Ricinus communis*).

*Frequency and timing of removal/treatment:* Treatments occurred from 10/3/17 to 10/6/16 and 10/11/16 to 10/13/16.

Disposal specifics: Treated biomass was hauled off-site and disposed of at an approved licensed facility.

*Monitoring Activities:* Photo documentation and mapping took place during the course of this project. A total of 43 hours were spent on monitoring and management activities.

# CURRENT CONDITIONS

*Current site conditions*: The dominant native species within the project were: mulefat (*Baccharis salicifolia*), hoary nettle (*Urtica dioica*), blue elderberry (*Sambucus nigra* spp. *caerulea*) and willow species (*Salix* spp.).

#### PROJECT STATUS AND RECOMMENDED ACTION

SAWA was contracted by the City of Lake Forest to only remove and treat non-native species within the 3.12-acre project area. Future treatments will be necessary to ensure that the non-native seed bank is exhausted and the natives are given adequate time to get re-established.

## PHOTOS

Photo taken 10/5/16: Non-native biomass being chipped prior to hauling to approved green waste facility.



Photo taken 10/5/16: Non-native biomass being hauled to chipper.



MAP



# HWY 330 SPANISH BROOM 7-1-16 THROUGH 6-30-17

#### PROJECT BACKGROUND

SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff.

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred in November of 2016. The only species treated was Spanish broom (*Spartium junceum*). A total of 172 hours were spent on enhancement activities.

*The methods used for removal:* All herbicide treatments were conducted using a cut-stump treatment method using 50-ounce spray bottles. A total of 35 ounces of Rodeo were used during this reporting period. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

*The amount removed and/or treated:* The total project acreage was ~ 11.25 acres with ~29% cover of Spanish broom (*Spartium* junceum) bringing the total amount treated to ~3.5 acres.

The frequency and timing of removal/treatment: The United States Forest Service (USFS) and The Southern California Mountains Foundation partnered up to hire SAWA as a contractor to specifically treat Spanish broom along highway 330 in an effort to increase mortality due to the plants actively translocating nutrients to the roots.

Disposal specifics: Biomass was hauled to the City Creek fire station and disposed of by USFS personnel.

*Monitoring Activities:* the hole and then the hole was backfilled and a basin created.

*Monitoring Activities:* The contract work issued by RLC to SAWA was to only cover the treatment of nonnative species. A bio-monitor was not required due to the fact that we were conducting the work outside of the migratory bird season. All sensitive areas were flagged and avoided

#### PROJECT STATUS AND REMEDIAL ACTION

SAWA was hired as a contractor for this project and has already received funding for the next treatment scheduled for the Fall of 2017. Continued treatment will prevent a re-infestation by Spanish Broom on this project site.

# PHOTOS



MAP



# OCWD TAMARISK TREATMENTS 7-1-16 THROUGH 6-30-17

## PROJECT BACKGROUND

The Orange County Water District hired the Santa Ana Watershed Association (SAWA) to conduct treatments to tamarisk (*Tamarix ssp.*) on a 10-acre project within the Prado Basin. The purpose of this project is to control the re-growth of non-native invasive plants. SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff.

# PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred in November and December of 2016. Species treated were tamarisk. A total of 124.75 hours were spent on enhancement activities.

*The methods used for removal:* All herbicide treatments were conducted using a cut-stump treatments using small 50-ounce sprayers. A total of 27 ounces Garlon 3A was used during this reporting period. A total of 27 ounces Competitor was used as a surfactant in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

*The amount removed and/or treated:* The total project acreage was ~ 10 acres with ~5% cover of tamarisk bringing the total amount treated to 0.5 acres.

*The frequency and timing of removal/treatment:* Orange County Water District hired SAWA as a contractor to specifically treat tamarisk on this project.

*Disposal specifics:* Biomass was hauled to an approved green waste facility.

*Monitoring Activities:* No bioassessment was conducted at this site. Wildlife species were noted incidentally.

#### CURRENT SITE CONDITIONS

*Current site conditions*: This site is composed of a diversion channel surrounded by riparian habitat. The surrounding habitat is composed of mainly willow forest with mulefat understory. The average tree height class is >10-15m and the average shrub height class is >1-2m. Overall plant coverage is at >75%, with native coverage at >50-75% and non-native coverage at >15-25%. The dominant native species include >25-50% mulefat (*Baccharis salicifolia*), >5-15% Fremont cottonwood (*Populus fremontii*), 1-5% alkali heliotrope (*Heliotropium curassavicum*), >5-15% cocklebur (*Xanthium strumarium*), and >15-25% willows (*Salix* sp.). The dominant non-native species include 1-5% perennial pepperweed (*Lepidium latifolium*), <1% giant reed (*Arundo donax*), >5-15% tamarisk, <1% castorbean, 1-5% poison hemlock (*Conium maculatum*), <1% tree tobacco (*Nicotiana glauca*), 1-5% white sweet clover (*Melilotus albus*), and 1-5% kochia (*Kochia scoparia*).

*Wildlife species:* Incidentally observed wildlife species consist primarily of riparian species, including Song Sparrow (*Melodia melospiza*), Tree Swallow (*Tachycineta bicolor*), Common Yellowthroat (*Geothlypis trichas*), Bushtit (*Psaltriparus minimus*), Red-tailed Hawk (*Buteo jamaicensis*), Nuttall's Woodpecker (*Picoides nuttallii*), Great Egret (*Ardea alba*), Lesser Goldfinch (*Spinus psaltria*), Great Blue Heron (*Ardea herodias*), Northern Flicker (*Colaptes auratus*), Snowy Egret (*Egretta thula*), Green-winged Teal (*Anas*)

*carolinensis*), desert cottontail (*Silvylagus audubonii*), coyote (*Canis latrans*), and western fence lizard (*Sceloporus occidentalis*). The non-native feral pig (*Sus scrofa*) is also present on the site. California species of special concern on site include the Yellow Warbler (*Setophaga petechia*) and Yellow-breasted Chat (*Icteria virens*), as well as the state and federal endangered Least Bell's Vireo (*Vireo bellii pusillus*).

#### PROJECT STATUS AND RECOMMENDED ACTION

SAWA was hired as a contractor for this project and is hopeful to have future funding provided by OCWD to continue treatments to non-native vegetation within the Prado Basin.

SAWA Annual Regulatory Report July 1, 2016 to June 30, 2017

#### CDFW Region 6 (contracts) OCWD Tamarisk Treatments



# PRADO DIVERSION CHANNEL 7-1-16 THROUGH 6-30-17

## PROJECT BACKGROUND

The Prado Diversion Channel project is located within the Prado Basin along the Orange County Water District's (OCWD) diversion channel from River Rd to the ground water recharge basins. The purpose of this project is to control the re-growth of non-native invasive plants. SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff.

# PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred on on 8/15/16, 8/16/16, 8/17/16, 8/18/16, 8/22/16, and 8/23/16. Species treated were giant reed (*Arundo donax*) and castorbean (*Ricinus communis*). A total of 339 hours were spent on enhancement activities.

The methods used for removal: All herbicide treatments were conducted using a foliar application with 4gallon back pack sprayers. A total of 1725 ounces Round Up Promax was used during this reporting period. A total of 432 ounces Quest was used as a water conditioner in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

*The amount removed and/or treated:* Approximately 14.5 acres of giant reed, 1.5 acre of castorbean, and 0.25 acre of tamarisk (*Tamarix* spp.) were treated.

*The frequency and timing of removal/treatment:* The project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered during this monitoring. Castorbean must be treated prior to the seed-heads setting, so the soil seed bank cannot be replenished. Giant reed is treated when the biomass reaches 2 to 4 feet in height.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

*Monitoring Activities:* The annual bioassessment survey took place on 6/16/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. A total of 3.5 hours were spent on monitoring and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site is composed of a diversion channel surrounded by riparian habitat. The surrounding habitat is composed of mainly willow forest with mulefat understory. The average tree height class is >10-15m and the average shrub height class is >1-2m. Overall plant coverage is at >75%, with native coverage at >50-75% and non-native coverage at >15-25%. The dominant native species include >25-50% mulefat (*Baccharis salicifolia*), >5-15% Fremont cottonwood (*Populus fremontii*), 1-5%

alkali heliotrope (*Heliotropium curassavicum*), >5-15% cocklebur (*Xanthium strumarium*), and >15-25% willows (*Salix* sp.). The dominant non-native species include >5-15% perennial pepperweed (*Lepidium latifolium*), >5-15% giant reed, 1-5% tamarisk, <1% castorbean, 1-5% poison hemlock (*Conium maculatum*), <1% tree tobacco (*Nicotiana glauca*), >15-25% white sweet clover (*Melilotus albus*), and >25-50% kochia (*Kochia scoparia*).

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including Song Sparrow (*Melodia melospiza*), Tree Swallow (*Tachycineta bicolor*), Spotted Towhee (*Pipilo maculatus*), Common Yellowthroat (*Geothlypis trichas*), Bushtit (*Psaltriparus minimus*), Red-tailed Hawk (*Buteo jamaicensis*), Black Phoebe (*Sayornis nigricans*), Nuttall's Woodpecker (*Picoides nuttallii*), Rock Pigeon (*Columba livia*), Great Egret (*Ardea alba*), Lesser Goldfinch (*Spinus psaltria*), Great Blue Heron (*Ardea herodias*), Northern Flicker (*Colaptes auratus*), Snowy Egret (*Egretta thula*), Green-winged Teal (*Anas carolinensis*), desert cottontail (*Silvylagus audubonii*), coyote (*Canis latrans*), long-tailed weasel (*Mustela frenata*), and western fence lizard (*Sceloporus occidentalis*). The non-native feral pig (*Sus scrofa*) is also present on the site. California species of special concern on site include the Yellow Warbler (*Setophaga petechia*) and Yellow-breasted Chat (*Icteria virens*). The state and federal endangered Least Bell's Vireo (*Vireo bellii pusillus*) was also detected during this survey.

# PROJECT STATUS AND RECOMMENDED ACTION

Treatment methods used to eradicate the target species have been proven to be effective, however there is still a large coverage of non-native species. Giant reed and perennial pepperweed is currently documented at >5-15% of the total project site. On-going monitoring and treatments are recommended to ensure eradication of these species. Other non-native species, such as sweet clover and kochia, are becoming established where giant reed was previously removed. Additional funding to cover the removal and treatment of these species is recommended.

#### **GPS PHOTO POINTS**

Photo point 1 – 443275, 3753517, heading 90 E; Photos taken 3/27/16 (left) and 6/16/17 (right).



Photo point 2 – 443897, 3753288, heading 67 E; Photos taken 3/27/16 (left) and 6/16/17 (right).



Photo point 3 – 444466, 3753858, heading 209; Photos taken 3/27/16 (left) and 6/16/17 (right).



Photo point 4 – 443685, 3753318, heading 336 N; Photos taken 3/27/16 (left) and 6/16/17 (right).



Photo point 5 – 443556, 3753491, heading 327 NW; Photos taken 3/27/16 (left) and 6/16/17 (right).



MAP



# PRADO MILL CREEK 7-1-16 THROUGH 6-30-17

# PROJECT BACKGROUND

The Prado Mill Creek project is located within the Prado Basin along Mill Creek, from Hellman Ave downstream to the Riverside-Orange County Line. Initial treatment occurred in 2003, and follow-up treatments occurred until 2009. Thereafter SAWA has acted as a contractor on 175-acre project site. Only those activities and impacts performed by SAWA staff will be reported here.

# PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred on on 8/24/16, 8/25/16, and 8/29/16. Species treated were giant reed (*Arundo donax*) and castorbean (*Ricinus communis*). A total of 120 hours were spent on enhancement activities.

*The methods used for removal:* All herbicide treatments were conducted using a foliar application with 4gallon back pack sprayers. A total of 6 ounces Garlon 4 Ultra and 30 ounces Round Up Promax were used during this reporting period. A total of 6 ounces Competitor was used as a surfactant and 8 ounces Quest were used as a water conditioner in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

*The amount removed and/or treated:* Approximately 0.75 acre each of giant reed and castorbean were treated. Twelve tree of heaven (*Ailanthus altissima*) were also treated.

*The frequency and timing of removal/treatment:* The project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered during this monitoring. Castorbean must be treated prior to the seed-heads setting, so the soil seed bank cannot be replenished. Giant reed is treated when the biomass reaches 2 to 4 feet in height.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

*Monitoring Activities:* The annual bioassessment survey took place on 6/20/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. A total of 4.5 hours were spent on monitoring and management activities.

# CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian habitat composed mainly of willow forest with mulefat understory. The average tree height class is >15-20 meters and the averge shrub height class is 2-5 meters. Overall plant coverage is at >25-50%, with native coverage at >50-75% and non-native coverage at >5-15%. The dominant native species include >25-50% Goodding's black willow (*Salix gooddingi*), >5-

15% mulefat (*Bacchairs salicifolia*), >5-15% Fremont cottonwood (*Populus fremontii*), and >5-15% coyote gourd (*Cucurbita palmata*). The dominant non-native species include >5-15% gum tree (*Eucalyptus* sp.), 1-5% tree tobacco (*Nicotiana glauca*), 1-5% perennial pepperweed (*Lepidium latifolium*), 1-5% castorbean, 1-5% golden crownbeard (*Verbesina encelioides*), and 1-5% Russian thistle (*Salsola tragus*).

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including American Crow (*Corvus brachyrhynchos*), Red-tailed Hawk (*Buteo jaimaicensis*), Spotted Towheed (*Pipilo maculatus*), Black Phoebe (*Sayornis nigricans*), American Coot (*Fulica americana*), California Towhee (*Melozone crissalis*), Common Yellowthroat (*Geothlypis trichas*), Barn Swallow (*Hirundo rustica*), Turkey Vulture (*Cathartes arua*), Mourning Dove (*Zenaida macroura*), Black-necked Stilt (*Himantopus mexicanus*), Song Sparrow (*Melodia melospiza*), Lesser Goldfinch (*Psaltria spinus*), House Finch (*Haemhorous mexicanus*), American Kestrel (*Falco sparverius*), Bushtit (*Psaltriparus minimus*), and the state species of special concern, Yellow-breasted Chat (*Icteria virens*) and White-tailed Kite (*Elanus leucurus*), and the state and federal endangered Least Bell's Vireo (*Vireo bellii pusillus*).

#### PROJECT STATUS AND RECOMMENDED ACTION

Treatment methods used to eradicate the target species have been proven to be effective. However, there are still coverages of non-native species, such as perennieal pepperweed and castorbean, each documented at 1-5% of the total project area, that should be treated. On-going monitoring and treatments are recommended to ensure eradication of these species. Other non-native species, such as golden crownbeard and Russian thistle, are becoming established where giant reed was previously removed. Additional funding to cover the removal and treatment of these species is recommended.

#### **GPS PHOTO POINTS**

Photo point 2 – 443155, 3756350, heading 35; Photos taken 2/12/15 (left) and 6/20/16 (right).



Photo point 4 – 443131, 3756334, heading 240; Photos taken 2/12/15 (left) and 6/20/16 (right).



Photo point 5 – 442333, 3755536, heading 87; Photos taken 6/23/16 (left) and 6/20/17 (right).



Photo point 7 – 442202, 3754759, heading 67; Photos taken 6/23/16 (left) and 6/20/17 (right).



Photos taken 6/20/17. Photo point 6 – 442333, 3755536, heading 87



Photo point 9 – 442477, 3755644, heading 345





Photo point 10 – 442895, 3755923, heading 255





MAP



# PRADO RIVER ROAD 7-1-16 THROUGH 6-30-17

# **PROJECT BACKGROUND**

The Prado River Road project is located within the Prado Basin, and runs along the south side of the Santa Ana River, from River Road downstream about 1000 meters. Originally the project area covered 70 acres, but was expanded by 4.75 acres in 2012. SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff.

# PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, one herbicide treatment occurred on on 9/6/16. Species treated was giant reed (*Arundo donax*). A total of 24 hours were spent on enhancement activities.

*The methods used for removal:* All herbicide treatments were conducted using a foliar application with 4gallon back pack sprayers. A total of 10 ounces Round Up Promax was used during this reporting period. A total of 2.5 ounces Quest was used as a water conditioner in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

*The amount removed and/or treated:* Approximately 0.25 acre of giant reed was treated.

*The frequency and timing of removal/treatment:* The project site is monitored annually by the ISR crew. Non-native plants are treated as they are encountered during this monitoring. Giant reed is treated when the biomass reaches 2 to 4 feet in height.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

**Monitoring Activities:** The annual bioassessment survey took place on 6/28/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. A total of 5.5 hours were spent on monitoring and management activities.

# CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian habitat composed of mainly willow forest with mulefat understory. The average tree height class is >10-15 meters and the average shrub height class is 2-5 meters. Overall plant coverage is at >15-25%, with native coverage at >50-75% and non-native coverage at >5-15%. The dominant native species include >50% Goodding's black willow (*Salix gooddingii*), >15-25% mulefat (*Baccharis salicifiolia*), >5-15% Fremont cottonwood (*Populus fremontii*), and >5-15% wild grape (*Vitis girdiana*). The dominant non-native species include 1-5% giant reed, 1-5% tree tobacco (*Nicotiana glauca*), 1-5% golden crownbeard (*Verbesina encelioides*), 1-5% palms, and 1-5% gum tree (*Eucalyptus* sp.).

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including Song Sparrow (*Melodia melospiza*), Spotted Towhee (*Pipilo maculatus*), Mourning Dove (*Zenaida macroura*), Northern Mockingbird (*Mimus polyglottos*), Common Yellowthroat (*Geothlypis trichas*), and the state and federal endangered Least Bell's Vireo (*Vireo bellii pusillus*).

#### PROJECT STATUS AND RECOMMENDED ACTION

Treatment methods used to eradicate the target species have been proven to be effective, however there is still a large coverage of non-native species. Giant reed is currently documented at 1-5% of the total project site. On-going monitoring and treatments are recommended to ensure eradication of these species. Other non-native species, such as golden crownbeard, are becoming established where giant reed was previously removed. Additional funding to cover the removal and treatment of these species is recommended.

#### **GPS PHOTO POINTS**

Photo point 7 – 444739, 3753842, heading 198; Photos taken 10/31/11 (left) and 6/28/17 (right).



Photo point 1 – 444660, 3753349, heading 351; Photos taken 6/23/16 (left) and 6/28/17 (right).



Photo point 2 - 444660, 3753349, heading 242; Photos taken 6/23/16 (left) and 6/28/17 (right).



Photo point 3 – 443775, 3752496, heading 348; Photos taken 6/23/16 (left) and 6/28/17 (right).



Photo point 4 – 443773, 3752509, heading 223; Photos taken 6/23/16 (left) and 6/28/17 (right).



Photos taken 6/28/17.

Photo point 5 – 444908, 3753615, heading 267 Photo point 6 – 444695, 3753896, heading 279



MAP



# RIVERSIDE FLOOD CONTROL: LAKE ELSINORE OUTLET CHANNEL & GUNNERSON POND PROJECT

7-1-16 THROUGH 6-30-17

## PROJECT BACKGROUND

SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff.

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** This project had two separate components. For the first phase SAWA in conjunction with the Orange County Conservation Corps (OCCC) was to conduct non-native vegetation removal and treat the cut-stumps of the biomass. The biomass was then hauled into staging locations along access roads. The second phase comprised of Riverside County Flood Control District conducting their hauling of the staged biomass to an approved green waste facility. Herbicide treatments occurred from 1/30/17 to 3/8/17. Targeted species included primarily tamarisk (*Tamarix* ssp.), palms., giant reed (*Arundo donax*) and castorbean (*Ricinus communis*). The primary application method was a cut-stump treatment with an EPA aquatically approved triclopyr product. The other treatment method utilized the "Drill-N-Kill" method which is the process of drilling holes into non-native palms and then injecting an EPA aquatically approved glyphosate product. A total of 876.75 hours were spent on enhancement activities.

*Removal methods:* Treatments of non-native vegetation were conducted using either a small 50-ounce spray bottle to inject aquatically approved glyphosate into palm species or cut-stump treatments using small 50-ounce sprayers. All herbicide applications were conducted by SAWA's ISR crew.

Amount removed and/or treated: The site was monitored and non-native vegetation cover was treated as it was encountered. The non-native cover varied greatly. On the Lake Elsinore outlet channel side of the project, the tamarisk occurred in smaller than half acre patches and was approximately 90% cover within those patches. The total project acreage on the Lake Elsinore Outlet Channel was 30.8 acres. The estimated amount of non-natives removed was 1.8 acres. Across Riverside Drive, on the Gunnerson Pond side of the project, the cover was estimated at 5% within the areas worked. The total project acreage on the Gunnerson Pond side of the project acreage with ~ 0.6 acres of non-natives removed. The total project acreage for both areas was ~ 75.2 acres with ~ 2.4 acres of non-native vegetation treated/removed.

*Frequency and timing of removal/treatment:* Treatments began 1/30/17 and continued until 3/8/17. Treatments were halted due to migratory bird season beginning and concerns over impacts to migratory birds such as the Least Bell's Vireo.

*Disposal specifics:* Treated biomass was staged in areas for Riverside County Flood Control to return and haul to an approved green waste facility.

*Monitoring Activities:* The contract work issued by Riverside County Flood Control District to SAWA was to only cover the removal and treatment of non-native species. A bio-monitor was required due to the fact that migratory bird season was on the horizon and there were concerns about impacts to wildlife. All sensitive areas were flagged and avoided. In addition, general photo documentation occurred on-site

throughout the project. A total of 282.25 hours were spent on conservation, monitoring, and management activities.

#### CURRENT CONDITIONS

*Current site conditions*: Large portions of the project area had minimal amounts of tamarisk, however some portions of the project had large dense stands of tamarisk. In addition to the treatment of tamarisk, both non-native palm ssp. and giant reed were also treated. Of the remaining vegetation, the dominant native species were Fremont cottonwood (*Populus fremontii*) and willow species (*Salix* spp.). Understory was composed primarily of mulefat (*Baccharis salicifolia*) and narrow-leaf willow (*Salix exigua*), interspersed were areas of California buckwheat (*Eriogonum fasciculatum*) and other species commonly associated with California sagebrush vegetation. Following the Best Management Practices (BMPs). Riparian habitat was cleared by a permitted biologist prior to work crews entering riparian habitat.

*Wildlife species:* This project site has many common avian species and riparian birds including but not limited to: Red-tailed Hawk (*Buteo jamaicensis*), Cooper's Hawk (*Accipiter cooperii*), Great Egret (*Ardea albus*), Snowy Egret (*Egretta thula*), Song Sparrow (*Melodia melospiza*), Spotted Towhee (*Pipilo maculatus*), Bushtit (*Psaltriparus minimus*), Bewick's Wren (*Thryomanes bewickii*), House Wren (*Troglodytes aedon*), Lesser Goldfinch (*Spinus psaltria*), Mallard (*Anas platyrhynchos*), Common Yellowthroat (*Geothlypis trichas*), California Scrub-jay (*Aphelocoma californica*), Northern Mockingbird (*Minus polyglottos*), California Thrasher (*Toxostoma redivivum*), American Robin (*Turdus migratorius*), and Anna's Hummingbird (*Calypte anna*). Although not detected during this project, California species of special concern that have been previously detected on site include Yellow Warbler (*Setophaga petechia*) and Yellow-breasted Chat (*Icteria virens*), along with the endangered Least Bell's Vireo (*Vireo bellii pusillus*). Mammal species occupying this habitat include but are not limited to: Coyote (*Canis latrans*), Desert cottontail rabbit (*Sylvilagus audubonii*), and California ground squirrel (*Otospermophilus beecheyi*). The following reptile and amphibian species were observed during the project: Western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), gopher snake (*Pituophis catenifer*), and Baja California treefrog (*Pseudacris hypochondriaca*).

#### PROJECT STATUS AND RECOMMENDED ACTION

Treatment methods used to eradicate these target species have been effective thus far. The timing of the treatments was not ideal thus the mortality rate may be lower than typically experienced. Removing the biomass will positively affect the habitat going forward. Ideally future funding can be identified and used to treat re-growth.

# PHOTOS

Photos were taken 1/31/17 & 5-1-17: tamarisk before & after treatment. 467314 E 3728015 N Heading 60 NE





Photos were taken 1/31/17 & 5-1-17: tamarisk before & after treatment. 467975 E 3727509 N Heading 10 NNE





Photos were taken 1/31/17 & 5-1-17: Palms before & after treatment. 467793 E 3727731 N Heading 10 NNE



MAP



# RIVERSIDE FLOOD CONTROL: SANTA ANA RIVER PROJECT 7-1-16 THROUGH 6-30-17

## PROJECT BACKGROUND

SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff.

## PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** This project had two separate components. The first phase was to conduct nonnative vegetation removal after Riverside County Flood Control District conducted their mowing activities. The second component was to go back through their 2015 mow areas and re-treat non-native vegetation. For the first phase SAWA in conjunction with the Orange County Conservation Corps (OCCC) began removing non-native vegetation after the mowing was completed by Riverside County Flood Control District in the flood plain. All biomass was cut and hauled into the open mowed areas where Riverside County Flood Control District then returned and mowed the piles. The second phase targeted non-native re-growth within Riverside County Flood Control District's "2015 mow areas". Herbicide treatments occurred from 11/7/16 through the 1/26/17. Targeted species included primarily tamarisk (*Tamarix* ssp.), giant reed (*Arundo donax*) and castorbean (*Ricinus communis*). The primary application method was a cut-stump treatment with an EPA aquatically approved triclopyr product. The other treatment method utilized on old pure stands of giant reed was a foliar application with an EPA aquatically approved glyphosate product. A total of 1,422.75 hours were spent on enhancement activities.

*Removal methods:* Treatments of non-native vegetation were conducted using either foliar application with 4-gallon backpack sprayers or cut-stump treatments using small 50 ounce sprayers. All herbicide applications were conducted by SAWA's ISR crew. Herbicide applications occurred in November, December and January of this reporting period.

Amount removed and/or treated: The site was monitored and non-native vegetation cover was treated as it was encountered. The non-native cover varied greatly. The 2015 mow areas project acreage was 224.83 acres with approximately 22.48 acres of non-native vegetation treated/removed. The overall estimated cover within the 2015 mow areas was ~ 10%. The 2016 mow areas project acreage was 39.65 with approximately 4.36 acres of non-native vegetation treated/removed. The overall estimated cover within the 2016 mow areas is ~ 11%. The total project acreage for both areas was 264.48 with ~26.84 acres of non-native vegetation treated/removed.

#### *Frequency and timing of removal/treatment:* Treatments occurred from project on-set until 1/26/17.

*Disposal specifics:* Treated biomass was staged in areas for Riverside County Flood Control to return and mow. All biomass was mowed prior to rain events and prior to project completion.

*Monitoring Activities:* The contract work issued by Riverside County Flood Control District to SAWA was to only cover the removal and treatment of non-native species. A bio-monitor was not required due to the fact that we were conducting the work outside of the migratory bird season. All sensitive areas were flagged and avoided. In addition, general photo documentation occurred on-site throughout the project. A total of 94.25 hours were spent on monitoring and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: Large portions of the project area were mowed for flood control activities. This removed a majority of the canopy cover that was previously in place. Of the remaining vegetation, the dominant species were Fremont cottonwood (*Populus fremontii*) and willow species (*Salix* spp.). Understory was composed primarily of mulefat (*Baccharis salicifolia*) and narrow-leaf willow (*Salix exigua*), interspersed were areas of California croton (*Croton californica*), California buckwheat (*Eriogonum fasciculatum*) and other species commonly associated with California sagebrush vegetation. Although not common, woolly star (*Eriastrum densifolium*) is also found in this section of the Santa Ana River. Following the Best Management Practices (BMPs), the area around the woolly star plants was flagged by the permitted on-site biologist, and work crews avoided crossing this boundary. In addition, riparian habitat was cleared by a permitted biologist prior to work crews entering riparian habitat.

Wildlife species: This project site has many common avian species and riparian birds including but not limited to: Red-tailed Hawk (Buteo jamaicensis), Cooper's Hawk (Accipiter cooperii), Great Egret (Ardea albus), Snowy Egret (Egretta thula), Song Sparrow (Melodia melospiza), Spotted Towhee (Pipilo maculatus), Bushtit (Psaltriparus minimus), Bewick's Wren (Thryomanes bewickii), House Wren (Troglodytes aedon), Lesser Goldfinch (Spinus psaltria), Mallard (Anas platyrhynchos), Common Yellowthroat (Geothlypis trichas), California Scrub-jay (Aphelocoma californica), Northern Mockingbird (Mimus polyglottos), California Thrasher (Toxostoma redivivum), American Robin (Turdus migratorius), and Anna's Hummingbird (Calypte anna). Although not detected during this project, California species of special concern that have been previously detected on site include Yellow Warbler (Setophaga petechia) and Yellow-breasted Chat (Icteria virens), along with the endangered Least Bell's Vireo (Vireo bellii pusillus). Mammal species occupying this habitat include but are not limited to: Coyote (Canis latrans), Desert cottontail rabbit (Sylvilagus audubonii), California ground squirrel (Otospermophilus beecheyi), and non-native feral pig (Sus scrofa). Several homeless encampments are located in the removal area with untethered dogs (Canis lupus familiaris). The following reptile and amphibian species were observed during the project: Western fence lizard (Sceloporus occidentalis), side-blotched lizard (Uta stansburiana), Blainville's horned lizard (Phrynosoma blainvillii), Western skink (Plestiodon skiltonianus), gopher snake (*Pituophis catenifer*), and Baja California treefrog (*Pseudacris hypochondriaca*).

#### PROJECT STATUS AND RECOMMENDED ACTION

Treatment methods used to eradicate these target species have been effective thus far. The timing of the treatments was not ideal thus the mortality rate may be lower than typically experienced. Removing the biomass will positively affect the habitat going forward. Ideally future funding can be identified and used to treat re-growth.

#### **GPS PHOTO POINTS**

Photos were taken 11/15/16: tamarisk before & after treatment. 465481 E 3764381 N Heading 290



Photos were taken 1/3/17: castorbean before & after treatment. 465971 E 3764160 N Heading 315


MAP



# RIVERSIDE PARKS LAND AGREEMENENT – HIDDEN VALLEY 7-1-16 THROUGH 6-30-17

#### PROJECT BACKGROUND

SAWA acted as a contractor on this project, and will only report on activities and impacts it performed under its agreement with Riverside County Parks.

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred on 9/21/16 and 10/13/16. Species treated were giant reed (*Arundo donax*) and castorbean (*Ricinus communis*). A total of 31 hours were spent on enhancement activities.

*The methods used for removal:* All herbicide treatments were conducted using a foliar application with 4gallon back pack sprayers. A total of 64 ounces Rodeo (glyphosate) and 102 ounces Round Up Promax were used during this reporting period. A total of 25 ounces Agri-Dex was used as a surfactant and 32 ounces Quest was used as a water conditioner in these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

The amount removed and/or treated: Approximately 2 acres of giant reed were treated.

*The frequency and timing of removal/treatment:* The project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered during this monitoring. Giant reed is treated when the biomass reaches 2 to 4 feet in height.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

*Monitoring Activities:* The annual bioassessment survey took place on 6/9/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. This site is included in SAWA's monitored sites for Least Bell's Vireo (*Vireo bellii pusillus*). A total of 11.5 hours weres spent on monitoring and management activities.

## CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains patchy riparian habitat surrounded by historic agricultural fields. The habitat is composed of primarily willow forest with mulefat understory. The average tree height class is >10-15 meters and the average shrub height class is >2-5 meters. Overall vegetative coverage is at >50-75%, with native coverage at >50-75% and non-native coverage at >15-25%. The dominant native species include >1-5% mulefat (*Baccharis salicifolia*), >25-50% willows (*Salix* spp.), >5-15% Fremont cottonwood (*Populus fremontii*), and 1-5% alkali heliotrope (*Heliotropium curassavicum*). The dominant non-native

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plants include >5-15% perennial pepperweed (*Lepidium latifolium*), >5-15% giant reed, >1-5% tamarisk (*Tamarix* spp.), >1-5% kochia (*Kochia scoparius*), and <1% thistle (*Carduus* sp).

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including Song Sparrow (*Melodia melospiza*), Spotted Towhee (*Pipilo maculatus*), Common Yellowthroat (*Geothlypis trichas*), Tree Swallow (*Tachycineta bicolor*), Black Phoebe (*Sayornis nigricans*), Cooper's Hawk (*Accipiter cooperii*), Green Heron (*Butorides virescens*), Say's Phoebe (*Sayornis saya*), House Wren (*Troglodytes aedon*), California Towhee (*Melozone crissalis*), Common Ground-dove (*Columbina passerina*), Western fence lizard (*Sceloporus occidentalis*), and side-blotched lizard (*Uta stansburiana*). Several non-native wildlife species are present on the site, including feral pigs (*Sus scrofa*), red-eared slider (*Trachemys scripta*), bullfrog (*Lithobates catesbeianus*), *Lepomis* sp., and crayfish. California species of special concern on site include the Yellow Warbler (*Setophaga petechia*) and Yellow-breasted Chat (*Icteria virens*). The state and federal endangered Least Bell's Vireo (*Vireo bellii pusillus*) was also detected during this survey.

PROJECT STATUS AND RECOMMENDED ACTION

Treatment methods used to eradicate the target species have been proven to be effective, however there is still a large coverage of non-native species. Giant reed and perennial pepperweed is currently documented at >5-15% of the total project site. On-going monitoring and treatments are recommended to ensure eradication of these species.

#### **GPS PHOTO POINTS**

Photo point 1 – 452963, 3758394, heading 14 N; Photos taken 4/28/16 (left) and 6/9/17 (right).



Photo point 2 – 452834, 3758463, heading 68 E; Photos taken 4/28/16 (left) and 6/9/17 (right).



Photo point 3 – 452879, 3758779, heading 267 W; Photos taken 4/28/16 (left) and 6/9/17 (right).



Photo point 4 – 453301, 375883, heading 197 S; Photos taken 4/28/16 (left) and 6/9/17 (right).



Photo point 5 – 453460, 3758659, heading 17N; Photos taken 4/28/16 (left) and 6/9/17 (right).



Additional photo taken 6/9/17 showing large patch of giant reed.



MAP



# RLC LA CIENEGA 7-1-16 THROUGH 6-30-17

#### PROJECT BACKGROUND

Rivers & Lands Conservancy (RLC) La Cienega is located on a conservation area in Riverside County, CA. The Santa Ana Watershed Association (SAWA) was hired to remove and treat patches of tamarisk (*Tamarix* spp.) present throughout the site. SAWA was also also contracted to conduct restoration activities. SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff.

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

*Enhancement Activities:* During this reporting period, herbicide treatment occurred in October and November 2016. A total of 145.5 hours were spent on enhancement activities.

*Removal methods:* All herbicide treatments were conducted using a cut-stump treatment using a foliar application with 4-gallon back pack sprayers. A total of 30 ounces of Garlon 3A was used during this reporting period. A total of 39 ounces Competitor was used as a surfactant in these treatments. These treatments were conduced by SAWA's Invasive Species Removal (ISR) crew.

Amount removed and/or treated: Approximately 10 tamarisks were treated.

*Frequency and timing of removal/treatment:* RLC hired SAWA as a contractor to specifically treat tamarisk in October and November on this project.

*Disposal specifics:* Biomass was hauled away from the high water mark and piled to decompose on site.

**Restoration Activities:** SAWA collected a total of 147 ten-foot pole cuttings. A contractor was hired to augur holes 8 feet deep to plant the following species: mulefat (*Baccharis salicifolia*), Fremont cottonwood (*Populus fremontii*), goodding's willow (*Salix goddingii*), red willow (*Salix laevigata*) and arroyo willow (*Salix lasiolepis*). After the plants were placed in the hole three gallons of water would be added to the bottom of the hole and then the hole was backfilled and a basin created.

*Monitoring Activities:* The contract work issued by RLC to SAWA was to only cover the treatment of non-native species. A bio-monitor was not required due to the fact that we were conducting the work outside of the migratory bird season. All sensitive areas were flagged and avoided.

#### PROJECT STATUS AND RECOMMENDED ACTION

SAWA was hired as a contractor for this project and is hopeful to have future funding provided by RLC to continue treatments to non-native vegetation within the project area.

## PHOTOS



Map



# RLC PRENDA 7-1-16 THROUGH 6-30-17

#### PROJECT BACKGROUND

Rivers & Lands Conservancy (RLC) Prenda is located on a conservation area in Riverside, CA. The Santa Ana Watershed Association (SAWA) was hired to remove and treat patches of tamarisk (*Tamarix* spp.) present throughout the site. SAWA was also also contracted to conduct restoration activities. SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff.

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred in September and October of 2016. Species treated were tamarisk and castorbean (*Ricinus communis*). A total of 84.25 hours were spent on enhancement activities.

The methods used for removal: All herbicide treatments were conducted using a cut-stump treatment method using foliar application with 4-gallon back pack sprayers. A total of 24 ounces of Garlon 4 Ultra, 24 ounces of Competitor and 4 ounces of Quest were used during this reporting period. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

*The amount removed and/or treated:* The total project acreage was ~ 10 acres with ~5% cover of tamarisk bringing the total amount treated to 0.5 acres.

*The frequency and timing of removal/treatment:* Rivers and Lands Conservancy(RLC) hired SAWA as a contractor to specifically treat tamarisk and castorbean on this project.

*Disposal specifics:* Biomass was piled to decompose on site.

*Monitoring Activities:* The contract work issued by RLC to SAWA was to only cover the treatment of nonnative species. A bio-monitor was not required due to the fact that we were conducting the work outside of the migratory bird season. All sensitive areas were flagged and avoided.

PROJECT STATUS AND RECOMMENDED ACTION

SAWA was hired as a contractor for this project and is hopeful to have future funding provided by RLC to continue treatments to non-native vegetation within the project area.

MAP



# RLC MERIDIAN 7-1-16 THROUGH 6-30-17

#### **PROJECT BACKGROUND**

Rivers & Lands Conservancy (RLC) Meridian is located on a conservation area in Riverside, CA. The Santa Ana Watershed Association (SAWA) was hired to remove and treat patches of non-native and invasive vegetation present throughout the site. SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff.

#### PROEJCT ACTIVITIES AND NON-NATIVE REMOVAL

*Enhancement Activities:* During this reporting period, herbicide treatment occurred in October 2016. A total of 264.5 hours were spent on enhancement activities.

*Removal methods:* Two application methods were utilized on this project. The first was a cut-stump using a foliar application with 4-gallon back pack sprayers treatment with an EPA aquatically approved glyphosate product. The other treatment method utilized on mature non-native trees was a basal bark application with an EPA approved triclopyr product mixed with a methylated seed oil. A total of 2 ounces Garlon 4 Ultra, 38 ounces Garlon 3A, and 68 ounces Rodeo (glyphosate) were used during this reporting period. A total of 2 ounces Agri-Dex and 83 ounces Competitor were used as surfactants in these treatments. These treatments were conduced by SAWA's Invasive Species Removal (ISR) crew.

Amount removed and/or treated: The site was monitored and non-native vegetation cover was treated as it was encountered. The non-native cover varied greatly, cut was mostly smaller patchy infestations.

*Frequency and timing of removal/treatment:* RLC hired SAWA as a contractor to specifically treat nonnative plant species on this project.

*Disposal specifics:* Treated tree tobacco was left to decompose above the high water mark and all other treated biomass was left to die in place and be utilized as perches for raptors.

*Monitoring Activities:* The contract work issued by Rivers and Lands Conservancy to SAWA was to only cover the treatment of non-native species. A bio-monitor was not required due to the fact that we were conducting the work outside of the migratory bird season. All sensitive areas were flagged and avoided.

#### CURRENT CONDITIONS

*Current site conditions:* This project consisted of treatments to small infestations of edible fig (*Ficus carica*), Canary island palm (*Phoenix canariensis*), Brazilian peppertree (*Schinus* terebinthifolius), goldenrain tree (*Koelreuteria* paniculata), Chinese pistache (*Pistacia chinensis*), ash ssp. (*Fraxinus ssp.*), mulberry (*Morus ssp.*), Mexican fan palm (*Washingtonia robusta*), Peruvian peppertree (*Schinus molle*), tamarisk (*Tamarix spp.*), tree tobacco (*Nicotiana glauca*) and tree of heaven (*Ailanthus altissima*) (see attached map). Of the remaining vegetation the dominant native species were willow species (*Salix spp.*) with the understory being dominated primarily by mulefat (*Baccharis salicifolia*). All the tree tobacco (*Nicotiana glauca*) was treated utilizing the cut-stump method where the biomass was then hauled and piled above the high water mark to limit the amount of seed entering the drainages. All the other tree species treated were treated utilizing a basal bark application. The dead biomass was left in place to be utilized by raptor species.

*Wildlife species:* cidentally observed wildlife species consist primarily of riparian species, including Mourning Dove (*Zenaida macroura*), Greater Roadrunning (*Geococcyx californianus*), Anna's Hummingbird (*Calypte anna*), Red-tailed Hawk (*Buteo jamaicensis*), Nuttall's Woodpecker (*Picoides nuttallii*), American Kestrel (*Falco sparverius*), and Black Phoebe (*Sayornis nigricans*).

#### PROJECT STATUS AND RECOMMENDED ACTION

Treatment methods used to eradicate these target species have been effective thus far. The timing of the treatments was ideal to maximize the uptake of the herbicide to the roots of the treated species. We are anticipating on having future funds to continue to treat these conservation areas for the Rivers and Lands Conservancy.

MAP



## SAR MISSION BLVD TO VAN BUREN BLVD 7-1-16 THROUGH 6-30-17

#### PROJECT BACKGROUND

SAR Mission Blvd to Van Buren Blvd is located along the Santa Ana River (SAR) in Riverside, CA. This project also encompasses the former "Mission for *Arundo*" project managed by the Inland Empire Resource Conservation District (IERCD) within the Martha McLean-anza Narrows Park. Targeted species include giant reed (*Arundo donax*), tamarisk (*Tamarix* spp.), castorbean (*Ricinus communis*), and perennial pepperweed (*Lepidium latifolium*). SAWA acted as a contractor on this project, and will only report on activities and impacts performed by staff.

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatment occurred in July and September 2016, and one additional treatment on 5/18/17. Species treated included giant reed and tamarisk. A total of 730.5 hours were spent on enhancement activities.

*Removal methods:* All herbicide treatments were conduced using a foliar application with 4-gallon back pack sprayers. A total of 14 ounces Garlon 4 Ultra, 12 ounces Habitat (Imazapyr), and 383 ounces Rodeo (glyphosate) were used during this reporting period. A total of 181 ounces Agri-Dex and 26 ounces Competitor were used as surfactants, and 95 ounces Quest was used as a water conditioner in these treatments. These treatments were conduced by SAWA's Invasive Species Removal (ISR) crew.

Amount removed and/or treated: Approximately 9.5 acres of giant reed and 1 acre of tamarisk were treated.

*Frequency and timing of removal/treatment:* This project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered udring hits monitoring. Annual non-native weeds must be treated prior to the seed-heads setting, so the soil seed bank cannot be replenished. This necessitates treatments in the spring during bird nesting season. Treatments are conducted in the presence of a qualified biologist to protect nesting birds.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

*Monitoring Activities:* The annual bioassessment survey took place on 6/15/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. A total of 37.25 hours weres spent on conservation, monitoring, and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site contains riparian and riparian scrub habitat composed mainly of willow and cottonwood forest with mulefat understory. The average tree height class is >10-15 meters and the average shrub height class is >2-5 meters. Overall plant coverage is at about >50-75%, with native coverage at >50-75% and non-native coverage at >5-15%. The dominant native species include >25-50% willows (*Salix* spp.), >15-25% Fremont cottonwood (*Populus fremontii*), and >15-25% mulefat (*Baccharis salicifolia*). The dominant non-native species include >5-15% mustard (*Brassica* spp.), 1-5% giant reed, 1-5% tamarisk, 1-5% castorbean, <1% tree of heaven (*Ailanthus altissima*), and <1% tree tobacco (*Nicotiana glauca*).

*Wildlife species:* Observed wildlife species consist primarily of riparian species, including House Finch (*Haemorhous mexicanus*), American Crow (*Corvus brachyrhynchos*), California Towhee (*Melozone crissalis*), Phainopepla (*Phanopepla nitens*), Nuttall's Woodpecker (*Picoides nuttalli*), Mourning Dove (*Zenaida macroura*), Hooded Oriole (*Icterus cucullatus*), European Collared Dove (*Streptopelia decaocto*), Red-tailed Hawk (*Buteo jamaicensis*), Common Yellowthroat (*Geothlypis trichas*), Northern Mockingbird (*Mimus polyglottos*), Lesser Goldfinch (*Psaltria spinus*), Ash-throated Flycatcher (*Myiarchus cinerascens*), House Wren (*Troglodytes aedon*), California Scrub-jay (*Aphelocoma californica*), Song Sparrow (*Melodia melospiza*), Blue Grosbeak (*Passerina caerulea*), Spotted Towhee (*Pipilo maculatus*), Cliff Swallow (*Petrochelidon pyrrhonota*), California Thrasher (*Toxostoma redivivum*), Barn Swallow (*Hirundo rustica*), desert cottontail (*Sylvilagus audubonii*), California ground squirrel (*Otospermophilus californicus*), and side-blotch lizard (*Uta stansburiana*). The state species of special concern, Yellow-breashed Chat (*Icteria virens*) and Yellow Warbler (*Setophaa petechia*), as well as the state and federally listed endangered Least Bell's Vireo (*Vireo bellii pusillus*) were also detected during this survey.

#### PROJECT STATUS AND RECOMMENDED ACTION

Treatment methods used to eradicate the target species have been proven to be effective. However, there are still coverages of non-native species, such as giant reed, tamarisk, and castorbean, which require treatment. On-going monitoring and treatments are recommended to ensure eradication of these species. Other non-native species, such as mustard, are becoming established where giant reed was previously removed. Additional funding to cover the removal and treatment of these species is recommended.

#### **GPS PHOTO POINTS**

Santa Ana River from Mission Ave. to Tequesquite Landfill, taken Photo point 1 – 462852, 3759864, heading 182; Photos taken 6/16/16 (left) and 6/15/17 (right).



Photo point 3 – 462744, 3759861, heading 86; Photos taken 6/16/16 (left) and 6/15/17 (right).



Photo point 4 – 463011, 3759894, heading 293; Photos taken 6/16/16 (left) and 6/15/17 (right).



Photo point 5 – 463172, 3760614, heading 274; Photos taken 6/16/16 (left) and 6/15/17 (right).



Mission 4 Arundo Expansion, 2/4/13 and 6/14/16, respectively. Photo point 1 – 459803, 3758708, heading N



Photo point 2 - 459824, 3758692, heading 6 N



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Mission 4 *Arundo*, 12/16/11 and 6/14/16, respectively. Photo point 3 – 460306, 3758491, heading 37 NE





Photo point 4 – 460043, 3758610, heading 20 N



MAP







## SAWPA PEPPERWEED (PRADO BASIN) 7-1-16 THROUGH 6-30-17

#### PROJECT BACKGROUND

Enhancement, conservation, and restoration activities took place throughout the 10.25-A SAWPA Pepperweed project site, and are indicated in the included map as demonstrated by locations of invasive vegetation removal, restoration planting, photo documentation, and general site monitoring.

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

**Enhancement Activities:** During this reporting period, herbicide treatments occurred on 2/2/17, 2/16/17, 4/6/17, and 6/20/17. Species treated were mustard (*Brassica sp.*), perennial pepperweed (*Lepidium latifolium*), castorbean (*Ricinus communis*), and London rocket (*Sisymbrium irio*). A total of 90.75 hours were spent on enhancement activities.

*Removal methods:* All herbicide treatments were conducted using a foliar application with 4-gallon backpack sprayers. A total of 4 ounces Garlon 4 Ultra and 149 ounces Round Up Promax were used during this reporting period. A total of 4 ounces Competitor was used as a surfactant and 49 ounces Quest was used as water conditioner during these treatments. These treatments were conducted by SAWA's Invasive Species Removal (ISR) crew.

Amount removed and/or treated: Approximately 0.103 acre was treated.

*Frequency and timing of removal/treatment:* The project site is monitored several times a year by the ISR crew. Non-native plants are treated as they are encountered during this monitoring. Annual weeds must be treated prior to the seed-heads setting, so the soil seed bank cannot be replenished. This necessitates treatments in the spring during bird nesting season. Treatments are conducted in the presence of a qualified biologist to protect nesting birds.

*Disposal specifics:* Due to the small amounts being treated, biomass is left on site and allowed to dry and decompose in place. Any species that were suspected to have viable seed present were hand pulled and bagged to be disposed of at a landfill.

**Restoration Activities**: The site has established a high presence of native species due to the restoration activities conducted on-site.

*Monitoring Activities:* The annual bioassessment survey took place on 6/6/17 and consisted of surveying the site to determine native and non-native vegetative cover and take photos at established photo points. Detected wildlife species are also recorded. A total of 47.5 hours were spent on conservation, monitoring, and management activities.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: Riparian habitat consisting mainly of arroyo willow (*Salix lasiolepis*) forest with mulefat (*Baccharis salicifolia*) understory. Canopy cover is 50-75%, with tree height of 5-10 meters. Dominant species are: arroyo willow at >25-50% cover and mulefat at >25-50% cover. Dominant non-native species is mustard at 1-5% and perennial pepperweed at <1%.

*Wildlife species:* Observed wildlife species consist primarily of common riparian birds, including Song Sparrow (*Melodia melospiza*), House Finch (*Haemorhous mexicanus*), California Towhee (*Melozone crissalis*), Red-tailed Hawk (*Buteo jamaicensis*), and Western fence lizard (*Sceloporus occidentalis*). Six terrirotires for the state and federally-listed endangered Least Bell's Vireo (*Vireo bellii pusillus*) were documented on site.

#### PROJECT STATUS AND RECOMMENDED ACTION

The project has been largely successful at reducing non-native plants within the project site. In 2011 the site was dominated by perennial pepperweed now there is less than 1% cover. Further review of the original site plan indicated unnecessary density in planned areas of native plant re-vegetation, particularly in light of limited ability to provide irrigation. However, this large number of original plantings is projected to result in survivability beyond what was outlined in the project's HMMP. The site has now documented six terrirotires for the state and federally-listed endangered Least Bell's Vireo (*Vireo bellii pusillus*) which was outlined in the original biological opinion. A meeting occurred on-site on 6/28/2017 with US Fish and Wildlife Service (USFWS), the Santa Ana Watershed Project Authority, and the Santa Ana Watershed Association, and we deemed the success criteria to have been met. The USFWS requested one final treatment to be conducted after the migratory bird breeding season concludes September 15<sup>th</sup>, 2017. All three parties agreed to the final treatment and then the project would then be considered complete.

#### **GPS PHOTO POINTS**

Photo point 1 – 444080, 3750652, heading W; Photo taken on 6/6/17.



Photo point 2 – 443892, 3750667, heading SW; Photo taken on 6/6/17.



Photo point 3 – 443573, 3750639, heading NW; Photo taken on 6/6/17.



MAP



# SUNNYSLOPE OCWD 7-1-16 THROUGH 6-30-17

#### PROJECT BACKGROUND

In 2010 OCWD and the Santa Ana Watershed Association (SAWA) prepared a feasibility study that identified potential native fish habitat restoration activities for Sunnyslope Creek. Measurements were taken along the creek to establish a baseline for habitat conditions. Starting in the spring of 2011 to present, OCWD and SAWA implemented habitat restoration activities along Sunnyslope Creek (see Sunnyslope project report, page 88), including the removal of predatory fish from the deeper pools, filling holes in the creek bed with rock and gravel, removing sediment, trash and marsh blockages, and placing boulders, rocks and gravel along the creek where needed. These activities restored aquatic connectivity between the creek and river thereby greatly improving conditions for native fishes including suckers. Restoration activities continued from 2012-2016 and include non-native vegetation removal, sediment, debris and vegetation plug management, non-native species removal, native fish surveys, substrate and water depth surveys, water flow surveys, recontouring and trash collection.

#### PROJECT ACTIVITIES AND NON-NATIVE REMOVAL

Enhancement Activities: No enhancement activities occurred during this reporting period.

*Removal methods:* No removal activities took place during this reporting period.

Amount removed and/or treated: No removal activities took place during this reporting period.

*Frequency and timing of removal/treatment:* No removal activities took place during this reporting period.

*Disposal specifics:* No removal activities took place during this reporting period.

*Monitoring Activities:* Trash was collected from banks and the creek whenever the field crew was on site, but a large two-day trash collection yielding sixty-eight 30-gallon trash bags was conducted in December. In addition, large items such as tires, a car seat, couch cushions, and other items were removed from Sunnyslope. Fallen trees that caused debris build up were also removed from the creek.

#### CURRENT SITE CONDITIONS

Current site conditions are determined annually during the bioassessment survey. A modified rapid assessment method is followed to determine the coverage of native and non-native plant species, and tree and shrub height. Dominant native and non-native species are recorded with their respective coverage. Wildlife species detected during this survey are also listed.

*Current site conditions*: This site occurs in a drainage channel containing dense riparian habitat, with a canopy cover greater than 75%. The trees throughout the project are about 10-15 meters in height and shrubs about 2-5 meters in height. The following native species were documented on site: >25-50% willows (*Salix* sp.), >5-15% Fremont cottonwood (*Populus fremontii*), and >1-5% Western sycamore (*Platanus racemose*). The following non-native species were documented on site: >1-5% giant reed (*Arundo donax*), >1-5% gum tree (*Eucalyptus* sp.), >1-5% milk thistle (*Silybum marianum*).

*Wildlife species:* Sunnyslope Channel has many common avian species and riparian birds including but not limited to: House Finch (*Haemorhous mexicanus*), Lesser Goldfinch (*Spinus psaltria*), Western

Kingbird (*Tyrannus verticalis*), Bushtit (*Psaltriparus minimus*), Black-headed Grosbeak (*Pheucticus melanocephalus*), Common Yellowthroat (*Geothlypis trichas*), Anna's Hummingbird (*Calypte anna*), Black Phoebe (*Sayornis nigricans*), Nuttall's Woodpecker (*Picoides nuttallii*), Spotted Towhee (*Pipilo maculatus*), Northern Flicker (*Colaptes auratus*), Cooper's Hawk (*Accipiter cooperi*), Northern Mockingbird (*Mimus polyglottos*), Black-chinned Hummingbird (*Archilochus alexandri*), western fence lizard (*Sceloporus occidentalis*), coyote (*Canis latrans*), feral pig (*Sus scrofa*), and California ground squirrel (*Oteospermophilus beecheyi*). Other California species of special concern found on this site include the Yellow Warbler (*Setophaga petechial*). This site also hosts the state and federally-listed endangered Least Bell's Vireo (*Vireo bellii pusillus*). The creek also provides a breeding site for federally-listed endangered Santa Ana sucker (*Catostomus santaanae*).

#### PROJECT STATUS AND RECOMMENDED ACTION

This project has been successful in controlling the non-native animal species and has thus seen an increase in habitat suitability for the Santa Ana sucker.

# APPENDIX A. IERCD CALNEV PIPELINE REPORT

The following report was prepared by the Inland Empire Resource Conservation District (IERCD), and submitted to SAWA for reporting purposes. This report covers the activities performed as part of the CalNev Pipeline mitigations.

#### CDFW 2016 REPORTS FOR PERMIT 1600-2012-0084-R6: CALNEV PIPELINE

CalNev Pipeline Project Permit Table				
CalNev - Cajon	California Department of Fish and Wildlife	1600-2006-0189-R6		
CalNev - Deadman Junction	California Department of Fish and Wildlife	1600-2007-0105-R6		
CalNev - Swarthout Canyon	California Department of Fish and Wildlife	1600-2007-0075-R6		

## REPORT AREA I: LIST OF ALL HABITAT CREATION, RESTORATION, ENHANCEMENT, AND CONSERVATION PROJECT AREAS CURRENTLY BEING MANAGED BY PERMITTEE

Enhancement and conservation activities took place throughout the 300-A CalNev Pipeline site, and are indicated in the included map as demonstrated by locations of invasive vegetation removal, photo documentation, and general site monitoring.

### REPORT AREA II: DESCRIPTION OF THE HABITAT RESTORATION, ENHANCEMENT, AND CONSERVATION ACTIVITIES PERFORMED WITHIN EACH PROJECT AREA

A total of 68.25 staff hours were spent on the project in the 2016 reporting period, supplemented by assistance from United States Forest Service Front County Botanist Debra Nelson, and from the Santa Ana Watershed Association and Urban Conservation Corps technical crews.

**Enhancement Activities:** Removal events occurred within the project site, on dates including 8/2/16, 8/31/16, 9/6/16, 9/14/16, 9/19/16, 12/14/16, and 12/19/16. The removals were performed over mixed stands of *Arundo donax, Tamarix ramosissima* and *Spartium junceum*, and involved removal planning, implementation, and post-facilitation mapping and field work documentation tasks necessary for enhancement. The Blue Cut Fire that ripped through the Cajon Pass during the 2016 reporting period burned native and non-native vegetation which resulted in access to previously unreachable stands of *Arundo donax* which were mapped and treated. All removals taking place within the established nesting season were performed in cooperation with biological monitors from the Santa Ana Watershed Association.

**Conservation Activities:** Conservation activities took place throughout this site on 8/2/16, 8/31/16, and 9/14/16, and consisted primarily of tracking new and re-sprouting populations of target species. In addition to tracking invasive presence, conservation activities included development of site maps, taking photo points, monitoring site for trash and coordination with site partners. IERCD also monitored through 2016 for the presence of Polyphagous shot hole borer (PSHB) but showed no sign of being on site.

#### REPORT AREA III: CURRENT SITE CONDITIONS INCLUDING:

No active restoration has taken place on this site. The original project requirements mandated only conservation, resulting in performance of some enhancement measures but no active restoration.

#### REPORT AREA IV: NON NATIVE PLANT AND ANIMAL SPECIES REMOVAL

The methods used for removal: All treatments of Arundo donax, Spartium junceum, and Tamarix ramosissima were done using the cut-and-daub method of application of glyphosate. As this project occurs on Federal lands, it is covered by National Environmental Protection Act documentation which has specific standards for herbicide type and application, and the use of Rodeo as a 50% solution in water falls within the allowances of these documents.

The amount removed and/or treated: A total of .135-A was eradicated, consisting of .133-A of new removal and .02-A of retreatment. This brings the total for six years of removal of spotty populations of invasives over a large project area to 1.132-A. This is the sixth and final year of this project and the required 1.08-A of removal as mandated in original project permits has been surpassed with 2016 reporting period totals.

#### Table : Treatment of Invasive Vegetation, January 1st 2016 - December 31st 2016

Species Treated	Removal Type	Total Acreage Removed
Arundo donax Spartium junceum Tamarix ramosissima	New Treatment	.133-A
Arundo donax Tamarix ramosissima	Re-Treatment	.002-A
Totals		.135-A

Removal through 12-31-15	.997 A
Removal Cumulative to 12-31- 16	1.132 A

This is based on methodology established by SAWA, shown in the table below demonstrating quantifying total area treated adjusted by infestation:

Action	GIA (Gross Infested Acre)	NIA (Net Infested Acre)	# of Patches or Individuals of Invasive Plants Treated
Chemical Treatment	.366-A	0.133-A	95
Chemical Retreatment	.017-A	0.002-A	21

*The frequency and timing of removal/treatment:* Removals were concentrated in fall and winter of 2016 for optimal uptake of herbicide/kill rate of target species. All treatments were conducted outside of nesting season to the extent possible; however, within nesting season, SAWA ensured consultation with qualified biologist to avoid impacts to covered species.

*Disposal specifics:* due to the small size of the biomass removed from the targeted species resprouts/new growth, it was removed from the riparian area and left to decompose on the property.

Summary of the general successes and failures or overall failure of the nonnative removal plan: the required use of glyphosate as the only removal herbicide remains a challenge as it is not as potent as is

needed to gain effective control over species in an efficient manner. However, its use is mandated in NEPA documents covering this site so IERCD/SAWA continued to use it in all applications in the 2016 reporting period.

#### REPORT AREA V: WILDLIFE DATA

#### Species Observance On-Site:

Birds			
American Kestrel	Falco sparverius		
Brown-head Cowbird	Molothrus ater		
Bullock's Oriole	Icterus bullockii		
*California Gnatcatcher (FT, SSC)	Polioptila californica		
*Cooper's Hawk (WL)	Accipiter cooperii		
*Golden Eagle (WL)	Aguila chrysaetos		
*Loggerhead Shrike (SSC)	Lanius ludovicianus		
*Prairie Falcon (WL)	Falco mexicanus		
*Purple Martin (SSC)	Progne subis		
*Rufous-crowned Sparrow (SSC)	Aimophila ruficeps		
*Sharp-shinned Hawk (WL)	Accipiter striatus		
*Southwestern Willow Flycatcher (FE, SE)	Empidonax traillii extimus		
*White-tailed Kite (PF)	Elanus leucurus		
*Yellow-breasted Chat (SSC)	Icteria virens		
*Yellow Warbler	Setophaga petechia		
Reptiles			
*Coast Horned Lizard (SSC)	Phrynosoma blainvillii		
Additional Presence of Species as Indicated by CNDD	В:		
Birds			
*Least Bell's Vireo (FE, SE)	Vireo bellii pusillus		
Reptiles			
*Two-striped garter (SSC)	Thamnophis hammondii		
Amphibians			
*Arroyo Toad (SSC)	Anaxyrus californicus		
Fish			
*Santa Ana Speckled Dace (SSC)	Rhinichthys osculus ssp.		
Plants			
*Short -Joint Beaver Tail Cactus (1B.2)	Opuntia basilaris var. brachydada		
*White-bracted Spineflower (1B.2)	Chorizanthe xanti var. leucotheca		
*Black bog-rush (2B.2)	Schoenus nigricans		
*Plummer's Mariposa Lily (4.2)	Calochortus plummerae		

\*Key

FE- Federally Endangered

FT - Federally Threatened PF- Fully Protected SE- State Endangered SSC- California Species of Special Concern WL- CDFG Watchlist 1B.2- Plants rare, threatened, or Endangered in California or elsewhere 2B.2- Plants rare, threatened, or Endangered in California, but more common elsewhere 4.2- Plants of limited distribution

#### PHOTOS – GPS PHOTO POINTS



Left: Treated project areas burned in 2016 Blue Cut Fire; Left: PSHB Trap at CalNev Site

## SAWA Annual Regulatory Report July 1, 2016 to June 30, 2017





Service Layer Credit: Source: Exil. HERE, DeLorne, USGB, Internap, Increment P. Corp., NRCAN, Exil Japan, METI, Exil Crista (Hong Kong), Exil (Thallwel), MaemyInda, © OpenStimetMag contributors, and the GIB User Community Source: Exil, Digatilitable, Google, Earthear Geographics, CNES/Minna, ESI, USGA, VIGSB, AeroGRID, ISN, and the GIS User Community

# APPENDIX B. IERCD CENTERPOINTE REPORT

The following report was prepared by the Inland Empire Resource Conservation District (IERCD), and submitted to SAWA for reporting purposes. This report covers the activities performed as part of the Centerpointe mitigation.
### CDFW 2016-17 REPORTS FOR PERMIT 1600-2012-0084-R6: CENTERPOINTE

Project Proponent: Overton Moore Properties

#### **Permit Information**

California Department of Fish and Wildlife Streambed Alteration Agreement #1600-2009-0043-R6

#### **PROJECT BACKGROUND:**

Overton Moore Properties contacted the IERCD concerning their mitigation needs in conjunction with impacts made in the creation of the Centerpointe Development in Moreno Valley. Right of first refusal for project implementation was given to the San Jacinto Basin RCD, who declined to facilitate the mitigation. Following their declination, the IERCD worked with non-profit Santa Ana Watershed Association (SAWA) to begin work required for mitigation facilitation

#### Mitigation Assigned:

Final assignment for projected impacts of .51-A associated with Overton Moore's planned development was 1.02-A of restoration and .44-A of enhancement. Work performed since the acceptance of these project responsibilities has focused on the Cienega property in San Timoteo Canyon owned by the Riverside Land Conservancy (RLC).

#### Work Completed in the 2015 Reporting Period:

In the first year of project planning, significant coordination with project partners occurred in order to determine potential placement for responsibilities; once that was confirmed, pre-implementation data collection was performed including vegetation surveying which revealed 90% infestation of the site by exotic species, and soil surveying which revealed soil and groundwater levels capable of long-term support of riparian species. Unfortunately, of the two major properties considered for placement, both were unable to be selected as candidates for final mitigation funding application due to inability to secure perpetuity right to access the property to enable satisfaction of perpetuity maintenance/monitoring element of the site. F

The 2016-17 reporting period included IERCD research into current invasive cover at pending City of Norco property, in addition to performance of hydrology study to demonstrate riparian characteristics of property. Ultimately, District staff were able to locate and reserve 1.02-A of restoration and .44-A of enhancement capable of being placed within this site, currently funded for minimal maintenance but no other money to address considerable issues with presence and ongoing spread of invasive vegetation. Once the District finalizes the terms of the easement, physical work for this project and others assigned to be placed there can begin. Additional work performed on behalf of multiple projects to be placed at the City of Norco has been billed is not reflected in the following hourly or financial summaries.

7/1/16 – 6/30/17 Staff Time Summary: Centerpointe		
Category	Category Hours	
General Admin	10.5	
GIS	.75	
Total Project Hours	11.25	

#### **Funds Management:**

- Received:
  - Deposit I, \$5,000 on 10/6/11

Centerpointe: 2016 Costs		
Category	Cost	Notes
Salaries	\$ 641.25	
Total Project Costs, 2016	\$641.25	

Total Expended to 12-31-15	\$3,048.24
Total Expended to 12-31-16	\$3,689.49

Deposit Balance as of 12-31-16	\$1,310.51



**Final Centerpointe Placement:** 

21-A City of Norco minimally-funded conservation easement, located within Santa Ana River watershed, downstream from originally slated Centerpointe placement within San Timoteo Canyon subwatershed. In the 2016-17 reporting period, the property was revisited for updated enhancement and restoration potential, in addition to conduction of a hydrology study to determine riparian characteristics of the site. Placement work in 2017 will include final mapped area within restoration/enhancement polygons, shown alongside other small mitigations and included in an RFP for site preparation and planting for winter 2017-18 implementation.



# Combined City of Norco Mitigation Projects Proposal



Imagery: World Imagery from ESRI

# APPENDIX C. IERCD REACH 3B REPORT

The following report was prepared by the Inland Empire Resource Conservation District (IERCD), and submitted to SAWA for reporting purposes. This report covers the activities performed as part of the Reach 3B mitigation.



# THE RESTORATION AND MANAGEMENT OF THE NATURAL RESOURCES OF SAN TIMOTEO CREEK WATERSHED

# 2016 ANNUAL REPORT

## The Santa Ana Watershed Association

Authors:

Mandy Parkes (<u>mparkes@iercd.org</u>) Sue Hoffman (<u>shoffman@sawatershed.org</u>) Allyson Beckman (<u>abeckman@sawatershed.org</u>)





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#### SECTION I: PROJECT DESCRIPTION AND STATEMENT OF IMPACTS



The San Timoteo Creek Reach 3B Flood Control Project ("Project") is located within San Bernardino County, including the city of Loma Linda, city of Redlands, and unincorporated portions of the County. The project was planned and constructed by the U.S. Army Corps of Engineers (USACE) with the San Bernardino County Flood Control District (SBCFCD) as the local sponsor, with the future facilities to be operated and maintained

by the SBCFCD. This report addresses compensation for impacts related to the flood control improvements performed on Reach 3B of San Timoteo Creek from the terminus of Reach 3A, extending upstream 4,000 feet northeast of the San Timoteo Canyon Road crossing. The total length of the work was 14,300 feet and was projected to impact 39.1 A of riparian vegetation, of which 22.9 A were unvegetated and 16.2 A were classified as wetland habitat.

Through Section 7 Consultation with the U.S. Fish and Wildlife Service (USFWS), the USACE was required to restore 34.56 acres of riparian habitat within the San Timoteo Creek watershed for the loss of habitat as part of the flood control project. In response, the USACE opted to execute a Memorandum of Understanding (MOU) with the Santa Ana Watershed Association (SAWA), in order to allow SAWA to perform the mitigation work. In exchange for twenty years of restoration work designed to satisfy the terms of the mitigation, SAWA received \$1,620,000 to fund all work associated with the project. The timeline and task list for this work was outlined in a Plan of Action, developed in coordination with the USFWS, as well as a MOU between all participating parties, which SAWA and member district Inland Empire Resource Conservation District (IERCD) continue to carry out on an annual basis over the acreage comprising the mitigation work area.

The mitigation-related restoration work performed over the project area began in 2004 and will continue at a minimum until 2024, then extend through the lifetime of the funding in the established escrow account provided by the USACE in 2003. The project area includes the entirety of the 126-square mile San Timoteo Creek watershed region, although the majority of work completed has taken place within and in close proximity to the watershed's mainstem.

This report covers cumulative work up to and including December 31<sup>st</sup>, 2016.

#### SECTION II: METHODOLOGY FOR QUANTIFICATION OF 34.56-A OF RESTORATION

San Timoteo Creek is a major tributary of the Santa Ana River, the main channel of the larger Santa Ana River watershed. Within the SAR watershed, the San Timoteo Creek subwatershed drains approximately 126 square miles of surrounding urban and wildlands, and was selected for application of mitigation work due to the original project impacts located within its mainstem. One of the primary areas of focus of the mitigation work is reestablishment of functional habitat for riparian vegetation and wildlife, particularly the least Bell's vireo (*Vireo bellii pusillus*/ "LBV") and southwestern willow flycatcher (*Empidonax traillii extimus*/ "SWWF").

The restoration and creation of desired habitat within the San Timoteo Creek subwatershed aids in the recruitment of functional riparian species, and the existence of such property in perpetuity for use by and sustenance of other key species including LBV and SWWF. In addition to this work, improvement of overall watershed health is critical for species support, and has consisted of measures including but not limited to removal of invasive species, passive encouragement of recolonization of sites with native seed, documentation of species presence and breeding patterns, and discouragement of activities determined to be detrimental to site function, among other project work. These additional measures have taken place on the mainstem but also expanded to include all areas within the region, with a focus on upper subwatershed areas for maximum benefit downstream.

Historically, the quantification of total acres restored in accordance with the Reach 3B Flood Control mitigation project has been performed solely according to documented LBV territories. However, in the 2010 reporting period, SAWA began quantification of restoration successes using the annual number of LBV territories documented, in addition to the acres of invasive vegetation initially removed and/or maintained on an ongoing basis within the project area. In 2011, riparian recovery in the Creek and surrounding watershed as a result of work performed was quantitatively demonstrated using data generated from a comparison of vegetative condition of the project area using aerial imagery from 1995 and 2010.

One additional measure for quantification of acres restored was originally slated to consist of purchase and conservation of open space adjacent to the San Timoteo Creek mainstem. In 2010, staff from the USACE worked with SAWA to analyze total staff time spent on this pursuit, and ultimately recommended consideration of alternatives to this mitigation measure due to the time investment relative to results. Following that recommendation, the USACE and SAWA worked with staff from the USFWS, the Regional Water Quality Control Board (RWQCB) and California Department of Fish and Wildlife (CDFW) to come up with a suitable alternative, and ultimately agreed to consider active restoration of ten acres of riparian habitat adjacent to the mainstem or major tributary as a replacement for land acquisition.

In the 2014 reporting period, Phase I consisting of the initial 2-A of active restoration was installed and Phase II representing an additional 2-A was designed and prepped. In the 2015 reporting period, Phase II was installed and the third 2-A section referred to as Phase III was prepared, consisting of tasks including but not limited to consultation with regulatory agency on restoration design aimed at improvement upon earlier Phase approaches to increase benefit of site uplift for target species. In the 2016 reporting period, Phase III restoration was installed and maintained through December 31<sup>st</sup> along with the four acres representing Phase I and Phase II. However, despite the biological success of Phases I, II, and III, SAWA determined that active restoration of this acreage is not consistent with long-term project funding availability, and focus has returned to land acquisition in the absence of a formal agreement to amend the original mitigation. Both of these approaches are further detailed in section four of this document.

In the 2016 reporting period, a combination of documented LBV territories, implementation of active restoration acreage, and performance of new and maintenance of previously treated invasive vegetation populations were used in determining total acres restored on behalf of the Reach 3B mitigation project. Efforts directed at land acquisition as a fourth indicator of success are documented but not quantified as no acreage was secured with project funding in the reporting period covered by this document.

#### METHODOLOGY I: NUMBER OF ACRES REQUIRED FOR FUNCTIONAL LBV TERRITORY

The presence of LBV documented in the San Timoteo Creek subwatershed has increased on an almost annual basis since the inception of the Reach 3B project, from 29 territories in 2004 to 173 territories in 2016. The USFWS recognizes the LBV as an indicator species of riparian health, requiring a minimum of two acres for each functional territory (USFWS, 1989; *Ecology and Conservation of the Endangered Least Bell's Vireo*; USFWS, DOI, Biological Report 89(1), 17pp); for this reason, its elevated population numbers are used as a method of quantifying the restoration completed to-date in the Reach 3B project area. The aforementioned increase to 173 total territories breaks out to a net gain of 288 acres of healthy riparian habitat since the initial implementation of Reach 3B work. Active monitoring management of the San Timoteo Creek mainstem and tributaries through removal of invasive species, restoration of mixed riparian forest, conduction of regular site assessments, and annual nest tracking have all been implemented in 2016; as a result, the populations of this species have continued to increase over simple replacement-level growth, which is a pattern documented only after inception of project work in 2004.

Table I: Least Bell's vireo ( <i>Vireo bellii pusillus</i> ) Data, 2004 – 2016		
Reporting Year	Number of Documented Territories	Average Functional Riparian Area Required for Population Support
2004	29	58 Acres
2005	43	86 Acres
2006	32	64 Acres
2007	56	112 Acres
2008	78	156 Acres
2009	105	210 Acres
2010	126	252 Acres
2011	116	232 Acres
2012	118	236 Acres
2013	131	262 Acres
2014	151	302 Acres
2015	176	352 Acres
2016	173	346 Acres

# METHODOLOGY II: RESTORATION OF RIPARIAN HABITAT THROUGH REMOVAL OF INVASIVE VEGETATION.

The reduction in presence of invasive vegetation is a central focus of the Reach 3B mitigation project, and consists of both new removals and maintenance of former removal areas. All efforts are performed through remote and ground assessments, extensive mapping and removal method determination, in addition to consultation and coordination with major subwatershed partners including the California State Parks, the Riverside County Parks and Open Space District, cities including Redlands and Yucaipa, water districts including the Yucaipa Valley Water District and Beaumont-Cherry Valley Water District and non-profits including the Wildlands Conservancy, the Rivers and Lands Conservancy and Redlands Conservancy, among others. The initial eradication on new sites involves biomass removal, followed by treatment with herbicide while maintenance of former removal areas involves monitoring and spot treatments as necessary to suppress re-growth. New eradication work is critical for habitat health; however, discouraging recolonization of areas formerly infested by non-natives is also essential for continued biological recovery of the project area. In the San Timoteo Creek project area, there has been work performed in both of these categories of vegetative maintenance, with specific details of individual removals listed in the following sub-sections:

#### Background/History of Maintenance of former removal sites of Arundo donax

Prior to the inception of the San Timoteo Creek project, the SAWA worked with the IERCD (previously the East Valley RCD or EVRCD) to execute the first large-scale removal of the highly invasive *Arundo donax* plant from the San Timoteo Creek main channel. The total area over which *Arundo* was removed was in excess of 350-acres; however, due to variable degrees of infestation, a total of 209-A of *Arundo* was credited as being removed from this site. It was done in a four-phase process, from 1997 – 2001. This initial *Arundo* removal was critical for encouragement of recolonization by native plants, while its long-term maintenance increases recruitment and sustainability of key native species.

#### Active Eradication of New Areas/Species Within Project Site

In addition to the aforementioned active maintenance of the 209-A *Arundo* removal, SAWA also performs new eradication efforts within the San Timoteo Creek watershed. The majority of removals in 2016 focused on *Centaurea solstitialis, Rhaponticum repens*, and *Silybum marianum*, in addition to 2-A of mixed annul invasive removals in anticipation of Phase III installation and ongoing spot treatments within all three restoration phases. Removal preparation consisting of mapping, site visits, partner coordination, and training to ensure consistency in data capture and storage relative to invasive populations needing treatment in addition to those receiving initial and repeat treatments. Methods employed in these removals are guided by data determined in sensitive species' monitoring and surveying of project site, as well as target vegetation type, infestation, and proximity to native vegetation. Table II quantifies former removal site acreages maintained and monitored, and initial eradication of target species in 2016, along with cumulative totals for all species.

For each of these species, the removal calculations are performed by taking total area of polygon to be treated, then adjusting for percent infestation to secure a reliable calculation of actual area treated. For this reason, the total area monitored and moved through during treatment may be considerably larger than the actual number of acres credited to this project, since SAWA does not include functional habitat even when occurring within overall treatment site in final species removal numbers.

Table III: Quantification of Vegetative Restoration Work, San Timoteo Creek Mitigation Site through 12-31-16			
Species	Initial Removal and/or Re- Treated Former Removal Areas through 12-31-15	Initial Removal Areas and/or Re-Treated Areas 1/1/16 - 12/31/16	Initial Removal and/or Re-Treated Areas Cumulative to 12/31/16
Giant cane (Arundo donax)	Total: 209.003 (RTA)/Treatment of rogue canes	Treatment of rogue canes at dedicated points	209.003 (RTA)
Tree of heaven ( <i>Ailanthus</i> <i>altissima</i> )	Total: 1.212 (IR) and 1.008 (RTA)	1.76 (RTA)	1.212 (IR) and 2.768 (RTA)
Yellow starthistle ( <i>Centaurea solstitialis</i> )	57.09 (IR) and 126.25 (RTA) Total: 183.34	.01 (IR) and 5.42 (RTA)	57.1 (IR) and 131.67 (RTA)
Tamarisk ( <i>Tamarix spp.</i> )	.093 (IR) and .10 (RTA) Total: .19	Treatment of resprouts at dedicated points	.093 (IR) and .10 (RTA)
Bull thistle (Cirsium vulgare)	Total: 12.88 (IR)	N/A	12.88 (IR)
Milk thistle (S <i>ilybum</i> marianum)	Total: 13.89 (IR)	2.3 (RTA)	13.89 (IR) and 2.3 (RTA)
Italian thistle ( <i>Carduus</i> pycnocephalus )	Total: 2.49 (IR)	N/A	2.49 (IR)
Russian thistle ( <i>Salsola</i> <i>tragus</i> )	2.519 (IR)	N/A	2.519 (IR)
Tocalote ( <i>Centaurea melitensis</i> ) /Mixed annual grasses	Total: 13.61 (IR)	N/A	13.61 (IR)
Mexican fan palm (Washingotnia robusta)	.08 (IR)	N/A	.08 (IR)
Perennial pepperweed (Lepidium latifolium)	Total: 5.25 (IR); 1.443 (RTA)	N/A	5.25 (IR) and 1.443 (RTA)
Castorbean ( <i>Ricinus</i> communis)	.002 (IR)	N/A	.002 (IR)
Individual Totals:	103.72 (IR); 337.41 (RTA)	.01 (IR) and 9.48 (RTA)	103.73 (IR) and 346.89 (RTA)
Grand Totals	441.13	27.05	450.62

\*\*Math error in 2015 report; cumulative acreage listed erroneously as 446.83; corrected to 441.13 \*IR = Initial Removal; \*\*RTA = Re-Treated Areas

The work performed in conjunction with the San Timoteo Creek project responsibilities for the past ten years has included multiple measures designed to restore the 34.56-acres of riparian habitat required in the Biological Opinion issued by the USFS, which governs this project. Totals for work quantified in this report include:

• 288 acres of restored riparian habitat based on LBV territory increases over original 2004 numbers

#### SAWA Annual Regulatory Report July 1, 2016 to June 30, 2017

• 450.62 acres of a combination of new removals and continually managed/maintained former active removal areas cumulative through December 31<sup>st</sup>, 2016.



L: Milk thistle removal; R: recolonization of site by Erigeron canadensis

# METHODOLOGY III: RESTORATION OF SPECIES WITHIN SAN TIM CREEK SUBWATERSHED

In the original Plan of Action governing work to be done in cooperation with Reach 3B mitigation requirements, the Santa Ana Watershed Association was required to perform tasks designed to ultimately result in acquisition and conservation of at least 5-7 acres of property adjacent to the San Timoteo Creek mainstem. However, despite consistent work with multiple partners on tasks including but not limited to site assessments, mapping, property appraisals, and other coordination, no significant progress was made in securing the required acreage. For this reason, in 2011 the USACE worked with agencies including the USFS, the CDFW, and the RWQCB to alter the original requirement from acquisition of otherwise unconserved property to restoration of 10-A of mainstem or major

tributary property already in conservation. After a considerable process involving many partners and obstacles, in 2012 SAWA began the foundation for the first two of a total of 10-A of restoration within the Cienega property owned by Rivers and Lands Conservancy.

Restoration began in 2014, with Phase I completed that year, Phase II completed in 2015, and Phase III completed in 2016. However, 2016 also involved accrual of previously non-accrued expenses, and for that reason, all Reach 3B work has been assessed for efficiency and ability to sustain through the lifetime of the project.



Ultimately, it was determined that additional 4-A of restoration would not be financially sustainable to complete, and for that reason, Phase III will be the last segment of active restoration completed for Reach 3B. The 2016 annual report will provide detail on both Phase III establishment and ongoing

maintenance of Phase I and II, with transition back to land acquisition research and task work included in the 2017 report.

Phase III Active Habitat Restoration/Phase I and II Maintenance and Monitoring The preparation work for Phase III restoration involved consultation with USFWS regarding design and intention of Phase I and Phase II, relative to that of Phase III. USFWS noted that Phases I and II were both focused on development of riparian forest and some foraging buffer, and indicated that it seemed logical that Phase III would instead be focused on mixed riparian forest with a transition edge, with immediately adjacent depressional herbaceous cover. The intention of this design was to provide a naturally meandering tree line using the Hilbert Curve method, then including adjacent depressional herbaceous cover for



support of presence of foraging opportunities for LBV.

Elements of the design were based on two years of groundwater availability sampling performed through the use of piezometers. In addition to this data, soil surveys were performed with the Natural Resources Conservation Service's Area Soil Conservationist, and reference sites were assessed to determine potential for long-term site establishment, particularly in the absence of application of artificial irrigation following the first two years of site work. The final species lists for Phase III Included:

• Five seasonal depressions, approximately 300 square feet in size and 4" – 6" depth using the following plant palette with species sourced locally:

Species	Common Name	Life form	Amount
Distichlis spicata	Salt grass	Perennial	200 nluas
	Surgruss	grass	See progs
Atripley graenteg	Silvaracala calthuch	Annual	seed
Attiplex argentea	Silverscale salcoosil	herb	seed
Anomonsis californica	Vorba manca	Perennial	150 half gallon /sood
Anemopsis cuijonnicu	i el ba mansa	herb	150 han ganon /seed
Centromadia pungens ssp.	Smooth taralant	Annual	Sood
Laevis	Shiboth taipiant	herb	Seeu
Sporobulus giroidos	Alkali dransaad	Perennial	Natural
Sporooolos airoides	Alkall dropseed	grass	recruitment/seed
Lantachlag uninan ig	Maxican coranglaton	Annual	Natural
Leptochioù onmervia	Mexican sprangletop	grass	recruitment/seed
Atriplay caropana	Calterale	Annual	Natural
Aunplex serenana	SaitsCale	herb	recruitment/seed
Haliatronium curascavicum	Calt baliatropa	Annual	Natural
πειιοτιοριοπι corassavicom	Sait hellotrope	herb	recruitment/seed

• 325 mixed pole cuttings, aligned using Hilbert's Curve and alternated to produce maximum diversity, sourced from healthy trees within the region using CDFW methods to ensure lack of impacts to stock trees:

Species	Common Name	Amount Needed
Baccharis salicifolia	Mulefat	100
Populus fremontii	Fremont's cottonwood	25
Salix gooddingii	Gooddings willow	25
Salix Laevigata	Red willow	25
Salix lasiolepis	Arroyo willow	50
Salix exigua	Sandbar willow	100
Total		325

Following site design, project implementation began with removal of site invasives, focusing on those identified in the following table:

Таха	Common
Bassia hysopifolia	Five hooked bassia
Chenopodium murale	Goosefoot
Cynodon dactylon	Bermuda grass
Hordeum murinum	Foxtail barley
Malva parvaflora	Cheeseweed
Salsola tragus	Russian thistle
Sisymbrium irio	London rocket
Tamarix ramossisima	Tamarisk

After the removal of invasives, irrigation was installed; following the completion of the irrigation, the 325 poles were planted using a mini-excavator with augur attachment to get them 6-7' below ground based on collected piezometer data. Plots for ongoing assessment of Phase III health were established as part of this work, with the final step involving installation of herbaceous depressions. After installation was complete, Phase III was maintained and monitored through December 31<sup>st</sup>, 2016,



alongside Phase I and Phase II. Tasks associated with this maintenance and monitoring included photo documentation with established photo points and wildlife cameras; assessment of plant health and vigor; documentation of any evidence of illegal trespass and/or vandalism; removal of minor trash; and adaptive management including plant replacement and irrigation refinements based on plant health data analysis.

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L: planting and prep; R: establishment of seasonal depressions adjacent to riparian forest

#### 4.9-A Seeding at Redlands Conservancy-Managed San Timoteo Nature Sanctuary

In addition to active container and pole installation, reporting period 2016 also included enhancement of 4.9-A of conserved property adjacent to San Timoteo Creek. The property is owned by the City of

Redlands but encumbered by a conservation easement in favor of the Redlands Conservancy, and has been slated for placement of uplift funding as a result of considerable infestation of the site with annual invasives consisting primarily of *Centaurea solstitialis* and *Salsola tragus*. The 4.9-A section of this site selected for enhancement through removal of invasives and application of a mix of native seed was chosen due to proximity to the mainstem of San Timoteo Creek.



Preparation for seeding occurred in October with the design of a site palette based on reference site assessments, with the final list and mix consisting of:

Scientific	Common	% Mix
Asclepias fascicularis	Narrowleaf milkweed	10
Eriodictyon crassifolium	Felt-leaved yerba santa	10
Eriogonum fasciculatum	California buckwheat	15
Helianthis annus	Common sunflower	10
Acmispon glaber	Deerweed	15
Baccharis pilularis	Coyote brush	
Ceanothus crassifolius	Hoary-leaved ceanothus	
Chaenactis glabriuscula	Yellow pincushion	
Lasthenia californica	Dwarf goldenfields	collé of cood mix will be aqual
Lupinus succulentus	Arroyo lupine	40% of seed fills will be equal
Malacothamnus fasciculatus	Chaparral mallow	representation of these species
Mimulus auranticus	Sticky monkeyflower	
Stipa cernua	Nodding needlegrass	
Vulpia microstachys	Native fescue	

Following site design, site invasives were removed while ensuring existing site natives remained intact, and soil was prepared. The seeding was completed using a combination of mechanized seeding and hand-sowing in November, and four photo points were established to track progress through 2017. Additional maintenance projected to occur over the next three years as natives establish will likely consist of spot treatments with selective herbicide, and tracking of progress to inform approach to future seeding sites. On-site partners including the City of Redlands and the Redlands Conservancy have both pledged ongoing support of this project.

## SECTION III: ENDANGERED SPECIES MONITORING AND MANGEMENT

#### 3.1 Current Activity

Annual surveys were conducted for the endangered Least Bell's Vireo and Southwestern Willow Flycatcher and management efforts were employed to aid in their recovery. The primary purpose of this monitoring was to locate all vireos and flycatchers to determine their breeding status and enhance their breeding output through management.

#### 3.1.2 Methodology

Surveys for the Least Bell's Vireo and Southwestern Willow Flycatcher were conducted in San Timoteo between the dates



of March 18 and August 27, 2016. Presence/absence surveys for both species were conducted as prescribed by the USFWS or more frequently so that problems could be monitored and managed, for example, intervention when egg parasitism was observed. Nest monitoring and data analysis of vireo followed the protocol of Pike *et al.* (1999).

Vireo were monitored from the headwaters of Cooper's Creek downstream to the ACOE flood control basins; however some areas were not accessible due to private landowner restrictions. All potential habitats were carefully and slowly traversed along the edges and open trails. Nesting and territorial vireos and flycatchers were noted as to location, behavior, reproductive status, etc. Other sensitive species encountered were also documented throughout the canyon.

#### 3.1.3 Results

In 2016, 173 vireo territories were documented in San Timoteo, down 2% from the 176 documented in 2015. However, the population in San Timoteo has experienced an over 30-fold increase in the past 16 years. This increase can be attributed to the removal of invasive species and subsequent restoration of native vegetation, nest monitoring, and cowbird management. San Timoteo originally contained many invasive plant species, most notably giant reed (*Arundo donax*) and Tamarisk (*Tamarix* sp.). SAWA removed 239 acres of invasive plants from 1997 to 2001, and continues a maintenance program to control re-growth. Restoration of the native plant community through natural recruitment has taken place throughout the canyon resulting in a healthy riparian under-story, effects of natural storm cycles notwithstanding.

One hundred twenty-four vireo pairs and 222 fledglings were detected in 2016. Nesting success was 51%, down from 58% in 2015 but similar to 48% in 2014. Nest losses were primarily due to predation (42%).

Thirty-nine well-monitored pairs had a 3.1 reproductive success rate in 2016 (the number of fledglings produced per pair), similar to 3.2 in 2015. Nesting success is 56% over sixteen years of monitoring (n=844 well-tracked nests), ranging from a low of 29% in 2004 (n=31 nests) to a high of 100% in 2001 (n=4 nests). Depredation has been the major cause of nest loss in the last 16 years (35%). Overall reproductive success based on productivity of well-tracked pairs in the last 16 years is 2.9 and has ranged from a low of 0.8 in 2004 to a high of 3.9 in 2009.

Mulefat (28%), arroyo willow (21%) and red willow (16%) have been the primary plant species used for nest placement in San Timoteo since 2001 (n= 924 nests). Goodding's black willow and desert wild grape held another 8% and 7%, respectively. Only ten nests found from 2001-2016 were placed in non-native vegetation; five nests were built in mustard (*Brassica* sp.), two in tamarisk (*Tamarix* sp.), one in tree of heaven (*Ailanthus altissima*), one in perennial pepperweed (*Lepidium latifolium*), and one in white mulberry (*Morus alba*).



3.2. Cowbird Trapping 3.2.1 Current Activity SAWA field biologists conducted Brown-headed Cowbird trapping from mid-March through the last week of July 2016. Cowbird trapping has occurred in San Timoteo Canyon since 2001, and a total of 2,475 cowbirds have been removed during this time. As in 2015, no parasitism occurred in San Timoteo in 2016. In 2014, five of 88 well-tracked nests (6%) were parasitized by cowbirds; two nests successfully fledged vireo after nest manipulation, one nest failed due to predation after removal of the

cowbird egg, and two were abandoned (one before nest manipulation and one after). In 2013, two of 76 well-tracked nests (3%) were parasitized however neither nest failed due to parasitism; one nest was successful after removal of a cowbird egg and the second failed due to predation after removal of the egg. These low rates remain a marked decrease from a high of 75% in 2001. Although parasitism by cowbirds still occurs, at a rate of 14% over sixteen years (114 of 844 nests), only 3% of nests have failed due to parasitism. This low failure rate is primarily a result of intensive nest monitoring efforts which include nest manipulation.

### 3.2.3 Methodology

Eight traps were deployed on San Timoteo Creek in 2016. Trapped cowbirds are transferred to a licensed falconer. Native birds that are captured in the traps are released immediately on the day of their capture; traps are checked daily.

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Cowbird traps were located in, or near riparian habitat in each of the drainages of the Santa Ana River. The traps are modified Australian crow traps measuring 6'x 6'x 8' and 6'x 6'x 4'. The cages are baited with 3-7 live cowbirds and supplied with ample food and water. They are checked daily to ensure that the food and water supplies are adequate and to remove non-target species (native birds that are captured incidentally). Trapping is done according to the SAWA protocol and under permit and authorization from the U.S. Fish and Wildlife Service (permit # TE839480-4).

3.3. General Wildlife Monitoring 3.3.1 Current Activity – Winter and Breeding Bird Surveys Along with Least Bell's Vireo and Willow Flycatcher monitoring, the Mitigation Management Plan also requires monitoring of other riparianassociated species along San Timoteo Creek (Surveys for federally listed species, San Timoteo Creek Management Plan, 2003). The following information represents this additional species monitoring.



The activities associated with *Arundo* removal can result in disturbance and

displacement of wildlife, including listed species. The Corp's Regional General Permit 41 (RGP) for these activities includes monitoring requirements. The removal of invasive species from sites occupied by listed species is stopped when necessary to avoid potential disturbance (i.e., nesting season). Once the nesting season is over, sites that had to be avoided will be returned to and treated. Winter and breeding bird counts were conducted again on San Timoteo Creek in 2015-16, as summarized in attachments to this report.

### 3.3.2 Methodology - Winter Bird and Breeding Bird Surveys

The annual winter bird and breeding bird surveys and associated vegetation analysis will be used to document changes over time in avian populations and vegetative cover following the removal of invasive plants from the watershed.

The survey area on San Timoteo Creek is on the outskirts of the City of Redlands, located between the 60 and 10 freeways, in San Bernardino and Riverside Counties. The USGS California Quadrangle location is Redlands. The study plot is located between the UTM coordinates of 0487864, 3760565, and 0488562, 3760357. The riparian canopy is composed mostly of perennials and mature trees. Steep, tall canyon walls enclose the study plot. The canyon on this 30-acre plot is fairly narrow with the exception of two large, wide terraces. The plot is approximately 1 mile long and varies from 50 - 300 yards wide. The surrounding areas consist of some upland habitat, but mostly non-native grasslands used for grazing and agriculture. There is also a highly traveled railroad system paralleled by a two-lane canyon road.

The plot habitat comprises a well-developed cottonwood/willow/mulefat community with an associated upland component on the low terraces within the floodplain. Site disturbance includes historical grazing and other human-related activities such as off-highway vehicle use.

Temperature, wind, and humidity measurements were taken using a Kestrel 3000 weather meter. Surveys were not conducted during inclement weather. Haven Kobl's "Audubon Winter Bird-Population Study" (1985) protocol was utilized as the method for these surveys and data analysis. The plot was surveyed by one biologist and occasionally an additional observer/trainee. A plot map was used for reference and to note locations and numbers of all birds encountered during surveys. The plot was walked slowly along routes that allowed thorough visual and auditory access to the habitat. Birds observed flying over but not stopping and other faunal observations were noted but were not used in the calculations of bird densities.

Species marked with an asterisk in tables included in Attachment V of this document are "covered species" in the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).

#### 3.3.3 Current Activity – Raptor Surveys

Raptor surveys were also conducted in San Timoteo in January and November-December 2016. Raptors are birds that have adapted carnivorous feeding strategies and are often considered good indicators of the overall health of an ecosystem because they are top predators, inhabit most ecosystem types, occupy large home-ranges, and are sensitive to chemical contamination and other forms of human-caused disturbance. The purpose of these surveys is to gather additional data on distribution, abundance, and seasonality of the raptors in the San Timoteo Canyon.

#### 3.3.4 Methodology – Raptor Surveys

A 14.1-mile raptor survey route was demarked along San Timoteo Canyon Road from the intersection with Interstate 10 downstream to the point where the road crosses San Timoteo Creek (near ACOE basins). Each census consisted of a driver and observer recording all raptors seen while driving with the unaided eye. When necessary, binoculars were used to make a positive identification.

#### 3.3.5 Results – Raptor Surveys

A total of four raptor species were observed in San Timoteo Canyon in 2016 throughout four surveys. The range of detections was between 7–19 individuals per survey. The most abundant raptor species observed was the Red-tailed Hawk, with 20 total observations, followed by the American Kestrel with four observations over the survey period (Table 8.6-1). Three of the species detected are "covered species" in the Western Riverside County MSHCP (those marked with an asterisk on the corresponding table in Attachment V of this report).

Although not detected during the roadside surveys, Barn Owls, *Tytoalba*, were observed during other biological monitoring activities throughout the canyon.

In addition to the raptors listed above, any of the birds of prey known to occur in the middle watershed of the Santa Ana River could be present in the canyon including the Western Screech Owl, (*Otus kennicottii*), Great Horned Owl, (*Bubo virginianus*), Burrowing Owl\* (*Athene cunicularia*), Long-eared Owl, (*Asio otus*), Short-eared Owl, (*Asio flammeus*), Bald Eagle\*, (*Haliaeetus leucocephalus*), Northern Harrier\*, (*Circus cyaneus*), Sharp-shinned Hawk\*, (*Accipiter striatus*), Swainson's Hawk\*, (*Buteo swainsoni*), Ferruginous Hawk\*, (*Buteo regalis*), Rough-legged Hawk, (*Buteo lagopus*), Golden Eagle\*, (*Aquila chrysaetos*), Prairie Falcon\*, (*Falco mexicanus*), and Turkey Vulture\*, (*Cathartes aura*). All of these 22 species are considered sensitive to environmental perturbations and are good barometers of environmental health and annual productivity of lower trophic level organisms. The Bald Eagle is still listed as a threatened species and under the full protection of the Endangered Species Act of 1973, as

amended. The Peregrine Falcon was a victim of the rampant use of DDT and formerly listed as endangered but since has been recovered and de-listed. Additionally, 14 of these species are "covered species" in the Western Riverside County Multiple Species Habitat Conservation Plan (those marked with an asterisk above).

The two most abundantly sighted raptors during the surveys are two of the three species most readily observed. The canyon landscape and land use offers good foraging habitat for these species. As reflected in these surveys, the Red-tailed Hawk is the most common *buteo* in southern California, particularly during the winter. They disperse to some extent during the breeding season with migrants returning to former haunts and breeding pairs space along riparian ribbons and undisturbed eucalyptus belts. They nest high above the ground in the tallest trees available, being particularly sensitive to human disturbance. Red-tailed Hawks are perch-hunters of open country or otherwise are observed soaring about on thermal updrafts, making them easily observed in either case.

American Kestrels are not as abundant as they once were but are still our most commonly encountered small raptor. They hunt from the air and perch over open ground or sparse shrublands. They are cavity-nesters and so disperse during the breeding season, limited locally by the number and quality of appropriately sized cavities.

#### SECTION IV: FUNDS EXPENDITURE AND MANAGEMENT

#### Section 5.1: Status of Mitigation Funds for San Timoteo Creek Project

The original funding provided for 34.56-acres of riparian restoration work in the San Timoteo Creek project area consisted of \$1,620,000 deposited into the Santa Ana River Trust fund in January of 2004. These monies were meant to be used toward all tasks required for satisfaction of mitigation work, and have been tracked in reports through demonstration of annual fund interest balanced against staff time and direct project work costs. Currently, the total funding available for the San Timoteo Creek project work is \$1,531,468.54, which will continue to be managed and used wisely in order to extend the life and ability of the fund. A full fund amortization is included in Attachment IV of this report, showing funds progression from project inception through December 31<sup>st</sup>, 2016.

#### Section 5.2: Prudent Investment of Funds

Although the Santa Ana Watershed Association is classified as a 501c(3) non-profit organization and therefore not bound by the investment restrictions under which governmental entities must act, its board and staff still observe the principles and regulations constituting prudent investment practices. The implementation of these practices designed to maximize return while minimizing risk allow for protection of public and other agency monies invested in SAWA for the purposes of planning, executing, and monitoring/maintaining mitigation-related restoration, creation, and enhancement projects.

Placeholder – Hours and Funds Expended, 1-1-16 through 12-31-16

#### SECTION VI: CONCLUSION

The flood control improvement work over Reach 3B of San Timoteo Creek resulted in impacts to overall system function, including but not limited to removal of native vegetation, compromised habitat availability for dependent wildlife, and interruption of natural hydrologic pattern throughout the mainstem of the project area. As a result of these impacts, the United States Army Corps of Engineers

was required to fund the recovery of a minimum of 34.56-A of riparian habitat through implementation of direct and indirect preservation, enhancement, and restoration activities throughout the 126 square mile San Timoteo Creek subwatershed. Beginning in 2004, SAWA has conducted such work on an annually increasing basis, both in terms of total area covered as well as total acres treated through a range of tasks designed to preserve functional open spaces, limit presence and spread of invasive species, and rehabilitate degraded riparian and adjacent buffer areas through the San Timoteo Creek project region.

An analysis of aerial imagery was performed in the 2011 reporting period by Redlands-based Geographic Information Systems (GIS) firm Aerial Information Systems, consisting of a comparison between pre-project imagery from 1995 and current, post-project initiation imagery from 2010. The full analysis is available in the 2011 Reach 3B annual report, and clearly demonstrated progress in terms of total acres of functional native riparian vegetation as well as successional movement of desired habitat units within the project area. Highlights of report findings include a <1% presence of *Arundo donax* within this portion of San Timoteo Creek, which is instead characterized by a mixture of healthy native vegetation including willow and cottonwood trees and mulefat shrubs, all of which are known to house and feed LBV and SWWF individuals and pairs. The work performed by SAWA in this capacity has resulted in functionality of a 350-acre continuous corridor throughout the Creek, which would otherwise be infested with previously targeted invasive species, primarily the extremely fast-growing/water using *Arundo donax* plant. Detailed reporting on findings is available in the Reach 3B Annual Report covering 2011 project activities.

Table IV: San Timoteo Creek Project Work Results, Cumulative to 12/31/16				
Task	Total Associated Habitat Function Increase			
Cumulative Active Restoration - Phases I-II-III site uplift	Over 6-A of mixed riparian forest, buffer foraging, and seasonal depressions for the benefit of LBV			
Cumulative site seeding	15.76-A of seeding in headwaters of San Tim Creek (2014) and creekside (2016)			
Eradication of new populations/ maintenance of former removal areas of invasive vegetation, 2004-2016	Over 450-A of riparian and adjacent buffer habitat rehabilitated from direct initial removal and ongoing, follow-up maintenance of invasive vegetation			
Increase in LBV Documented Pairs in Project Site, 2004-2016	173 territories representing increase of 288-A of functional riparian habitat since project inception.			

In addition to this analysis, quantitative data from sensitive species' surveying and invasive species removal revealed far greater than the required 34.56-A of riparian habitat improvement, as shown in the following table:

The increase in vegetative health in San Timoteo Creek is a strong indicator of riparian recovery, which is further supported by the massive increase in documented LBV pairs mapped within the areas over which tasks including vegetation removal, maintenance/monitoring of former removal sites, BHCO trapping, native plant reestablishment and sensitive species' support have occurred. In 2004, there were 29 established LBV territories, which increased to 173 documented territories in 2016. Using the accepted estimation of a minimum habitat requirement of two acres of healthy riparian area, it can be extrapolated that there has been restoration of 288 acres of riparian habitat in San Timoteo Creek since 2004. Management of least Bell's vireo in San Timoteo Creek has allowed the birds to exceed replacement level reproduction, which has not occurred prior to management.

The aforementioned work over the San Timoteo Creek watershed has resulted in excess of 34.56-acres of riparian restoration, which was the total ordered in the project's Biological Opinion. However, SAWA will still continue to supplement these restored areas through execution of additional direct invasive vegetation removal, continued maintenance of existing removal sites, ongoing support of sensitive species, and implementation of active revegetation of former and new removal sites. Work planned for 2017 includes ongoing initiation of new removal and management of former removal areas totaling 475-acres; ongoing maintenance of over 6-A of actively restored areas and over 15-A of passively restored seeded areas, in addition to tasks associated with seeking out and acquiring 5-7 A of property to be placed into permanent conservation, within close proximity to San Timoteo Creek.

SAWA will continue to perform all tasks required for successful implementation of the mitigation responsibilities associated with the San Timoteo Creek Flood Control Improvements until the end of Calendar Year 2024. After the end of the required 20-year performance period, SAWA will continue to maintain and monitor the San Timoteo Creek watershed in order to sustain restoration work performed in conjunction with this mitigation project. Long-term project goals beyond the already-met 34.56-acre requirement include continued stabilization of marginalized species of local native wildlife, as well as the erosion control, soil enhancement, and riparian health that result from the continued restoration of acreages within the watershed. The proper management of funding in conjunction with long and short-term tasks designed to fit the needs of the Creek are key in ensuring continuing recovery of this key riparian zone in the Santa Ana River watershed.

## APPENDIX D. PERMIT DIRECTORY

## CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE (CDFW) PERMITS (in order of permit number)

		CDFW	SAWA Mitigation	
Permit Number	Permitted Project Name	Region	Placement Name	Page
1600-2003-5111-R6	Eastvale Storm Drain	R6	SAR I-215 Interchange to Rialto Channel	90
1600-2003-5167-R5	SR-22 HOV Lane Project	R5	Santiago Creek Phase II	32
1600-2004-0009-R6 (Op Law)	Crafton Hills Repair Project	R6	Quail Run Phase II	60
1600-2004-0060-R5	Southern California Regional Rail Bridge Project	R5	Irvine Park	21
1600-2004-0116-R6 (Op Law)	TTM 31955 and Foothill Parkway Extension, Corona	R6	Hwy 71 Eucalyptus	49
1600-2004-0145-R6 (Op Law)	Quincy Channel Hydro-modification	R6	Mockingbird Canyon MCB	55
1600-2004-0187-R6	May Ranch Phase 6 Residential Development Project	R5	Santiago Creek Phase II	32
1600-2004-0256-R5	Caliber Motors Satellite Sales Facility	R5	Irvine Park	21
1600-2005-0039-R6	Construction of Five Storm Drain Outlet Structres in Salt Creek for Tract #30808	R6	Temescal Wash Phase V	109
1600-2005-0092-R6 (Op Law)	TT 32997, Century American Development	R6	Hwy 71 Eucalyptus	49
1600-2005-0284-R5	Mountain Park Development Project	R5	Santiago Creek Phase I	27
1600-2005-0309-R5	Friends Christian High School Project	R6	SAR I-210 to I-10/I-215 Interchange	84
1600-2005-0386-R5	Boy Scouts of America Outdoor Education Camp	R5	Santiago Creek Phase II	32
1600-2006-0175-R6	Santa Ana River Trail Phase 1	R6	SAR I-215 Interchange to Rialto Channel	90
1600-2006-0189-R6 (Ope Law)	Repair of Calnev Pipeline east of I-15	R6	Cal-Nev Pipeline	41
1600-2007-0003-R5	Santiago Canyon Creek Recharge Enhancement Project	R5	Irvine Park	21
1600-2007-0039-R6	Crafton Hills College Master Plan Phase	R6	SBVCD - San Bernardino	75
1600-2007-0073-R6	Van Buren Bridge Replacement Project	R6	SAR I-215 Interchange to Rialto Channel	90
1600-2007-0075-R6 (Op Law)	Swarthout Canyon Road Washout Repair	R6	Cal-Nev Pipeline	41
1600-2007-0105-R6 (Op Law)	Deadman Junction Pipeline Washout Repair	R6	Cal-Nev Pipeline	41
1600-2007-0106-R6 (Op Law)	Hawarden Development Project	R6	Mockingbird Canyon MCB	55
1600-2007-0213-R6 (Op Law)	Walgreen's Project	R6	Sunnyslope	97

# CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE (CDFW) PERMITS (in order of permit number)

		CDFW	SAWA Mitigation	
Permit Number	Permitted Project Name	Region	Placement Name	Page
1600-2008-0096-R6	Kitching Street Improvements Project	R6	Mockingbird Canyon MCB	55
1600-2008-0104-R6	JCSD Plant 1 100-year Flood Protection Project	R6	Habitat for Hamner	43
1600-2008-0105-R6	Agua Mansa Commerce Center Project	R6	Mockingbird Canyon MCB	55
1600-2008-0138-R6	SR-91 Eastbound Lane Addition Between SR-241 and SR-71 Project	R6	Wolfskill-Gilman	113
1600-2008-0314-R5 (Op Law)	Fullerton Layover Facility Project	R5	Irvine Lake	12
1600-2008-0420-R5 (Op Law)	Santiago Creek Bike Trail - Tustin Branch Trail	R5	Irvine Lake	12
1600-2009-0020-R5 (Op Law)	North Diemer Access Road Project	R5	Carbon Canyon AERA	9
1600-2009-0043-R6 (Rev. 1)	Centerpointe Business Park Project	R6	Centerpointe	42
1600-2009-0060-R6 (Op Law)	Ironwood Avenue Road Widening Project	R6	Wolfskill-Gilman	113
1600-2009-0115-R6	Ironwood Avenue and Indian Avenue Detention Basin Improvements Project	R6	Wolfskill-Gilman	113
1600-2009-0138-R6	Florida Promenade Specific Plan Amendment	R6	Quail Run Phase II	60
1600-2010-0089-R6 (Op Law)	Bundy Canyon Plaza Project	R6	Quail Run Phase II	60
1600-2010-0149-R6 (Op Law)	Temescal Canyon Business Park	R6	Temescal Wash Phase V	109
1600-2011-0007-R6 (Op Law)	Line Section-51 Pipeline Erosion Repair Project	R6	Quail Run Phase II	60
1600-2011-0165-R6 (Op Law)	North Norco Channel Flood Control Improvements Project	R6	Sunnyslope	97
1600-2012-0024-R6	I-215 Widening from Scott Road to Nuevo Road Project	R6	Wolfskill-Gilman	113
1600-2012-0210-R6 (Op Law)	I-215/Newport Road Interchange Improvement Project	R6	Wolfskill 1.47-A	122
5-028-00	Yorba Linda Heights Project	R5	Irvine Park	21
6-008-98	Forecast Homes	R6	SAR I-215 Interchange to Rialto Channel	90
6-2002-039	Murrieta Hot Springs Road Development	R6	Hwy 71 Eucalyptus	49
6-2002-283	GFR Enterprises	R6	SAR I-215 Interchange to Rialto Channel	90
CDFW Notification	Specific Plan No. 301 and EIR No. 423	R6	SAR I-215 Interchange to Rialto Channel	90
CDFW Op Law	Rober D. Diemer Filtration Plant Emergency Spillway Vegetation Clearing Project	R5	Irvine Park	21

## U.S. ARMY CORPS OF ENGINEERS (USACOE) PERMITS (in order of permit number)

		CDFW	SAWA Mitigation	
Permit Number	Permitted Project Name	Region	Placement Name	Page
199915117-YJC	Saddleback Meadows	R5	Irvine Park	21
200000736-YJC	Yorba Linda Heights Project	R5	Irvine Park	21
2002-00505-DPS	Mountain Park Development Project	R5	Santiago Creek Phase I	27
200300194-YJC	Frank R. Bowerman Landfill	R5	Irvine Park	21
200300640-WJC	May Ranch Phase 6 Residential Development Project	R5	Santiago Creek Phase II	32
200300727-DPS	Garbani Property Rsidential Development	R6	SAR I-215 Interchange to Rialto Channel	90
200301268-YJC	Boy Scouts of America Outdoor Education Camp	R5	Santiago Creek Phase II	32
200301477-DLC	Tract 30662	R6	SAR I-215 Interchange to Rialto Channel	90
200301492-JPL	Lemnar Homes	R6	SAR I-215 Interchange to Rialto Channel	90
200400654-GS	Crafton Hills Repair Project	R6	Quail Run Phase II	60
200401-500-SMJ	Storm Drain Improvements at Corydon St and Melinda Ln, Lake Elsinore	R6	Temescal Wash Phase V	109
200401866-CLM	TTM 31955 and Foothill Parkway Extension, Corona	R6	Hwy 71 Eucalyptus	49
200500154-JPL	Caliber Motors Satellite Sales Facility	R5	Irvine Park	21
200500862-SJH	Rider Street Improvements Project	R6	SAR I-215 Interchange to Rialto Channel	90
200500907-DPS	Eastgate Business Center Storm Drain	R6	SAR I-215 Interchange to Rialto Channel	90
2005-00978-DPS	Construction of Five Storm Drain Outlet Structres in Salt Creek for Tract #30808	R6	Temescal Wash Phase V	109
200501187-DPS	Tequesquite Trunk Sewer Protection Project	R6	SAR I-215 Interchange to Rialto Channel	90
2005-01214-CLM	Friends Christian High School Project	R6	SAR I-210 to I-10/I-215 Interchange	84
2005-01337-SJH	TT 32997, Century American Development	R6	Hwy 71 Eucalyptus	49
200501536-SJH	Ethanac Road Shopping Center (Perris Crossing)	R6	SAR I-215 Interchange to Rialto Channel	90
200600313-CLM	Pulte Homes Residential Development	R6	SAR I-215 Interchange to Rialto Channel	90
2006-00825-SHJ	WL Homes Tracts 28886 and 28886-1	R6	SAR I-215 Interchange to Rialto Channel	90

## U.S. ARMY CORPS OF ENGINEERS (USACOE) PERMITS (in order of permit number)

		CDFW	SAWA Mitigation	
Permit Number	Permitted Project Name	Region	Placement Name	Page
2006-01249-SJH	I-215 Improvements Project	R6	SAR I-215 Interchange to Rialto Channel	90
200601563-SLT	Repair of Calnev Pipeline east of I-15	R6	Cal-Nev Pipeline	41
200601732-JPL	Santa Ana River Trail Phase 1	R6	SAR I-215 Interchange to Rialto Channel	90
2006-01866	Union Pacific Railroad Company Track Improvement Project	R5	Irvine Lake	14
20061265-JPL	Iowa Street Medical Condo Project	R6	SAR I-215 Interchange to Rialto Channel	90
2007-00549-JPL	Van Buren Bridge Replacement Project	R6	SAR I-215 Interchange to Rialto Channel	90
2007-01258	Swarthout Canyon Road Washout Repair	R6	Cal-Nev Pipeline	41
2007-1288	Deadman Junction Pipeline Washout Repair	R6	Cal-Nev Pipeline	41
2007-379-SLP	Crafton Hills College Master Plan Phase I	R6	SBVCD - San Bernardino	75
2007-76-Y	Santiago Canyon Creek Recharge Enhancement Project	R5	Irvine Park	21
2008-312-SLP	Burlington Northern Santa Fe Railway, mile post 64.11X, Devore	R6	Hwy 71 Eucalyptus	49
206-01404-JPL	Proposed Tract 32996, Lake Elsinore	R6	SAR I-215 Interchange to Rialto Channel	90
30-2005-32-DGW	Del Rio Project	R5	Santiago Creek Phase II	32
SPL-2004-899-WJC	First Street and Potrero Avenue Roadway Improvement Project	R6	Quail Run Phase II	60
SPL-2006-01928-JPL	Centerpointe Business Park Project	R6	Centerpointe	42
SPL-2007-00128-SLP	Alabama Street Arch Culvert Construction Project	R6	Quail Run Phase II	60
SPL-2007-00374-JPL	Hawarden Development Project	R6	Mockingbird Canyon MCB	55
SPL-2007-01094-FBV	Stagecoach Park Project	R6	Quail Run Phase II	60
SPL-2008-00242	Walgreen's Project	R6	Sunnyslope	97
SPL-2008-00254-YLC	San Sevaine Villas Affordable Housing Project	R6	Mockingbird Canyon MCB	55
SPL-2008-00358-FBV	Sycamore Creek Area Project	R6	Sunnyslope	97
SPL-2008-00785-JEM	JCSD Plant 1 100-year Flood Protection Project	R6	Habitat for Hamner	43
SPL-2008-00814-SLP	Agua Mansa Commerce Center Project	R6	Mockingbird Canyon MCB	55
SPL-2008-01063-JPL	Fullerton Layover Facility Project	R5	Irvine Lake	14

## U.S. ARMY CORPS OF ENGINEERS (USACOE) PERMITS (in order of permit number)

		CDFW	SAWA Mitigation	
Permit Number	Permitted Project Name	Region	Placement Name	Page
SPL-2008-01145-MAS	Santiago Creek Bike Trail - Tustin Branch Trail	R5	Irvine Lake	14
SPL-2008-0923	Kitching Street Improvements Project	R6	Mockingbird Canyon MCB	55
SPL-2009-00139-VCC	I-215 West Perimeter Drainage Improvement Project	R6	Quail Run Phase II	60
SPL-2009-00292-JPL	North Diemer Access Road Project	R5	Carbon Canyon AERA	9
SPL-2009-00674-JPL	Olinda Alpha Landfill Expansion	R5	Irvine Lake	14
SPL-2009-00750-JPL	Florida Promenade Specific Plan Amendment	R6	Quail Run Phase II	60
SPL-2010-00522-CLD	Temescal Canyon Business Park	R6	Temescal Wash Phase V	109
SPL-2010-00944-SCH	I-215 Widening from Scott Road to Nuevo Road Project	R6	Wolfskill-Gilman	113
SPL-2011-00236	Line Section-51 Pipeline Erosion Repair Project	R6	Quail Run Phase II	60
SPL-2011-00570-SME	North Norco Channel Flood Control Improvements Project	R6	Sunnyslope	97

## REGIONAL WATER QUALITY CONTROL BOARD (RWQCB) PERMITS (in order of permit number)

		CDFW	SAWA Mitigation	
Permit Number	Permitted Project Name	Region	Placement Name	Page
02C-037	Murrieta Hot Springs Road Development	R6	Hwy 71 Eucalyptus	49
30212-05	I-215 Widening from Scott Road to Nuevo Road Project	R6	Wolfskill-Gilman	113
332007-18	Parcel Map 30626	R6	Temescal Wash 3M 2.8- A	104
33-2007-43	Walgreen's Project	R6	Sunnyslope	97
332010-29	Temescal Canyon Business Park	R6	Temescal Wash Phase V	109
33-2011-07	North Norco Channel Flood Control Improvements Project	R6	Sunnyslope	97
332011-12	Line Section-51 Pipeline Erosion Repair Project	R6	Quail Run Phase II	60
332012-07	TT 32997, Century American Development	R6	Hwy 71 Eucalyptus	49
332012-36	I-215/Newport Road Interchange Improvement Project	R6	Wolfskill 1.47-A	122
36-2004-04-DGW	Crafton Hills Repair Project	R6	Quail Run Phase II	60
362006-26-APF	Santa Ana River Trail Phase 1	R6	SAR I-215 Interchange to Rialto Channel	90

# REGIONAL WATER QUALITY CONTROL BOARD (RWQCB) PERMITS (in order of permit number)

		CDFW	SAWA Mitigation	
Permit Number	Permitted Project Name	Region	Placement Name	Page
Certificate 1/24/06	Boy Scouts of America Outdoor Education Camp	R5	Santiago Creek Phase II	32
Certificate 11/3/09	Sycamore Creek Area Project	R6	Sunnyslope	97
Certificate 11/7/06	WL Homes Tracts 28886 and 28886-1	R6	SAR I-215 Interchange to Rialto Channel	90
Certificate 12/20/05	Mountain Park Development Project	R5	Santiago Creek Phase I	27
Certificate 12/4/07	Hawarden Development Project	R6	Mockingbird Canyon MCB	55
Certificate 2/27/09	Santiago Creek Bike Trail - Tustin Branch Trail	R5	Irvine Lake	14
Certificate 5/20/05	Raceway Ford Project	R6	Raceway Ford	67
Certificate 7/22/09	Union Pacific Railroad Company Track Improvement Project	R5	Irvine Lake	14
Certificate 8/13/07	Crafton Hills College Master Plan Phase I	R6	SBVCD - San Bernardino	75
Certificate 8/24/04	Storm Drain Improvements at Corydon St and Melinda Ln, Lake Elsinore	R6	Temescal Wash Phase V	109
Certificate 8/24/05	May Ranch Phase 6 Residential Development Project	R5	Santiago Creek Phase II	32
Certificate 9/17/09	North Diemer Access Road Project	R5	Carbon Canyon AERA	9
Certificate 9/25/07	Santiago Canyon Creek Recharge Enhancement Project	R5	Irvine Park	21
R8-2009-0047	Olinda Alpha Landfill Expansion	R5	Irvine Lake	14
R8-2010-054	Florida Promenade Specific Plan Amendment	R6	Quail Run Phase II	60
RWQCB Certificate	Caliber Motors Satellite Sales Facility	R5	Irvine Park	21
RWQCB Certificate	Cougar Ranch Development Tract 30388	R6	SAR I-215 Interchange to Rialto Channel	90